

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

SENECA ARMY DEPOT ACTIVITY

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

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TABLE OF CONTENTS

Description

Page

ES	EXEC	UTIVE SUMMARY ES-1		
1	INTRODUCTION			
	1.1	Purpose of Report1-		
	1.2	Site Background1-1		
		1.2.1 Depot		
		1.2.2 Buildings 813 and 8141-3		
		1.2.3 EM-5		
	1.3	Site Physical Characteristics		
	1.4 1.5	Comparison Criteria for Investigation Results		
	1.3	1.5.1 VOC Concentrations Proximate to Buildings 813 and 814 1-5		
		1.5.1.1 Soil Gas Survey Results		
		1.5.1.2 Groundwater Chemistry		
		1.5.1.3 Surface Water/Ditch Soil Chemistry1-6		
		1.5.1.4 Soil Chemistry1-6		
	1.6	1.5.2 Investigation of Radionuclides at EM-5		
	1.6	Report Organization1-7		
2	STUDY AREA INVESTIGATION2-1			
	2.1	Introduction		
	2.2	Building 813 and 814 Investigation2-1		
		2.2.1 Groundwater Investigation		
		2.2.1.1 Temporary Monitoring Well Installation2-1		
		2.2.1.2 Groundwater Sampling2-2		
		2.2.1.3 Sample Analysis2-3		
		2.2.2 Surface Water/Sediment Investigation		
		2.2.3 TCE Source Investigation		
		2.2.3.1 Phase I Test Pit - November 3, 20042-4		
		2.2.3.2 Phase II - November 10 and 11, 20042-4		
		2.2.3.3 Phase III - December 20 - 22, 2004		
		2.2.3.4 Soil Sampling and Analysis2-7		
	2.3	EM-5 Soil Investigation2-		
		2.3.1 Surface and Subsurface Soil Sampling2-7		
		2.3.2 Sample Analysis2-7		
	2.4	Site Survey		
	2.5	Data Validation		

3	RESU	<u>RESULTS</u>		
	3.1	Groundwater Results		
	3.2			
	3.3		esults	
		3.3.1	TCE Source Investigation	
			3.3.1.1 Phase I Test Pitting - November 3, 2004	
			3.3.1.2 Phase II - November 10 and 11, 2004	
			3.3.1.3 Phase III - December 20-22, 2004	
		3.3.2	Stockpiles	
		3.3.3	EM-5	
4	CON	CONCLUSIONS AND RECOMMENDATIONS		
	4.1	Conclu	usions	4-1
		4.1.1	VOC Contamination at Building 813/814	4-1
			4.1.1.1 Groundwater	
			4.1.1.2 Surface Water/Ditch Soil	
			4.1.1.3 Soil	4-2
		4.1.2	EM-5 Soils	4-2
	4.2	Recon	nmendations	4-3

LIST OF TABLES

Number Table Name

- Table 1-1 Soil Gas Survey Results Original RI
- Table 2-1
 Preliminary Temporary Well Placement Rationales
- Table 3-1
 Groundwater VOC Detections
- Table 3-2Sediment VOC Detections
- Table 3-3Test Pit Soil VOC Detections
- Table 3-4Stockpile Soil VOC Detections
- Table 3-5Comparison of Pb-210 Results from RI and SRI

LIST OF FIGURES

NumberFigure Title

- Figure 1-1 Future Land Use
- Figure 1-2SEAD-12 Site Plan
- Figure 1-3 Buildings 813 and 814
- Figure 1-4 RI Sample Locations Building 813 and 814
- Figure 1-5 Previous Soil Sample Locations at EM-5
- Figure 2-1 TCE Detected During RI
- Figure 2-2 Proposed Temporary Well Locations
- Figure 2-3 Temporary Well and Surface Water/Ditch Soil Sample Locations
- Figure 2-4 Sample Locations from Test Pit at Building 813/814
- Figure 2-5 Building 813/814 Excavation As Built
- Figure 2-6 EM-5 Soil Sample Locations
- Figure 3-1 Groundwater and Surface Water/Ditch Soil Detections
- Figure 3-2 Soil Sample TCE Results in Building 813/814 Test Pit
- Figure 3-3 TCE Concentrations in Stockpile Samples at Building 813/814

LIST OF APPENDICES

Appendix A:	Temporary Well Construction Diagrams
Appendix B:	Sampling Records
Appendix C:	Test Pit Logs
Appendix D:	Laboratory SOP – Method HASL 300
Appendix E:	Analytical Results
Appendix F:	Laboratory Certifications
Appendix G:	Excavation Photos
Appendix H:	Response to Comments

ACRONYMS AND ABBREVIATIONS

ASP	Analytical Services Protocol
AWQS	Ambient Water Quality Standards
BCT	BRAC Closure Team
bgs	Below Grade Surface or Below Ground Surface
BRAC	Base Realignment and Closure
BTEX	Benzene, Toluene, Ethylbenzene, and Xzylene
CAS	Columbia Analytical Services
CERCLA	Comprehensive Environmental Responsibility, Compensation, and Liability Act
Cis-1,2-DCE	cis-1,2-dichloroethene
CLP	Contract Laboratory Program
DCE	1,2-Dichloroethene
DCGL	Derived Concentration Guideline Level
DO	Dissolved Oxygen
et al.	and others
FFA	Federal Facilities Agreement
FID	Flame Ionization Detector
FS	Feasibility Study
ft.	Feet
GEL	General Engineering Laboratories
HTRW	Hazardous, Toxic, and Radioactive Waste
i.e.,	that is
IAG	Interagency Agreement
LRA	Local Development Authority
MS	Matrix Spike Sample Designation
MSD	Matrix Spike Duplicate Sample Designation
MW	Permanent Monitoring Well Designation
NPL	National Priority List
NYSDEC	New York State Department of Environmental Conservation
ORP	Oxidation-Reduction Potential
PCB	Polychlorinated Biphenyl
pCi/g	Pico-curies/gram
PID	Photoionization Detector
QA/QC	Quality Assurance/Quality Control

QC	Quality Control
RI	Remedial Investigation
SD	Ditch Soil or Sediment Designation
SEDA	Seneca Army Depot Activity
SOP	Standard Operating Procedure
SQL	Sample Quantitation Limit
SRI	Supplemental Remedial Investigation
SVOC	Semivolatile Organic Compound
SW	Surface Water Sample Designation
TAGM	Technical and Administrative Guidance Memorandum
TBC	To Be Considered
TCE	Trichloroethene
TCL	Target Compound List
TIC	Tentatively Identified Compound
TOC	Total Organic Carbon
TOGS	Technical Operating Guidance Series
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WRS	Wilcoxon Rank Sum
μg/Kg μg/L	Microgram or Micrograms per Kilogram Microgram or Micrograms per Liter

REFERENCES

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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. Nine of the 13 temporary wells were abandoned in place since no VOCs were detected in these wells and they were not considered necessary for any potential future investigation at the site.

The ten RI soil sample locations at EM-5 exhibiting the highest Pb-210 concentrations were resampled 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, , and backfilling a portion of the stockpiled test pit soil (Phase II and Phase IIIA soils) while awaiting results of re-sampling performed on the remaining stockpiled portion (Phase IIIB soils). Phase III B soils will be backfilled or disposed of off-site based on the re-sampling results. 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 Remedial Investigation (RI) Report at the Radiological Waste Burial Sites (SEAD-12; Parsons, 2002a) and the Draft Feasibility Study (FS) Report for the Radioactive Waste Burial Sites (SEAD-12; Parsons, 2002b), 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 volatile organic compound (VOC) contamination in the vicinity of Buildings 813 and 814 and the elevated concentrations of Pb-210, a radionuclide, in the soil at the EM-5 area. The SRI work was conducted in accordance with the Final Workplan for the Supplemental Remedial Investigations at the Radioactive Waste Burial Sites (Parsons, 2004).

The Supplemental Remedial Investigation activities carried out at these two areas were performed as part of the United States Army Corps of Engineers (USACE) remedial response activities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at SEDA. The SRI activities followed the requirements of the New York State Department of Environmental Conservation (NYSDEC), the U.S. Environmental Protection Agency (USEPA) Region II, and the Interagency Agreement (IAG; Army et al., 1993).

1.2 SITE BACKGROUND

1.2.1 Seneca Army Depot

Seneca Army Depot Activity (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 USEPA 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 USEPA, 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. The Seneca County Industrial Development Authority (SCIDA) revised the future land use of the Depot in 2005. 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 SCIDA and approved by the Board of Supervisors included:

- Housing;
- Institutional;
- Institutional training;
- Green energy;
- Development reserve;
- Residential resort;
- Utility;
- Training area;
- Industrial;
- Warehousing;
- Conservation/recreational land;
- An area designated for a 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 SCIDA's recommended future land use for the Depot is provided as **Figure 1-1**. As shown in the figure, SEAD-12 is located within the area planned for Institutional Training. The Fed to Fed transfer, Prison, and Institutional areas have already been transferred to new owners. The majority of the Airfield and Institutional Training, Green Energy, Development Reserve, and Training area have been transferred except for pieces that have been retained by the Army pending forthcoming environmental action.

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 large 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 was performed at SEAD-12 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 Building 815 and Buildings 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. Depth to competent bedrock in the area around SEAD-12 varies; areas upgradient of Buildings 813/814 have a depth to bedrock ranging from 10 to 15 feet bgs whereas the area immediately downgradient ranges from 5 to 10 feet bgs. 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 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 (1998) ARAR.
- Surface Water NYSDEC TOGS, 1.1.1, Class C Guidance Values (1998) TBC.
- Groundwater NYSDEC TOGS, 1.1.1, Class GA Standards (1998) ARAR.
- Groundwater NYSDEC TOGS, 1.1.1, Class GA Guidance Values (1998) TBC.

For constituents in surface water and groundwater, the NYSDEC TOGS standards (considered ARARs) and the NYSDEC TOGS guidance values (considered TBCs) from the above published

documents were used for comparison to field data. For soil, criteria from TAGM-4046 are considered TBCs. These criteria are referenced 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 **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, 2002a) and the Draft Feasibility Study Report for the Radioactive Waste Burial Sites (SEAD-12; Parsons, 2002b). 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 as high as 2,400 ppbv. 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. Soil gas results are used as a qualitative tool to plan additional investigations such as groundwater monitoring. Elevated TCE and total VOC concentrations do not necessarily predict the concentrations of VOCs in groundwater immediately underlying them. Soil gas originating from groundwater will follow preferential paths within the matrix toward an accumulation or exit point. However, results may be used to plan additional investigations. The complete soil gas survey results are presented in **Table 1-1** and were used to plan the groundwater investigation in both the RI and the Supplemental RI.

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 MW12-37 was placed approximately 10 feet from the northeast corner of Building 813 to further

investigate the potential impact to groundwater based on the elevated soil gas TCE concentrations detected in that location. Monitoring wells 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 total VOCs detected in soil gas samples at those locations. Monitoring well location MW12-38 is in the 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 impact to groundwater by VOC contamination in the area.

The results of the groundwater sampling program during the RI (April 1999 and December 1999) 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 μ g/L of TCE during both of the two sampling events conducted; the NYSDEC Class GA Standard for groundwater is 5 μ g/L. The groundwater samples collected during the second sampling event also showed an estimated DCE concentration of 30 μ g/L, which also exceeds the NYSDEC Class GA Standard of 5 μ g/L. The sample collected during the second event at MW12-40 showed a TCE concentration of 1.7 μ g/L, below 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 the NYSDEC Ambient Water Quality Standards (AWQS) for Class C water. Although the iron and aluminum concentrations exceeded the Class C Standards, the concentrations of these two metals were in line with background values across the site and therefore iron or aluminum was not considered a contaminant of concern. Sample SW12-30 contained a concentration of 1 μ g/L of TCE, which is below the Class C Standard.

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 analytical results of the surface and subsurface soil samples indicated that there were metals that exceeded TAGM values at these locations. However, the values were below the maximum background concentrations for SEDA. In addition, none of the VOC or SVOC detections in surface or subsurface soils exceeded their respective TAGM values. The RI reported that no risk was found within this area due to the presence of heavy metals in soils. The presence of TCE in groundwater at MW12-37 was the only significant source of risk in this area.

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 (Department of Defense et al., 2000) and in Section 4.1.2.3 of the RI (Parsons, 2002a). 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 RI 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 areas (area adjacent to Building 813/814 and EM-5) based on the data collected.

2 <u>STUDY AREA INVESTIGATION</u>

2.1 INTRODUCTION

Supplemental investigations were performed within the SEAD-12 area based on the results of the Remedial Investigation at the Radiological Waste Burial Sites (Parsons, 2002a). Based on comments received from the regulatory community, additional investigation of elevated trichloroethene detections in groundwater outside Buildings 813/814, as well as elevated detections of Pb-210 within the EM-5 area of the site were performed. The SRI was conducted in accordance with the Final Workplan for the Supplemental Remedial Investigations at the Radioactive Waste Burial Sites, submitted in March, 2004. The purpose of the Supplemental RI 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 BUILDINGS 813 AND 814 INVESTIGATION

2.2.1 Groundwater Investigation

2.2.1.1 Temporary Well Installation

The TCE concentrations detected in MW12-37 during the two sampling events in the original RI were above the NYSDEC GA Standard. The DCE concentration detected in MW12-37 in December 1999 was above the NYSDEC GA Standard. TCE was also detected in one surface water sample and VOCs were detected in a number of soil gas samples. As a result, 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 and DCE 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 locations of the 13 temporary wells installed during the SRI are shown in **Figure 2-3**.

The temporary monitoring wells were installed according to the monitoring well installation 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 report for each of the wells is contained in **Appendix A**.

In June 2005, temporary wells TW12-1, TW12-4, TW12-5, TW12-7, TW12-8, TW12-22, TW12-23, TW12-25, and TW12-26 were abandoned in accordance with the Generic RI/FS Workplan (Parsons, 1995), NYSDEC Well Abandonment Protocols, and the Supplemental RI Workplan. TW12-6 along with MW12-37 were removed during test pit operations. TW12-3, TW12-9, and TW12-24 remain at the site along with MW12-38, MW12-39, and MW12-40.

2.2.1.2 Groundwater Sampling

Groundwater samples were collected from each of the temporary monitoring wells installed during the SRI. 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 MW12-40 were re-sampled during Phase II of the SRI. The Phase II samples were analyzed for VOCs.

All temporary well and permanent well samples were collected in accordance with the procedures specified in the USEPA Region II (1998) Standard Operating Procedure (SOP) titled *Groundwater Sampling Procedure, Low Flow Pump Purging and Sampling*. 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**.

Based on the fact that groundwater results from three wells (TW12-24, TW12-9, and TW12-3) installed during the SRI within 45 feet of MW12-37 showed no detections of VOCs, it was concluded that the groundwater impacts at MW12-37 were isolated. A final, post-excavation groundwater sampling round was not performed since there were no exceedances of TCE in the groundwater except for MW12-37 and this well, in addition to the soils surrounding it, were removed during the SRI.

2.2.1.3 Sample Analysis

Groundwater samples collected were submitted to Chemtech located in Mountainside, New Jersey. The laboratory is certified by New York State's Contract Laboratory Program (CLP), Analytical Services Protocol (administered by New York State Department of Health (NYSDOH) and the US Army Corp of Engineers (USACE), Hazardous, Toxic, and Radioactive Waste (HTRW) Center of Expertise (i.e., former Missouri River Division) for CLP VOC analysis. Certifications for CLP VOC analyses were provided in **Appendix F**. Organic compounds characterized during this investigation focused on compounds listed on the CLP Target Compound List (TCL). Additionally, attempts were made to identify and quantify the 10 volatile tentatively identified compounds (TICs) of greatest concentrations, in accordance with the NYSDEC Analytical Services Protocol (ASP). A field duplicate sample, a rinsate blank, and a Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample were collected during each phase of sampling and were submitted to the laboratory with the rest of the groundwater samples and a trip blank supplied by the lab for quality control (QC) purposes. A detailed discussion of the groundwater 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 μ g/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 an approximate 100-foot interval 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 of the *Generic RI/FS Workplan* (Parsons, 1995). Both the surface water and ditch soil samples were submitted to Chemtech for VOC analysis by Method 8260B, and the ditch soil samples were also analyzed for total organic carbon (TOC) by USEPA Method 9060. As with the groundwater samples, a full set of QC samples was collected and submitted to the laboratory 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 results is contained in **Section 3**.

2.2.3 TCE Source Investigation

2.2.3.1 Phase I Test Pitting - 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 1999. 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.

Test pit excavation and test pit sample collection were conducted in accordance with the test pitting techniques outlined in the Field Sampling and Analysis Plan of the *Generic RI/FS Workplan* (Parsons, 1995).

On November 3, 2004, approximately 20 cubic yards of soil were removed from the area immediately surrounding MW12-37. 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 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 in **Figure 2-4**.

Photos of the excavation can be found in **Appendix G**. The test pit and stockpile soil samples were submitted to Chemtech and Columbia Analytical Services in Rochester, NY for CLP VOC analysis. A detailed discussion of the test pit sample results and stockpile sample results is contained in **Section 3**.

2.2.3.2 Phase II Test Pitting - 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 as field screen for VOC concentrations.

The pit was excavated to bedrock depth, and the only notable object discovered were a piece of rusting metal debris and an abandoned 6-inch clay sewer pipe along with clay pipe fragments. Metal

debris was found near the northern limit of the Phase II test pit, approximately 22 feet from the Northeastern 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. The 6-inch clay sewer 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 the Phase I excavation. The pipe appeared to be empty, and no visible contamination was sighted in the soil removed from the hole. There were no elevated readings detected by the field photoionization detector (FID) in the area where the pipe was found. No as-built records showing existing sewer lines were available for this building; and it is not known when this sewer line was in service. 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 the Phase II excavation was stockpiled in the same area as the material removed during Phase I while the piles from the two Phases were kept separate. An effort was 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 the stockpile location from which each stockpile sample was collected.

Photos of the excavation can be found in **Appendix G**. The test pit soil samples and stockpile samples collected during the second phase of investigation were submitted to Columbia Analytical Services (CAS) located in Rochester, New York for VOC analyses using the USEPA SW-846 8260B. Some samples were also analyzed for total organic carbon (TOC) using the USEPA approved Lloyd Kahn analytical method. A detailed discussion of the test pit sample results and stockpile sample results is contained in **Section 3**.

2.2.3.3 Phase III Test Pitting - 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 levels for TCE and other VOC analytes. However, the TCE levels in the samples collected from the southern wall and western wall 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 soil 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 in groundwater 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. A 4-inch ductile iron (DI) pipe was found during the excavation near the 4-inch DI end within the foundation. No definitive bedding was found in the area of the pipes. The invert of the pipe was found approximately 4 to 5 feet bgs and the excavation was taken down to native bedrock (approximately 7 feet bgs). 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. The rationale for this extension was based on the location of TW12-6, which was approximately 30 feet west of MW12-37. No VOCs were detected in groundwater from TW12-6, indicating that TCE was not present in the soils at concentrations contributing to groundwater contamination in this area. 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. A pair of sidewall samples (TP813-13F and its field duplicate) was collected from the western wall of the pit near the excavation bottom (i.e., 3-4 ft bgs. vs. 5 ft bgs.), 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 soil samples and stockpile soil samples collected during the third phase of investigation were submitted to CAS in Rochester, New York for VOC analyses using the USEPA SW-846 8260B. A detailed discussion of the test pit sample results and stockpile sample results is contained in **Section 3**.

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 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 in **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. The test pit logs for the final excavation boundaries are included in **Appendix C**. Photos of the excavation can be found in **Appendix G**.

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 of the *Generic RI/FS Workplan* (Parsons, 1995). 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 one set of QC samples was collected and submitted to the laboratory for each sampling event. Some Phase II soil samples were also analyzed for TOC using the USEPA approved Lloyd Kahn analytical method. A detailed discussion of the test pit and stockpile soil sample 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, soil re-sampling and re-analyzing 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**). The soil samples were collected according to the sampling methods outlined in the Field Sampling and Analysis Plan of the *Generic RI/FS Workplan* (Parsons, 1995). All 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) located in Charleston, SC 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 results. GEL's Standard Operating Procedures for the Determination of Gamma Isotopes (Modified DOE EML HASL-300) is included as **Appendix D**. One set of quality assurance/quality control (QA/QC) samples was collected (MS/MSD and field duplicate samples were collected from surface soil location SS12-107) and submitted to the laboratory with the rest of the samples. The results of Ra-226 and its daughter products in soil 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 USACE 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* (Parsons, 1995).

2.5 DATA VALIDATION

Validation of soil, groundwater, surface water, and ditch soil analytical data was performed in a manner that is generally consistent with procedures defined in the Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA, 1999), Region 2 Resource Conservation and Recovery Act and Comprehensive Environmental Responsibility, Compensation, and Liability Act Data Validation Standard Operating Procedures, and NYSDEC (2000) Contract Laboratory Program ASP, with consideration for the methodology requirements and the Final Workplan for the Supplemental Remedial Investigations at the Radioactive Waste Burial Sites (SEAD-12; Parsons, 2004).

The data validation included performance of a completeness audit and a review of the following parameters, where applicable: holding times, sample preservations, percentage of solids, quality control results of equipment/rinsate blanks, trip blanks, method blanks, matrix spike /matrix spike duplicate analyses, laboratory control sample performances, laboratory and field duplicates, surrogate recoveries, instrument performance and calibration, chromatograms and mass spectrums, internal standard recovery, and reporting limits. In performing the data validation, the raw data were spotchecked in accordance with the Region II SOP to evaluate whether there was any transcription error.

3 <u>RESULTS</u>

3.1 GROUNDWATER RESULTS

A total of 15 temporary and permanent monitoring wells were sampled during the Supplemental Remedial Investigation and analyzed for VOCs. The detections observed in the groundwater VOC analysis are summarized in **Table 3-1** and shown in **Figure 3-1**. A complete record of the analytical results is presented in **Appendix E**. As shown in **Table 3-1**, there were no exceedances of NYSDEC Class GA Groundwater Standards in the samples collected from the Phase I temporary wells, TW12-1 and TW12-3 through TW12-9. The only detections in the Phase I wells were for trichloroethene and acetone. TCE was detected in wells TW12-1 and TW12-3 at concentrations of 4.1 μ g/L (J) and 4.2 μ g/L (J), respectively. Both of these concentrations are below the NYSDEC Class GA standard for TCE (i.e., 5 μ g/L). Acetone was detected at a concentration of 47 μ g/L (J) at TW12-9 and a concentration of 51 μ g/L at TW12-4. There is no NYSDEC GA standard for acetone, but these two detections were near the NYSDEC GA guidance value of 50 μ g/L.

Because there was no significant detection of TCE in the first round results, the Phase II temporary wells were generally positioned between Building 813/814 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 exceeded the Class GA Standards, with TCE detected at a concentration of 2,400 μ g/L and cis-1,2-DCE at a concentration of 41 μ g/L. The Phase II groundwater investigation results indicated that the TCE observed during the RI was still present but was localized to the area in adjacent to MW12-37.

Temporary monitoring wells were installed during the SRI in areas where high VOC concentrations were observed in the soil gas during the RI, as well as between MW12-37 and MW12-40 (the two wells where TCE was detected during the RI). Soil gas investigations are generally conducted to assist in the planning of additional investigations. Therefore, an elevated VOC concentration in soil gas does not necessarily indicate an elevated VOC concentration in the groundwater at that point. Soil gas originating from groundwater will follow preferential paths within the matrix toward an accumulation or exit point. Some correlation between soil gas and groundwater impacts were found during the RI. Soil gas results near the northeastern portion of the building led to the installation of MW12-37 during the RI where groundwater impacts were found. Soil gas readings in other locations further investigated during the SRI were not indicative of groundwater impacts at those points. In summary, the RI and SRI groundwater results indicate that the impacts to groundwater have been limited and localized to area adjacent to MW12-37.

3.2 SURFACE WATER AND DITCH SOIL SAMPLE RESULTS

Seven surface water and ditch soil locations were investigated in the drainage ditch near Building 813/814. 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 in **Figure 3-1**, and the ditch soil detections are summarized in **Table 3-2** and shown in **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 value of 1,500 μ g/Kg. The highest toluene concentration observed in the samples was 7.4 μ g/Kg. The two acetone detections were 110 μ g/Kg at SD12-70 and 72 μ g/Kg at SD12-68; both are below the TAGM limit of 200 μ g/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 the NYSDEC TAGM 4046; the TCE results are shown in **Figure 3-2**. The highest TCE concentration was $65,000 \ \mu g/Kg$ in the field duplicate sample for location TP813-3T, which was on the east side of the test pit. The concentration in sample TP813-3T was comparable to this at $60,000 \ \mu g/Kg$. The TCE concentrations in TP813-1T (south sidewall) and TP813-2T (north sidewall) were not as high as those on the east side, with concentrations of 11,000 $\ \mu g/Kg$ and 7,000 $\ \mu g/Kg$, respectively. However, both of these concentrations were at least 10 times the TAGM value of 700 $\ \mu g/Kg$. A number of other VOCs were also detected in the four test pit samples, but none of these detected VOC concentrations exceeded the TAGMs and the concentrations detected were approximately 1,000 times lower than those for TCE.

3.3.1.2 Phase II Test Pitting - 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, TP813-6F, TP813-7T, -8T, and -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 μ g/Kg. TP813-7T and TP813-8T had been collected near visually stained soils. The two detections not exceeding the TAGM were 160 μ g/Kg (J) at TP813-5F and 590 μ g/Kg at TP813-6F. The two locations with TCE concentrations below the TAGM 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 conducted. The only analytes other than TCE detected in the soil samples were toluene at a concentration of 100 μ g/Kg in sample TP813-6F and cis-1,2,-DCE at a concentration of 2,800 μ g/Kg in sample TP813-7T.

3.3.1.3 Phase III Test Pitting - 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 a field 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 μ g/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 4-inch DI 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 μ g/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 μ g/Kg of TCE, a concentration well below the TAGM. The analytical results for TP813-13F and its field duplicate collected from the western side of the test pit showed a concentration of 1.3 μ g/Kg (J) and a non-detect with a sample quantitation limit (SQL) of 4.5 μ g/Kg, respectively. The detected concentration was well below the TAGM.

Of the non-TCE compounds, acetone was detected at the highest concentration of $32 \mu g/Kg$. 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 among 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 field 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 and the TCE concentrations of the stockpile samples. 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 in 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 III stockpile samples were collected on December 21.

Phase II and Phase III soils were re-sampled on July 22, 2005. Three additional grab samples were collected at random grid locations within the Phase II stockpile (see **Figure 3-3**). One additional sample was collected from this stockpile on November 28, 2005. Results indicated that TCE was detected below action levels for each sample and that this soil could be backfilled. Four additional grab samples were collected at random grid locations from the Phase IIIA stockpile. Results indicated that TCE was detected below action levels and that this soil could be backfilled. Four additional grab samples were collected at random grid locations from the Phase IIIA stockpile. Results indicated that TCE was detected below action levels and that this soil could be backfilled. Two additional grab samples were collected from the Phase IIIB stockpile on a grid basis. One sample had concentrations that were below the TAGM for TCE. However, the other sample SP813-16 had TCE levels at 22,000 ug/Kg. Since this stockpile has not been sampled since July 2005, it will be resampled to see if levels have decreased since the summer months. This stockpile will be partitioned and sampled further to determine what portion of the soil may be returned to the excavation and what portion, if any, may need to be taken off-site for disposal. Four additional samples are to be collected in February 2006.

3.3.3 EM-5

A total of 10 locations were sampled during the SRI 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 (WRS) Test 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 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 (Department of Defense et al., 2000)

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 <u>CONCLUSIONS AND RECOMMENDATIONS</u>

The objective of the Supplemental Remedial Investigation (SRI) was twofold: 1) to investigate the VOC contamination detected in the groundwater in the vicinity of Buildings 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 (i.e., MW12-37). The cis-1,2-DCE concentration observed in MW12-37 was above the NYSDEC Class GA Standard (41 μ g/L vs. 5 μ g/L). 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 and cis-1,2-DCE contaminated groundwater. The specific conclusions drawn from the test pit investigation will be discussed in **Section 4.3**, but the results suggested 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.

4.1.1.2 Surface Water/Ditch Soil

No exceedances of the NYSDEC Class C surface water standards or TAGM 4046 soil levels 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 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 standard. 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 **Figure 3-2**).

During the test pitting, soils associated with TCE concentrations of up to 65,000 ug/Kg (TP813-3T field 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 laboratory 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 much lower than those from the original RI.

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. The SEAD-12 area is designated for Institutional Training use. The Institutional Training designation implies that personnel will be allowed in the area for limited time periods throughout the year; and use of Buildings 813/814 is not currently planned. Buildings 813/814 currently do not have electrical, water, or sewer service and are not inhabitable. 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 buildings. Such an investigation may be conducted based on actual indoor air testing.
- The Phase II and Phase III stockpiles remaining on-site were re-sampled in the July and November 2005. Results for the Phase II and Phase IIIA stockpile re-sampling indicated that TCE was detected below action levels for each sample and that this soil may be backfilled. Results for the Phase IIIB stockpile sampling indicated one sample had concentrations that were below the TAGM for TCE. However, the other sample SP813-16 had TCE levels at 22,000 ug/Kg. Since this stockpile has not been sampled since July 2005, it will be resampled in February 2006 to see if levels have decreased since the summer months. This stockpile will be partitioned and sampled further to determine what portion of the soil may be returned to the excavation and what portion, if any, may need to be taken off-site for disposal.
- No further action will be performed at EM-5.
- A Draft Feasibility Study was submitted for SEAD-12 in May, 2002 (Parsons, 2002b). 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

	DICHLOROETHENE	BENZENE	TRICHLOROETHENE	TOLUENE	P-XYLENES	TOTAL VOC
LOC ID	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(ppbv)	(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 SG12-164	0	94	0	12	0	4
	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	Status	Rationale	
Loc ID		Existing Permanent or 1st Phase Temporary Wells	
NUN/40.07			TOF
MW12-37	existing	1,708 ppbv TCE concentration in soil gas sample SG12-121; concentration of 1,600 ug/L during two sampling events in the Remedial Investigation	TCE
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	
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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	
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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	
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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	
			Frequency			Number	Number	Number					1	
			of	Criteria	Action	of	of	of					1	
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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	
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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	
			Frequency			Number	Number	Number				
			of	Criteria	Action	of	of	of				
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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

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

LOCATION ID									SD12-72		SD12-72 (D)		SD12-73	SD12-74	T
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	
			Frequency			Number	Number	Number							
			of	Criteria	Action	of	of	of							
Parameter	Units	Maximum	Frequency	Туре	Action Level	Exceed	Detect	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	2 UJ
Toluene	µg/Kg	7.4	63%	TAGM 4046	1500	0	5	8	7.2	J	5.7	J	12 UJ	12	2 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
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q	Value
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 L
Acetone	µg/Kg	32	13%	TAGM 4046	200	0	2	15	1700 U	16 U	4.3 J	32	17 U	18 L
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 L
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 L
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 L
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 L
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 L
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 L
Trichoroethene	µg/Kg	65000	87%	TAGM 4046	700	9	13	15	1400	4800 J	11	1000 J	1.3 J	4.5 L
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 L
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		1							SOIL	SOIL		SOIL	
SAMPLE ID		1							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	1
			Frequency			Number	Number	Number					
			of	Criteria	Action	of	of	of					
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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	i 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	i 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	2
Total Organic Carbon	mg/Kg	5420	13%			0	2	15	5420				

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

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	
MATRIX									SOIL	SOIL		SOIL	SOIL	
SAMPLE ID									123685	123687		123695	123696	
TOP OF SAMPLE									N/A	N/A		N/A	N/A	
BOTTOM OF SAMPLE									N/A	N/A		N/A	N/A	
SAMPLE DATE									11/3/2004	11/10/2004		12/9/2004	12/9/2004	
QC CODE									SA	SA		SA	SA	
STUDY ID									SRI	SRI		SRI	SRI	
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Units	Maximum	Frequency	Туре	ction Lev	Exceed	Detect	Analyses	Value (Q)	Value	(Q)	Value (Q) Valu	e (Q)
1,1-Dichloroethene	µg/Kg	0.65	6%	TAGM 4046	400	0	1	18	0.19 UJ	680	U	4.4 U	4.	BU
Acetone	µg/Kg	3.8	6%	TAGM 4046	200	0	1	18	6.4 UJ	2700	U	18 U	1	9 U
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	2	18	0.09 UJ	1400	U	8.8 U	9.	5 U
cis-1,2-Dichloroethene	µg/Kg	20	28%	TAGM 4046		0	5	18	3.3 J	680	U	2.4 J	2.	6 J
Ethyl Benzene	µg/Kg	80	17%	TAGM 4046	5500	0	3	18	0.21 UJ	680	U	4.4 U	4.	BU
Meta/Para Xylene	µg/Kg	150	6%	TAGM 4046		0	1	18	0.44 UJ	680	U	4.4 U	4.	вU
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	2	18	0.59 UJ	950		4.4 U	4.	вU
Ortho Xylene	µg/Kg	42	11%	TAGM 4046		0	2	18	0.37 UJ	680	U	4.4 U	4.	вU
Tetrachloroethene	µg/Kg	1.7	6%	TAGM 4046	1400	0	1	18	0.55 UJ	680	U	4.4 U	4.	BU
Toluene	µg/Kg	210	6%	TAGM 4046	1500	0	1	18	0.22 UJ	680	U	4.4 U	4.	BU
trans-1,2-Dichloroethene	µg/Kg	1.3	6%	TAGM 4046	300	0	1	18	0.32 UJ	680	U	4.4 U	4.	вU
Trichloroethene	µg/Kg	28000	94%	TAGM 4046	700	7	17	18	28000	1500		3100	19	0
Vinyl Chloride	µg/Kg	7.4	6%	TAGM 4046	200	0	1	18	0.2 UJ	680	U	4.4 U	4.	BU

LOCATION ID									SP813-9		SP813-10		SP813-11		SP813-12	
MATRIX									SOIL		SOIL		SOIL		SOIL	
SAMPLE ID									123659		123660		123661		123662	
TOP OF SAMPLE									N/A		N/A		N/A		N/A	
BOTTOM OF SAMPLE									N/A		N/A		N/A		N/A	
SAMPLE DATE									7/22/2005		7/22/2005		7/22/2005		7/22/2005	
QC CODE									SA		SA		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI	
			Frequency			Number	Number	Number								
			of	Criteria	Action	of	of	of								
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	Analyses	Value	(Q)	Value	(Q)	Value	(Q)	Value	(Q)
1,1-Dichloroethene	µg/Kg	0.65	6%	TAGM 4046	400	0	1	18	520	U	420	U	480	U	580	U
Acetone	µg/Kg	3.8	6%	TAGM 4046	200	0	1	18	340	U	1700	U	1900	U	2300	U
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	2	18	1000	U	830	U	960	U	1200	U
cis-1,2-Dichloroethene	µg/Kg	20	28%	TAGM 4046		0	5	18	520	U	420	U	480	U	580	U
Ethyl Benzene	µg/Kg	80	17%	TAGM 4046	5500	0	3	18	33	J	80	J	480	U	580	U
Meta/Para Xylene	µg/Kg	150	6%	TAGM 4046		0	1	18	520	U	420	U	480	U	580	U
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	2	18	520	U	420	U	480	U	580	U
Ortho Xylene	µg/Kg	42	11%	TAGM 4046		0	2	18	520	U	31	J	480	U	580	U
Tetrachloroethene	µg/Kg	1.7	6%	TAGM 4046	1400	0	1	18	520	U	420	U	480	U	580	U
Toluene	µg/Kg	210	6%	TAGM 4046	1500	0	1	18	520	U	420	U	480	U	580	U
trans-1,2-Dichloroethene	µg/Kg	1.3	6%	TAGM 4046	300	0	1	18	520	U	420	U	480	U	580	U
Trichloroethene	µg/Kg	28000	94%	TAGM 4046	700	7	17	18	160	J	110	J	410	J	510	J
Vinyl Chloride	µg/Kg	7.4	6%	TAGM 4046	200	0	1	18	520	U	420	U	480	U	580	U

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

LOCATION ID									SP813-4	SP813-5	SP813-6	SP813-7	
MATRIX									SOIL	SOIL	SOIL	SOIL	
SAMPLE ID									123697	123698	123699	123700	
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	12/9/2004	
QC CODE									SA	SA	SA	SA	
STUDY ID									SRI	SRI	SRI	SRI	
			Frequency			Number	Number	Number					
			of	Criteria	Action	of	of	of					
Parameter	Units	Maximum	Frequency	Туре	ction Lev	Exceed	Detect	Analyses	Value (Q)	Value (Q)	Value (Q)	Value	(Q)
1,1-Dichloroethene	µg/Kg	0.65	6%	TAGM 4046	400	0	1	18	4.8 U	4.2 U	5.2 U	390	J
Acetone	µg/Kg	3.8	6%	TAGM 4046	200	0	1	18	19 U	17 U	21 U	1500	J
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	2	18	9.6 U	8.4 U	10 U	770	J
cis-1,2-Dichloroethene	µg/Kg	20	28%	TAGM 4046		0	5	18	1.7 J	4.2 U	5.4 U	390	J
Ethyl Benzene	µg/Kg	80	17%	TAGM 4046	5500	0	3	18	4.8 U	4.2 U	5.2 U	390	J
Meta/Para Xylene	µg/Kg	150	6%	TAGM 4046		0	1	18	4.8 U	4.2 U	5.2 U	390	J
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	2	18	4.8 U	4.2 U	5.2 U	390	J
Ortho Xylene	µg/Kg	42	11%	TAGM 4046		0	2	18	4.8 U	4.2 U	5.2 U	390	J
Tetrachloroethene	µg/Kg	1.7	6%	TAGM 4046	1400	0	1	18	4.8 U	4.2 U	5.2 U	390	J
Toluene	µg/Kg	210	6%	TAGM 4046	1500	0	1	18	4.8 U	4.2 U	5.2 U	390	J
trans-1,2-Dichloroethene	µg/Kg	1.3	6%	TAGM 4046	300	0	1	18	4.8 U	4.2 U	5.2 U	390	J
Trichloroethene	µg/Kg	28000	94%	TAGM 4046	700	7	17	18	110	9.3	7400 J	1700	
Vinyl Chloride	µg/Kg	7.4	6%	TAGM 4046	200	0	1	18	4.8 U	4.2 U	5.2 U	390	J

LOCATION ID									SP813-13		SP813-14		SP813-15		SP813-16	
MATRIX									SOIL		SOIL		SOIL		SOIL	
SAMPLE ID									123663		123664		123665		123666	
TOP OF SAMPLE									N/A		N/A		N/A		N/A	
BOTTOM OF SAMPLE									N/A		N/A		N/A		N/A	
SAMPLE DATE									7/22/2005		7/22/2005		7/22/2005		7/22/2005	
QC CODE									SA		SA		SA		SA	
STUDY ID									SRI		SRI		SRI		SRI	
			Frequency			Number	Number	Number								
			of	Criteria	Action	of	of	of								
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	Analyses	Value	(Q)	Value ((Q)	Value	(Q)	Value	(Q)
1,1-Dichloroethene	µg/Kg	0.65	6%	TAGM 4046	400	0	1	18	520	U	470 l	J	670	U	490	U
Acetone	µg/Kg	3.8	6%	TAGM 4046	200	0	1	18	2100	U	1900 l	J	2700	U	1900	U
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	2	18	1000	U	930 (J	1300	U	970	U
cis-1,2-Dichloroethene	µg/Kg	20	28%	TAGM 4046		0	5	18	520	U	470 l	J	670	U	490	U
Ethyl Benzene	µg/Kg	80	17%	TAGM 4046	5500	0	3	18	54	J	470 l	J	670	U	490	U
Meta/Para Xylene	µg/Kg	150	6%	TAGM 4046		0	1	18	150	J	470 l	J	670	U	490	U
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	2	18	520	U	470 l	J	670	U	490	U
Ortho Xylene	µg/Kg	42	11%	TAGM 4046		0	2	18	42	J	470 l	J	670	U	490	U
Tetrachloroethene	µg/Kg	1.7	6%	TAGM 4046	1400	0	1	18	520	U	470 l	J	670	U	490	U
Toluene	µg/Kg	210	6%	TAGM 4046	1500	0	1	18	210	J	470 l	J	670	U	490	U
trans-1,2-Dichloroethene	µg/Kg	1.3	6%	TAGM 4046	300	0	1	18	520	U	470 l	J	670	U	490	U
Trichloroethene	µg/Kg	28000	94%	TAGM 4046	700	7	17	18	240	J	130 .	J	670	U	22000	J
Vinyl Chloride	µg/Kg	7.4	6%	TAGM 4046	200	0	1	18	520	U	470 l	J	670	U	490	U

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

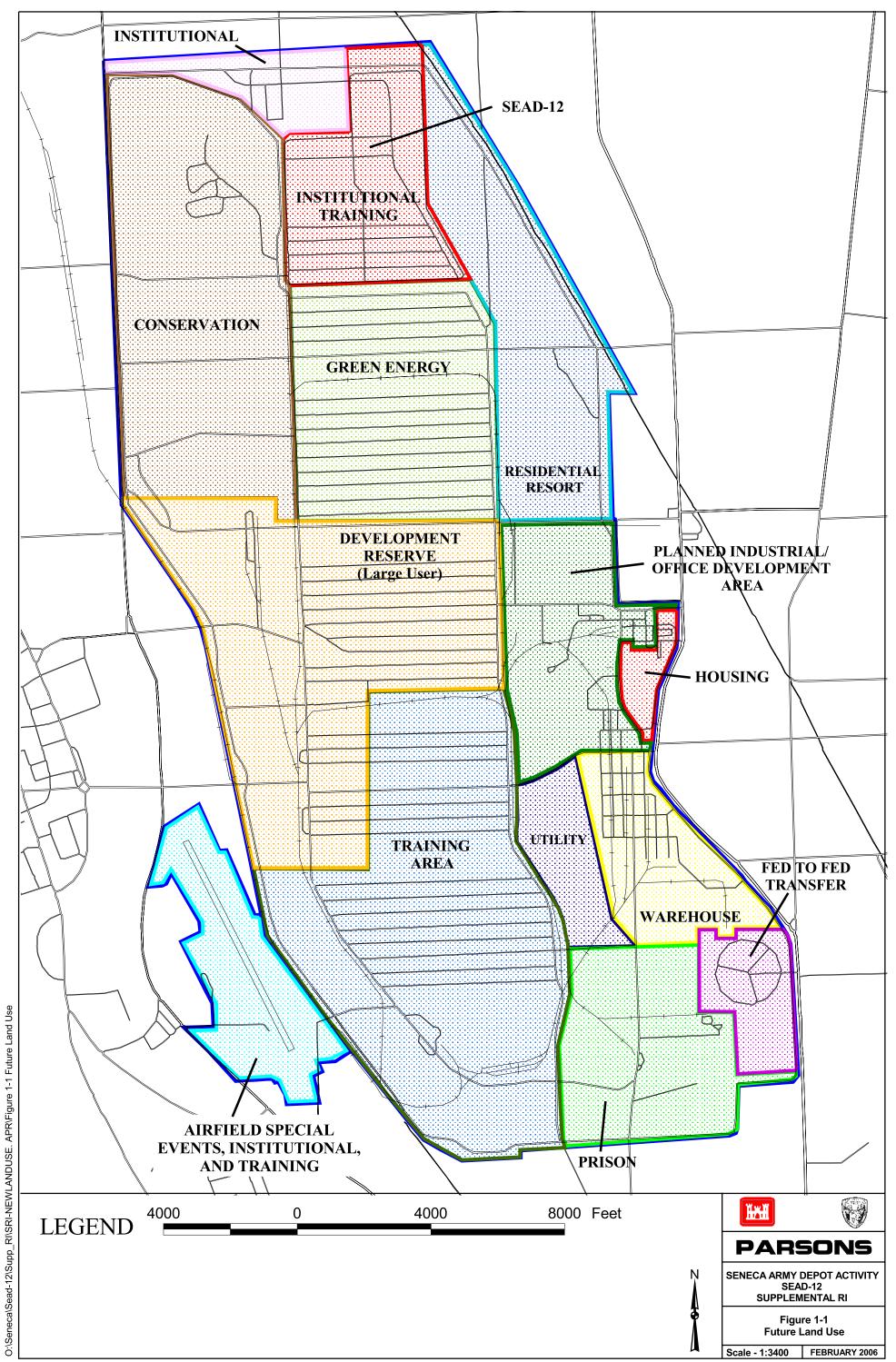
LOCATION ID									SP813-8	
MATRIX									SOIL	
SAMPLE ID									123706	
TOP OF SAMPLE									N/A	
BOTTOM OF SAMPLE									N/A	
SAMPLE DATE									12/21/2004	
QC CODE									SA	
STUDY ID									SRI	
			Frequency			Number	Number	Number		
			of	Criteria	Action	of	of	of		
Parameter	Units	Maximum	Frequency	Туре	ction Lev	Exceed	Detect	Analyses	Value	(Q)
1,1-Dichloroethene	µg/Kg	0.65	6%	TAGM 4046	400	0	1	18	0.65	J
Acetone	µg/Kg	3.8	6%	TAGM 4046	200	0	1	18	3.8	J
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	2	18	1	J
cis-1,2-Dichloroethene	µg/Kg	20	28%	TAGM 4046		0	5	18	20	
Ethyl Benzene	µg/Kg	80	17%	TAGM 4046	5500	0	3	18	1.7	U
Meta/Para Xylene	µg/Kg	150	6%	TAGM 4046		0	1	18	1.7	U
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	2	18	1.7	U
Ortho Xylene	µg/Kg	42	11%	TAGM 4046		0	2	18	1.7	U
Tetrachloroethene	µg/Kg	1.7	6%	TAGM 4046	1400	0	1	18	1.7	J
Toluene	µg/Kg	210	6%	TAGM 4046	1500	0	1	18	1.7	U
trans-1,2-Dichloroethene	µg/Kg	1.3	6%	TAGM 4046	300	0	1	18	1.3	J
Trichloroethene	µg/Kg	28000	94%	TAGM 4046	700	7	17	18	18000	J
Vinyl Chloride	µg/Kg	7.4	6%	TAGM 4046	200	0	1	18	7.4	

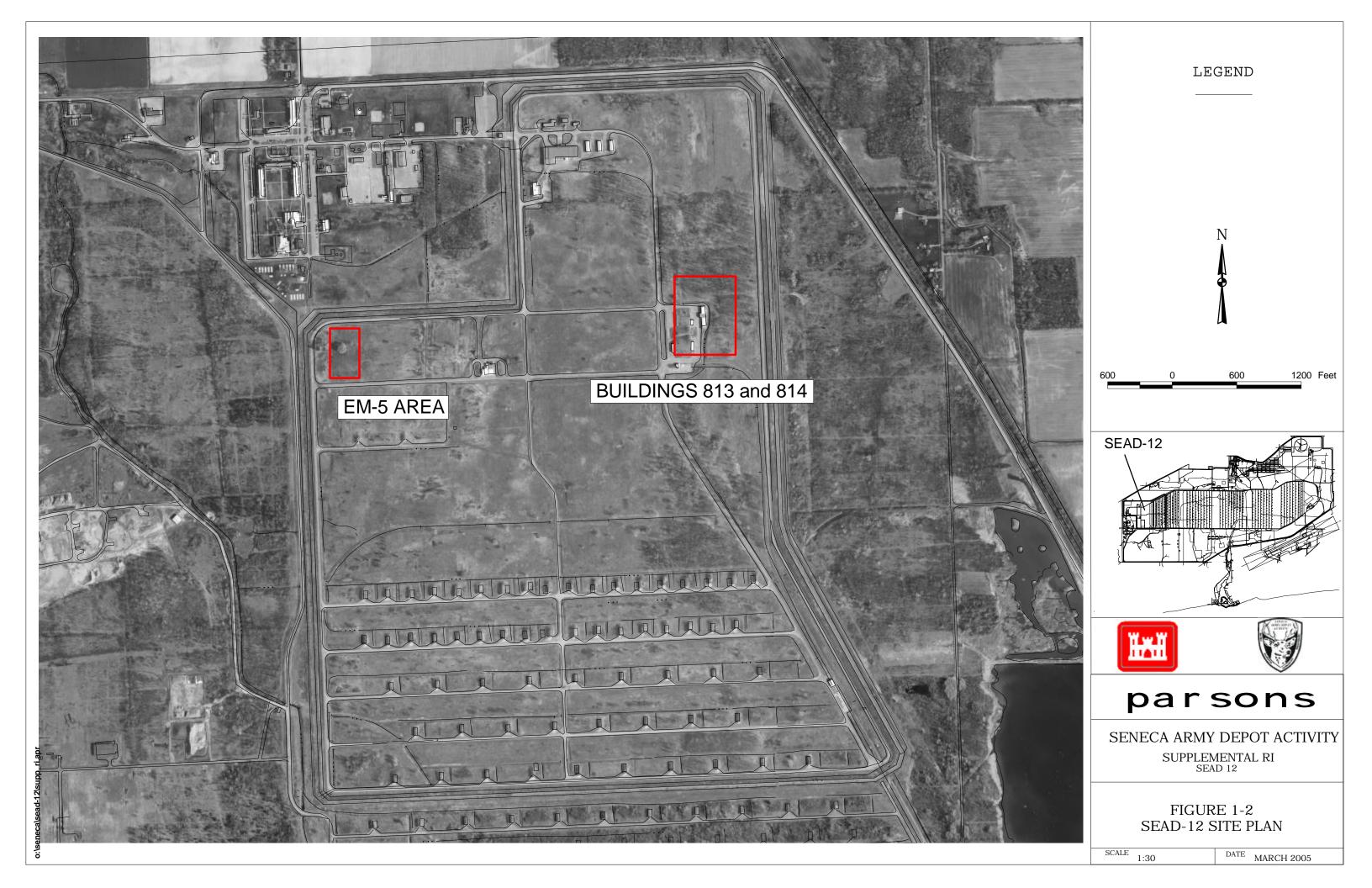
LOCATION ID									SP813-17	
MATRIX									SOIL	
SAMPLE ID									123667	
TOP OF SAMPLE									N/A	
BOTTOM OF SAMPLE									N/A	
SAMPLE DATE									11/28/2005	
QC CODE									SA	
STUDY ID									SRI	
			Frequency			Number	Number	Number		
			of	Criteria	Action	of	of	of		
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	Analyses	Value	(Q)
1,1-Dichloroethene	µg/Kg	0.65	6%	TAGM 4046	400	0	1	18	4.6	U
Acetone	µg/Kg	3.8	6%	TAGM 4046	200	0	1	18	18	U
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	2	18	0.48	J
cis-1,2-Dichloroethene	µg/Kg	20	28%	TAGM 4046		0	5	18	4.6	U
Ethyl Benzene	µg/Kg	80	17%	TAGM 4046	5500	0	3	18	4.6	U
Meta/Para Xylene	µg/Kg	150	6%	TAGM 4046		0	1	18	4.6	U
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	2	18	0.38	J
Ortho Xylene	µg/Kg	42	11%	TAGM 4046		0	2	18	4.6	U
Tetrachloroethene	µg/Kg	1.7	6%	TAGM 4046	1400	0	1	18	4.6	U
Toluene	µg/Kg	210	6%	TAGM 4046	1500	0	1	18	4.6	U
trans-1,2-Dichloroethene	µg/Kg	1.3	6%	TAGM 4046	300	0	1	18	4.6	U
Trichloroethene	µg/Kg	28000	94%	TAGM 4046	700	7	17	18	3.4	J
Vinyl Chloride	µg/Kg	7.4	6%	TAGM 4046	200	0	1	18	4.6	U

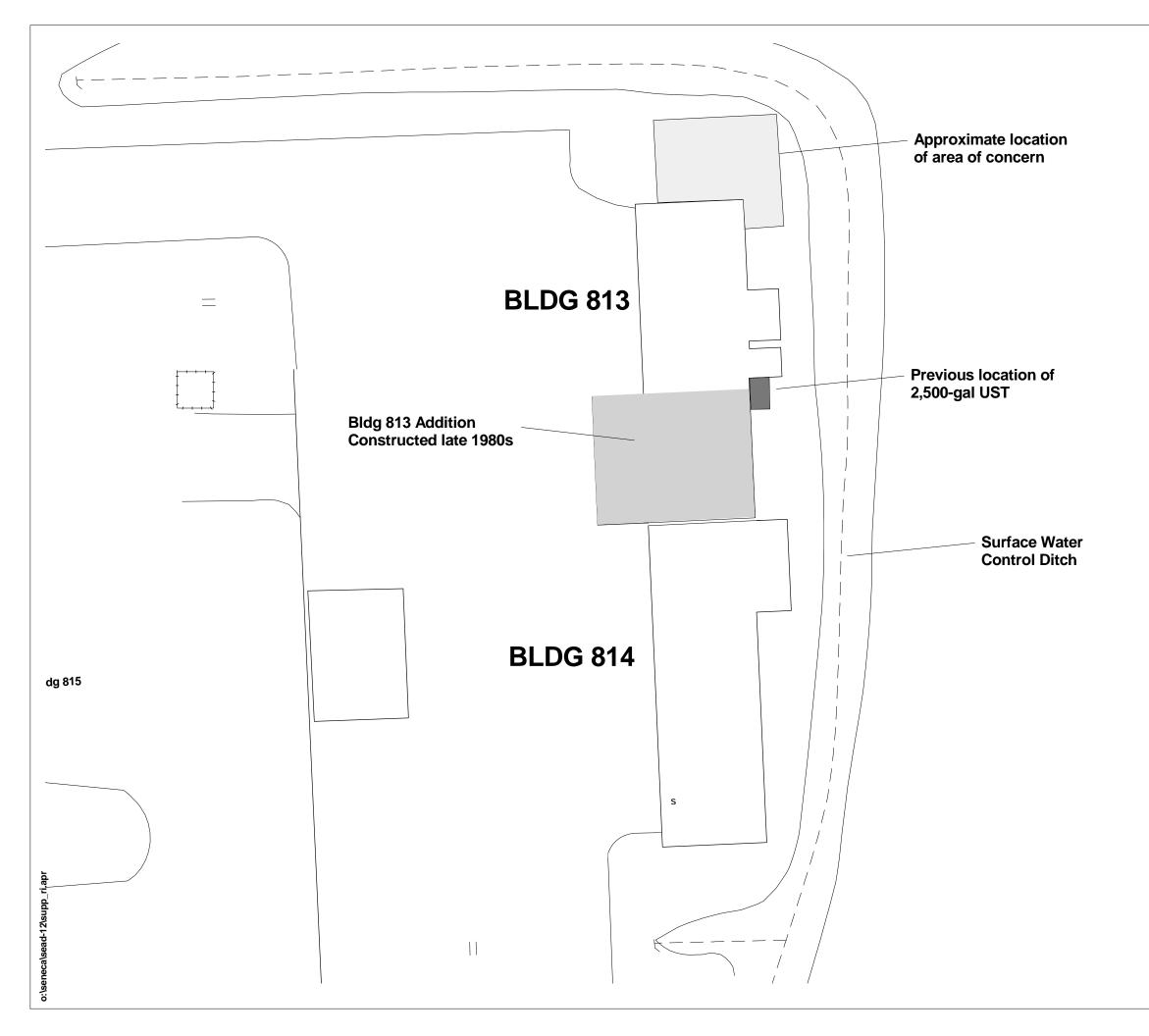
Table 3-5 Comparison of RI and SRI Pb-210 Results for EM-5 Soil Samples

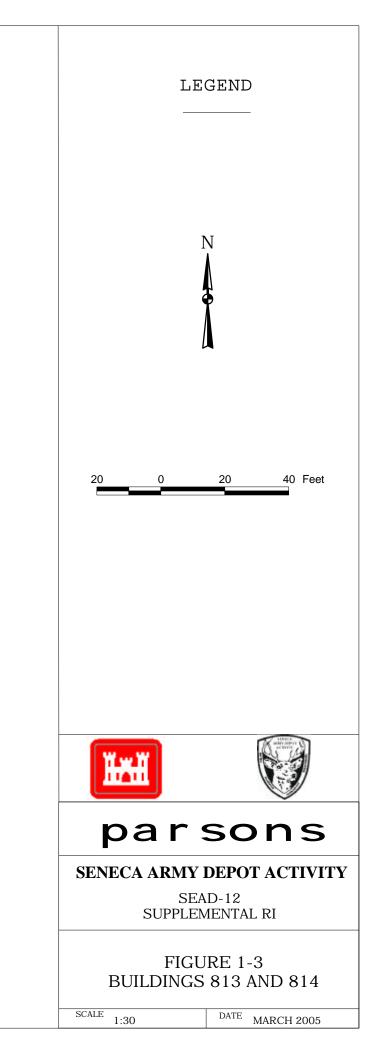
	SRI Result					
Loc_ID	(pCi/g)	SRI Q	SRI Uncertainty	RI Result (pCi/g)	RI Q	RI Uncertainty
SS12-102	3.46	U	+/- 4.13	27.5	U	
SS12-107	1.56	U	+/- 4.49	55.9		+/- 35.2
SS12-107 (D)	3.11	U	+/- 2.97	55.9		+/- 35.2
SS12-108	1.88	U	+/- 6.59	50.6		+/- 32.8
SS12-109	1.60	U	+/- 2.71	23.1	UJ	
SS12-117	2.64	U	+/- 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

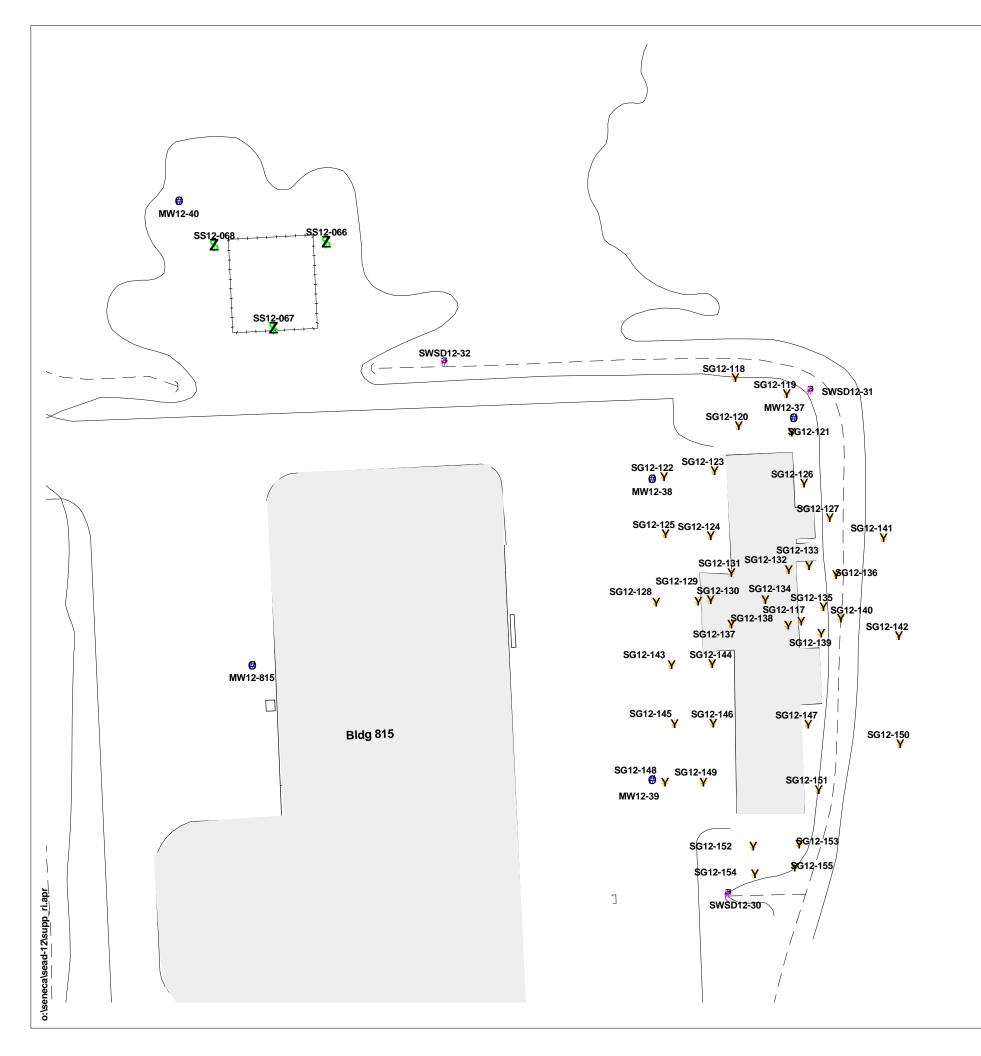
Figures



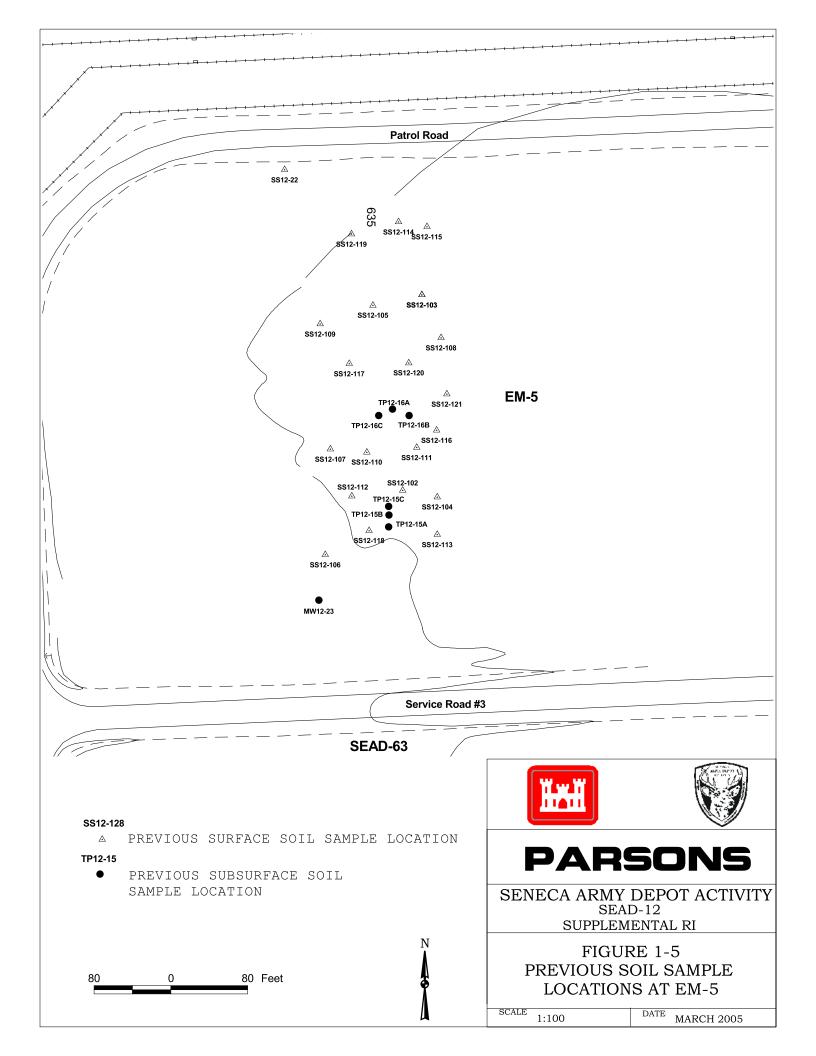


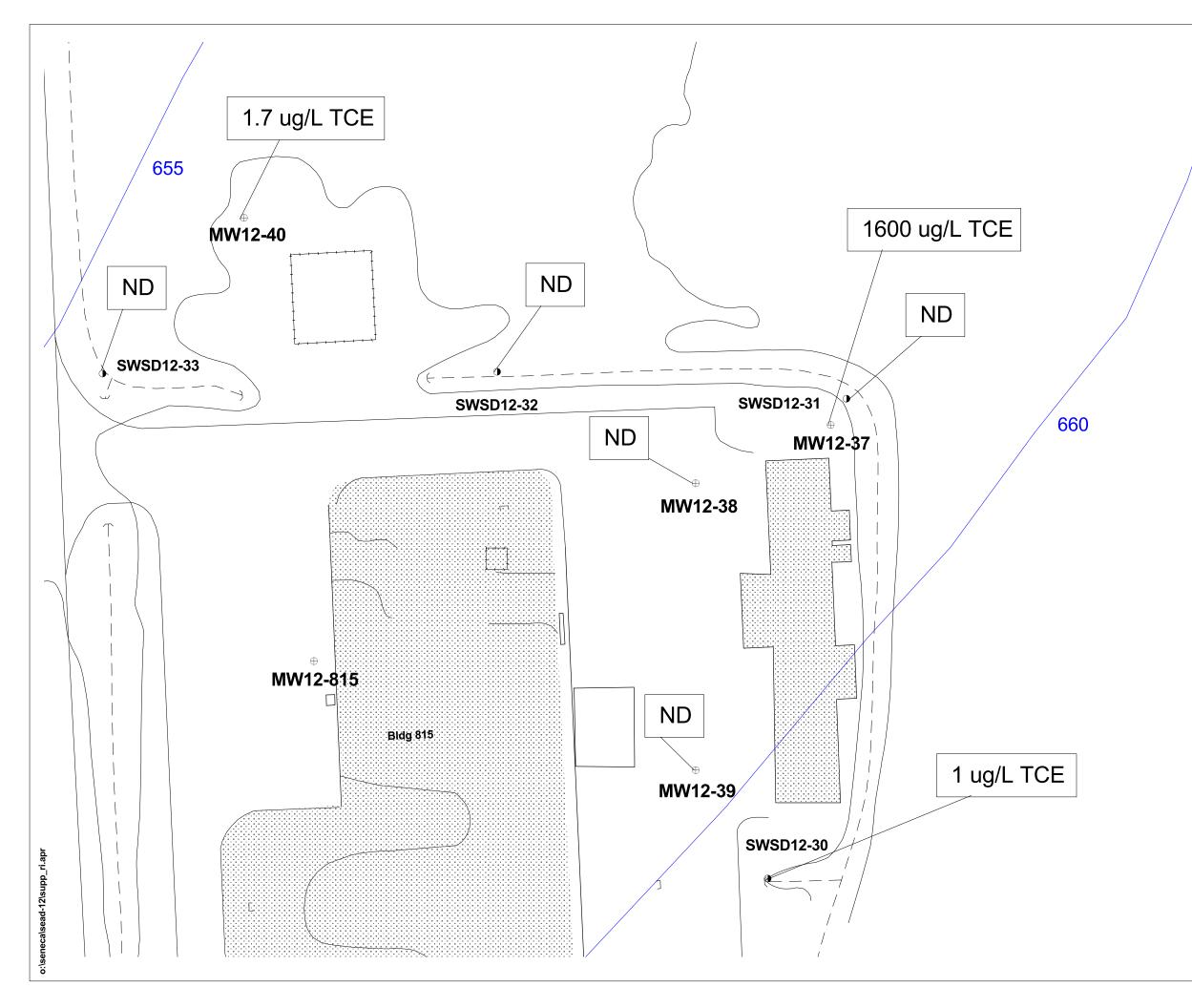


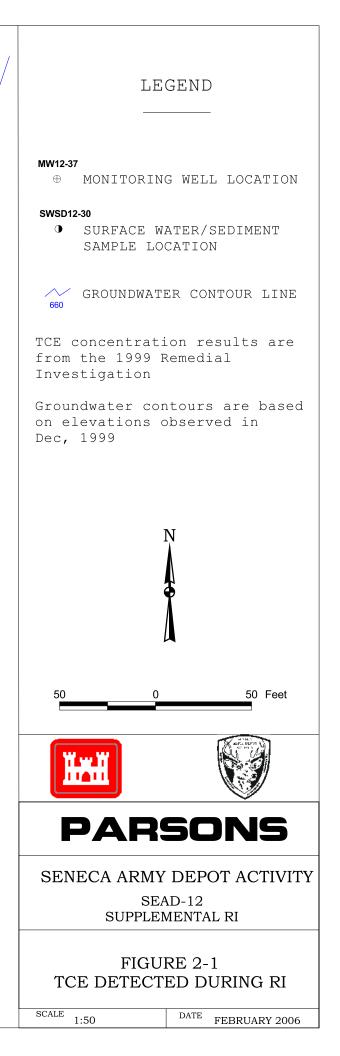


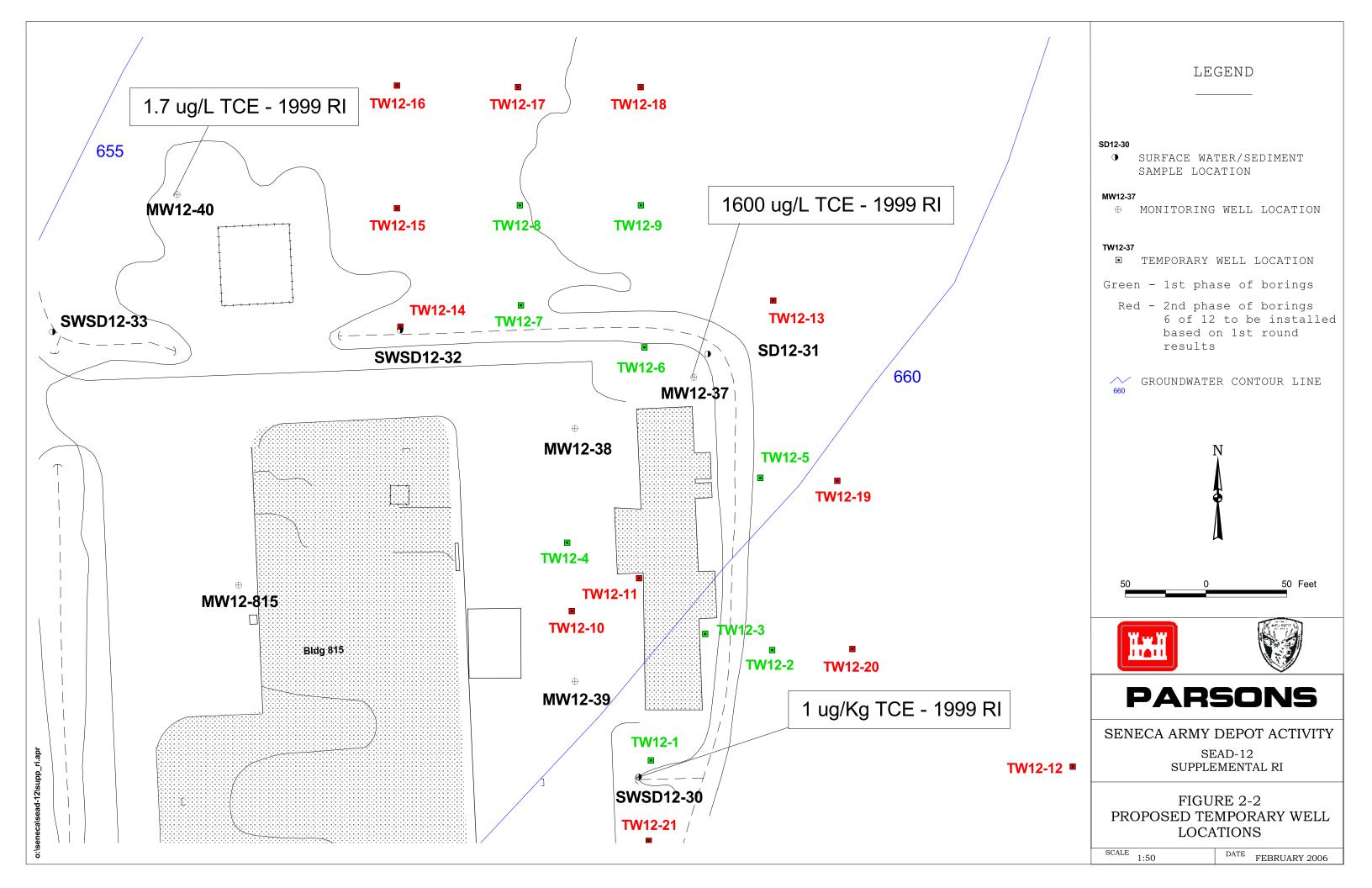


	LEGEND
SG12-128 ¥	
MW12-3	MONITORING WELL LOCATION
	subsurface soil samples also collected
SS12-67 Z	SURFACE SOIL SAMPLE LOCATION
SW/SD1 <i>쪾</i>	2-30 SURFACE WATER/SEDIMENT SAMPLE LOCATION
	N
	Ц
50	0 50 Feet
_	athere and an approximately
	parsons
SEN	ECA ARMY DEPOT ACTIVITY
	SEAD-12 SUPPLEMENTAL RI
	FIGURE 1-4
	EI SAMPLING LOCATIONS BUILDINGS 813 and 814
SCALE	1:50 DATE MARCH 2005





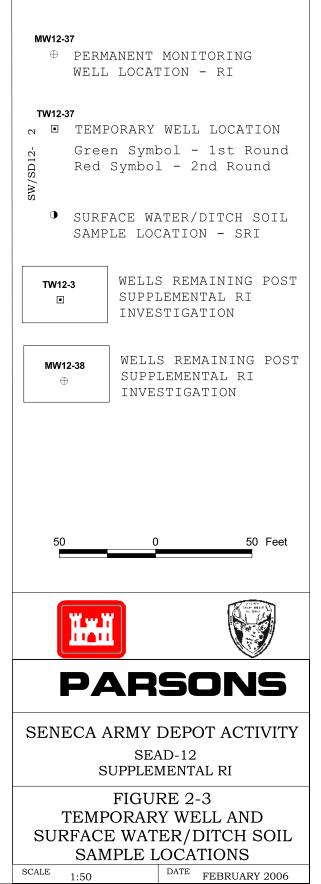


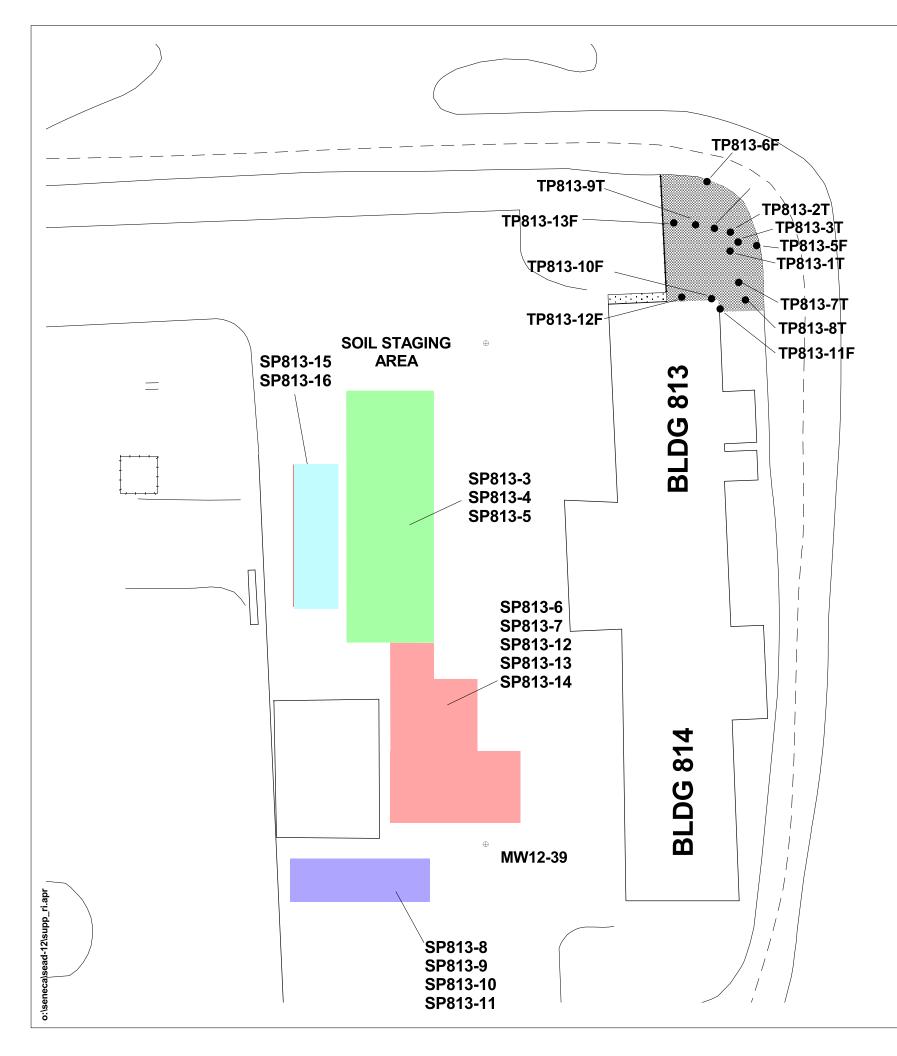


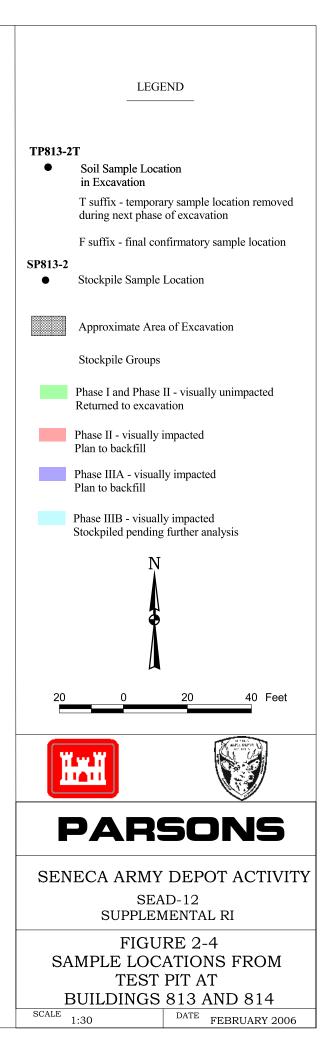


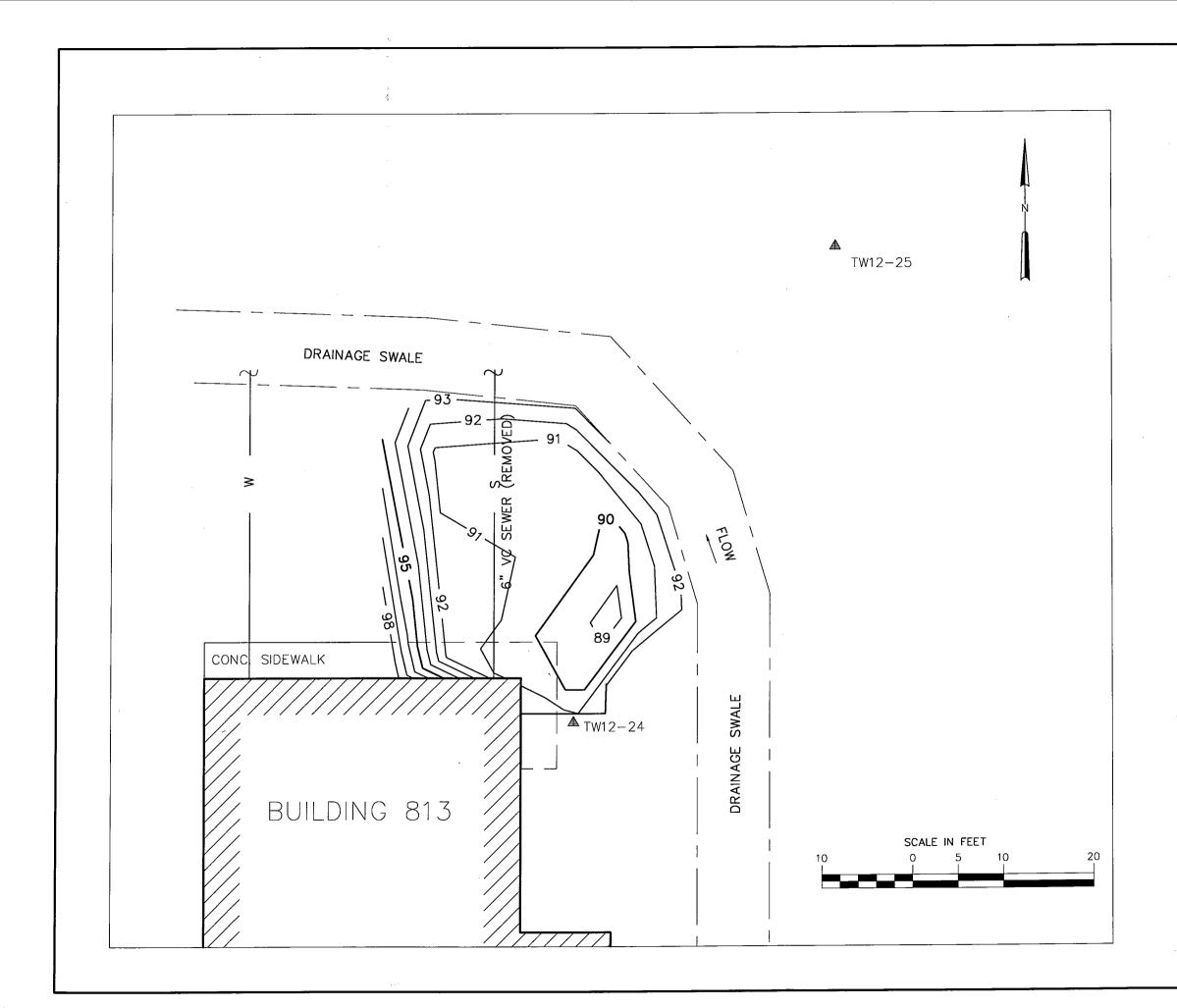
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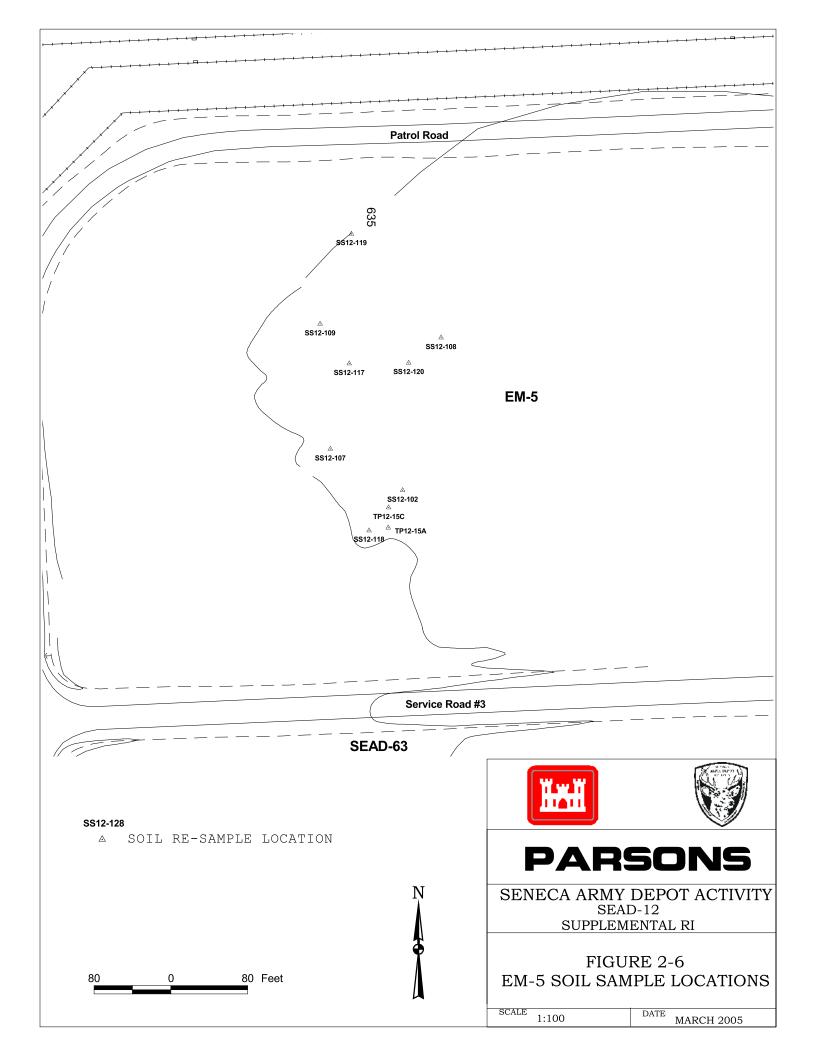
NOTE:

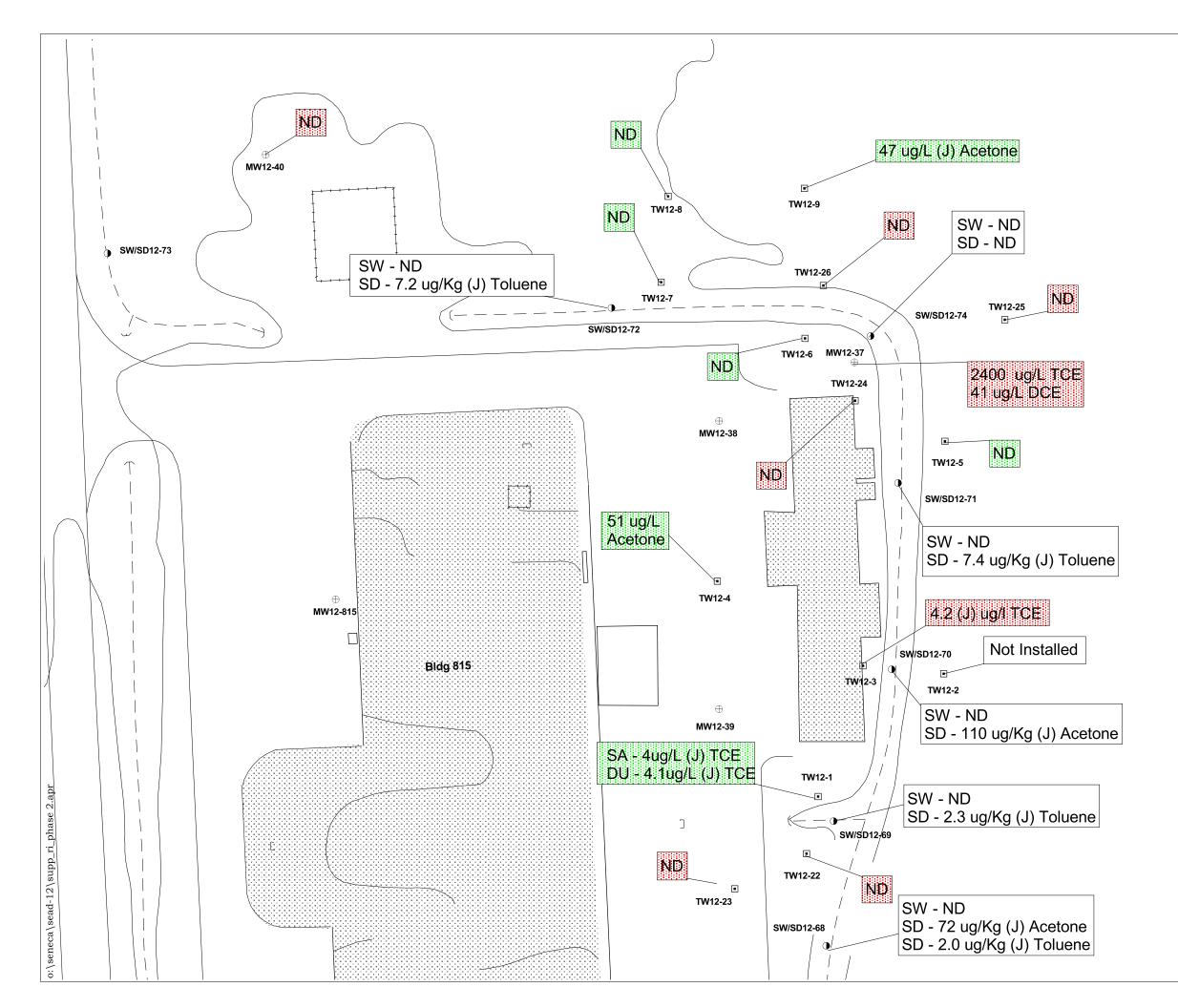
TOPOGRAPHIC SURVEY FOR TEST PIT GRADES WAS PERFORMED ON 12/21/04. GRADES ARE BASED ON AN ASSUMED VERTICAL DATUM BASED ON A BUILDING 813 FIRST FLOOR ELEVATION OF 100.0.

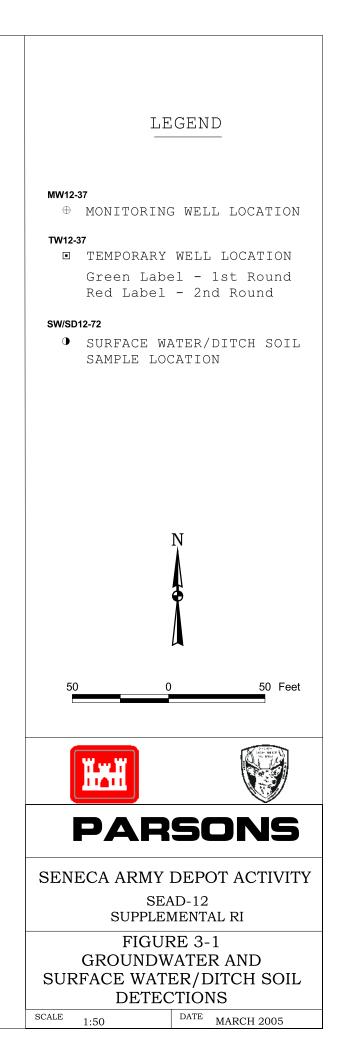
- 90- TEST PIT CONTOUR

MONITORING WELL

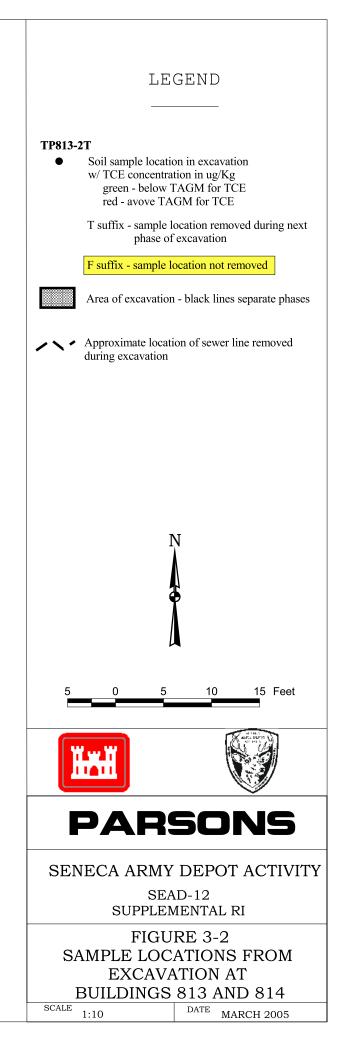
PARSONS									
SENECA ARMY DEPOT ACTIVITY SUPPLEMENTAL RI SEAD 12									
Т	TEST PIT TOPOGRAPHIC PLAN								
	BUILDING 813	3 AND 814							
	SEAD	12							
Scale :	cale : Date : Drawing No. :								
1"= 10'	^{11/17/04} FIG 2-5								













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Appendix A

Temporary Well Construction Diagrams

PAGE 1 OF 2

	COMPLI	ETION R	EPORT	IONITORIA & INSTALLA SURFACE COM	ATION DETAI	IL
PARSONS ENGINEERI				CLIENT:	USACOE	WELL #: MWTW12-1
PROJECT:		INVESTIGAT	ION		DJECT NO:	ии
SWMU # (AREA):		SEAD- 12		l i	SPECTOR:	McAllister
SOP NO.:					CKED BY:	
DRILLING CONTRACTOR:	Noth no	yle		POW DEPTH	(ft) :	······
- DRILLER:	Jay.	0			ON STARTED:	
- DRILLING COMPLETED:	May	24 2004	· · · · ·	INSTALLATIO	ON COMPLETED:	<u></u>
- BORING DEPTH:	¥				MPLETION DATE:	
DRILLING METHOD(S):					CONTRACTOR/CREW:	
BORING DIAMETER(S):					ONFIRMED (Y/N?)	· · · · · · · · · · · · · · · · · · ·
PROTECTIVE SURFAC	E CASING					
DIAMETER (ft):	<u></u>				LENGTH (ft)	·
RISER						
TYPE:		WC	·····		TR (ft)	3.29
DIAMETER(in):	2	incy			LENGTH (ft)	10.29
SURFACE COLLAR						
TYPE:					RADIUS (ft)	:
THICKNESS OF CENTER (ft):				т	HICKNESS OF EDGE (in)	:
SCREEN	Pvc	<u> </u>				5.7 14
TYPE: _	1			0.010	LENGTH (ft)	5.2 ft 5 foot
			SLOT SIZE:			
POINT OF WELL (SILT TYPE: _	end Ca	<u></u>	BSC (ft):	<u></u>	POW(ft)	:
GROUT TYPE:_	None		TG (ft):_		LENGTH (ft)	:
SEAL TYPE: _	Guonden	Benkomste	TBS (ft):	Surface	LENGTH (ft)	464
SAND PACK						
FINE SAND TYPE:	<u>#00</u>		TSP (ft):	4.00	LENGTH (ft)	<u> </u>
COARSE SAND TYPE:			TSP (ft):		LENGTH (ft)	:
ACRONYMS						
TSC 1	Fop of Riser Fop of Screen Background		POW	Bottom of Screen Point of Well Top of Sand Pack		G Top of Grout BS Top of Bentonite Seal
сомменть: Тенрачи	r well	not re				
SEE PAGE 2 FOR SCHEM	ATIC	* A	LL DEPTH	MEASUKEMEN 15 KEFE	RENCED TO GROUND S	OUNTALE

PAGE 1 OF 2

OVERBURDEN N COMPLETION REPORT ROADWAY BOX - 5		N DETAIL	
PARSONS ENGINEERING SCIENCE, INC.	CLIENT:	<u></u>	WELL #: ## 16/2-3
PROJECT: RI FIELD INVESTIGATION	PROJECT NO:	IL.	
SWMU # (AREA): SEAD- 12 RL	INSPECTOR:	_	McAllista
SOP NO .: Building 813/814	CHECKED BY:	-	· · · · · · · · · · · · · · · · · · ·
DRILLING CONTRACTOR: Noth nagle	POW DEPTH (ft) :		9' 10"
DRILLER:	INSTALLATION START	TED:	
DRILLING COMPLETED: May 24 2009	INSTALLATION COMP	LETED:	
BORING DEPTH: 10.25	SURFACE COMPLETIO	N DATE:	Tempora
DRILLING METHOD(S): HSA (6)	COMPLETION CONTRA	ACTOR/CREW:	
BORING DIAMETER(S): 6 inch	BEDROCK CONFIRME	D (Y/N?)	<u> </u>
PROTECTIVE SURFACE CASING			
DIAMETER (ft):		LENGTH (ft):	
RISER			
TYPE: 2 inch PVC DIAMETER(in): 2 inch		TR (ft):	
DLAMETER(in): 2. inch		LENGTH (ft):	
SURFACE COLLAR			
ТҮРЕ:		RADIUS (ft):	
THICKNESS OF CENTER (ft):	THICKNES	S OF EDGE (in):	
screen _{type:} DVC		TSC (ft)	5' 10'
DIAMETER (in):	·010	LENGTH (ft):	Sfoot
POINT OF WELL (SILT SUMP)			
туре: <u>ено Сар</u> BSC (ft):	9 feet 10 inches	POW(ft):	9 fact 10 in
GROUT TYPE: <u>Chip Benlouile</u> TG(R):		LENGTH (ft):	
SEAL TYPE: Chip Benlouile TBS (ft):	4 faot he Surface	LENGTH (ft):	1feet
SAND PACK			
FINE SAND TYPE: #OO TSP (ft):	4 feet	LENGTH (ft):	5 fout 10in
COARSE SAND TYPE: TSP (ft):		LENGTH (ft):	
ACRONYMS			
TSC Top of Screen POW	Bottom of Screen Point of Well Top of Sand Pack	TG TBS	Top of Grout Top of Bentonite Seal
COMMENTS: Temponary well not yet	completed	. <u></u>	- <u></u>
* ALL DEPTH SEE PAGE 2 FOR SCHEMATIC	MEASUREMENTS REFERENCED	TO GROUND SU	RFACE

	OVERBUR	DEN N	IONITORIN	G WELL	PAGE 1 (
	COMPLETION	REPORT	C & INSTALLAT SURFACE COMP	ION DETAIL	TW12-4
PARSONS ENGINEEI	RING SCIENCE, INC.		CLIENT:	USACOE	WELL #: TW
PROJECT:	RI FIELD INVESTIG		PROJEC	ΓNO:	743156
SWMU # (AREA):	SEAD- /	2 RI	INSPEC	TOR:	McAllister
SOP NO.:	Builden 813/814		CHECKE		
DRILLING CONTRACTOR	: Nothnagle		POW DEPTH (ft) :	<u> </u>	8.65
DRILLER:			INSTALLATION S	TARTED:	
DRILLING COMPLETED:	May 24 2009		INSTALLATION C	COMPLETED:	· ·
BORING DEPTH:	8:75		SURFACE COMPL	ETION DATE:	Temparay
DRILLING METHOD(S):	HSA		COMPLETION CO	NTRACTOR/CREW:	<u></u>
BORING DIAMETER(S):	binch		BEDROCK CONFI	RMED (Y/N?)	Ý
PROTECTIVE SURFA	CE CASING				
DIAMETER (ft):		·····		LENGTH (ft):_	
RISER					
TYPE				TR (ft):_	
DIAMETER(in)	اد <u>ــــــــــــــــــــــــــــــــــــ</u>			LENGTH (ft):	
SURFACE COLLAR			2		<u> </u>
TYPE	k			RADIUS (ft):	
THICKNESS OF CENTER (ft	t):		THICK	INESS OF EDGE (in):	
SCREEN					
TYPE	. PVC			TSC (ft):	3.75
DIAMETER (in):	2 incn	SLOT SIZE:	0.010	LENGTH (ft):	5 fout
POINT OF WELL (SIL	T SUMP)				
-	end Cap	BSC (ft):	8 .5 5	POW(ft):	B ·65
GROUT					
TYPE	:	TG (ft):		LENGTH (ft):	
SEAL	· /	<u></u>			- 0 1
ТҮРЕ:	<u>Chip Bentonite</u>	TBS (ft):	Surface	LENGTH (ft):	3feet
SAND PACK					<u> </u>
FINE SAND TYPE:	#00	TSP (ft):	3 feet	LENGTH (ft):	5-65
COARSE SAND TYPE:		TSP (ft):		LENGTH (ft):	
ACRONYMS					
TR	Top of Riser		ottom of Screen	TG	Top of Grout
TSC BGD	Top of Screen Background		oint of Well op of Sand Pack	TBS	Top of Bentonite Seal
Ténpo	ray well not	yet con	mpletecl		
	*	ALL DEPTH M	EASUREMENTS REFERENC	ED TO GROUND SUF	RFACE

SEE PAGE 2 FOR SCHEMATIC

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	COMPLI	ETION RE	POR	MONITORINO T & INSTALLAT - SURFACE COM	ION DETAI	L
PARSONS ENGINEERI	NG SCIENCE	E, INC.		CLIENT:	USACOE	WELL #: MWTW 12
PROJECT:	RI FIELD) INVESTIGATI	ON	PROJEC	Г NO:	
SWMU # (AREA):		SEAD- 12		INSPEC	TOR:	Muthlisten
SOP NO.:				CHECKEI	D BY:	
DRILLING CONTRACTOR:	Nothna	rsk		POW DEPTH (ft) :	· · · · ·	
DRILLER:	Jay	, 		INSTALLATION S	TARTED:	
DRILLING COMPLETED:	Mag 2	4 2004		INSTALLATION C	COMPLETED:	<u> </u>
BORING DEPTH:	=.			SURFACE COMPL	ETION DATE:	
DRILLING METHOD(S):				COMPLETION CO	NTRACTOR/CREW:	······
BORING DIAMETER(S):				BEDROCK CONFI	RMED (Y/N?)	
PROTECTIVE SURFAC	CE CASING					
DIAMETER (ft):					LENGTH (ft):	<u> </u>
RISER	·····					A (~
TYPE:		<u>/C</u>			TR (ft):	
DIAMETER(in):	2	inch			LENGTH (ft):	13.65 inc.screw
SURFACE COLLAR						
TYPE:					RADIUS (ft):	
THICKNESS OF CENTER (ft):				THIC	NESS OF EDGE (in):	
SCREEN TYPE:	PUC				TSC (ft):	6.5 feet
DIAMETER (in):	Lind	<u>k</u>	OT SIZE:	0.010	LENGTH (ft):	5 foot
POINT OF WELL (SIL)	r SUMP)					
TYPE:	End Cap)	BSC (ft):		POW(ft):	
GROUT						
TYPE:	None		TG (ft):		LENGTH (ft):	
SEAL	C 1	Barlonile		-	\/	4ft
TYPE:	Granwan	Donionite	TBS (ft):	Jorface	LENGTH (ft):	<u> </u>
SAND PACK	#~~			Surface 4ft bys.		
FINE SAND TYPE:	#00	<u> </u>	TSP (ft):		LENGTH (ft):	
COARSE SAND TYPE:			TSP (ft):	-	LENGTH (ft):	
ACRONYMS						· · · · · · · · · · · · · · · · · · ·
	Top of Riser		BSC	Bottom of Screen	TO	•
	Top of Screen Background		POW TSP	Point of Well Top of Sand Pack	TB	S Top of Bentonite Seal
COMMENTS:				1	r	
						-
SEE PAGE 2 FOR SCHEM	ATIC	* AL	_ DEPTH	MEASUREMENTS REFERENCE	CED TO GROUND SI	URFACE
						R
	p 2.50					

H:\ENG\SENECA\FORMS\FIELD\MWOBRB.XLS

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					PAGE 1 OF 2
	VERBURDEN			•••=====	
	PLETION REP ROADWAY BO				L TW12-6
PARSONS ENGINEERING SCIE	ENCE, INC.		CLIENT:	USACOE	WEL L #: MW
PROJECT: RI F	FIELD INVESTIGATION	(PROJECT	'NO:	743156
SWMU # (AREA):	SEAD- 12 RI		INSPECT	FOR:	Mallister
SOP NO.:	dig 813/819		CHECKED	BY:	
DRILLING CONTRACTOR: No	stunage		POW DEPTH (ft) :		/0.0
DRILLER:			INSTALLATION ST	FARTED:	
DRILLING COMPLETED:	lag 25 2004		INSTALLATION CO	OMPLETED:	·
BORING DEPTH:	10.30		SURFACE COMPLE	STION DATE:	Tempory
DRILLING METHOD(S):	·		COMPLETION CON	TRACTOR/CREW:	
BORING DIAMETER(S):			BEDROCK CONFI	RMED (Y/N?)	<u>Y</u>
PROTECTIVE SURFACE CASI	NG		· · · · · · · · · · · · · · · · · · ·		<u></u>
DIAMETER (ft):				LENGTH (ft):	
RISER					
TYPE:				TR (ft):	
DIAMETER(in):					
SURFACE COLLAR					
ТҮРЕ:				RADIUS (ft);	
THICKNESS OF CENTER (ft):	· · · · · · · · · · · · · · · · · · ·	<u> </u>	THICK	NESS OF EDGE (in):	
SCREEN					
TYPE: P	VC			TSC (ft):	5 feet
	uch slot	SIZE:	9.0(0	LENGTH (ft):	
POINT OF WELL (SILT SUMP)					
TYPE: End	l Cap BSG	9 .	90	POW(ft):	(0.00
GROUT			<u> </u>		
TYPE:	т	G (ft):		I БИСТИ (ff).	
SEAL		G (π):		LENGTH (ft):	
TYPE: Chip	Bentonite TB	PS (ft): 4	5 ft Bas	LENGTH (ft):	5.5fl-
SAND PACK	• ·		•		· ^ /
FINE SAND TYPE:		SP (ft):SU ~	face	LENGTH (ft):	4.Sfeet
COARSE SAND TYPE:	TS	SP (ft):		LENGTH (ft):	
ACRONYMS					<u> </u>
TR Top of Riser				TG	•
TSC Top of Scree BGD Background				TBS	5 Top of Bentonite Seal
COMMENTS			<u> </u>		
Temporay (well not ye	el comp	eled		
	* ALL DI	EPTH MEASUREM	IENTS REFERENCE	ED TO GROUND SU	IRFACE

.

SEE PAGE 2 FOR SCHEMATIC

PARSONS ENGINEERING SCIENCE, INC. PROJECT: RIFIELD INVESTIGATION PROJECT: RIFIELD INVESTIGATION PROJECT: RIFIELD INVESTIGATION PROJECT NO: RISPECTOR: RIGHER NO: RISPECTOR: RISPECTOR RIGHER NO: RISPECTOR: RISPECTOR RIGHER NO: RISPECTOR RIGHER NO: RISPECTOR RISPECTOR RIGHER NO: RISPECTOR RIGHER NO: RISPECTOR		COMPLETION TEMPORAR	REPORT Y WELL -	& INSTALLATI SURFACE COMI	ION DETAIL	L TW 12-7
SWAU # (AREA): SEAD. 12 BSPECTOR: #Allow SOP NO: CHECKED BY:	ARSONS ENGINEERI			·····		WELL #: MW
SOP NO:	PROJECT:	RI FIELD INVESTIG	ATION	PROJECT	`NO:	
DRILLING CONTRACTOR: Noth nagle pow defth (ft): DRILLING CONTRACTOR: May 14 1004 postallation contrested: DRILLING METHOD(S): DIAMETER(S): DIAMETER(S): DEDROCK CONFIRMED (V/N7) DEDROCK DOL (DEDROTH (V/N7) DEDROCK CONFIRMED (V/N7) DEDROCK CONFIRMED (V/N7) DEDROCK DEDROCH DEDROCK DEDROCK DEDROCH DEDROCK DEDROCK DEDROCH DEDROCK DEDROCK DEDROCH DEDROCK DEDROCH DEDROCH DEDROCK DEDROCH D	SWMU # (AREA):	SEAD- /	2	INSPECT	FOR:	Mcalloster
DRILLING COMPLETED:	SOP NO.:		. <u></u>	CHECKED	BY:	
DRILLER: <u>May 14 2004</u> DRILLING COMPLETED: <u>May 14 2004</u> DRILLING COMPLETED: <u>May 14 2004</u> DRILLING COMPLETED: COMPLETION COMPLETED: BORING DIAMETER(5): <u>BEDROCK CONFIRMED (YN7)</u> PROTECTIVE SURFACE CASING DIAMETER(6): <u>LENGTH (6)</u> RISER <u>TYPE</u> <u>PVC</u> <u>TR (8)</u> <u>A.00 shifey</u> DIAMETER(6): <u>LENGTH (6)</u> SURFACE COLLAR <u>RADIUS (8)</u> TYPE <u>Now</u> <u>THICKNESS OF EDGE (60)</u> SURFACE COLLAR <u>RADIUS (8)</u> TYPE <u>Now</u> <u>THICKNESS OF EDGE (60)</u> SURFACE COLLAR <u>RADIUS (8)</u> TYPE <u>Now</u> <u>THICKNESS OF EDGE (60)</u> SCREEN <u>TYPE <u>DVC</u> <u>TR (8)</u> <u>A.00 shifey</u> DIAMETER (6): <u>LENGTH (6)</u> SCREEN <u>TYPE <u>DVC</u> <u>TR (8)</u> <u>A.00 shifey</u> DIAMETER (6): <u>LENGTH (6)</u> <u>Sock</u> POINT OF WELL (SILT SUMP) <u>Sock</u> <u>O.01 LENGTH (6)</u> <u>Sock</u> POINT OF WELL (SILT SUMP) <u>Balbunk</u> TBS (6): <u>Socfacc</u> LENGTH (6): <u>S.5 FA</u> SAND PACK SEAL <u>TYPE <u>Mone</u> TG (6): <u>3.5 FA</u> <u>LENGTH (6)</u> <u>5.5 FA</u> SAND PACK TR Top of Biser <u>TSP (6)</u> <u>BSC (6)</u> <u>TOP OF COLLENGTH (6)</u> <u>S.5 FA</u> TABLE SAND TYPE: <u>TR (6)</u> <u>BSC (6)</u> <u>TOP OF COLLENGTH (6)</u> <u>5.5 FA</u> COARSE SAND TYPE: <u>TSP (6)</u> <u>BSC (6)</u> <u>TOP OF COLLENGTH (6)</u> <u>5.5 FA</u> COARSE SAND TYPE: <u>TR Top of Biser</u> <u>BSC BOILON of Screen</u> <u>TG</u> Top of Grout <u>TSP (7) of Baseronic Stal</u> BGD Badground <u>TSP Top of Staren</u> <u>POW</u> POINT OF WELL LENGTH (7). <u>5.5 FA</u> COMMENTS DACK <u>TSP (7) of Staren</u> <u>POW</u> POINT OF WELL (7) <u>5.5 FA</u></u></u></u>	DRILLING CONTRACTOR:	Nothnagle	• • • • • • • • • • • • • • • • • • • •	POW DEPTH (ft) :		
BORING DEPTH:	DRILLER:			INSTALLATION ST	FARTED:	
DRILLING METHOD(S):	DRILLING COMPLETED:	May 24 H	204	INSTALLATION C	OMPLETED:	
BORING DIAMETER(S):	BORING DEPTH: _	<u> </u>		SURFACE COMPLE	ETION DATE:	·
PROTECTIVE SURFACE CASING DIAMETER (11): RISER TYPE: PVC TR (11): RISER TYPE: PVC TR (11): RISER TYPE: PVC TR (11): TR (11): SURFACE COLLAR TYPE: Now TYPE: Now THICKNESS OF EDGE (10): THICKNESS OF EDGE (10): SCREEN TYPE: DVC TYPE: DVC TYPE: DVC TYPE: PVC TYPE: PVC TYPE: PVC THICKNESS OF EDGE (10): TYPE: PVC TYPE: P						
DIAMETER (f): LENGTH (f):				BEDROCK CONFIL	RMED (Y/N?)	
RISER TYPE: PVC DIAMETER(in): 2. inch TYPE: Nonc TYPE: Nonc TYPE: Nonc TYPE: Nonc TYPE: DIAMETER(in): 2. inch TYPE: Nonc TYPE: Airch SCREEN TYPE: Airch SLOT SIZE: 0.01 LENGTH (ft): 56cct POINT OF WELL (SILT SUMP) TYPE: EuroCap BSC (ft): 9.0 ft POW(ft): 9.025 GROUT TYPE: Monc TYPE: Monc TYPE: Community Balantik TBS (ft): 3.5 ft SAND PACK TYPE: TSP (ft): 3.5 ft SAND PACK TR TSC Top of Riser TSC TSC Top of Riser TSC TSC Top of Riser POW Point of Well TSP Top of Sant POW Point of Well TSP Top of Sant TSP Top of Sant POW Point of Well TSP Top of Sant TSP Top of Sant Seal TSC Top of Riser TSC Top of Sant POW POINT of Well TSP Top of Sant TSP Top of		E CASING				
TYPE: PVC TR (ft): A.º Skylop DIAMETER(in): 2. inch LENGTH (ft):				<u> </u>	LENGTH (ft):	
DIAMETER(in): <u>2</u> inch <u>LENGTH</u> (ft): <u>LENGTH</u> (ft): SURFACE COLLAR TYPE: <u>Now</u> <u>RADIUS (ft)</u> : <u>IENGTH</u> (ft): <u>SCREEN</u> TYPE: <u>DW</u> <u>TYPE: OOI LENGTH (ft): <u>SCREE</u> DIAMETER (in): <u>Alwah</u> <u>SLOT SIZE</u> <u>O.01 LENGTH (ft): <u>SCREE</u> POINT OF WELL (SILT SUMP) TYPE: <u>Fix Cap</u> <u>BSC (ft): <u>9.0 ft</u> <u>POW(ft)</u> <u>9.025</u> GROUT TYPE: <u>None</u> <u>TG (ft):</u> <u>LENGTH (ft): <u>S.5 ft</u> SEAL TYPE: <u>Gammaulon</u> <u>Balonik</u> <u>TBS (ft): <u>Surface</u> LENGTH (ft): <u>5.5 ft</u> SAND PACK FINE SAND TYPE: <u><u>TJP</u> <u>Top of Riser</u> <u>TSP (ft):</u> <u>LENGTH (ft): <u>5.5 ft</u> ACRONYMS TR Top of Screen <u>POW</u> Point of Well TSP (ft): <u>LENGTH (ft): </u><u>TSP (ft):</u> <u>TOp of Grout</u> <u>TBS</u> Top of Bentonite Seal COMMENTS: <u>Applh</u> of hole <u>9.025 ft</u> TOME <u>12.10</u> *ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE</u></u></u></u></u></u></u>		Dur				A co dutio
SURFACE COLLAR TYPE: Now RADIUS (R):	-					An shekop
TYPE: Now RADIUS (R): CHICKNESS OF CENTER (R): THICKNESS OF EDGE (IN): THICKNESS OF EDGE (IN): SCREEN TYPE: DWL TSC (R): A Cect DIAMETER (IN): A.VINCH SLOT SIZE: O.OI LENGTH (R): SECE POINT OF WELL (SILT SUMP) TYPE: Edd Cap BSC (R): 9.0 SF POW(R): 9.025 GROUT TYPE: Mone TO (R): LENGTH (R):		Linun			LENGTH (ft):	
THE		Non				
SCREEN TYPE: DUC DIAMETER (in): DUC DUC TSC (R): A Cap POINT OF WELL (SILT SUMP) TYPE: Cap BSC (R): Q. O.OI LENGTH (R): SEAL TYPE: Mone TG (R): LENGTH (R): Q. 0.25 SEAL LENGTH (R): S. 5 F.F. SAND PACK FIR Top of Riser BSC Bottom of Screen TG Top of Grout TR Top of Riser BSC Bottom of Screen TG Top of Grout BGD Background TSP Top of Sand Pack COMMENTS: Double degent 12.10 * ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE	-					
TYPE: DK. TSC (ft): Alch DIAMETER (in): Aluch SLOT SIZE: 0.01 LENGTH (ft): SLOT SIZE: POINT OF WELL (SILT SUMP) TYPE: TYPE: Eucl Cap BSC (ft): 9.0 St POW(ft): 9.025 GROUT TYPE: None TG (ft): LENGTH (ft): 9.025 SEAL TYPE: Gunusubn Balbuik TBS (ft): Surface LENGTH (ft): 3.5 St SAND PACK #I band TSP (ft): 3.5 St bgs LENGTH (ft): 5.5 St COARSE SAND TYPE: #I band TSP (ft): 3.5 St bgs LENGTH (ft): 5.5 St ACRONYMS TR Top of Riser BSC Bottom of Screen TG Top of Grout TSC Top of Screen TSP Top of Sand Pack Top of Bentonite Seal COMMENTS: Daphh of huke 9.028 ft TSP Top of Sand Pack COMMENTS: Daphh of huke 9.028 ft TSP Top of Sand Pack COMMENTS: Daphh of huke 9.028 ft Top of Sand Pack *ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE <td></td> <td>······</td> <td></td> <td></td> <td>NESS OF EDGE (in):</td> <td></td>		······			NESS OF EDGE (in):	
DIAMETER (in): <u>Ainch</u> SLOT SIZE: <u>O.01</u> LENGTH (ft): <u>Skeat</u> POINT OF WELL (SILT SUMP) TYPE: <u>Each Cap</u> BSC (ft): <u>9.0 £4</u> POW(ft): <u>9.025</u> GROUT TYPE: <u>None</u> TG (ft): LENGTH (ft): <u>9.025</u> SEAL TYPE: <u>Gunnaubn Balbnik</u> TBS (ft): <u>Surface</u> LENGTH (ft): <u>3.5 £4</u> SAND PACK FINE SAND TYPE: <u>#1 20.00</u> TSP (ft): <u>3.5 £4 bgs</u> LENGTH (ft): <u>5.5 £4</u> COARSE SAND TYPE: <u>TSP (ft)</u> LENGTH (ft): <u>5.5 £4</u> ACRONYMS TR Top of Riser BSC Bottom of Screen TG Top of Grout TSP Top of Sand Pack COMMENTS: Dypth of whe 9.028 £4 TOD of Sand Pack COMMENTS: Dypth of whe 9.028 £4 TOD WE heavent 12.10 *ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE		DVC				Mach
POINT OF WELL (SILT SUMP) TYPE: Execup BSC (ft): 9.0 ft POW(ft): 9.025 GROUT TYPE: None TG (ft): LENGTH (ft): 9.025 SEAL TYPE: Guanaulon Balonik TBS (ft): Surface LENGTH (ft): 9.025 SEAL TYPE: Guanaulon Balonik 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): TSP (ft): LENGTH (ft): 5.5 ft coarse sand type: TG Top of Grout TSC Top of Screen POW Point of Well TBS TDS Top of Bentonite Seal GGD Background TSP Top of Sand Pack TS Top of Bentonite Seal COMMENTS: Daphh of hole 9.038 ft Top of Sand Pack TS Top of Grout TSP Top of Sand Pack TSP Top of Sand Pack TOP of GROUND SURFACE	-		ST OT SIZE.	0.01	· · · -	<u>Glast</u>
TYPE: End Cup BSC (R): 9.0 ft POW(R): 9.025 GROUT TYPE: None TG (R): LENGTH (R):			SLUI SIZE:		LENGTH (II): _	0100
GROUT TYPE: LENGTH (ft): SEAL LENGTH (ft): S.5 ft SAND PACK FINE SAND TYPE: #1 20.00 SSAND PACK FINE SAND TYPE: #1 20.00 TSP (ft): 3.5 ft bgs LENGTH (ft): 5.5 ft SAND PACK FINE SAND TYPE: TSP (ft): 3.5 ft bgs LENGTH (ft): 5.5 ft COARSE SAND TYPE: TSP (ft): 3.5 ft bgs LENGTH (ft): 5.5 ft ACRONYMS TR Top of Riser BSC Bottom of Screen TG Top of Grout TSC Top of Sand Pack COMMENTS: Depth of hole 9.028 ft * ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE			PPC (A)	9.0 \$4	DOWNA	9.015
TYPE: None TG (#): LENGTH (#): SEAL TYPE: Guennaubon Bahbnik TBS (#): Surface LENGTH (#): 3.5 f.t SAND PACK #1 Dand TSP (#): 3.5 f.t bgs LENGTH (#): 5.5 f.t SAND PACK #1 Dand TSP (#): 3.5 f.t bgs LENGTH (#): 5.5 f.t COARSE SAND TYPE: #1 Dand TSP (#): 3.5 f.t bgs LENGTH (#): 5.5 f.t COARSE SAND TYPE: #1 Dand TSP (#): 3.5 f.t bgs LENGTH (#): 5.5 f.t COARSE SAND TYPE: #1 Dand TSP (#): 1.50 f.t LENGTH (#): 5.5 f.t COARSE SAND TYPE: #1 Dand TSP (#): 1.50 f.t DENGTH (#): 5.5 f.t COARSE SAND TYPE: TSP (#): Dength of Screen TG Top of Grout TSP Top of Sand Pack COMMENTS: Depth of hole q.ols f.t top of Sand Pack Top of Sand Pack *ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE			BSC (II):		ΡΟΨ(π):	
SEAL TYPE: Guennullen Balenile TBS (ft): Surface LENGTH (ft): 3.5 ft SAND PACK FINE SAND TYPE: #1 Jand TSP (ft): 3.5 ft-bgs LENGTH (ft): 5.5 ft COARSE SAND TYPE: TSP (ft): 3.5 ft-bgs LENGTH (ft): 5.5 ft COARSE SAND TYPE: TSP (ft): 13.5 ft-bgs LENGTH (ft): 5.5 ft COARSE SAND TYPE: TSP (ft): 15P (ft): 15P (ft): LENGTH (ft): 5.5 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 GOMMENTS: Depth of hole 9.028 ft- Top of Sand Pack TOP of GROUND SURFACE *ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE		Naue	TC (A).			
TYPE: Gunnaulon Balonik TBS (ft): Surface LENGTH (ft): 3.5 f.f. SAND PACK FINE SAND TYPE: # # 2 and TSP (ft): 3.5 f.f. bgs LENGTH (ft): 5.5 f.f. COARSE SAND TYPE: TSP (ft): 3.5 f.f. bgs LENGTH (ft): 5.5 f.f. COARSE SAND TYPE: TSP (ft): 3.5 f.f. bgs LENGTH (ft): 5.5 f.f. 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 GOMMENTS: Dolth of hole 9.028 f.f. TSP Top of Sand Pack Top of Grout COMMENTS: Dolth of hole 9.028 f.f. Top of Machine TSP TOP of Sand Pack *ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE	-		10 (π):		LENGTH (tt):	
SAND PACK FINE SAND TYPE: #1 sand TSP (ft): 3.5 ft bgs LENGTH (ft): 5.5 ft COARSE SAND TYPE: TSP (ft): TSP (ft): LENGTH (ft): 5.5 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 Top of Sand Pack Top of Surger COMMENTS: Depth of hole 9.028 ft top of Lange Well TSP Top of Sand Pack * ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE * ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE	SEAL	Gunuarilan Barlow	- TDG (A).	Suncere		3.5 [1
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 Top of Sand Pack Top of Mentonite Seal COMMENTS: Depth of hole 9.028 fft top of Logent 12.10 *ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE		Carrier al. Carbin	R IBS (II):		LENGTH (IT):	
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 Top of Sand Pack COMMENTS: Depth of hole 9.028 ff- top of Logent 12.10 * ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE		#1 and		3.5Ches	· · · · · · · · · · · · · · · · · · ·	5.5 14
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 9.028 ff tobal well hear ut 12.10 * ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE	-	TI CURIN	· · · -	5.0 m 035		0.0 01
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 Top of Sand Pack COMMENTS: Depth of hole 9.028 ff 12.10 * ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE			13r (II).			
TSC TOP OF Screen BGD Background COMMENTS: Depth of hole 9.028 ff- total well hear ut 12.10 * ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE		Tan of Disar	הפיר ד)-44	TO	T AO A
COMMENTS: Depth of hole 9.028 ft total well hear at 12.10 * All DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE	TSC	Top of Screen	POW P	Point of Well		•
total well hearth 12.10 * All DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE			TSP T	op of Sand Pack	<u></u>	
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE	COMMENTS: Light of	hole 9.028ft				
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE	tribul we	11 how not 17,10				
	(1010-1	a compress (6a/15-				
		,	* ALL DEPTH N	MEASUREMENTS REFERENC	ED TO GROUND SU	RFACE

PAGE	1	OF	2
11100		Ú.	~

	COMP	LETION I	REPOR	MONITOR F & INSTAL SURFACE C	LATION D	ETAIL	TW12-8
PARSONS ENGINEER	ING SCIEN	CE, INC.		CLIEN	T: USA	COE V	WELL #: MW
PROJECT: SWMU # (AREA): SOP NO.:	RI FIE	LD INVESTIG SEAD- //			PROJECT NO: INSPECTOR: CHECKED BY:		743156 MCAIIrsten
DRILLING CONTRACTOR: DRILLER: DRILLING COMPLETED: BORING DEPTH: DRILLING METHOD(S): BORING DIAMETER(S): PROTECTIVE SURFAC	May He	10 feet 5A 1. Inch	99	INSTALL SURFACE COMPLE	ATION STARTED: ATION COMPLETE COMPLETION DAT TION CONTRACTOR K CONFIRMED (Y/	'E: //CREW: \?)	
DIAMETER (ft): RISER TYPE: DIAMETER(in):							
SURFACE COLLAR TYPE: THICKNESS OF CENTER (ft)		·			RA THICKNESS OF I		
SCREEN TYPE: DIAMETER (in):	Pu 2	C Nuch	SLOT SIZE:	0.010	LE	TSC (ft):	Sfeel 5foot
POINT OF WELL (SIL TYPE:	r sump)		BSC (ft):			POW(ft):	
GROUT TYPE:			TG (ft):		LB	NGTH (ft):	
SEAL TYPE:	Chip	Bentouil	e TBS (ft):	Surfac	CLE	NGTH (ft):	4 feet
SAND PACK FINE SAND TYPE: COARSE SAND TYPE:	#00		TSP (ft): TSP (ft):	4 feet		NGTH (ft): NGTH (ft):	6 feet
TSC	Top of Riser Top of Screen Background		BSC POW TSP	Bottom of Screen Point of Well Top of Sand Pack		TG TBS	Top of Grout Top of Bentonite Seal
COMMENTS: TEW JEW SEE PAGE 2 FOR SCHEM	Rover	vell	ALL DEPTH	MEASUREMENTS R	EFERENCED TO GI	ROUND SUR	FACE

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PAGE	I OF	2
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	·····	PAGE 1 OF 2				
OVERBURDEN MONITORING WELL						
COMPLETION REPORT & IN ROADWAY BOX - SURFA		TW12-9				
PARSONS ENGINEERING SCIENCE, INC.	CLIENT: USACOE	WELL #: MW				
PROJECT: RI FIELD INVESTIGATION	PROJECT NO:	743 156				
SWMU # (AREA): SEAD- 12 RC	INSPECTOR:	Mcullister				
SOP NO.: 743 156	CHECKED BY:					
drilling contractor: Noth nagle	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?)	<u> </u>				
PROTECTIVE SURFACE CASING						
DIAMETER (ft):	LENGTH (ft):					
RISER	,,, , _, ,, ,, ,, ,, ,, , ,, ,, ,, , ,, , , ,					
ТҮРЕ:	TR (ft):					
DIAMETER(in):						
SURFACE COLLAR						
түре:	RADIUS (ft):					
THICKNESS OF CENTER (ft):	THICKNESS OF EDGE (in):	······				
SCREEN						
TYPE: PVC	TSC (ft):	4.11 ff				
DIAMETER (in): <u>2:404</u> SLOT SIZE: O.	CIO LENGTH (ft):	Sfoot				
POINT OF WELL (SILT SUMP),						
TYPE: End Cap BSC (ft): C	?. <i>Ol</i> POW(ft):	9.4				
GROUT						
TYPE: TG (ft):	LENGTH (ft):	· · · · · · · · · · · · · · · · · · ·				
SEAL	^					
TYPE: Chip BenkenFle TBS (ft): Sc	Hace LENGTH (ft):	4. 5 £ł				
SAND PACK	r N					
FINE SAND TYPE: # 00 TSP (ft): 4	ل الم الح	4.5ft				
COARSE SAND TYPE: TSP (ft):	LENGTH (ft):					
ACRONYMS						
TR Top of Riser BSC Bottom of S		•				
TSC Top of Screen POW Point of We BGD Background TSP Top of Sand		S Top of Bentonite Seal				
Temporay well No -Some For						
* ALL DEPTH MEASURE SEE PAGE 2 FOR SCHEMATIC	MENTS REFERENCED TO GROUND S	URFACE				

DRILLER:	PARSONS ENGINEERIN	COMPLETION ROADWAY	REPOR	T & INSTALL		T	
PARSONS ENGINEERING SCIENCE, INC. CLIENT: USACOE WELL #: THEP PROJECT: RI HELD INVESTIGATION PROJECT NO: 743 (56 SWMU (AREA:) SEAD. /2 RC INSPECTOR: MUCAL'SK. SOP NO: BUSUL, BTS / BL4 PROJECT NO: 743 (56 DERLING CONTRACTOR: NOTH ANGLE POW DEPTH (0): 73.51/ DERLING CONTRACTOR: NOTH ANGLE POW DEPTH (0): 73.51/ DERLING CONTRACTOR: JUSC 9 10004 INSTALLATION STARTED: 79.0004 DERLING CONTRACTOR: JUSC 9 10004 INSTALLATION STARTED: 79.0004 DERLING DEPTH: 2.45 SURFACE CONFIRMED (2/A??) Y DERLING DEPTH: 2.45 SURFACE CONFIRMED (2/A??) Y PROTECTIVE SURFACE CASING USACOE USACOE IEDROTH (0): JAMETER (0): Z.146 (0): IEDROTK (0): 17.47 SURFACE COLLAR TYPE: DUC TSC (B): 17.47 TYPE: DUC SL07 SIZE O.010 IEDROTH (0): 12.55 INTRACE COLLAR TYPE: <th></th> <th></th> <th><u> BOX -</u></th> <th>CIDELCE CO</th> <th></th> <th></th>			<u> BOX -</u>	CIDELCE CO			
PROJECT: RI FIELD INVESTIGATION PROJECT NO: 74/3 (36 SWMU # (AREA): SEAD. /2. R2 INSPECTOR: ////////////////////////////////////		G SCIENCE, INC.		1		N	
SWAU # (AREA): SEAD. / 2 RC BOP NO.: BUILLY BITS AGL4 CHECKED BY: MCAU'SEL DRULING CONTRACTOR: NOTHING L POW DEPTH (0): 2.3.5.5/F DRULING CONTRACTOR: JULL & BITS AGL4 POW DEPTH (0): 2.3.5.5/F DRULING CONTRACTOR: JULL & BITS AGL4 POW DEPTH (0): 2.3.5.5/F DRULING CONTRACTOR: JULL & GITS AGL4 POW DEPTH (0): 2.3.5.5/F DRULING COMPLETED: JULL & GITS AGL4 POW DEPTH (0): 2.3.5.5/F BORNO DIAMETER(S): G'ULM BURSCOMPLETED: Temporacy: DEBLING COMPLETED: JULK INSTALLATION STARTED: Temporacy: BORNO DIAMETER(S): G'ULM BURSCOCK CONFIRMED (Y/N) Y PROTECTIVE SURFACE CASING JULK ILENGTH (R): ILENGTH (R): USER TYPE: DUK TR (0): ILENGTH (R): MATHER USER TYPE: DUK TR (0): ILENGTH (R): ILENGTH (R): ILENGTH (R): USER TYPE: DUK SLOT SIZE: O. OLO LENGTH				CLIENT:	USACOE		
SOP NO: Building B13 B14 CHECKED BV: DRILLING CONTRACTOR: Nother and Lewissian and Lew	—			- PRO	DJECT NO:		
DRELLING CONTRACTOR: Nothing L POW DEPTH (B): 23:51F DRELLING CONTRACTOR: JUL 9 1009 INSTALLATION STARTED: INSTALLATION STARTED: DRELLING COMPLETED: JUL 9 1009 INSTALLATION STARTED: INSTALLATION STARTED: DRELLING COMPLETED: JUL 9 1009 INSTALLATION STARTED: INSTALLATION STARTED: DRELING COMPLETED: JUL 9 1009 INSTALLATION COMPLETED: SURFACE COMPLETED: DRILING METHOD(S): H5A COMPLETED: SURFACE COMPLETED: DRILING METHOD(S): H5A COMPLETED: Temporag. DRIND DLAMETER(S): G1/U.M BEDROCK CONFERNED (V/N) Y PROTECTIVE SURFACE CASING LENGTH (B): ILENGTH (B): ILENGTH (B): DIAMETER(G): Z.MC M LENGTH (B): M DF DIAMETER(G): Z.MC M LENGTH (B): M DF SURFACE COLLAR TYPE: PWC TSC (B): (I 3.5) NAMETER (G): TYPE: DWC SLOT SIZE: O. Ol 0 LENGTH (B): NAMETER (G): TYPE: DWC SLOT SIZE: O. Ol 0 LENGTH (B): NAMETER (G): TYPE: C TG (B): SLOT SIZE: O. Ol 0 SCOUT TYPE: C TG (B): SUFAce LE			2	- IN	SPECTOR:	McAlliske	
DRILLER: JULY 9 2004 DRILLING COMPLETED: JULY 9 2004 DRILLING COMPLETED: JULY 9 2004 DRILLING COMPLETED: SURFACE COMPLETION DATE: Temporag. SURFACE COMPLETION CONTRACTOR/CREW: BORNO DIAMETER(S): <u>61/40.01</u> BORNO CONFRACE CONFRMED (VAN) SURFACE COLLAR TYPE: <u>DUC</u> DIAMETER(S): <u>7.40.01</u> IENGTH (R): <u>71/17</u> SURFACE COLLAR TYPE: <u>DVC</u> THICKNESS OF EDDES (G): <u>71/17</u> HICKNESS OF EDDES (G): <u>71/17</u> HICKNESS OF EDDES (G): <u>71/17</u> SURFACE COLLAR TYPE: <u>DVC</u> TYPE: <u>DVC</u> SURFACE COLLAR TYPE: <u>DVC</u> TYPE: <u>DVC</u> SURFACE COLLAR TYPE: <u>DVC</u> TYPE: <u>DVC</u> TYPE: <u>DVC</u> SURFACE COLLAR TYPE: <u>DVC</u> TYPE: <u>DVC</u> TYPE: <u>C</u> TG (R): <u>12 Acet</u> LENGTH (R): <u>12 Acet</u> LENGTH (R): <u>12 Acet</u> LENGTH (R): <u>12 Acet</u> LENGTH (R): <u>12 Acet</u> COARSE SAND TYPE: <u>HCO</u> TSP (R): LENGTH (R): <u>12 Acet</u> LENGTH (R): <u>12 Acet</u> LENGTH (R): <u>12 Acet</u> LENGTH (R): <u>12 Acet</u> COARSE SAND TYPE: <u>HCO</u> TSP (R): LENGTH (R): <u>TSP (G)</u> TSP (G): LENGTH (G): <u>TSP (G)</u> TSP (G): LENGTH (G): <u>TSP (G)</u> TSP (G) Background TSP TOP of Sand Pack	SOP NO.:	Suiding BISA	3(4	- CHE	CKED BY:		
DRILLING COMPLETED: $30002 9,0004$ BISTALLATION COMPLETED: 2.4.5 BORING DEPTH: $2.4.5$ DRILLING METHOD(S): HSA COMPLETION CONTRACTORCREW: BORING DIAMETER(S): 61000 PROTECTIVE SURFACE CASING DIAMETER(G): LENGTH (G): Y REDROCK CONFIRMED (YN7) Y PROTECTIVE SURFACE CASING DIAMETER(G): LENGTH (G): HFA SURFACE COLLAR TYPE: DUC DIAMETER(G): $Z.5000$ TYPE: $RADIUS(G)$: HFA SURFACE COLLAR TYPE: DUC DIAMETER(G): $Z.5000$ TYPE: $RADIUS(G)$: HFA SURFACE COLLAR TYPE: DUC THECKNESS OF EDGE (G): $C.55$ SURFACE COLLAR TYPE: DUC TYPE: DUC TYPE: $C. TG(G)$: $C.600$ THECKNESS OF EDGE (G): $UFOOT$ TYPE: $C. TG(G)$: 2.345 POW(G): 23.5 SROUT TYPE: $C. TG(G)$ LENGTH (G): $I2.55$ SROUT TYPE: $C. TG(G)$ LENGTH (G): $I2.55$ SROUT TYPE: $C. TG(G)$: $Surface$ LENGTH (G): $I2.6et$ CORSES SAND TYPE: HOO TSP (G): $2.6et$ LENGTH (G): $I2.6et$ LENGTH (G): $I2.6et$ LENGTH (G): $I2.6et$ LENGTH (G): $I2.6et$ LENGTH (G): $I2.6et$ CORSES SAND TYPE: HOO TSP (G): $G.5000$ TSP (G): $G.50000$ TSP (G): $G.50000$ TSP (G): $G.500000$ TSP (G): $G.5000000000000000000000000000000000000$	DRILLING CONTRACTOR:	Nothnagle		POW DEPTH	(ft) :	<u></u> 23.54	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	DRILLER:			INSTALLATE	ON STARTED:		
DRILLING METHOD(S): <u>HSA</u> COMPLETION CONTRACTOR/CREW: BORING DIAMETER(S): <u>6(¹UCM</u>) BEDROCK CONFIRMED (V/N7) PROTECTIVE SURFACE CASING DIAMETER (R): LENGTH (R): RISER <u>DUC</u> TYPE: <u>DUC</u> TR (R): LENGTH (R): <u>MDF</u> SURFACE COLLAR TYPE: <u>DUC</u> TYPE: <u>TYPE: DUC</u> NAMETER (ID): <u>MDF</u> SURFACE COLLAR TYPE: <u>DUC</u> TYPE: <u>DUC</u> TSC (R): <u>13-5</u> NAMETER (ID): <u>UD (DOCT</u>) LENGTH (R): <u>UD (DOCT</u>) TYPE: <u>CUC</u> TG (R): <u>LENGTH (R)</u> : <u>Z3-5</u> SROUT TYPE: <u>CUC</u> TG (R): <u>SURFACE</u> LENGTH (R): <u>Affect</u> LENGTH (R): <u>12 Acet</u> LENGTH (R): <u>12 Acet</u> LENGTH (R): <u>12 Acet</u> CARD PACK INE SAND TYPE: <u>HCO</u> TSP (R): <u>PG (D)</u> CRONYMS TR TOp of Biser TSC TOp of Screen TSC TOp of Screen TSC TOp of Screen TSP TOP of Sand Pack COMMENTS:	DRILLING COMPLETED:	June 9 2000	{	INSTALLATI	ON COMPLETED:		
BORING DIAMETER(s): 6/40.01 BEDROCK CONFIRMED (Y/N7) Y PROTECTIVE SURFACE CASING LENGTH (ft):	BORING DEPTH:	24.5		SURFACE CO	MPLETION DATE:	Temporang.	
PROTECTIVE SURFACE CASING LENGTH (ft): LENGTH (ft): DIAMETER (ft): DUC TR (ft): LENGTH (ft): NISER DUC TR (ft): LENGTH (ft): HL SURFACE COLLAR TYPE: RADIUS (ft): HL SURFACE COLLAR TYPE: RADIUS (ft): HL SURFACE COLLAR TYPE: RADIUS (ft): Image: Comparison of the comparison of	DRILLING METHOD(S):	<u>ltsa</u>		COMPLETIO	N CONTRACTOR/CREW:		
DAMETER (f): LENGTH (f): LENGTH (f): TYPE: DUC TYPE: DUC DIAMETER(ii): Z. ¹ /2.4 URFACE COLLAR TYPE: RADIUS (h): $H DH$ URFACE COLLAR TYPE: RADIUS (h): $H DH$ URFACE COLLAR TYPE: DVC THICKNESS OF EDGE (in): $H DH$ THICKNESS OF EDGE (in): $H DH$ THICKNESS OF EDGE (in): $H DH$ TYPE: DVC THICKNESS OF EDGE (in): $H DH$ TYPE: DVC TYPE:	BORING DIAMETER(S):	<u>61'ncn</u>	<u></u>	BEDROCK C	ONFIRMED (Y/N?)	<u> </u>	
RISER TYPE: DVC TR (ft): HF DIAMETER(in): Z , $Inc H$ LENGTH (ft): HF SURFACE COLLAR TYPE: RADIUS (ft): HF TYPE: $TYPE:$ RADIUS (ft): HF HICKNESS OF CENTER (ft): $TYPE:$ DVC TSC (ft): $I3.5$ ILENGTH (ft): $I3.5$ LENGTH (ft): $I0$ foot NAMETER (in): Z , $Inc H$ SLOT SIZE: O , Olo LENGTH (ft): $I0$ foot NAMETER (in): $Z3.5$ SROUT TYPE: $Eucl Cap$ BSC (ft): $Z3fS$ POW(ft): $Z3.5$ SROUT TYPE: C TG (ft): LENGTH (ft): $I2$ foot NAME TR (ft): $I2$ foot SROUT TYPE: HOO TSP (ft): 9 feet LENGTH (ft): $I2$ foot NAME TS: TOP of Rise: TSP (ft): ISP foot Screen TG TOP of Sand Pack SGROUT TYPE: $Inc Top of Rise: TSP (ft): TSP (ft): TSP (ft): IS for of GroutTSC TOP of Screen POW Point of Well TBS (ftop of Grout TSP (ftop of Screen TG) for the theorem TSC TOP of Screen TSC TSC TOP of S$	PROTECTIVE SURFACE	CASING					
TYPE: DVC TR (ft): DIAMETER(in): Z. ¹ UC M LENGTH (ft): $M D M$ SURFACE COLLAR TYPE: RADIUS (ft): M D M TYPE: TYPE: RADIUS (ft): M D M HICKNESS OF CENTER (ft): DVC THICKNESS OF EDGE (in): M D M SCREEN TYPE: DVC TSC (ft): (J 3. 5) MAMETER (in): Z. ¹ UC M SLOT SIZE: O. OLO LENGTH (ft): W Foot YOINT OF WELL (SILT SUMP) TYPE: EWC DSC (ft): 2 3.5 SROUT TYPE: C TG (ft): LENGTH (ft): Z 3.5 SROUT SEAL TYPE: Chip Baubon'b TBS (ft): Surface LENGTH (ft): A feet TYPE: Chip Baubon'b TSP (ft): Surface LENGTH (ft): 12 Acet GARSE SAND TYPE: #OO TSP (ft): LENGTH (ft): 12 Acet Surface MORASE SAND TYPE: #OO TSP (ft): LENGTH (ft): 12 Acet Sufface MARE AND PACK TSP (ft): LENGTH (ft): Top of Grout TSP TOP of Sand Pack <t< td=""><td>DIAMETER (ft):</td><td></td><td></td><td>•</td><td>LENGTH (ft):</td><td></td></t<>	DIAMETER (ft):			•	LENGTH (ft):		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	RISER	Dir					
SURFACE COLLAR TYPE: RADIUS (R): TYPE: PUC TSC (R): TYPE: PUC TSC (R): TYPE: PUC TSC (R): TYPE: PUC TSC (R): TSC (R): TSC (R): TYPE: Chip Cap BSC (R): 2345 POW(R): 23.5 GROUT TYPE: Chip Beufourb TBS (R): Surface LENGTH (R): 23.5 GROUT TYPE: Chip Beufourb TBS (R): Surface LENGTH (R): Affect Affect LENGTH (R): 12 Aeet TYPE: TP (R): 9 Feet LENGTH (R): 12 Aeet LENGTH	TYPE:	PUC			TR (ft):		
TYPE: RADIUS (R): HICKNESS OF CENTER (R): THICKNESS OF EDGE (IN): TYPE: DVC THICKNESS OF EDGE (IN): TYPE: DVC TYPE: DVC TYPE: DVC TSC (R): 13.5 DIAMETER (IN): DVC TYPE: DVC TSC (R): 13.5 COUT TYPE: C TG (R): LENGTH (R): 23.5 GOUT TYPE: Chip Beuton/b TB (R): LENGTH (R): 2 TYPE: Chip of Sace <td>DIAMETER(in):</td> <td>Zinch</td> <td></td> <td></td> <td>LENGTH (ft):</td> <td><u> </u></td>	DIAMETER(in):	Zinch			LENGTH (ft):	<u> </u>	
HICKNESS OF CENTER (R): THICKNESS OF CENTER (R): TYPE: DVC THICKNESS OF CENTER (R): $TSC (R)$: $I 3.5$ SCREEN TYPE: DVC TSC (R): $I 3.5$ DIAMETER (in): 2.5^{MAM} SLOT SIZE: $O.010$ LENGTH (R): $III Constraints (R)$ NOINT OF WELL (SILT SUMP) TYPE: $Eucl Cap$ BSC (R): 2.345 POW(R): $Z3.55$ GROUT TYPE: C TG (R): LENGTH (R): $III Constraints (R)$ TYPE: C TG (R): $III Constraints (R)$ $IIII Constraints (R)$ $IIII Constraints (R)$ Stand Type: C TG (R): $IIIII Constraints (R)$ $IIIIIIII Constraints (R)$ $IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII$	SURFACE COLLAR						
TYPE: PVC TSC (ft): 13.5 DAMETER (in): $2.3.6$ TYPE: PVC TSC (ft): 13.5 LENGTH (ft): 12.5 DOINT OF WELL (SILT SUMP) TYPE: $Evcl Cap BSC (ft): 2.345 POW(ft): 23.5 SROUT TYPE: C TG (ft): 2.345 POW(ft): 23.5 SROUT TYPE: C TG (ft): 2.345 POW(ft): 23.5 SROUT TYPE: C TG (ft): 2.345 POW(ft): 23.5 SROUT LENGTH (ft): 23.5 TYPE: C TG (ft): 2.3.5 SEAL LENGTH (ft): 23.5 TYPE: C TG (ft): 2.3.5 Superimentation of the top (ft): 2.3.5 BOL TYPE: C TG (ft): 2.3.5 TYPE: C Type: C TG (ft): 2.3.5 Superimentation of the top (ft): 2.5.5 TYPE: $	TYPE:				RADIUS (ft):		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	THICKNESS OF CENTER (ft):			1	HICKNESS OF EDGE (in):		
DIAMETER (in): 1. inch SLOT SIZE: 0.010 LENGTH (R): W foot DOINT OF WELL (SILT SUMP) TYPE: Ewd Cap BSC (R): 2345 POW(R): 23.5 GROUT TYPE: C TG (R): LENGTH (R): W foot TYPE: C TG (R): LENGTH (R): 23.5 GROUT TYPE: C TG (R): Surface LENGTH (R): 24.5 A fact TYPE: 4 fact TSP (R): 9 fact LENGTH (R): 12 fact TOP of Riser TSP (R): 9 fact LENGTH (R): 12 fact TSC Top of Riser TSP (R): TG for out <td colspa<="" td=""><td>SCREEN</td><td>Duk</td><td></td><td></td><td></td><td></td></td>	<td>SCREEN</td> <td>Duk</td> <td></td> <td></td> <td></td> <td></td>	SCREEN	Duk				
Constraint Constraint <td>TYPE:</td> <td></td> <td></td> <td></td> <td>TSC (ft):</td> <td></td>	TYPE:				TSC (ft):		
TYPE: Ewd Cap BSC (fi): 2345 POW(fi): 23.5 GROUT TYPE: C TG (fi): LENGTH (fi): 23.5 GROUT TYPE: C TG (fi): LENGTH (fi): 23.5 GROUT TYPE: C TG (fi): LENGTH (fi): 23.5 GROUT TYPE: Chip Bautowb TBS (fi): Surface LENGTH (fi): Afect GAND PACK TYPE: #OO TSP (fi): 9 feet LENGTH (fi): 12 feet GOARSE SAND TYPE: #OO TSP (fi): 9 feet LENGTH (fi): 12 feet MCRONYMS TR Top of Riser BSC Bottom of Screen TG Top of Grout BGD Background TSP Top of Sand Pack Top of Sand Pack Top of Bentonite Seal OMMENTS:	DIAMETER (in):	2.inch	SLOT SIZE:	0.010	LENGTH (ft):	W foot	
Intering to the construction of the	POINT OF WELL (SILT S	SUMP)					
TYPE: C TG (ft): LENGTH (ft): LENGTH (ft): LENGTH (ft): Merce EAL TYPE: Chip Beulouib Surface LENGTH (ft): Merce TYPE: Chip Beulouib TBS (ft): Surface LENGTH (ft): Merce A feet EAL TYPE: Chip Beulouib TBS (ft): Surface LENGTH (ft): Merce A feet LENGTH (ft): Merce IENGTH (ft): 12 feet COARSE SAND TYPE: TSP (ft): 9 feet LENGTH (ft): 12 feet COARSE SAND TYPE: TSP (ft): 12 feet TSP (ft): 15 feet LENGTH (ft): 12 feet TSP (ft): 15 feet LENGTH (ft): 12 feet COARSE SAND TYPE: TSP (ft): 12 feet TSP (ft): TSP for of Grout TSC Top of Riser TS BSC Bottom of Screen TG Top of Grout BGD Background TSP Top of Sand Pack COMMENTS: Colspan="2">Colspan= 2"	TYPE:	End Cap	BSC (ft):	2345	POW(ft):	_23.5	
SEAL TYPE: Chip Bautonib TBS (ft): Surface LENGTH (ft): Affect GAND PACK INE SAND TYPE: #COO TSP (ft): 9 feet LENGTH (ft): 12 feet COARSE SAND TYPE: TSP (ft): 9 feet LENGTH (ft): 12 feet COARSE SAND TYPE: TSP (ft): LENGTH (ft): 12 feet CRONYMS TR Top of Riser BSC Bottom of Screen TG Top of Grout BGD Background TSP Top of Sand Pack Top of Sand Pack Top of Bentonite Seat	GROUT				······································		
TYPE: Chip Beulouib TBS (ft): Surface LENGTH (ft): A feet VAND PACK INE SAND TYPE: #COO TSP (ft): 9 feet LENGTH (ft): 12 feet WOARSE SAND TYPE: TSP (ft): 9 feet LENGTH (ft): 12 feet WOARSE SAND TYPE: TSP (ft): LENGTH (ft): 12 feet WOARSE SAND TYPE: TSP (ft): LENGTH (ft): 12 feet MCRONYMS TSC 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 Top of Sand Pack	TYPE:		TG (ft):		LENGTH (ft):		
AND PACK #COO TSP (ft): 9 feet LENGTH (ft): 12 feet INE SAND TYPE: TSP (ft): 9 feet LENGTH (ft): 12 feet COARSE SAND TYPE: TSP (ft): LENGTH (ft): 12 feet CRONYMS 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 TOP of Sand Pack	SEAL			- ^	47 <u> </u>		
INE SAND TYPE: #OO TSP (ft): 9 feet LENGTH (ft): 12 feet COARSE SAND TYPE: TSP (ft): TSP (ft): LENGTH (ft): 12 feet CRONYMS 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 Top of Sand Pack	туре:	hip Deutonib	TBS (ft):	Surface	LENGTH (ft):	Afeet	
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 TOP of Sand Pack	SAND PACK			• ·	<u> </u>		
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 TOP of Sand Pack	INE SAND TYPE:	#-00	TSP (ft):	9 feet	LENGTH (ft):	12 feet	
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 Top of Sand Pack	COARSE SAND TYPE:				LENGTH (ft):		
TSC Top of Screen POW Point of Well TBS Top of Bentonite Seal BGD Background TSP Top of Sand Pack	ACRONYMS			<u> </u>			
BGD Background TSP Top of Sand Pack		p of Riser	BSC	Bottom of Screen	TC	3 Top of Grout	
OMMENTS:		•			TB	•	
Temporay well				10p 01 Janu 1 dCK			
	Temporay	we (1					
	• •						

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OVERBURI COMPLETION F ROADWAY	REPOR'		ATION DETAI	Γ Τω12-23
PARSONS ENGINEERING SCIENCE, INC.		CLIENT:	USACOE	WE LL#: MW-
PROJECT: RI FIELD INVESTIGA	TION	. PR	OJECT NO:	743156
SWMU # (AREA): SEAD- /2	2 RI	п	NSPECTOR:	mallister
SOP NO.: 743156		СН	ECKED BY:	
DRILLING CONTRACTOR: Noth nay Le		POW DEPTH	l (ft) :	13.25
DRILLER:		INSTALLAT	ION STARTED:	
DRILLING COMPLETED: JUNE 9 2004		- INSTALLAT	ION COMPLETED:	· · · · · · · · · · · · · · · · · · ·
BORING DEPTH: 23.3 ft		SURFACE C	OMPLETION DATE:	Temporing
DRILLING METHOD(S):		COMPLETIC)N CONTRACTOR/CREW:	
BORING DIAMETER(S):	-	BEDROCK	CONFIRMED (Y/N?)	<u> </u>
PROTECTIVE SURFACE CASING				
DIAMETER (ft):			LENGTH (ft):	
RISER				
TYPE: PUC		-	TR (ft):	
DIAMETER(in): 2 Juin		-	LENGTH (ft):	14 fect
SURFACE COLLAR				
TYPE:		-	RADIUS (ft):	
THICKNESS OF CENTER (ft):		-	THICKNESS OF EDGE (in):	
SCREEN TYPE: DVC DIAMETER (in): 2; 10.4	SLOT SIZE:	0.010	TSC (ft): LENGTH (ft):	
POINT OF WELL (SILT SUMP) TYPE: <u>Find Cap</u>	BSC (ft)	23.25	POW(ft):	23.3
GROUT TYPE:	TG (ft)	·	LENGTH (ft):	
SEAL TYPE: Chip Bentourte	TBS (ft)	B .9 ft	LENGTH (ft):	2.7
SAND PACK FINE SAND TYPE: #00	TSP (ft)	Eath	(1.2,ft LENGTH (ft):	2 feet
COARSE SAND TYPE:	TSP (ft)	<u></u>	LENGTH (ft):	
ACRONYMS TR Top of Riser TSC Top of Screen	BSC POW	Bottom of Screen Point of Well	TC	
BGD Background	TSP	Top of Sand Pack	<u></u>	
COMMENTS: Temponary Well				• •
	ALL DEPTH	MEASUREMENTS REF	ERENCED TO GROUND S	URFACE
SEE PAGE 2 FOR SCHEMATIC				

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	OVERBU	RDEN M	IONITORIN	G WELL		.**
	COMPLETION		& INSTALLA SURFACE CO		TW 12-24	- 71 - 71
PARSONS ENCINEE	RING SCIENCE, INC.	NI WELL-	CLIENT:	USACOE	WELL #: MW	3
PROJECT:	RI FIELD INVEST	IGATION		I		
SWMU # (AREA):	SEAD-			ECT NO: PECTOR:		
SOP NO.:		<u> </u>		KED BY:	·	ت ور ر
			l			:45
DRILLING CONTRACTOR	Norway		POW DEPTH (f		· · · · · · · · · · · · · · · · · · ·	18
DRILLER:	Jine	10 2004	INSTALLATION			4
DRILLING COMPLETED:	June			N COMPLETED:	<u></u>	·~~
BORING DEPTH:				IPLETION DATE:		
DRILLING METHOD(S): BORING DIAMETER(S):				CONTRACTOR/CREW: NFIRMED (Y/N?)	<u> </u>	192 194
			BEDROCK CO			
PROTECTIVE SURFA	AUE CASING					14°44
DIAMETER (ft):				LENGTH (ft):		: · ·
RISER	Pr				QAI	
ТҮРЕ					8.0(
DIAMETER(in)	<u>2.incn</u>			LENGTH (ft):		200 200 200
SURFACE COLLAR						
TYPE	k			RADIUS (ft):	· · · · · · · · · · · · · · · · · · ·	2.5
THICKNESS OF CENTER (f	t):		TH	ICKNESS OF EDGE (in):		: ند:
SCREEN	Ωr				Aark	1972
TYPE				TSC (ft):	9 3 feet	110
DIAMETER (in):	Linch	SLOT SIZE:	0.0	LENGTH (ft):	5 feet	
POINT OF WELL (SI						
TYPE	End Cap	BSC (ft):		POW(ft):		
GROUT	· · · · · · · · · · · · · · · · ·					
TYPE	None	TG (ft):		LENGTH (ft):		1
SEAL						
ТҮРЕ	Grunnstein Bent	WIE TBS (ft):	Surface 3.1 feet	LENGTH (ft):	3.164	رب الجا معد
SAND PACK						-44-4
FINE SAND TYPE:	#1 sand	TSP (ft):	3.1 feet	LENGTH (ft):	6.2 feet	
COARSE SAND TYPE:		TSP (ft): TSP (ft):		LENGTH (it):		
ACRONYMS						
TR	Top of Riser	BSC B		TC		
TSC	Top of Screen		ottom of Screen pint of Well	TG TB:	•	.:
BGD	Background		op of Sand Pack			
COMMENTS: Auger	refused @ 9.3(it G		the 3.1 to Sonf	BU C	-
Screen	5 foot	To	shel Depth	13.01		~
the se	nel to 3.1 feet	·	Stakins	13.01 3.71 feet		
		* ALL DEPTH N	IEASUREMENTS REFERI		JRFACE	
SEE PAGE 2 FOR SCHE	MATIC	OZA 111 11.				
H:\ENG\SENECA\FORMS\FIE	LD/MWOBRB.XLS				FIGURE A-9	
					A-7	1944 1940

OVERBURDEN MONITORING WELL COMPLETION REPORT & INSTALLATION DETAIL ROADWAY BOX - SURFACE COMPLETION TW PARSONS ENGINEERING SCIENCE, INC. CLIENT: USACOE WELL #: TAW PROJECT: RI FIELD INVESTIGATION PROJECT NO: 743 / 256 SWMU # (AREA): SEAD- 12 / 27 INSPECTOR: ULCALL: SOP NO: CHECKED BY:
COMPLETION REPORT & INSTALLATION DETAIL ROADWAY BOX - SURFACE COMPLETION PARSONS ENGINEERING SCIENCE, INC. PARSONS ENGINEERING SCIENCE, INC. CLIENT: USACOE WELL #: MAXE PROJECT: RI FIELD INVESTIGATION PROJECT NO: 743 (56) SWMU # (AREA): SEAD- 12 RZ INSPECTOR: UWCAU(I/S/Lac) SOP NO: CHECKED BY: CHECKED BY: INSTALLATION STARTED: DRILLING CONTRACTOR: NOH Mag (e) POW DEPTH (R): 12.3 f/c. DRILLING COMPLETED: JUAC 9 200 9 INSTALLATION COMPLETED: Installation started: DRILLING COMPLETED: JUAC 9 200 9 INSTALLATION COMPLETED: Imstallation completed: BORING DEPTH: 12.3 feef SURFACE COMPLETION DATE: Implemention date: DRILLING METHOD(S): H5A COMPLETION CONTRACTOR/CREW: 1 BORING DIAMETER(S): 6 JULL BEDROCK CONFIRMED (Y/N?) Immlemention
ROADWAY BOX - SURFACE COMPLETION $12.2.2.5$ PARSONS ENGINEERING SCIENCE, INC. CLIENT: USACOE WELL #: MAKE PROJECT: RI FIELD INVESTIGATION PROJECT NO: 743.656 SWMU # (AREA): SEAD- 12 & Z INSPECTOR: $UUCAUI_656.$ SOP NO.:
PROJECT: RI FIELD INVESTIGATION PROJECT NO: 743 rsg SWMU # (AREA): SEAD- 12 RT INSPECTOR: McAlliste SOP NO.:
SWMU # (AREA): SEAD- 12 RT INSPECTOR: UncAllister SOP NO.: CHECKED BY: CHECKED BY: Inspector:
SOP NO.: CHECKED BY: DRILLING CONTRACTOR: Nothinggle DRILLING CONTRACTOR: Nothinggle DRILLING CONTRACTOR: Nothinggle DRILLER: INSTALLATION STARTED: DRILLING COMPLETED: June 9 200 9 BORING DEPTH: 12.3 feet DRILLING METHOD(S): HSA BORING DIAMETER(S): 6 fuch BORING DIAMETER(S): 6 fuch BORING DIAMETER(S): 6 fuch
DRILLING CONTRACTOR: Nothinggle Pow Depth (ft): /2.3.1. DRILLING CONTRACTOR: June 9 200 9 Installation started: Installation started: DRILLING COMPLETED: June 9 200 9 Installation completed: Installation completed: BORING DEPTH: 12.3 feet Surface completion date: Image:
DRILLER: INSTALLATION STARTED: DRILLING COMPLETED: June 9 200 9 BORING DEPTH: 12.3 feet DRILLING METHOD(S): HSA BORING DIAMETER(S): 6 mmm BORING DIAMETER(S): 6 mmm BRING DIAMETER(S): 6 mmm
DRILLER: INSTALLATION STARTED: DRILLING COMPLETED: June 9 200 9 BORING DEPTH: 12.3 feet DRILLING METHOD(S): HSA BORING DIAMETER(S): 6 mmm BORING DIAMETER(S): 6 mmm BRING DIAMETER(S): 6 mmm
BORING DEPTH: 12.3 feet SURFACE COMPLETION DATE: Iempory DRILLING METHOD(S): H5A COMPLETION CONTRACTOR/CREW: I BORING DIAMETER(S): 6 / WCM BEDROCK CONFIRMED (Y/N?) I PROTECTIVE SURFACE CASING I I I
DRILLING METHOD(S): HSA COMPLETION CONTRACTOR/CREW: 4 BORING DIAMETER(S): 6 (MCh BEDROCK CONFIRMED (Y/N?) 4 PROTECTIVE SURFACE CASING 6 (MCh 6 (MCh 6 (MCh
BORING DIAMETER(S): 6 (WCM BEDROCK CONFIRMED (Y/N?)
PROTECTIVE SURFACE CASING
DIAMETER (ft): LENGTH (ft):
RISER
TYPE: TR (ft):
DLAMETER(in): LENGTH (ft):
SURFACE COLLAR
TYPE: RADIUS (ft):
THICKNESS OF CENTER (ft): THICKNESS OF EDGE (in):
SCREEN Dr
TYPE: PVC TSC (ft): 7.3ft
DIAMETER (in): <u>2,'ucu</u> slot size: <u>0.010</u> LENGTH (ft): <u>4.85600</u> +
POINT OF WELL (SILT SUMP)
TYPE: <u>End Cap</u> BSC (ft): <u>12.25</u> POW(ft): <u>12.3</u>
GROUT
TYPE: TG (ft): LENGTH (ft):
SEAL
TYPE: Chop Bentonile TBS (ft): 5.2 feet LENGTH (ft): 5.2 feet
SAND PACK
FINE SAND TYPE: #00 TSP (ft): S.2 feet LENGTH (ft): -8,9 (ft)
COARSE SAND TYPE: 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
Tempory well to
* ALL DEPTH MEASUREMENTS REFERENCED TO GROUND SURFACE SEE PAGE 2 FOR SCHEMATIC

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PAGE 1 OF 2

	COMPLETION H	REPORT	IONITORIN & INSTALLA' SURFACE COM	FION DETAI	L TW12-26
PARSONS ENGINEER			CLIENT:	USACOE	WELL #:
PROJECT:	RI FIELD INVESTIGA	ATION	PROJE	CT NO:	743156
SWMU # (AREA):	SEAD-	12 RI	INSPI	ECTOR:	McAllislen
SOP NO.:	· · · · · · · · · · · · · · · · · · ·		CHECK	ED BY:	
DRILLING CONTRACTOR: DRILLER: DRILLING COMPLETED: BORING DEPTH: DRILLING METHOD(S): BORING DIAMETER(S):	June 9 2004 Ilfeet HsA Ginch		COMPLETION C	STARTED:	<u>10.9£F</u>
PROTECTIVE SURFA	CE CASING			¥	
DIAMETER (ft):	DVC		201 <u>1 </u>	LENGTH (ft):	
TYPE: DIAMETER(in):	0 1			TR (ft): LENGTH (ft):	
SURFACE COLLAR					
TYPE: THICKNESS OF CENTER (ft)			THE	RADIUS (ft):	
SCREEN TYPE: DIAMETER (in):	PVC 2.incu	SLOT SIZE:	O-0W	TSC (ft): LENGTH (ft):	5.9ft Sfoot
POINT OF WELL (SIL' TYPE:	rsump End Cap	BSC (ft):	10. 85 ,4	POW(ft):	10.9 ff
GROUT TYPE:		TG (ft):		LENGTH (ft):	
SEAL TYPE:	Chip Bentonite	TBS (ft):_	Surface	LENGTH (ft):	4 .95t
SAND PACK FINE SAND TYPE: COARSE SAND TYPE:	#00	TSP (ft):	4.9 Ft	LENGTH (ft):	6 feet
TSC	Top of Riser Top of Screen Background	POW I	Bottom of Screen Point of Well Fop of Sand Pack	TC TB:	•
COMMENTS: TEMP		all depth	MEASUREMENTS REFERE	NCED TO GROUND SU	JRFACE

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Appendix B

Sampling Records

SAMPLING RECORD - SURFACE WATER

TIME (24 HR)	TEMP (APPRX)	Bu	2 F	15								INSPECTOR:	McAlliste.	•
TIME (24 HR)	ТЕМР	NDITION		<u>, 81</u>								LABORATORY:	Chemfell	l
TIME (24 HR)	ТЕМР		S CHE		3-81							LAB. STAFF:	K. Humn	nhen
(24 HR)		14/5 4			· . ·	· ·	RD M	AJOR CHAN	T			CHAIN OF CUS	STODY <u>#:</u>	
(24 HR)				RE	EL.			(FROM)		SURF	/ SITE	MO	NITORING	
	(* ·····)	(GEN			PRX)	(APPF		(0 - 360)	l c	ONDIT	1	INSTRUMENT	DECTE	CTOR
14:00	630	Okra		Hy		10-15		West	1	et		PLD	Ppm	
	····												 	
LOC	SAMPLE #	DFS	DEDT	TINAC	TEMP	MON	. 1	TURBIDITY		SPEC		SAMPLING		QC SF
<u></u>	# 1 2450 121000	2.Ft	•3#		темр 20-6			(NTU)	T T	COND •77	D.O.	bevice	TYPE / SIZE	N N
Sw/SD 12-69	121001	1.5	14	15:45	22.2	.6 PPA		63.9	7.4	.46	7.1	bottle	3/40ml VOA	N
SWISD	12(002	1.864	•6f	1600	13-96	1		47.2ml	71	.75	7.2	bottle	3/40ml VOA	N
sw150 Q.7(21003	1.8A	.st	16:20	1944	·2,70		76atu			7.5	bothle	*40ml VGA	M
SW/SD	121006	1.2ft	·3ft	16:40	2156	·lam		44.6 n tu	7.3	.70	B. 06	bottle	3/40 ml VOA	Ŋ
SwlsD 12.72	121004	20	.3¥	17:00	<i>1</i> 015	Oppon		76ntu	6 8	.72	5.52	bottle	3/40ml JUA-	Y
5 uls 5 12·73	12/005	[.4 \$ }	5	(7:Ab	10.3J	0 ppm		26ntu	7.5	.70	7.62	bofflo	3/2000/ Vox(N
								· · · · · · · · · · · · · · · · · · ·						

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

`

SEE MASTER ACRONYM LIST FOR COMPLETE LISTING OF ABBREVIATIONS

								·	PAGE OF	
	S	AN	SAMPLING		RECORD	ND - SURFACE SOIL/SEDIMENT	EDIMENT	r -		
	PARSONS	NOS			CLIENT:	INSPECTOR :	DA	DATE: JUNE	24	2004
PROJECT:	ECT:	ΰ	ЕМ-5	Kesample			. SURFACE SOIL	IL SOIL TYPE	YPE SEDIMENT	tent
COMMENTS:	Samples		collected	with a	Ceution	Sheel Shirt Stoor	MOI GAM - Mueller - Ludiua	MONITORING Ludiua	RING	
	SAMPLE INFORMATION	FORM.	ATION			SOIL INF	IL INFORMATION			
LOCATION	SAMPLE NUMBER	SAI DEP	SAMPLE DEPTH (in) TOP BOTTOM	TIME (military)	GRAB or COMPOSITE SAMPLE	SAMPLE DESCRIPTION (Burnister method)	cation	VOC SCIEEN (PPM)	QC Split (yes or no)	Other Notes
Q11.7195	173678	0	7.	G);][Dry brown , Sith d Clay soft loose, Some Skale Regiments five to course Agulan	0	8	Ž	
201-7155	123677	0	-2-	11:40		Dog brown Sill & Cla Soft loss Some State Fugurents five her come Ay.	v	0.0	No	
SS12-lof	123676	0	2.	11:57 12:03		Moist. brown SiltaClay. Some Slade fugments f-c trace orycone	0	0.0	Ks	
2512-120	123671	0	.2	12:08		moist brown Sult \$ Clay some shele frammads trace onsance	Ð	0.0	No	
5512-108	123673	0	4.	12:18		Dry brown Silfano.Cly Solfleor Some shale figues than organie	0	00	No	
5512-117	123674	0	.2	12:29		Do H. brown Siltard Clar. There cycure malerial (mads)		0.0	No	Naills aw kilood at lac
SS 12. 109	12326745 123267450 123267450	0	-2	12:40		Dory 11-biouur Silkanicles Soure Canunel M-C there organic	0	0.0	Yes	Sourp MS MRD MSD
TP12- 15C	123680	ې 9	0 .83	15:46		H. Grag Sitt & Clg. Some Gravel little Orgenic mut	0	0.0	No	
SSIZ-119	123670	0	.2	13:09		H.G.my Sulf #Clg 2000 Gravel mrc tract Organic		0.0	No	
TPISA	123675	3.0	3.5	15:39		Wet. (Hogg to boun Sitacly. Some Grend (skule) M-C	0	0 Q	NU	
Rinse Blunk										
(MRD Sample	be collected	(P)	4	501-21 SS		123267)				

.

H:\ENG\SENECA\FORMS\SSSAMPRD.XLS

FIGURE A-4

and the second sec

and the street

PAGE #1 of 2

SAI	MPLIN(G RECO	<u> </u>	GROUN	DWAT	ER		
PARSONS			CLIENT:			WELL # :		2-1
PROJECT (STUDY_ID):	SE	EAD 12	RI		DATE:		6/84	
SWMU # (AREA):	30.10	m 8/3/2	84	•	LABORATO		hemfek	
SCREENED INTERVAL (TOC):		3.95 10		, ,	MONITORIN	NG DATE:		
STATE WELL PERMIT #:	* Not S	rivered	clention	· . X .	INSTRUM	ENT	_ DE	TECTOR
WEATHER:	S		> .		PID /	/ FID	· · Ø	•
FREE PRODUCT (NO/ YES) Thickness		N4		-				
BOREHOLE DIAMETER FACTORS		<u> </u>						
DIAMETER (INCHES):	1 1.5	4 1	3 4	-	6 7	8	9 10	1
GALLONS/FOOT:	0.041 0.09		0.367 0.6		1.47 2.00	0 2.61	3.30 5.87	<u></u>
PURGE METHOD:	Blatter	A. 1 CA	-	OC CONCENTRA		· 12	ø	
STATIC DEPTH TO WATER (TOC):	12.1	-	-		N WELL (gallons):		• #	
WELL DEPTH (TOC):	13.5	15 57	-	VOLUMES (gallon	•	3.4		
FEET OF WATER IN WELL:	7.6		ONE:	·····	TWO:	THREE	E:	
Measure	indicator para		RGING DA' ich volume (at		more than 3 rec	quired*)		
TIME BEGIN PURGING:	-				TIME END P	URGING:		
Time:	14:26	15:%	15:35	15:44	15:53	16:02	[6s]]	16:20
Depth to Water (ft)	7.60	B.72	8.72	B.72	8.72	872	8.72	8.72
Depth to bottom						Ī ļ		[]
opening of	10.5		14.6	10.5	100			ا مقد ا
Purge Device (TOC)		10.5	10.S	10-5	6.5	10.5	U .S	10.s
Flow Rate (ml/min.)	80a/	60 ml	60 m	60m1	60-11	60ml	60 mg	bom/
Volume of Water		['	[I	[/	Ī ļ	1	/
Removed (gals)	Scon	3700ml	4200 ml	4700	5200	5700m	6200 m	6700m/
		7.18	722	7.21	7.20	7.19	7.16	7.15
pH	Wash .		1.21	120	LIB	1.19	1.13	1.12
Specific Conductivity (umhos)	64	1.25						
Dissolve Oxygen (DO)	21/20	9.38	5.89	5.37	4.77	4.47	3.80	3.40
Temperature (deg. C)	27	69-00	(9.97	20.1	20.35	2040	19.89	(9.73
ORP (mV)	\$ S	138	120	114	108	106	102	(02
Turbidity (NTU)		78	56.5	52.5	489	50	51	5/
DI	EPTH TO W	ATER ME	ASUREMI	ENTS AFT	ER PURGIN	NG		
				Ţ		· ·		
			Water (ft)	Pre-Purge / "Sta			1 (A)	% RECOVERY
Date	Time	Aner	Purge"	Coiu	umn (ft)	Water Co	olumn (ft)	KELUVERI
		ļ	<u></u>	<u> </u>	· · · · · ·	 		
l. <u></u>								
Notes:	-		_	_				
* Purging should not exc								
(1) Determine water column in the l			" and "static"	conditions)				

(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 I hoor to establish a flow rale of 60 ml/inn with a stabilized water level of 8.72 feet.

PAGE #2 of 2

SA	MPLIN	G REC	ORD - (GROUN	DWAT	ER		
PARSONS			CLIENT	:		WELL # :	Twn	+1
PROJECT (STUDY_ID):	Se	EAD r	2 RL		DATE:	8/2	6/04	
SWMU # (AREA):			13/814	-	LABORAT		hemtek	· · · · · · · · · · · · · · · · · · ·
SCREENED INTERVAL (TOC):	13		55 4	- •	MONITORI			
STATE WELL PERMIT #:	* Not	savad	elevolvon	-	INSTRUM		DE	TECTOR
WEATHER:	<u> </u>	Sin	720	-	PID	/ FID	Ø	• • •
FREE PRODUCT (NO/ YES) Thickness		NA		-				
BOREHOLE DIAMETER FACTORS								
DIAMETER (INCHES):	1 1.		3 4	5	6 7	8	9 10	
GALLONS/FOOT:	0.041 0.0	0.163	0.367 0.	554 1.02	1.47 2.	00 2.61	3.30 5.8	7
PURGE METHOD:	Bladde	or Puny	WELL HEAD V	OC CONCENTRA	TION (ppm):		5	
STATIC DEPTH TO WATER (TOC):	6.	50	STANDING WA	ATER VOLUME II	N WELL (gallons): [•]	/4	
WELL DEPTH (TOC):	73	.55	THREE WELL	VOLUMES (gallor	is):	<u> </u>	44	
FEET OF WATER IN WELL:	7.0	>5	ONE:		TWO:	THRE	E:	i
		PUI	RGING DA	TA:				
Measur	e indicator para	meters after ea	ach volume (a	1/2 volume if	more than 3 r	equired*)		
TIME BEGIN PURGING: /1:26					TIME END I	PURGING:		.
Time:	16:29	16:38		16:56			; ;	
Depth to Water (ft)	8.72	8.72	8.72	8.72	cp			
Depth to bottom					E			
opening of					2			
Purge Device (TOC)	10.5	10.5	10.5	10.5	5			
Flow Rate (ml/min.)	60 m/	60 m l	60m1	60ml	in the second se			
Volume of Water					E			
Removed (gals)	7200 ml	7700ml	8200mi	8700ml				
pH	7.16	7.17	717	7.17	0			
Specific Conductivity (umhos)	1.10	1.09	1.08	1.07	4			
Dissolve Oxygen (DO)	3.4	2.65	2.50	2.43	8 B G G G G			
Temperature (deg. C)	19.21	19.87	19.85	19.80				
ORP (mV)	99	97	96	97				
Turbidity (NTU)	52.3	54	66	54				
·····	EPTH TO V		CASUREM	ENTS AFTI	ER PURGI	NG	Å	<u></u>
Date	Time		Water (ft) Purge"	Pre-Purge / "Stat Colu	ic" Waten mn (ft)		olumn (ft)	% RECOVERY
Notes:		I		1		<u> </u>		I
	and 5	200						
 * Purging should not ex (1) Determine water column in the 			and "etatio"	conditions)				
by subtracting the measured wa			and static	conditions)				
(2) Divide the "after purge" water c		-	olumn and mu	ltiply by 100				
to determine the percent of reco	warn for the we	31						

Do has not Stabilized continue to collect field purameters

Although Sample time is 16:20

gwsmpr

Г		7		SAMPLING INFOR	MATION		
	Il Number:	W12-1 Blodder Pur	nD .	• • • • • •			х <i>и</i>
SAN	MPLING DEVICE						TURBIDITY SAMPLE T
$\cdot \uparrow$	SAMP	YC CLPASP	TIME	CONTAINER .	None	PLOR	AFTER (CHECK ONE)
.	/U IV	1	16:20	40 ml VOA	inche	, ,	122284
				2.40 M 10A			122207
				2.40 ml VOA	-		
*		-		2.40ml UDA			120001
╞		.		2.40 mi VOA	-	• •	122275
k				2.40 ml VOA			1222751
	\searrow	;*• <u>.</u>					
		<u> </u>				<u> </u>	
		<u> </u>					
					· .		-
IN	VESTIGATI	ON DERIVED WASTE				•	· · · · · · · · · · · · · · · · · · ·
		Volume Trans	Date fered to Drum	3,01			
		l	Drum Number	hoik		· · · · · ·	
CC	OMMENTS:		4 		•		
	Sa	allos collector	1 5	126/04 fr	Т.	א כו י	
	<u> </u>	vyne) Chicye	. 0	20/04 to	om Iu		
			-				
			•	•	• . ·		
gv	wsmpr	•		•	•. •		

gwsmpr

					Page	10-	
MPLIN	G REC				3		
			: SEAD	<u>- 12</u>			- 1
SEA	<u>D -12 -</u>	RT.	_	DATE:	5/#		
56	1012		_	LABORAT	CORY :	Chemps	<u> </u>
11.75	- 6.75		_	MONITOR	ING DATE:	5/2	5
				INSTRUM	TENT	DE	TECTOR
Sun	70°			PID	/ FID	Ø	
5	NA						
	•			. ģ.			
	1 1	-		6 7	8	9 10	
	92 0.163	0.367 0.	654 1.02	1.47 2.	.00 2.61	3.30 5.8	7
		WELL HEAD V	OC CONCENTR	ATION (ppm):		7/1	
		-					
		-					•
7. 10		-		TWO:	THR	EE:	<u>yo</u>
indicator nam				f more than 3 r	equired*)		
	SAT	ien volume (a				14:14	
14:00	%80.2	10:29	1058	10:47	10:58	(1:05	
			_				1
<u> </u>	100	TOL	1,02	IUF	1.07	100	1
aN	lon	aci.	911	911	94	914	
765	171	1.0.	*			(''	
100 mella	BSWAR	651014	65 1	65 1	65mi	65001	
1404.1	1Can .1	34 .	3/100	Alen	AZAD	5150	$\left \bigcirc \right $
1000 m		50.20					E
	6.81	6.80					
	5.12	5.22	5.25	5.26	5.26	5.25	K
~	3.14	3.02	2.92	2.71	1.56	1.55	4
-							15
<u> </u>							1 č
	• • • • • • •						-
<u>.</u>	1293	215	22.8	123	μ	125	18
EPTH TO V	ATER ME	ASUREM	ENTS AFT	ER PURGI	NG		.
Time			-			Column (ft)	% RECOVE
							1
							+
	1						
						,	
		" and "static"	conditions)				
		and static	conditions)				
	-	olumn and m	iltiply by 100	بالم ا		ac	
very for the we	11.			(Jano)	<u>n = JR</u>	DD MI	
,	. البير هم		1 4.	A	Δ.	L QRI	<u>`1</u>
y at	too wym.	n wel	1 405	(X ICU- M	ooun	10 01	T.
	SEA 5600 11.75 5000 1 0.041		CLIENT SEAD $-12 - RT_{-}$ Sign 12- 1 1.5 3 0.41 0.092 0.163 0.041 0.092 9/25 THREE WELL 7-05 STANDING W. 1/75 THREE WELL 0.041 0.092 8/24/24 WELL HEAD W. 7-05 STANDING W. 1/75 THREE WELL 0.085 0.367 0.085 0.367 9/260 507 1/1.75 THREE WELL 0.085 0.367 9/27 1/4:00 9/280 7:82 1 1.5 9/28 7:80 9/28 7:80 9/14 9/14 9/14 9/14 9/14 9/14 100 3/200/1 9/20 5/2/2 9/21 1/200/1 1 3.14 3.02 1/2 <td>CLIENT: SEAD SEAD -1/2 - RL SEAD 12- 11-75 - 6.75 SUN 70° N4 1 1.5 2 3 4 5 0.041 0.092 0.163 0.367 0.654 1.02 Budder WELL HEAD VOC CONCENTR 7-05 Frag STANDING WATER VOLUMES (galk 0.163 1/1-75 THREE WELL VOLUMES (galk 0.012 PURGING DATA: e indicator parameters after each volume (at 1/2 volume i 0/CG3D Standing 65 in 1/2 1058 7-8 7-80 7-82 7:92 967 964 965 al 0.50 4 100 m/ 2504 30 50 3600 - 6-81 6-80 6-78 - 5-12 5-12 5-25 - 3-14 3-02 2-92 - 18-12 18-12 18-2 - 18-12 18-12 5-25</td> <td>CLIENT: SEAD - 12. SEAD -12 - RT DATE: LABORAT 1 1.5 6.75 1 1.5 2 0.01 0.092 0.163 0.367 0.01 0.092 0.163 0.367 0.654 1 1.5 2 3 4 5 6 1 0.092 0.163 0.367 0.654 1.02 1.47 2 1 0.092 0.163 0.367 0.654 1.02 1.47 2 1 1.5 2 3 4 5 6 7 0.011 0.092 0.163 0.367 0.654 1.02 1.47 2 1 1.5 2 7.00 THNE 1.00 1.099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099</td> <td>SEAD -/2 RI 56:4D 12 LABORATORY : 1 15 6:75 NA PID / FID 50:47 70° 9 NA 1 1.5 0.092 0.163 0.153 0.367 0.041 0.092 0.052 0.163 0.153 0.367 7:405 STANDING WATER VOLUME IN WELL (gallons): 7:470 ONE: 72 90 900 52 101 102 1058 102 52 TWO: 11 15 102 11 15 100 11 15 102 12 WELL HEAD VOC CONCENTRATION (ppm): 7:40 ONE: 72 11 175 THREE WELL VOLUMES (gallons): 11 102 52</td> <td>CLIENT: SEAD - 12 WELL #: $Tw / 2$ SEAD -12 RE DATE: 5/24/04 IL: 75 - 6.75 DATE: 5/24/04 IL: 70 - 6.75 MONITORING DATE: 5/24/04 IL: 70 - 6.75 MONITORING DATE: 5/24/04 DATE: 5/24/04 DATE: 5/24/04 IL: 70 - RE SUM 70° NA ONTO TORING DATE: 0000 WHEL VOLTARE WELL Gallons): 7766/ THEE WELL VOLTARE WELL Gallons): 7766/ THEE WELL VOLTARE VEL Callons): 7766/ PURGING DATA: 100 PMR: 700 PMR:</td>	CLIENT: SEAD SEAD -1/2 - RL SEAD 12- 11-75 - 6.75 SUN 70° N4 1 1.5 2 3 4 5 0.041 0.092 0.163 0.367 0.654 1.02 Budder WELL HEAD VOC CONCENTR 7-05 Frag STANDING WATER VOLUMES (galk 0.163 1/1-75 THREE WELL VOLUMES (galk 0.012 PURGING DATA: e indicator parameters after each volume (at 1/2 volume i 0/CG3D Standing 65 in 1/2 1058 7-8 7-80 7-82 7:92 967 964 965 al 0.50 4 100 m/ 2504 30 50 3600 - 6-81 6-80 6-78 - 5-12 5-12 5-25 - 3-14 3-02 2-92 - 18-12 18-12 18-2 - 18-12 18-12 5-25	CLIENT: SEAD - 12. SEAD -12 - RT DATE: LABORAT 1 1.5 6.75 1 1.5 2 0.01 0.092 0.163 0.367 0.01 0.092 0.163 0.367 0.654 1 1.5 2 3 4 5 6 1 0.092 0.163 0.367 0.654 1.02 1.47 2 1 0.092 0.163 0.367 0.654 1.02 1.47 2 1 1.5 2 3 4 5 6 7 0.011 0.092 0.163 0.367 0.654 1.02 1.47 2 1 1.5 2 7.00 THNE 1.00 1.099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099 1.0099	SEAD -/2 RI 56:4D 12 LABORATORY : 1 15 6:75 NA PID / FID 50:47 70° 9 NA 1 1.5 0.092 0.163 0.153 0.367 0.041 0.092 0.052 0.163 0.153 0.367 7:405 STANDING WATER VOLUME IN WELL (gallons): 7:470 ONE: 72 90 900 52 101 102 1058 102 52 TWO: 11 15 102 11 15 100 11 15 102 12 WELL HEAD VOC CONCENTRATION (ppm): 7:40 ONE: 72 11 175 THREE WELL VOLUMES (gallons): 11 102 52	CLIENT: SEAD - 12 WELL #: $Tw / 2$ SEAD -12 RE DATE: 5/24/04 IL: 75 - 6.75 DATE: 5/24/04 IL: 70 - 6.75 MONITORING DATE: 5/24/04 IL: 70 - 6.75 MONITORING DATE: 5/24/04 DATE: 5/24/04 DATE: 5/24/04 IL: 70 - RE SUM 70° NA ONTO TORING DATE: 0000 WHEL VOLTARE WELL Gallons): 7766/ THEE WELL VOLTARE WELL Gallons): 7766/ THEE WELL VOLTARE VEL Callons): 7766/ PURGING DATA: 100 PMR: 700 PMR:

1

1

Well Number: TW12-4		SAMPLING INFORM	IATION	
SAMPLING DEVICE:				
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYC CLP		240 ml van	Clear	1222.78
		· .		
				-
QA\QC: QA/QC DUPLICATE SAMPLE COLLECT Duplicate Sample Name: QA\QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED:	YES or) or NO NO	· · · · · · · · · · · · · · · · · · ·	
INVESTIGATION DERIVED WASTE (1 Volume Transfe D	Date:	2 marsha		
COMMENTS:			.1 ./	
Sample 1222	79 c	collected at 11:1	o this well	was
drawn down	comple	Hy on 5/	26/04 1500	nl Removed
the well TW today before				(5250 ml
Ŭ	•			

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SAI	MPLIN	G REC	ORD - (GROUN	DWAT			
PARSONS			CLIENT			WELL #	: 7W 1)	- 5
PROJECT (STUDY_ID):	SEAL				DATE:	6/2	.204	
SWMU # (AREA):	Build	ing 813/	8/4	_	LABORAT	ORY :	Chemlek	
SCREENED INTERVAL (TOC):				_	MONITORI	NG DATE:		
STATE WELL PERMIT #:					INSTRUM	ENT	DE	TECTOR
WEATHER:	5	un 70°		_	PID	/ FID	þ	
FREE PRODUCT (NO/ YES) Thickness		NA						
BOREHOLE DIAMETER FACTORS	· · ·							
DIAMETER (INCHES):	1 1.:		3 4	5	6 7	8	9 10	-
GALLONS/FOOT:	0.041 0.0		0.367 0.6		1.47 2.0	0 2.61	3.30 5.8	/
PURGE METHOD:		w	-	OC CONCENTRA			0 101	
STATIC DEPTH TO WATER (TOC):	8.10		-	TER VOLUME I	-	2.7		······
WELL DEPTH (TOC):	<u>/3-65</u> 5.55		-	OLUMES (gallon				
FEET OF WATER IN WELL:	0.00	PIN	ONE: RGING DA	TA:	TWO:	THR	BB:	
Measure	indicator para				more than 3 re	quired*)		
TIME BEGIN PURGING: 14:30	-	.			TIME END P			
Time:	15:30	15:40	15:50	1535	(600	1625	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	11.65	1110	1110			1110	1100	
	Co.II	11.65	162	11.65	11.65	11.65	1.65	
Purge Device (TOC)	And	Admi	1641	11.65 40mC	180.1	40m/	40MI	10
Flow Rate (ml/min.)	40m/	1 mi	ADM(TOMC	YOAL	1084		<u>\$.</u>
Volume of Water	0.000				-	-		n de
Removed (gals)	2500	2900	3400 N	-				5
рН	6.71	6.53	6.72	6.75	6.74	670	6.71	6
Specific Conductivity (umhos)	2.14	2.19	2.19	2, 21	2,24	2.26	2.25	le
Dissolve Oxygen (DO)	10.06	6.95	6.60	6. 90	6.63	6-60	6.59	8
Temperature (deg. C)	19.59	20 AO	20.72	20,78	20,40	20.40	20.40	a
ORP (mV)	/4	26	14	16	24	26	26	
Turbidity (NTU)	32.5	433	44.4	53	69.4	76.4	98.5	÷.
	EPTH TO V		<u>i vi a</u> Surfmi			<u> </u>		<u> </u>
			ASUREMI					T
		Depth to	Water (ft)	Pre-Purge / "Stat	ic" Water			%
Date	Time		Purge"		mn (ft)		Column (ft)	RECOVERY
Notes:		1		•		1		·····
* Purging should not exc	ceed 5 volum	nes						
(1) Determine water column in the l			e" and "static"	conditions)				
by subtracting the measured water (2) Divide the "after purge" water or		_	aluma and	kint., h., 100				

is not 98.5 the meter is not working propaly

to determine the percent of recovery for the well.

* Turbshiky

Well Number:		SAMPLING INFORM	IATION	•
Well Number: TW 12-5 SAMPLING DEVICE: Bladden Pr	mp.	1		· · · · · · · · · · · · · · · · · · ·
				TURBIDITY SAMPLE TAKEN
SAMPLE PARAMETER	TIME	CONTAINER		AFTER (CHECK ONE)
VOL NIJCLPADA	16:00	2-40 ml Voa	No color	1222.79
				v 1
······································	· · · · · ·		•-	
			<u></u>	
· · · ·				
				, .
		· · · ·		
	•	, , , , , , , , , , , , , , , , , , ,		
Duplicate Sample Name:	120	294	•	
QA\QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (NO		·
MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (Volume Transf	IDW): Datě: ered to Drum:	5/27		*
MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (Volume Transf	IDW): Datë:	5/27		•
MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (Volume Transf	IDW): Datë: ered to Drum: Drum Number:	5/27		·
MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (Volume Transf COMMENTS: Sample # 12.	IDW): Datë: ered to Drum: Drum Number:	5/27	<u> </u>	soupefer
MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (Volume Transf E	IDW): Datë: ered to Drum: Drum Number:	5/27 23a1 Winte	<u> </u>	soupefer
MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (Volume Transf COMMENTS: Sample # 12.	IDW): Datë: ered to Drum: Drum Number:	5/27 23a1 Winte	<u> </u>	soupefer
MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (Volume Transf COMMENTS: Sample # 12.	IDW): Datë: ered to Drum: Drum Number:	5/27 29al Winte Collected at	16:10 is vac	·
MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (Volume Transf COMMENTS: Sample # 12.	IDW): Datë: ered to Drum: Drum Number:	5/27 29al Winte Collected at	16:10 is vac	·
MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (Volume Transf E COMMENTS: Sample # 122 TW12-5	IDW): Datě: ered to Drum: Drum Number:	5/2.7 Agal Winke Collected at	16:10 is vac	·

.

<u>SAI</u>		<u>G REC</u>	K		DWAI				
PARSONS			CLIENT	· · · · · · · · · · · · · · · · · · ·		WELL # :		.•6	
ROJECT (STUDY_ID):	SEA	D.12	·	-	DATE:	512	7104		
VMU # (AREA):	Bueld	in 83(81	4	_	LABORAT	ORY :			
CREENED INTERVAL (TOC):	(6.0	5 - 5.0	5		MONITOR	NG DATE:			
FATE WELL PERMIT #:		****		•	INSTRUM	IENT	DE	TECTOR	
EATHER:	S	m 700		-	PID	/ FID			
REE PRODUCT (NO/ YES) Thickness	— į	VA		-					
OREHOLE DIAMETER FACTORS	· · · · ·								
AMETER (INCHES):	1 1	5 2	3 4	5	67	8	9 10		
LLONS/FOOT:	0.041 0.	092 (0.163)	0.367 0.6	54 1.02	1.47 2.	00 2.61	3.30 5.8	7	
URGE METHOD:	Bladd	er	WELL HEAD V	OC CONCENTRA	TION (ppm):	OL	Ø		
ATIC DEPTH TO WATER (TOC):	7.45		- STANDING WA	TER VOLUME I	V WELL (gallons): •91	28		
ELL DEPTH (TOC):	13.05		-	OLUMES (gallor		´			
ET OF WATER IN WELL:		06	ONE:	obolinbo (ganoi	TWO:	THRE	E: 2.73	•	
			RGING DA	TA:		— <u></u>			
Measure	indicator para	ameters after ea			more than 3 re	equired*)			
ME BEGIN PURGING:	-				TIME END I	-			
Time:	1030	1108	1115	1120	1125	1130	1135	1140	6
Depth to Water (ft)	7.45	8.25	* thate					4	Com pec p
	1.10	0-2-4							
Depth to bottom								r	
opening of									
Purge Device (TOC)	13.00	13.05	13.05	13 05	_ (
Flow Rate (ml/min.)	75	20	20	20 -	<u> </u>	5 ~		-	
	~~								
Volume of Water									
Removed (gals)									
рН	-	6.47	6,35	6.38	6.42	6. 4.4	6.45	6.45	
Specific Conductivity (umhos)	(2.65	2,66	2.64	2.62	2,59	2.55	2.55	
Dissolve Oxygen (DO)	1	10.81	9.07	8,75	8.58	8.21	8.13	7.90	
		10,00						5100	
Temperature (deg. C)	•	+(r .7)	19.53	(9.70	20.10	,	21.33	41.39	
ORP (mV)	`	12	22	23	23	21	19	(8	
Turbidity (NTU)	-	19.8	24.0	26.7	34.1	40.0	48,3	51.7	
DE	РТН ТО V	VATER ME	ASUREMI	ENTS AFTI	ER PURGI	NG			
			Water (ft)	Pre-Purge / "Stat	ic" Water			%	
Date	Time	"After	Purge"	Colu	nn (ft)	Water C	olumn (ft)	RECOVERY	
· · · · · · · · · · · · · · · · · · ·									
otes:		I		I		.I		1	1
* Purging should not exc	eed 5 volu	nes							
(1) Determine water column in the b			e" and "static"	conditions)					
		· · · · · · · · · · · · · · · · · · ·							-

Note: Note: * Low wel Flow rate to 59 secs satirlity 1 sec discharge time for losp up low fech orge rate of wall. Did this at 3 1050 gwsmpr ## DTW dropply slowly at marrian a flow rate able to be produced by Sladoh Mmp. A final DTW will be

20f 2	_
-------	---

PARSONS		G REC	CLIENT				TWI	2-2	
····	<u>CC</u>	N 12.	- RE	<u></u>				~ 0	
PROJECT (STUDY_ID):		and the second secon			DATE:		5/27/04		
SWMU # (AREA):	Duila	ing OIS	/9!4	-	LABORAT		I	<u></u>	
SCREENED INTERVAL (TOC):		- ··· ·		-	MONITORI			DETECTOR	
STATE WELL PERMIT #:		- 70	0	-	INSTRUM			DETECTOR	
WEATHER:		<u>Sun 70</u>	· · · ·	-	PID	/ FID			
FREE PRODUCT (NO/ YES) Thicknes	is	<u>N</u> T						<u> </u>	
BOREHOLE DIAMETER FACTORS DIAMETER (INCHES):	1 1.:		3 4	5	67	8	9 10		
GALLONS/FOOT:			0.367 0.6		1.47 2.0		3.30 5.8	7	
PURGE METHOD:	Bladder	PUMP	WELL HEAD V	OC CONCENTRA	TION (ppm):		Ø		
STATIC DEPTH TO WATER (TOC):	7.4	5	- STANDING WA	TER VOLUME I	N WELL (gallons)	:	-9128		
WELL DEPTH (TOC):	13.0	5	- THREE WELL V	OLUMES (gallor	is):				
FEET OF WATER IN WELL:			ONE:		TWO:	THRE	E: 2.7.	5	
		PUI	RGING DA	TA:					
	re indicator para	meters after ea	ich volume (at	1/2 volume if		-			
TIME BEGIN PURGING:	11.000	10000			TIME END P		(710 m	1.4.4	
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				1					
	13.05	13.05	(3,05	13.05	13-05	1305	13.00	13-05	
Purge Device (TOC)	20ml					12.40	13.05		
Flow Rate (ml/min.)	20ml	20 ml/m	20ml/m	20 ml/m	20 mlun	20 mlm	20 miles	10 mlm	
Volume of Water									
Removed (gals)									
pH	6.64	6.46	6.46	6.47	6.48	649	648	6.48	
Specific Conductivity (umhos)	2.49	2.47	2.48	245	2.43	2.40	2.36	2.35	
	7.39	7.34	7.21	7.19	7.11	7.01	6.93	6.87	
Dissolve Oxygen (DO)				<u> </u>					
Temperature (deg. C)	21.72	21.88	21.91	21.92	22.07	12-11	12.47	22.80	
ORP (mV)	16	15	14	14	12	11	10	8	
Turbidity (NTU)	80.1	94.7	110	126	138	183	228	297	
D	EPTH TO W	VATER ME	ASUREMI	ENTS AFTI	ER PURGI	١G			
D-+-	Time		Water (ft)	Pre-Purge / "Stat		Watar C	alumn (fi)	% RECOVER	
Date	Time	Atter	Purge"	Colu	mn (ft)	water Co	olumn (ft)	RECOVER	
	<u> </u>	ļ		 			<u>-</u>		
				I					
Notes:									

 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 pursed

			SAMPLING INFORM	MATION		-	•
	12-6	2001 1997 - A	1. S alara	3	* - 2	, A	
SAMPLING DEVICE:				·····	· · ·		SAMPLE TAK
SAMPLE PA	RAMETER	TIME	CONTAINER	COLOR		AFTER (CHEC	CK ONE)
VEL NY	<u>S CLPAR</u>	12:30	2-40ml 104	No coluc		(22)	280
	 			• .			1
	· · · · · · · · · · · · · · · · · · ·						
·			· ,				<u> </u>
	но на на селото на селото на селото н на селото на селото н на селото на селото н		••••			· · · · ·	
				· · · · · · · · · · · · · · · · · · ·			
	4.	1	•	· · · · · · · · · · · · · · · · · · ·			
	10. ····						<u></u>
	s. por la servición de la servición						
QA\QC:		<u>I</u>	<u> </u>			<u>L</u>	
	1						
QA/QC DUPLICATE Duplicate Sample Nar QA\QC RINSATE SA	me:	TED: YES	or NO	۰ ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹ - ۱۹۹۹	.		2 19 4 - J.
QA/QC DUPLICATE Duplicate Sample Nar	ne: MPLE NAME: APLE COLLECTED:	YES or	or NO NO				
QA/QC DUPLICATE Duplicate Sample Nar QA/QC RINSATE SA MATRIX SPIKE SAN	ne: MPLE NAME: APLE COLLECTED: DERIVED WASTE (Volume Trans	YES or (IDW): Date:	NO 5/2-7 (-8,24				
QA/QC DUPLICATE Duplicate Sample Nar QA/QC RINSATE SA MATRIX SPIKE SAN INVESTIGATION I	ne: MPLE NAME: MPLE COLLECTED: DERIVED WASTE Volume Trans	YES or (IDW): Date: fered to Drum: Drum Number:	NO 5/2-7 (-9.ja/				
QA/QC DUPLICATE Duplicate Sample Nar QA/QC RINSATE SA MATRIX SPIKE SAN INVESTIGATION I	ne: MPLE NAME: MPLE COLLECTED: DERIVED WASTE Volume Trans	YES or (IDW): Date: fered to Drum: Drum Number:	NO 5/2-7 (-9.ja/				
QA/QC DUPLICATE Duplicate Sample Nar QA/QC RINSATE SA MATRIX SPIKE SAN INVESTIGATION I	ne: MPLE NAME: MPLE COLLECTED: DERIVED WASTE Volume Trans	YES or (IDW): Date: fered to Drum: Drum Number:	NO 5/2-7 (-8,24	Mg.	· · · · · · · · · · · · · · · · · · ·	ess) ₍₁₁₎	
QA/QC DUPLICATE Duplicate Sample Nar QA/QC RINSATE SA MATRIX SPIKE SAN INVESTIGATION I	ne: MPLE NAME: MPLE COLLECTED: DERIVED WASTE Volume Trans	YES or (IDW): Date: fered to Drum: Drum Number:	NO 5/2-7 (-9.ja/	4		es) //	
QA/QC DUPLICATE Duplicate Sample Nar QA/QC RINSATE SA MATRIX SPIKE SAN INVESTIGATION I	ne: MPLE NAME: APLE COLLECTED: DERIVED WASTE Volume Trans	YES or (IDW): Date: fered to Drum: Drum Number: 9 9-00	NO 5/2-7 (-9.ja/	Any.	• • • • •	• •••	
QA/QC DUPLICATE Duplicate Sample Nar QA/QC RINSATE SA MATRIX SPIKE SAN INVESTIGATION I	ne: MPLE NAME: APLE COLLECTED: DERIVED WASTE Volume Trans	YES or (IDW): Date: fered to Drum: Drum Number:	NO 5/2-7 (-9.ja/	Any.	• • • •	49) (1)	

gwsmpr

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2 of 2

		~ ~ ~ ~ ~ ~ ~		~ ~ ~ ~			2012	• .
SA	AMPLIN	<u>G REC</u>	<u>ORD - (</u>	GROU	NDWAT			
PARSONS			CLIENT	<u>':</u>		WELL # :	TWI	<u>~7</u>
PROJECT (STUDY_ID):	SEAL	<u> 12 RI</u>	۹ ب ۹ 7 4 . 4	_	DATE:			
SWMU # (AREA):	Builde	My BI	3/814	_	LABORATO		.	
SCREENED INTERVAL (TOC):		• 		_	MONITORIN		ļ	
STATE WELL PERMIT #:					INSTRUM	ENT		TECTOR
WEATHER:		<u>00 7011</u>		-	PID /	FID	Ø	
FREE PRODUCT (NO/ YES) Thickne		NA					<u> </u>	
BOREHOLE DIAMETER FACTORS			3 4	4 5	67	8	9 10	
DIAMETER (INCHES): GALLONS/FOOT:		$\binom{2}{0.163}$	\	4 5 654 1.02	6 / 1.47 2.00		9 10 3.30 5.87	7
PURGE METHOD:	Rladdes			OC CONCENTR		,	Ø	
STATIC DEPTH TO WATER (TOC):	7.3		-		IN WELL (gallons):	-	774	
WELL DEPTH (TOC):	12.11	ŏ	-	VOLUMES (gallo	-		·····	·····
FEET OF WATER IN WELL:	4.7	5	ONE:		TWO:	THRE	IE: 2.3 2	
			RGING DA					
	ure indicator para	ameters after e	ach volume (at	t 1/2 volume i		-	` .	
TIME BEGIN PURGING:	14:60	14:10	1	Т	TIME END P	URGING:	1	I
Time:		1 .		 			<u> </u>	
Depth to Water (ft)	835	8.35	<u> </u>	_		<u> </u>	<u> </u>	
Depth to bottom			10					
opening of	105	10.5	X					
Purge Device (TOC)			-					
Flow Rate (ml/min.)	Acunt	40ml	な					<u> </u>
Volume of Water							Ī	Ī
Removed (gals)	6500	7000	6)					
pH	6.81	6.81	6	1	1 1			
Specific Conductivity (umhos)	A /A	1.63	8	1	1 1		<u> </u>	1
	1.89	1.89	8	+	+ +			{
Dissolve Oxygen (DO)	16.54	16.59	<u> </u>	+			<u> </u>	}
Temperature (deg. C)				+			Į	
ORP (mV)	59	57		<u> </u>			ļ	
Turbidity (NTU)	30	31.7.		<u> </u>		<u> </u>		
<u>r</u>	DEPTH TO W	VATER MJ	EASUREM	ENTS AFT	ER PURGIN	łG		
		Dette						
Date	Time		o Water (ft) r Purge"	Pre-Purge / "St Col	tatic" Water lumn (ft)	Water Co	olumn (ft)	% RECOVERY
		1		1			<u> </u>	1
		+		+			•••	
Notes:			<u> </u>	<u>.</u>		L		I
* Purging should not e	exceed 5 volue	mes			1			
(1) Determine water column in the			e" and "static"	conditions)				
by subtracting the measured w		-						
(2) Divide the "after purge" water	column by the "	static" water c	olumn and mu	ltiply by 100				

to determine the percent of recovery for the well. @ 14:10 Sample # 1222B1

Sample Collected

Pagel 1

SA	SAMPLING RECORD - GROUNDWATER										
PARSONS		· ,	CLIENT	:		WELL # :	TWIZ	1-7-			
PROJECT (STUDY_ID):	SE	AD 12			DATE:	Ę	5127104	1			
SWMU # (AREA):	Boilo			-	LABORAT	ORY :	ches	nfek			
SCREENED INTERVAL (TOC):	(0'	10 5.10		-	MONITORI	NG DATE:					
STATE WELL PERMIT #:		~ _	··· · ·	-	INSTRUM	ENT	DE	TECTOR			
WEATHER:	5	ou 70)	•	PID	/ FID	Mar	40			
FREE PRODUCT (NO/ YES) Thickness	5 5	N4				-	Ŕ	r			
BOREHOLE DIAMETER FACTORS		~									
DIAMETER (INCHES):	1 1.:	. ()	34	5	67	8	9 10				
GALLONS/FOOT:		92 0.163	0.367 0.6	54 1.02	1.47 2.0		3.30 5.8	7			
PURGE MÉTHOD:	Bladd		WELL HEAD V	OC CONCENTRA	ATION (ppm):	<u>Ø</u> _	7 7				
STATIC DEPTH TO WATER (TOC):	7.3		STANDING WA	TER VOLUME I	N WELL (gallons)	• <u>•</u>	<u> </u>				
WELL DEPTH (TOC):	(2.10		THREE WELL V	OLUMES (gallor	ns):	· · · · · ·	4-27				
FEET OF WATER IN WELL:	4.75		ONE:	TD 4	TWO:	THRE	те: 2-32	-			
Measure	e indicator para		RGING DA		more than 3 re	mired*)					
TIME BEGIN PURGING:	mujeator para	meters after ea		172 Volume II	TIME END F	. ,					
Time:	12:31	/2:44	12:57	13:10	13:13	13:26	(3:39	13:52			
Depth to Water (ft)	8.20	8.30	8.35	8.35	8.55	8.35	8.35	8.55			
Depth to bottom					49 a.c.		-				
opening of	10.6	10.6	10.6	Int		INI					
Purge Device (TOC)	10.0		10.0	10.6	10.6	10.6	10.6	10.6			
Flow Rate (ml/min.)	40m/	Acmi	40m1	40ml	A0ml	40mi	40ml	40ml			
Volume of Water											
Removed (gals)	1500 m	3000m1	3500m/	4000	4560	5000	5500	6000			
pH	6-61	648	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	9.1	23.5	26.3			
DI	EPTH TO W	ATER ME	ASUREMI	ENTS AFTI	ER PURGI	NG					
Date	Time		Water (ft) Purge"	Pre-Purge / "Sta Colu	tic" Water mn (ft)		olumn (ft)	% RECOVERY			
Notes:		· · · · · · · · · · · ·	<u>.</u>			I		· · ·			
* Purging should not exc	ceed 5 volun	nes									
(1) Determine water column in the h	porehole(for bo	th "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 Number TW12-7

SAMPLING INFORMATION

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLI AFTER (CHECK ONE)		
X NYG CIP ASI	> 14:0	2-40ml VOA	None	122281		
				• • •		
¹ 21 ₆₁ .						
	•••••	·				
· · · · · · · · · · · · · · · · · · ·						
RIX SPIKE SAMPLE COLLECTE	• •	2.34				
			· · · · · · · · · · · · · · · · · · ·			
IMENTS:	1		000 11			
IMENTS: Sande Colle	uted C	014:10 ∉ 1	22281			
IMENTS: Sande Colle	ubed C	014:10 ≠ 1	2228(
IMENTS: Sande Colle	ubed C		12228(

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						F	Dare la	of 3
SAI	MPLIN	G REC	ORD - (GROUN	IDWAT	ER		
PARSONS			CLIENT:	· · · · · · · · · · · · · · · · · · ·			TW 12	8
PROJECT (STUDY_ID):	SE	AD I	2 RE		DATE:	5/2	27/04	
SWMU # (AREA):	Buildi	na <u>30</u>	184	,	LABORAT		hemtein	ι
SCREENED INTERVAL (TOC):				,	MONITORI	NG DATE:		
STATE WELL PERMIT #:	·			'	INSTRUM	ENT	DF	ETECTOR
WEATHER:	<	Sun	700	1	PID	/ FID	<u> </u>	r
FREE PRODUCT (NO/ YES) Thickness		NA				!		
BOREHOLE DIAMETER FACTORS		~						
DIAMETER (INCHES):	1 1.5		3 4	5	6 7	8	9 10	
	0.041 0.09		0.367 0.65		1.47 2.0	0 2.61	3.30 5.8	7
PURGE METHOD:	- Bladde		-	OC CONCENTRA	· · ·			
STATIC DEPTH TO WATER (TOC):	11.4		-		N WELL (gallons):	P	· · 7~71	-
WELL DEPTH (TOC):			-	OLUMES (gallon	•	7	3.Lgallon	<u>, </u>
FEET OF WATER IN WELL:	52		ONE: RGING DA		TWO:	THRE	E:	
Measure	e indicator parar				more than 3 re			
TIME BEGIN PURGING:	Indicator P		Chi Yolunia (II & TUAMANY	TIME END P	-		
Time:	13.25	13:31	13:45	<i>IA:0</i>	14:05	14:10	14:15	14:20
Depth to Water (ft)	7.35	7.50	7.70	7.85	7.85	7.85	785	7.85
Depth to bottom	[!		['			['		
opening of	1	1	_ !		'	1 '	1	
Purge Device (TOC)	12.40	1240	12.40	12:40	1240	1240	12.40	12.40
Flow Rate (ml/min.)	30 ml/m	30a/m	304/1			30 ME (AL	30 m/	Della
Volume of Water			· ·			['	· ·	· ·
Removed (gals)	'	1	1'	1	!'	l'		
pH		·	l!	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)		ſ'	[]	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)			l	55	54	61	65	56
Turbidity (NTU)				31.5	20.2	20.5	25.8	268
	EPTH TO W	ATER MF	ASUREMF		ER PURGI	NG		
	Ţ	ſ		Ī.			-	1
Date	Time		Water (ft) r Purge"	Pre-Purge / "Stat Colur	atic" Water umn (ft)		olumn (ft)	% RECOVERY
1	'	1						
	·							
Notes:	<u> </u>	L		L		L		<u>.</u> ł
* Purging should not exc	reed 5 volum	nes						
(1) Determine water column in the b			e" 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.

	-	Tw 12.	.8				Page	2053
SAI	MPLIN	G REC	ORD - (GROUN	DWAT	'ER	<u> </u>	
PARSONS			CLIENT				TWIZ	-8
PROJECT (STUDY_ID):	SEA	1) 12	RE		DATE:		27/04	
SWMU # (AREA):	Buildi	nc 1813/	8/4	-	LABORAT		hented	1
SCREENED INTERVAL (TOC):		0	k		MONITORI			
STATE WELL PERMIT #:	<u>,</u>		··		INSTRUM	ENT	DE	TECTOR
WEATHER:		un 70°		-		/ FID	Q	5
FREE PRODUCT (NO/ YES) Thickness		NA		•				
BOREHOLE DIAMETER FACTORS							•••••••	
DIAMETER (INCHES):	1 1.:	$5 / 2 \int$	3 4	5	67	. 8	9 10	
GALLONS/FOOT:		192 0163	0.367 0.6	54 1.02	1.47 2.0	0 2.61	3.30 5.87	1
PURGE METHOD:	Balder	- Pomp	WELL HEAD VO	OC CONCENTRA	TION (ppm):			
STATIC DEPTH TO WATER (TOC):	<u> </u>		STANDING WA	TER VOLUME IN	NWELL (gallons)		54	
WELL DEPTH (TOC):	12.4		THREE WELL V	OLUMES (galion	s):	<u> </u>	4	
FEET OF WATER IN WELL:	5.2		ONE:	34	TWO:	THRE	e: 2 .59	
			RGING DA'			• •••		
Measure TIME BEGIN PURGING:	indicator para	meters after ea	ich volume (at	1/2 volume if	more than 3 re TIME END P			
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	785	7.85
Depth to bottom								
-								
opening of	12.40	12.40	12.40	1240	11 40	11 4-	10.00	
Purge Device (TOC)			10.10	· · · · · ·	12.40	12.40	12.40	12.40
Flow Rate (ml/min.)	30m/m	30m//m	30ml/1m	30mla	30m/m	30 ml/m	30Ala	30mi/m
Volume of Water	-		-	-	-			-
Removed (gals)	/ / *					1 1 0		7.14
рН	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	1.58	2.54	2.49	1-46	242
Dissolve Oxygen (DO)	6.49	6.08	583	5.58	5.37	5.16	5.03	5.00
Temperature (deg. C)	21.7	21.78	21.73	21-88	12.32	22.53	22.67	12.51
ORP (mV)	56	58	59	61	61	62	62	63
Turbidity (NTU)	31	31.8	36.2	382	40.1	40.4	48.5	55.7
		ATER ME	ASUREME	NTS AFTE	R PURGIN	IG		
Date	Time	-	Water (ft) Purge"	Pre-Purge / "Stati Colun		Water Co	olumn (ft)	% RECOVERY
Notes:						L.		L
* Purging should not exc	eed 5 volum	ies						
(1) Determine water column in the b			" and "static" c	onditions)				
by subtracting the measured wate		-						
(2) Divide the "after purge" water co	-		lumn and mult	tiply by 100				
to determine the percent of recov	ery for the wel	1.						

Sample Collected et 15:15 (22282 2 gallons punged

Page 3013

SA	MPLIN	G REC	ORD - (GROUN	DWAT	ER		
PARSONS			CLIENT	;		WELL #:	TW12	-8
PROJECT (STUDY_ID):	SEAC) 12	RI		DATE:		:27	
SWMU # (AREA):	Rydy	4 80/E		-	LABORATO		ientem	
SCREENED INTERVAL (TOC):		¥ 00/(-	MONITORIN			
STATE WELL PERMIT #:				-	INSTRUM		DF'	TECTOR
	5	on 70°	>	-	PID/		Ø	IECIOK
WEATHER:		NA		-			~~~~	
FREE PRODUCT (NO/ YES) Thickness BOREHOLE DIAMETER FACTORS		197		· · · · ·				
DIAMETER (INCHES):	I 1.5		3 4	5	67	8	9 10	
GALLONS/FOOT:	0.041 0.0		0.367 0.6		1.47 2.00		3.30 5.87	
PURGE METHOD:	Rhaden	Pump		OC CONCENTRA				
	2.7		-		N WELL (gallons):		.94	
STATIC DEPTH TO WATER (TOC):	11.4		-		•		54	
WELL DEPTH (TOC):	5.2			OLUMES (gallo)			A 64	
FEET OF WATER IN WELL:	0.7	- DI II	ONE:		TWO:	THRE	E: h-01	
Measure	indicator para				more than 3 red	mired*)		
TIME BEGIN PURGING:	nulcator para	meters after et	ion voiume (at	172 Volume II	TIME END P			
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	a					
Flow Rate (ml/min.)	30ml/m	30ml/m	-fal					
Volume of Water	-	-	0					
Removed (gals)	`		\square					
pН	6.66	6.66	lice					
Specific Conductivity (umhos)	2.39	2.35	in the second					
Dissolve Oxygen (DO)	4.87	4.75	2					
Temperature (deg. C)	12.52	22.60						
ORP (mV)	63	63	515					
Turbidity (NTU)	67.8	68						
				ENTS AFT	ER PURGIN	NG		
Date	Time		Water (ft) Purge"	Pre-Purge / "Sta Colu	atic" Water umn (ft)		olumn (ft)	% RECOVERY
······································				1				
Notes:		1						
* Purging should not exe	ceed 5 volum	nes						
(1) Determine water column in the			e" and "static"	conditions)				
by subtracting the measured wa			- and built					
(2) Divide the "after purge" water c to determine the percent of reco	olumn by the "	static" water c	olumn and mu	ltiply by 100				

Sample Collected at 15:15 sample # 122282

gwsmpr

	•			
TI112-8		SAMPLING INFORM	IATION	
Well Number: TW 12-8 SAMPLING DEVICE: Bladden	Pump			
SAMI LING DEVICE.		· · · · ·		
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOCNYS CLPASP	15:15	2-40 ml vo4	No Color	122282
· · · · · · · · · · · · · · · · · · ·				
Duplicate Sample Name: QA\QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED INVESTIGATION DERIVED WASTE		NO		
	sfered to Drum:	2000		
	Drum Number:	waste] · ·
COMMENTS:				
Sample Celler	ked @	15:15 122	LBL	

J

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1071

SA	MPLIN	G REC	ORD	- GR	ROUN	IDW	ATE	R			
PARSONS			CLIE	NT:			W	VELL #	: TW	- 19	1-9
PROJECT (STUDY_ID):	SEA	D 12	RI			DATE:			127/0		
SWMU # (AREA):	Ruidin	4 8/3/	1814			LABO	RATOR		Ch	emle	6 4
SCREENED INTERVAL (TOC):	<u> </u>	,				MONIT	ORING	DATE:	S	5127	•
STATE WELL PERMIT #:						INSTR	RUMEN	т			TECTOR
WEATHER:	50	n. 70'	0				PID / FI	D		Ø	
FREE PRODUCT (NO/ YES) Thickness	s – – –	NA									
BOREHOLE DIAMETER FACTORS											
DIAMETER (INCHES):	1 1.		3	4	5	6	7	8	9	10	
GALLONS/FOOT:		0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87	
PURGE METHOD:	Bailer	<u></u>	WELL HE	AD VOC C	ONCENTRA	ATION (ppm	i):				
STATIC DEPTH TO WATER (TOC):	12.		STANDIN	G WATER	VOLUME I	N WELL (ga	illons):		-		
WELL DEPTH (TOC):			_THREE W	ELL VOLU	MES (gallo	ns):					
FEET OF WATER IN WELL:	· 5		ONE:			TWO	:	THR	EE:		
Macaure	indicator ner		RGING				· · · · ·				
TIME BEGIN PURGING:	e indicator para	meters after e	ach volum	ae (at 1/2	volume if	TIME EN	-				
Time:	15:36				<u>.</u>			0110.	Τ	T	
Depth to Water (ft)					<u></u>						
Depth to bottom											
opening of	$ ()\rangle$										
Purge Device (TOC)	<u>द</u>			$\mathbf{\lambda}$							
Flow Rate (ml/min.)	M				$\overline{\ }$						
Volume of Water	8										
Removed (gals)											
рН	6)							ii ii			
Specific Conductivity (umhos)	E.										
Dissolve Oxygen (DO)	8-								N		
Temperature (deg. C)											
ORP (mV)	22283										\
Turbidity (NTU)	83										
DI	EPTH TO W	ATER MI	EASURI	EMENT	IS AFT	ER PUR	GING				
Dut	Time		Water (ft) Pre-	Purge / "Sta		Water				%
Date	Time	After	r Purge"		Colu	mn (ft)		Water C	olumn (f	t)	RECOVERY
			·i-								
			<u></u>								
Notes: * Purging should not exc (1) Determine water column in the b by subtracting the measured wat (2) Divide the "after purge" water co	oorehole(for bo ter level from the plumn by the "s	th "after purge ne well point. static" water c							e		
to determine the percent of reco	very for the we	11.									

It See back page for sampling Details

Well Number: TW 12-9		SAMPLING INFOR	MATION	
SAMPLING DEVICE: Bailer			,	
i				TURBIDITY SAMPLE TAKEN
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	AFTER (CHECK ONE)
VOC MYS CLPASP	15:35	2-40 ml VOA	No Color	122283
·				
	1			
		·		
QA\QC: QA/QC DUPLICATE SAMPLE COLLECT Duplicate Sample Name: QA\QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED:		or NO NO		
INVESTIGATION DERIVED WASTE (IDW):			
	Date:			
Volume Transf D	ered to Drum: rum Number:			
• • •			Lanan I	
COMMENTS:		<u>, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>		
There is not	ounsh	water i'm	this well to	low flow
Saul A	1	· · · ·	1 1/1 1	1 Interior
Sample. A gro	is sa	mple will	be collected with	m a dedicated
bailer with NO	purgi	ny of the	well or sandpace	k. Greeb
			- 15:35 / 5/2	

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gwsmpr

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5/26 ms, msDi RBITB, SA, DU Tw- 12-1 Did not inshall 12-2 DRY 12-3 12.4 5-27 5.27 125 12-6 5-22 12.2 5.27 5.27 12.8 12.9 Grob

SA	MPLIN	G REC	ORD - (GROUN	DWAT	TER		
PARSONS			CLIENT	:	<u></u>	WELL #	: TW12-	·3
PROJECT (STUDY_ID):	554	DL	RF-		DATE:	JUNC	11 2004)
SWMU # (AREA):	Builde	n Bl	3/8/4	-	LABORAT		i	
SCREENED INTERVAL (TOC):		0		-	MONITORI	NG DATE:	1	
STATE WELL PERMIT #:				-	INSTRUM	IENT	DF	ETECTOR
WEATHER:	Su	n 70°	•	-		/ FID		
FREE PRODUCT (NO/ YES) Thickness	;			-				
BOREHOLE DIAMETER FACTORS								
DIAMETER (INCHES):	1 1.		3 4	5	6 7	8	9 10	
GALLONS/FOOT:		0.163	0.367 0.6	54 1.02	1.47 2.0	0 2.61	3.30 5.8	7
PURGE METHOD:	Bladda		WELL HEAD V	OC CONCENTR	ATION (ppm):			
STATIC DEPTH TO WATER (TOC):	<u> </u>	525	STANDING WA	TER VOLUME I	N WELL (gallons)):	·0S	
WELL DEPTH (TOC):	12.75		THREE WELL	VOLUMES (gallo	ns):			
FEET OF WATER IN WELL:	6.50		ONE:		TWO:	THR	E: 3.15	
			RGING DA					
Measure TIME BEGIN PURGING:	indicator para	meters after ea	ich volume (at	1/2 volume if	more than 3 re TIME END F			
Not een time 7 422 sine 9 Time:	20145	21105	21:20	2(135	24:45	21:55	22:00	22:05
Depth to Water (ft)		8.175	8.250		813	8.3	5.325	8.325
Depth to bottom								
opening of	10A	-		-	-	-	-	
Purge Device (TOC)								
Flow Rate (ml/min.)	25 ml/m							
Volume of Water	0.15	0.20	0.25	0.30	0.33	6.4		
Removed (gals)	7.21	7.20	7 7 4	7.0	7.16	715	7.15	7 /11
рН			7.20	7.19		7.15		7.14
Specific Conductivity (umhos)	1.45	1.42	1.37	1.37	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	z 3.46	24.27
ORP (mV)	92	72	72	59	61	90	97	105
Turbidity (NTU)	48.2	50.Z	34.6	31.2	27.0	17.7	18.5	
DF	PTH TO W	ATER ME	ASUREMI	ENTS AFTI	ER PURGI	NG	<u>. </u>	<u>*</u>
								Γ
		Depth to	Water (ft)	Pre-Purge / "Sta	tic" Water			%
Date	Time	"After	Purge"	Colu	mn (ft)	Water C	olumn (ft)	RECOVERY
Notes:	I	·				1		<u>. </u>
* Purging should not exc	eed 5 volun	nes						
(1) Determine water column in the b			" and "static" (conditions)				
by subtracting the measured wat		-	-					
(2) Divide the "after purge" water co			lumn and mul	tiply by 100				
to determine the percent of record	very for the we	11.						

Sample # 122277 collected @ 11:30

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SA	MPLIN	G REC	ORD - (GROUN	JDWAT	FP		
PARSONS			CLIENT			1	77.112	
PROJECT (STUDY_ID):	SEA	D 12	the second s	•			TW12-	
SWMU # (AREA):	R.VA	Q/2/		-	DATE:	Jule	1 200	,4
SCREENED INTERVAL (TOC):		9 011		-	LABORAT		1	- <u> </u>
STATE WELL PERMIT #:				-	MONITORI			
WEATHER:	5.	, 700		-	INSTRUM		DI	ETECTOR
FREE PRODUCT (NO/ YES) Thickness		L <u></u>		-	PID	/ FID		<u> </u>
BOREHOLE DIAMETER FACTORS					<u>I</u>		1	
DIAMETER (INCHES):	I 1.	s (?)	3 4	5	67	8	9 10	
GALLONS/FOOT:	0.041 0.0	092 0.162	0.367 0.6	54 1.02	1.47 2.0		3.30 5.8	7
PURGE METHOD:			WELL HEAD V	OC CONCENTR/	ATION (ppm):			
STATIC DEPTH TO WATER (TOC):	5).25	STANDING WA	TER VOLUME I	N WELL (gailons)	<u>_</u>	1.05	
WELL DEPTH (TOC):	12	.75	THREE WELL	OLUMES (gallor	15);		·	
FEET OF WATER IN WELL:	(50	ONE:		TWO:	THRE	E: 3.1	5
Massura	indiantes		RGING DA					
TIME BEGIN PURGING:	mulcator para	imeters after ea	ach volume (at	1/2 volume if		quired*) URGING: 23	. 34	
Time:	22:12	27:18	22:23		TIME END P		24	
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	<u> </u>		0.5	Total	05.6			
Removed (gals)			0.5	Pulge	0.5 gals			
рН	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						
DE	РТН ТО W	ATER ME	ASUREME	ENTS AFTE	R PURGIN	lG		
Date	Time	•	Water (ft)	Pre-Purge / "Stat	ic" Water			%
Bar	Time	Alter	Purge"	Colur	nn (ft)	Water Co	lumn (ft)	RECOVERY
			<u>.</u>			·		
Notes:								
 Purging should not exce (1) Determine water column in the be 	rehole(for bot	les h "after purcu"	' and "seatis" -	414" ·				
by subtracting the measured wate	r level from th	e well point.						
(2) Divide the "after purge" water col	umn by the "si	tatic" water co	lumn and mult	tiply by 100				
to determine the percent of recover	ery for the well	l						

Well Number: TW 12-3		SAMPLING INFORM	MATION	· · · ·
SAMPLING DEVICE: LOW FLOW				
SAMPLE PARAMETER	TIME	CONTAINER		TURBIDITY SAMPLE TAKEN
VOC NYS CLPASP	11:30		COLOR	AFTER (CHECK ONE)
			· · · · · · · · · · · · · · · · · · ·	
			· · · · · · · · · · · · · · · · · · ·	
QA/QC DUPLICATE SAMPLE COLLECT Duplicate Sample Name: QA/QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (1)	YES or	or NO NO	<u></u>	
Volume Transfe D	Date:	June 4 -7-Sgal		
COMMENTS: The Wake leve Purse perovel. The lowest volume	The ?	Sample rale	of 25ml/r	nimule was
of 2.75 inches	occura	throughout	the puye pero	el.

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PARSONS			CLIENT		IDWAT		TW11	. 12
PROJECT (STUDY_ID):	SGAR.	> 12	RI.		DATE:	Trae	10, 200	4
SWMU # (AREA):	Ridda	813/8		-	LABORAT		hentech	
SCREENED INTERVAL (TOC):) 2010	<u>•7</u>	-	MONITORI			
STATE WELL PERMIT #:	·			-	INSTRUM		DF	TECTOR
WEATHER:	Rut	1 60°		-		/ FID	Ĉ	
FREE PRODUCT (NO/ YES) Thicknes		·		-				
BOREHOLE DIAMETER FACTORS					<u> //</u>		<u> </u>	
DIAMETER (INCHES):	1 1.	$5 \left(\begin{array}{c} 2 \\ 2 \end{array} \right)$	3 4	5	6 7	8	9 10	
GALLONS/FOOT:	0.041 0.0	0.163	0.367 0.6	54 1.02	1.47 2.0	0 2.61	3.30 5.8	7
PURGE METHOD:	- 61	•7	-	OC CONCENTR/	•••			
TATIC DEPTH TO WATER (TOC):	5.6		•		N WELL (gallons)	: 5 .	18	
VELL DEPTH (TOC):	19.5	<u>0</u> 2	•	OLUMES (gallo		<u></u>	E: 9.5	
EET OF WATER IN WELL:		DUI	ONE:	ΤΔ.	TWO:	THRE	E: 7. J	
Measur	e indicator para	meters after ea	ch volume (at	1/2 volume if	more than 3 re	quired*)		
TIME BEGIN PURGING: 15:31		<u></u>	15:16		TIME END P	URGING:		
Time:	14:40	14:497	110,554	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	0.0			,				
Purge Device (TOC)	20ft							
	40ml/m	10 m/m	TO ~1/m	40 m/m	35~1/2	SOMY	sop 1/m	ap n/m
Flow Rate (ml/min.)		•• Im	3 ///			<u> </u>	/ //	55 11
Volume of Water	.75	0.85	1.0	1.25	1.40	1.75	2.0	2.45
Removed (gals)	•							
pH	6.47	6.69	6.67	6.63		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)	4.57	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
	EPTH TO W	ATER ME			ER PURGIN	NG	<u> </u>	<u></u>
······································								<u> </u>
D .			Water (ft)	Pre-Purge / "Sta				%
Date	Time	"Atter	Purge"	Colu	mn (ft)	Water Co	olumn (ft)	RECOVERY
/								1

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

SA	MPLIN	<u>G REC</u>	<u> ORD - (</u>	<u>GROUN</u>	IDWA T	ER		
PARSONS			CLIENT	•		WELL #	. TW12	-22
PROJECT (STUDY_ID):	_ Sec	d 121	RF		DATE:	Jun	R 10 9	004
SWMU # (AREA):	Buile	Ly 813	1814	_	LABORAT	ORY :		
SCREENED INTERVAL (TOC):				-	MONITORI	NG DATE:		
STATE WELL PERMIT #:				_	INSTRUM	ENT	DI	ETECT
WEATHER:	Kat	4 60°	······	_	PID	/ FID		· · · · · · · · · · · · · · · · · · ·
FREE PRODUCT (NO/ YES) Thicknes	is		<u> </u>	<u></u>				
BOREHOLE DIAMETER FACTORS DIAMETER (INCHES):	1 1.	$\langle \rangle$			<i>,</i>	0	<u> </u>	
GALLONS/FOOT:		$\frac{3}{092}$ $\begin{pmatrix} 2\\ 0.162 \end{pmatrix}$	3 4 0.367 0.6	-	6 7 1.47 2.0	8)0 2.61	9 10 3.30 5.8	
PURGE METHOD:				OC CONCENTRA				
STATIC DEPTH TO WATER (TOC):	5.	67	-	TER VOLUME I):	3.18	
WELL DEPTH (TOC):	25	.20	-	OLUMES (gallor	-			
FEET OF WATER IN WELL:	19.	53	ONE:		TWO:	THRI	EE: 9.6	5
			RGING DA				`	
	e indicator para	meters after ea	ach volume (at	1/2 volume if				
TIME BEGIN PURGING:	17 11	11191	16:38	16:46	TIME END F	URGING:	1	1
Time:	16:16	<u> </u>	+					
Depth to Water (ft)	7.90	7.90	7.90	7.80				<u> </u>
Depth to bottom					Total	2 1		
opening of]		Purse	3gal		
Purge Device (TOC)								
Flow Rate (ml/min.)	45 m/m	30 m/m	20 ~1/m	35 m/m			<u> </u>	1
Volume of Water		0-	2.60					1
	2,25	2.)	12.60	12,80				
Removed (gals)	165	6.63	0	111				
рН				6.65				
Specific Conductivity (umhos)	0.98	0.97		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				1
Turbidity (NTU)	13.4	14.5	13.4	16.0				1
	EPTH TO W					<u>.</u> NG	L	1
							<u></u>	
_			Water (ft)	Pre-Purge / "Stat				97
Date Jule 10 2004	Time		Purge"		nn (ft)		olumn (ft)	RECO
June 10 2004	16:46	7-8	U	5.67		19	.53	<u> </u>
Notes: * Purging should not ex	and 5 volum	195						
 * Purging should not exercise (1) Determine water column in the 			" and "static" a	onditions)				

1		SAMPLING INFORM	MATION		Pose 3of 3
AMPLING DEVICE: Ow flow					
AMPLING DEVICE: OW HOW		1			r
					TURBIDITY SAMPLE TAKE
SAMPLE PARAMETER	TIME	CONTAINER	COLOR		AFTER (CHECK ONE)
VOC NYS CLPASP	16:50	2-40ml 1004 141			13.4
<u></u>	 		······································		·
<u></u>					
·····.	 				
<u></u>	<u> </u>				
· · · ·			· · · · · · · · · · · · · · · · · · ·		· · · ·
	_				
QA/QC DUPLICATE SAMPLE COLLECT Duplicate Sample Name: QA/QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED: INVESTIGATION DERIVED WASTE (YES or	or NO NO			
UNVESTIGATION DERIVED WASTE ((ID W):				
		June 10]
Volume Transf	fered to Drum: Drum Number				4
			• •		
I					
I			• · ·		•
I COMMENTS:			Trad 1/1		3.5
I			Jone 10	2004	3-Sgalos py
I COMMENTS:			Jure 10	2004	3-Sgalos py
I COMMENTS:			Jure 10	2004	3-Sgalous py
I COMMENTS:			Jone 10	2004	3-Sgalos py
I COMMENTS:			Jure 10	2004	3-Sgalous py
I COMMENTS:			Jone 10	2004	3-Sgalos py
I COMMENTS:			Jure 10	2004	3-Sgalous py

•

							Po	ye 20
SA	MPLIN	G REC	ORD - (GROUN	IDWAT	ER		
PARSONS			CLIENT	:		WELL # :	Tw 12.	<u>73</u>
PROJECT (STUDY_ID):	Buildi.	N 813/8	314	_	DATE:	June	10 200	4
SWMU # (AREA):	Sead	12 RF		_	LABORAT	ORY: (hemfect	1
SCREENED INTERVAL (TOC):				_	MONITORI	NG DATE:		
STATE WELL PERMIT #:	_				INSTRUM	ENT	DE	TECTOR
WEATHER:	Kain	600			PID	/ FID		
REE PRODUCT (NO/ YES) Thickness	5			-				
BOREHOLE DIAMETER FACTORS		~						
DIAMETER (INCHES):		$.5 \left(\begin{array}{c} 2 \end{array} \right)$	3 4		6 7	8	9 10	
ALLONS/FOOT:		092 0.165		554 1.02	1.47 2.0	0 2.61	3.30 5.8	7
URGE METHOD:	low Flo		WELL HEAD V	OC CONCENTRA	ATION (ppm):		Ø	
TATIC DEPTH TO WATER (TOC):	8:9		-		N WELL (gallons)	<u> </u>	.64	
VELL DEPTH (TOC):	15.7		-	VOLUMES (gallor			-701	
EET OF WATER IN WELL:	16.2		ONE: RGING DA	<u></u>	TWO:	THRE	E: 794	
Меясиг	e indicator par				more than 3 re	auired*)		
TME BEGIN PURGING:	•		(u		TIME END P	• •		
Time:	15:40	15:45	15:50	15.55	16:00	/6:05	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	2017	20Ft	10.6	20ft	soft	000	17.0	A. 11
Purge Device (TOC)	ľ		zoft	LUTI	~FI	20ft	20Ft	20th
Flow Rate (ml/min.)	Anla	40m1/m	40m//m	40ml/m	40m1/m	40m//m	40 mllm	40ml/4
Volume of Water						1.5.		
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
	2.56	2.56	2.49	2.42	2.41	2.10	2.33	2.30
Dissolve Oxygen (DO) 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	6.4	5.90	5.64	5.53	5.45	5.5/
				<u> </u>	ER PURGI		1	•
Date	Time	Depth to	Water (ft) r Purge"	Pre-Purge / "Sta			olumn (ft)	% RECOVER
 Purging should not executive (1) Determine water column in the by subtracting the measured wa (2) Divide the "after purge" water c to determine the percent of recomplete the second second	borehole(for bo ter level from t olumn by the '	oth "after purge the well point. 'static" water c	e" and "static"	conditions)	e pouse	1 3.24	Szallons	L
Sample = 12286122286122286122297122297	· · · ·	16:15						l of

SAI	MPLIN	G REC	ORD - (GROUN	NDWAT	TER		
PARSONS			CLIENT	·:			. TW-:	
PROJECT (STUDY_ID):	Build	ing \$13/	84	<u></u>	DATE:		e 10 20	
SWMU # (AREA):	Sel.	40 12	RC	-	LABORAT		Chembers	
SCREENED INTERVAL (TOC):				-	MONITOR	ING DATE:		
STATE WELL PERMIT #:				-	INSTRUM	1ENT	DF	TECTOR
WEATHER:	Rain	60*		-	PID	/ FID	1	
FREE PRODUCT (NO/ YES) Thickness	;	·		-			[
BOREHOLE DIAMETER FACTORS							<u> </u>	
DIAMETER (INCHES):	1 1.5	1 1	3 4	4 5	6 7	8	9 10	
GALLONS/FOOT:		092 0:163		654 1.02		.00 2.61	3.30 5.8	1
PURGE METHOD:	Bladde		_WELL HEAD V	OC CONCENTR	ATION (ppm):	<u> </u>	<u>Ø</u>	
STATIC DEPTH TO WATER (TOC):	8.95		STANDING W/	ATER VOLUME I	IN WELL (gallons)): <u> </u>	.64	<u> </u>
WELL DEPTH (TOC):	15.20			VOLUMES (gallor	ns):		-	
FEET OF WATER IN WELL:	16.25		ONE:	<u> </u>	TWO:	THRE	3E: 7.94	
Measura	-indicator nors	PUJ	RGING DA	.TA:	f	· ·		
TIME BEGIN PURGING: (1:58	indicator para	Incicis andi ca	ach volume (at	. 1/2 volume n	TIME END I	PURGING:		
Time:	14:30	14:40	14:55	15:10	45:15	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	20ft	20ft	10.01	anti				
Purge Device (TOC)		0~ Fi	20ft	20ft	20H	2061		
Flow Rate (ml/min.)	40 ml/m	40ml/m	Aimlin	Aom/m	40min	40m/m	40ml/m	40m/in
Volume of Water				ł		Ī		[
Removed (gals)	Igollon							
pH	689	6.89	6.89	6.90	6.91	6.91	692	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	1.68	1.63
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
DE	ертн то w	ATER MF	CASUREMI	ENTS AFT	ER PURGI	NG		
				Γ				
Date	Time	-	Water (ft)	Pre-Purge / "Sta			· · · · · · · · · · · · · · · · · · ·	%
June 10 2004	16:15	Q. Z	r Purge"		umn (ft)		olumn (ft)	RECOVERY
Oure l' nut	10.0	7.1	<u> </u>		15	(6-)	-5	
Notes:	·							
 * Purging should not exc (1) Determine water column in the h 			" Ju-tation	****				
 Determine water column in the b by subtracting the measured water 			and static	conditions)				
(2) Divide the "after purge" water co		-	olumn and mu	ltiply by 100				
to determine the percent of recov								

Well Number: TW 12-23		SAMPLING INFOR	RMATION	
SAMPLING DEVICE: OW FLOW				
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYSCLPASD	1625	2-40ml VOA Hel		5.51
-				
· · · · · · · · · · · · · · · · · · ·				τ ^ο τ
			· · ·	
		алан тарат. Алар Фаларт Т		
· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		
QA\QC: QA/QC DUPLICATE SAMPLE COLLEC Duplicate Sample Name: QA\QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED	17: 120 TES or	or NO 2247 5101 NO		
	. •		•]
[2-2 / > 2	-296N -296M	5	Sangle Mahrix Spiko J MS Diplicate Diplicate	UK 10
120 170	002		Rinse Blank Ju Trop Blank	re 14

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SA	MPLIN	G REC	ORD -	GROUN	NDWAT	ER		
PARSONS		· · ·	CLIENT			<u> </u>	TW2.	14
PROJECT (STUDY_ID):	SEAL) 12 R	2°C	<u> </u>	DATE:	June		
SWMU # (AREA):	Bvil	dry 813	/814	-	LABORAT		en fach	
SCREENED INTERVAL (TOC):				_	MONITORI			
STATE WELL PERMIT #:		· .			INSTRUM		DE	TECTOR
WEATHER:	Su	n 74°		_	PID	/ FID		
FREE PRODUCT (NO/ YES) Thickness								
BOREHOLE DIAMETER FACTORS DIAMETER (INCHES):		<u> </u>					- <u> </u>	
GALLONS/FOOT:	l 1.: 0.041 0.0	$\frac{1}{163}$	3 4 0.367 0.0	5 54 1.02	6 7 1.47 2.0	8	9 10	_
PURGE METHOD:	Bladde			OC CONCENTRA		0 2.61	3.30 5.8	
STATIC DEPTH TO WATER (TOC):	8.7				N WELL (galions)		<u> </u>	
WELL DEPTH (TOC):	130			VOLUMES (gaika				······
FEET OF WATER IN WELL:	4.7	6	ONE:		TWO:	THRE	E: 208	2
			RGING DA					
Measure TIME BEGIN PURGING:	indicator para	meters after ea	ich volume (at	1/2 volume if				
Time:	15:28	15:33	15:38	15:43	TIME END P	URGING:		
Depth to Water (ft)	9.15	9.15	a. 2	9.2	9.2		15:58	
Depth to bottom	1115	1.15		['2-	1.2	9,295	1.2	9.2
opening of								
Purge Device (TOC)								
Flow Rate (ml/min.)	25 ~1/2	25 1/m	25 -4	25-1/	25 m/	25 ~ Ym	25 48	25~1
Volume of Water	· · · · ·	- ///	Im Im	cs In	m /m	- (m	- In	c- Im
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	
Dissolve Oxygen (DO)	4.76	4.16	3.99	3.69	3.53	3.35	3,30	1.23
Temperature (deg. C)	18.71	18.43	18.54	18,19		18,10	18.10	3.30
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
DE	РТН ТО W						2006	> 2.+
					<u>SKI UKGI</u>			
Date	Time		Water (ft) Purge"	Pre-Purge / "Stat Colu	nc" Water		olumn (ft)	% RECOVERY
Notes: * Purging should not exce (1) Determine water column in the be by subtracting the measured wate (2) Divide the "after purge" water col to determine the percent of recov	orehole(for bot ir level from th lumn by the "s	h "after purge" le well point. tatic" water co						· · ·

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SA	MPLIN	G REC	ORD	- G	ROUN	NDWA'	ΓER				
PARSONS			CLIE						Tω	112 -	24
PROJECT (STUDY_ID):	SEA	HD 121	E			DATE:				<u> </u>	
SWMU # (AREA):	Build	my 813/	94			LABORA	TORY :	···			
SCREENED INTERVAL (TOC):						MONITOR	UNG DA	TE:			
STATE WELL PERMIT #:						INSTRU	MENT			DET	TECTOR
WEATHER:	<u> </u>	m 740				PII) / FID				
FREE PRODUCT (NO/ YES) Thicknes BOREHOLE DIAMETER FACTORS	<u>s</u>					<u> </u>					
DIAMETER (INCHES):	· . · · .	5 2				_				,	
GALLONS/FOOT:		092 $ $	3 0.367	4 0.654	5 1.02	6 7 1.47 2	-	3 2.61	9	10	
PURGE METHOD:	low flow	/	WELL HE	AD VOC		ATION (ppm):		2.01	3.30	5.87	
STATIC DEPTH TO WATER (TOC):	8.75	5				N WELL (gallon	s).	•/	69		
WELL DEPTH (TOC):	13.01				UMES (gailo						
FEET OF WATER IN WELL:	4.26		ONE:		_	TWO:		THREE	. X	-08	
Maaaaa	. .		RGING			<u></u>					
TIME BEGIN PURGING:	e indicator para	imeters after ea	ach volum	e (at 1/2	volume if						6:20 Sarples
Time:	16:08	16:13	<u> </u>			TIME END	PURGIN	<u>IG:</u> 14	0,10	T	
Depth to Water (ft)	9.2	9.2		-+-	<u> </u>						······
Depth to bottom				-+-			+				
opening of											
Purge Device (TOC)											
Flow Rate (ml/min.)	25 ~1/2	25 ~1/m				<u> </u>					
Volume of Water		1		$-\frac{1}{4}$	L						
Removed (gals)		0.3		`	furse	0.42	gal	3			
рН	7.08	7.08					+			-+	······
Specific Conductivity (umhos)	1.23	1.23			······				······		
Dissolve Oxygen (DO)	3.30	3,26								-+	
Temperature (deg. C)	18.25	·····			••••• <u>•</u> •	<u> </u>	+			-+	
ORP (mV)	107	108			······		-			-+	
Turbidity (NTU)	34.4	33.5									
D	EPTH TO W		ASURE	MEN	TS AFTI	ER PURGI	NG				
							T				
Date	Time		Water (ft) Purge"	Рте	-Purge / "Star	ic" Wate nn (ft)					%
							+	ater Col	umn (ft	<u>}</u>	RECOVERY
	<u> </u>				<u> </u>		+	·			
Notes:		i		I							
 Purging should not exc 											
(1) Determine water column in the t	orehole(for bo	th "after purge"	" and "stat	ie" con	ditions)						
by subtracting the measured wat (2) Divide the "after purge" water co	er level from the "s	te well point.	humn and	multin	v hv 100						
to determine the percent of reco	very for the wel	II	anni and	manupi	y 0y 100			· .			
Samplet 12228	37 6	16:19						diago e	····		
	•										

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Tu) 17-24	1	SAMPLING INFORMATI	ON	
Well Number: TW 12-24 SAMPLING DEVICE: LOW FLC	<u> </u>			
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYSCLP	ASP 16:19	2-40 m 1 A/024 14cl		33.5nhu
			<u></u>	
	<u> </u>			
	100 A			
· · · · · · · · · · · · · · · · · · ·				
QA\QC:				
QA/QC DUPLICATE SAMPLE CO Duplicate Sample Name: QA\QC RINSATE SAMPLE NAM MATRIX SPIKE SAMPLE COLLE	E :	NO		
INVESTIGATION DERIVED W	ASTE (IDW):			
	Date:			
Volum	e Transfered to Drum: Drum Number:	7594(
			···· I	
COMMENTS:	·	• <u>·</u> ···································	·	
Sanyslett 12	.2287 Col	Keded @ 16:19		

SA	MPLIN	G REC	ORD -	GROUP	JDWA7	rfd		1073
PARSONS		<u>U MLC</u>						~ F
PROJECT (STUDY_ID):		10 12	CLIENT RI	:	T		: TW12.	·25
SWMU # (AREA):	Ruit	dag 313/6		-	DATE:		1/ 2004	
SCREENED INTERVAL (TOC):		100 0.71 C	<u><u><u></u><u><u></u><u><u></u><u></u><u></u><u></u><u></u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u></u></u></u>	-	LABORAT		herobech	
STATE WELL PERMIT #:	- <u></u>			-		ING DATE:	+	
WEATHER:	Sun	700		-	INSTRUM			ETECTOR
FREE PRODUCT (NO/ YES) Thickness	ss	NA -	<u> </u>	-	<u> </u>	D / FID		·
BOREHOLE DIAMETER FACTORS		<u> </u>	<u> </u>		<u>1</u>		<u></u>	
DIAMETER (INCHES):		1.5 2) 3 4	\$ 5	67	8	9 10	
GALLONS/FOOT:	0.041 0.0	0.092 0.162		654 1.02		.00 2.61	3.30 5.8	
PURGE METHOD:	<u> </u>	10		OC CONCENTRA				
STATIC DEPTH TO WATER (TOC): WELL DEPTH (TOC):	<u> </u>			ATER VOLUME IN		»: <u>/•</u>	0	
WELL DEPTH (TOC): FEET OF WATER IN WELL;	14.8			VOLUMES (gallon	as):		<u> </u>	
	6.15		ONE: RGING DA		TWO:	THRI	REE: 30	
Measur	re indicator para				more than 3 r			
TIME BEGIN PURGING: 11:43	· · · · ·			1/2 Volume	TIME END F			
Time:	12:30	12:35	12:40	12:45	12:50	12:55	13:00	13:05
Depth to Water (ft)	9.4 Ft	9.451	9.451	9-44	9.45	9.45	9.45	9.50
Depth to bottom	1	<u> </u>	<u> </u>	<u>├ · · · ·</u>			7.10	
opening of								
Purge Device (TOC)	12.5	12.5	12.5					
Flow Rate (ml/min.)	30m//m	30m/(m	30ml/m	30ml/m	30m/m	20-1/2	3-1/1	<u> </u>
Volume of Water			Contract [Mail	JU MU/M	JUNY M	30 m/m	30m/m	30m/im
Removed (gals)	.8gul	3242ml	3393	3543	3693	3843	3993	4(43
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		
Temperature (deg. C)	15.21	15.23					5.63	5.68
			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	360	36.4	35.6	31.6	
DE	EPTH TO W	/ATER ME	ASUREME	INTS AFTF	ER PURGI	NG		
	'	Durath to	Water (ft)	1				[
Date	Time		Water (ft) Purge"	Pre-Purge / "Stati Colum	tic" Water mn (ft)		Column (ft)	% RECOVERY
June 11 2004	13:45	9.57	- <u>-</u>	8.65			Junn (117	RELOTER
					,	<u> </u>	<u> </u>	+
Notes:	L	<u> </u>	J	L		<u> </u>		<u> </u>
 Purging should not exc 	eed 5 volur:	nes						
(1) Determine water column in the b	borehole(for both	th "after purge"	" and "static" c	conditions)				
by subtracting the measured wate (2) Divide the "after purge" water co	ter level from the	he well point.						
to determine the percent of recov	Jumn by the si	latic water con	lumn and mult	liply by 100				

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PARSONS	MPLIN					_	<u></u>	
ROJECT (STUDY_ID):		10 17	CLIENT RI	:	1		TW12.	<u>25</u>
WMU # (AREA):		$\frac{10}{11}$	KAL .	-	DATE:	Jine	11 2004	
CREENED INTERVAL (TOC):	Đ øi	any DI?	ריטע	-	LABORAT	ORY:	herten	
TATE WELL PERMIT #:			· · · · · · · · · · · · · · · · · · ·	-	MONITOR	NG DATE:	JUNEI	2004
VEATHER:	- 7.0	1720		-	INSTRUM	IENT	DE	TECTOR
REE PRODUCT (NO/ YES) Thicknes	<u></u>	NA NA		-	PID	/ FID	L	<u> </u>
OREHOLE DIAMETER FACTORS	<u>s</u>	11/1						
IAMETER (INCHES):	1 1	s \int_{2}^{∞}	3 4	5	<i>(</i> -			
ALLONS/FOOT:		092 0.163	0.367 0.6	2	6 7 1.47 2.0	8 00 2.61	9 10 3.30 5.8	7
URGE METHOD:			WELL HEAD V	OC CONCENTR/			5.50 5.6	·
TATIC DEPTH TO WATER (TOC):				TER VOLUME I		·	1.0	
YELL DEPTH (TOC):	14.3	5		OLUMES (gailor				
EET OF WATER IN WELL:	6.	15	ONE:	-	TWO:	THRE	E: 31	2
			RGING DA					
Measur IME BEGIN PURGING: 11:43	e indicator para	ameters after ea	ach volume (at	1/2 volume if			•	
	17 1/4	12.15	12.2.		TIME END P	1	<u> </u>	
Time:	13:10	13:15	13:20			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	Ē
Flow Rate (ml/min.)	30m//m		30ml/m					Sample
		30 m//m	20mi/M	30al/m	30m//m	30m/m	30m/m	2
Volume of Water	4293	101 -	1000	1712	104-	GAM		
Removed (gals)	+	444 3	4593m1	4743ml	4893	5043	5193	90
рН	7.10	7.15	7.17	7.17	7.17	717	7.16	حزي
Specific Conductivity (umhos)	1.18	1.16	1.17	1.15	1.16	1.17	1.16	200
Dissolve Oxygen (DO)	5.67	5.67	5.66	5.67	5.66			8 00
Temperature (deg. C)	16.35		16.61			5.66	5.66	200 80
		16.14		17-11	16.37	16.53	16.47	6
ORP (mV)	65	65	66	66	67	67	67	
Turbidity (NTU)	20.1	4.6	10:7	8.98	8.54	8.34	8.10	
DI	EPTH TO W	ATER ME	ASUREME	NTS AFTE	ER PURGIN	١G		
		_						
Date	Time		Water (ft) Purge"	Pre-Purge / "Stat				%
·		, ,		Cour	nn (ft)	Water Co	olumn (ft)	RECOVERY
······································					·			
Dies:	<u> </u>	L						
 Purging should not executed 	and 5							
(1) Determine water column in the l	orehole(for bo	les h "aftar numer"	" and "meets"	om die f				
by subtracting the measured wat	ter level from th	ie well noint	and static c	onattions)				
(2) Divide the "after purge" water co	olumn by the "s	tatic" water co	lumn and mult	iply by 100				
to determine the percent of reco	very for the wel	I						
Sample ID # Total Volume Pur	17700		2120					· · ·

·		······································		Page 3 of 3
Well Number: TW 12-25		SAMPLING INFORM	MATION	
SAMPLING DEVICE: Ou Flow	- <u> </u>	1		
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKE: AFTER (CHECK ONE)
VE NYSCLPASP	13:45	2-40 ml 104 Hcl		B.10 nh
······································			1	
				• • • •
			· · · · · · · · · · · · · · · · · · ·	
Duplicate Sample Name: QA\QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED): YES or	NO		•
INVESTIGATION DERIVED WASTE	(IDW):			· · · · · · · · · · · · · · · · · · ·
	•	Jer 4	•	<u>-</u> Г
	sfered to Drum: Drum Number:			
	•			J.
COMMENTS:				
Sample #12	7288 (@13:45		
1				
•		dropped 1.5	inches throughout	puno
Water level in		Jupped 1.5	inches throughout	puye
•		Oroppod 1.5	inches throughout	puye
Water level in		Oroppod 1.5	inches throughout	Puye

•••

gwympr

2 of 2

<u> </u>	MPLIN	<u>G REC</u>	<u>ORD - (</u>	JROUN	DWAT	'ER		
PARSONS			CLIENT:		<u> </u>	WELL # :	TW12-2	26
PROJECT (STUDY_ID):	SEAC	0 12 21			DATE:	<u>n</u>	e 11 200	
SWMU # (AREA):	Buildy		8/4	• •	LABORAT		ientech	<u> </u>
SCREENED INTERVAL (TOC):		p wree		• •	MONITORI	the second s		
STATE WELL PERMIT #:		· · · · · · · · · · · · · · · · · · ·	······	• •	INSTRUM			ETECTOR
WEATHER:	50	n 700	· · ·	• •		/ FID		ALLIUN
FREE PRODUCT (NO/ YES) Thicknes		NA		• •			<u> </u>	
BOREHOLE DIAMETER FACTORS	— <u>—</u> ——	<u>L</u>			<u>4</u>	<u> </u>	<u></u>	
DIAMETER (INCHES):	1 1.5	-	3 4	5	6 7	8	9 10	
GALLONS/FOOT:	0.041 0.0	092 0.163	0.367 0.65		1.47 2.0	00 2.61	3.30 5.8	57
PURGE METHOD:		• •		OC CONCENTRA				
STATIC DEPTH TO WATER (TOC):	<u> </u>		_STANDING WA	TER VOLUME I	N WELL (gailons)	<u>ه</u>	945	
WELL DEPTH (TOC):	/3.4		— · .	VOLUMES (galion	15):	<u> </u>		
FEET OF WATER IN WELL:	58		ONE.		TWO:	THRE	EE: 2.8	5
Measur	e indicator para		RGING DAT		- t			
TIME BEGIN PURGING: 12:01	, and calor para.	MCICIS and w	ίζη νοιμπε ται		more than 3 real TIME END P	•		
Time:	12:55	1:05	1:10	1:15	1:20	1:25	1:30	11175
Depth to Water (ft)	8.725		3.775		8.8	5.7	8.8	1:35
Depth to bottom	+	 				0	0.0	01-05
•		ł	'	1	1 '			
opening of	'		1 .'	ľ	1 '		1	
Purge Device (TOC)			<u> '</u>	<u> </u>	<u> </u>		L	
Flow Rate (ml/min.)	25 ~1/m	25 ~ m	′	'	[!			25 ~1/m
Volume of Water	0.15	0.2	1754	0.25	0.27	- 7		
Removed (gals)		0.0	0.00	0.2-	U.LT	0.3	1	
pH	6.29	6.28	6.24	6.20	6.18	6.15	6.15	4.13
Specific Conductivity (umhos)	1.20	1.18	1.18		1.17			
		5.34	5.14	1.17 5.15		1.17	1.17	1.17
Dissolve Oxygen (DO)	4.11				5.06	4.83	4.82	4.79
Temperature (deg. C)		21.15	21.20			21.74		21.15
ORP (mV)	62	64	73	80	84	87	97	85
Turbidity (NTU)	135	132	110	90.2	89.7	88.2	78.8	80.1
DI	EPTH TO W	ATER ME	ASUREMF	INTS AFTE		NG	<u>.</u>	<u>a ann an a</u>
	/					· ·	_÷	· · ·
Date	Time		Water (ft) Purge"	Pre-Purge / "Stati				%
	1		ruige	Colum	mn (<u>ft)</u>	Water Co	olumn (ft)	RECOVERY
	+		/	 		 		
	!	L	<u> </u>	L		<u> </u>		
 Purging should not exc 							_	
I ut ging anound not car			e" and "static" c					

(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.

122284 @ 13:53 Turboth + 26.9 Scemple

Scalo Suid Jay Suid Jay Suid Suid Suid Suid Suid Suid Suid Suid) PUI	CLIE RF- IA 3 0.367 WELL HEA STANDING THREE WI	4 0.654 AD VOC C	5 1.02	MONIT INSTI	RATO	DATE:		200 Hee	
41 0.092 8.0 13.0 5.8 icator param) PUI	3 0.367 WELL HEA STANDING THREE WI	0.654 AD VOC C	1.02	LABO MONIT INSTI	RATOI ORING RUMEN PID / F	Тине RY : С DATE: IT	_ 1(200 Hee	94 h
41 0.092 8.0 13.0 5.8 icator param) PUI	0.367 WELL HEA STANDING THREE WI	0.654 AD VOC C	1.02	MONIT INSTI	ORING RUMEN PID / F	RY : C DATE: T		tee	ĥ
41 0.092 8.0 13.0 5.8 icator param) PUI	0.367 WELL HEA STANDING THREE WI	0.654 AD VOC C	1.02	MONIT INSTI	ORING RUMEN PID / F	DATE:		DET	ECTOR
41 0.092 8.0 13.0 5.8 icator param) PUI	0.367 WELL HEA STANDING THREE WI	0.654 AD VOC C	1.02	<u>INST</u>	RUMEN PID / F	T		DET	ECTOR
41 0.092 8.0 13.0 5.8 icator param) PUI	0.367 WELL HEA STANDING THREE WI	0.654 AD VOC C	1.02	6		1D			
41 0.092 8.0 13.0 5.8 icator param) PUI	0.367 WELL HEA STANDING THREE WI	0.654 AD VOC C	1.02						
41 0.092 8.0 13.0 5.8 icator param) PUI	0.367 WELL HEA STANDING THREE WI	0.654 AD VOC C	1.02						
41 0.092 8.0 13.0 5.8 icator param) PUI	0.367 WELL HEA STANDING THREE WI	0.654 AD VOC C	1.02		7				
8.0 13.90 5.80 icator param) PUI	WELL HEA STANDING THREE WI	AD VOC C				8	9	10	
1390 5.80 icator parame	PUI	STANDING			1.47	2.00	2.61	3.30	5.87	<u> </u>
1390 5.80 icator parame	PUI	THREE WI	U WATER					AC		
5.80	PUI	_				ilons):	•7	45		
icator param	PUI	ONE:		mes (ganor	is): TWO	. —			8	<u></u>
		RGING	DATA	•	1.40	• •	THR	EE:	<u>0</u>	
	eters after ea	ach volum	e (at 1/2	volume if	more than	3 requi	red*)			
			<u> </u>		TIME E	ND PUR	GING:			
.40	•									
.825								T		
	∇		,					1		7
	zu									
	Sec.		i i							
5-1/			<u> </u>	<u> </u>						·
1/1	-	·						<u> </u>		
									.	•.
	÷	· · ·								
.11	×.							T		
.18	U							1		
.84	Â							+		
1							<u> </u>			
	-w-				·			╉────		
					·			<u></u>		
		<u> </u>	<u>. </u>							
H TO WA	TER ME	ASURE	MENT	'S AFTE	R PUR	GING				
	Depth to	Water (ft)								
Time	After	Purge"	Pre-	-		Vater	Water C	Column (f	b	% RECOVER
3:53	9.9	25		8.1	5		· · · · · · · · ·		<u> </u>	
								•		<u> </u>
	······		l			I				
5 volumes	S									
ole(for both '	after purge	" a								
	• 18 • 84 • 97 • 13 • 6.9 • H TO WA Time • 53 5 volume	.11 .18 .84 .7 .97 . Cri .97 . Cri	. 11 . 18 . 84 . 84 . 97 . 53 Depth to Water (ft) "After Purge" . 53 8.82-5 5 volumes	.11 .18 .84 .77 .	.11 .18 .84 .84 .77 .51 .77 .	.11 .11 .18 .18 .84	.11 .11 .18 .18 .84	.11 .18	.11	.11 .11 .18 .18 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .18 .11 .19 .11 .19 .11 .19 .11 .19 .11 .11 .11 .11 .11 .11 .11 .11 .11 .11 .11 .11 .11 .12 .11 .13 .11 .13 .11 .13 .11 .13 .11 .14 .11 .15 .11 .15 .11 .11 .11 .12 .11 .13 .11 .14 .11 .15 .11 .15 .11 .15 .11 .14 .11

to determine the percent of recovery for the well.

Sample ID # 122289 @ 13:53 Volume porged is ASgallon

		CANDE INCOME	LTION	Page 30
TW12-26		SAMPLING INFORM	IATION	-
II Number: TW12-26 MPLING DEVICE: low Flow	• •	,		
MPLING DEVICE: LOW Public	T ·····			
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
			COLOK	
/OC NYS CLPASP	12.22	L W MILVOM		76.9
<u> </u>				
			<u></u>	
			· · · ·	
······································	L	· · · · · ·	· · · · · · · · · · · · · · · · · · ·	
· · ·				
· · · · · · · · · · · · · · · · · · ·				
÷				
plicate Sample Name: AQC RINSATE SAMPLE NAME: ATRIX SPIKE SAMPLE COLLECTED: VESTIGATION DERIVED WASTE		NO		
	Deter	6 (2104	 	
Volume Trans	fered to Drum:	.95		
l	Drum Number:	Perm (······································	
MARINES.				
			· · · · · · · · · · · · · · · · · · ·	./
	12 99	(3)53	the sande rate	was 25 milla
O Sample # 12	,22 99	@ (3:53 .	the sample rate	was 25 ml/m
DAMMENTS: Descriptente 12	22 99 Hbe (@ 13:53 . DED pomp u	the sample rale	was 25 ml/m
	22.99 the (© 13:53 QED pomp u	the sample rate voll 60.	was 25 ml/m
O Sample # 12	2299 the (© (3:53 QED ротр и	the sample rale will GO.	ucos 25 ml/m
O Sample # 12	2299 Hbe (© (3:53 QED ротр и	the sample rale voll 60.	was 25 ml/m
O Sample # 12	2299 the (© (3:53 QED ротр и	the sample rale voll 60.	ucos 25 ml/m
O Sample # 12	2299 Hbe (© 13:53 QED ротр и	the sample rate roll 60.	uces 25 ml/m

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PARSONS			CLIENT				441.1 19	22
ROJECT (STUDY_ID):	SEA	<u>n n</u>	CLIENT				: MW 12	
WMU # (AREA):	Rula	in BB	1814	~	DATE:	June	the second s	
CREENED INTERVAL (TOC):		14 00		-	LABORAT		Chem fee	
TATE WELL PERMIT #:				-		ING DATE:	JUNE I	
VEATHER:	Su	1 750		-	INSTRUM		DE	TECTOR
REE PRODUCT (NO/ YES) Thicknes		NA NA	L	-	PID	/ FID		
OREHOLE DIAMETER FACTORS		141	<u> </u>		<u> </u>			
IAMETER (INCHES):	1 I.	.5 2	. 3 .	5	6 7	8	9 10	
ALLONS/FOOT:	0.041 0.	092 0.163	0.367 0.0	654 1.02		00 2.61	3.30 5.8	7
URGE METHOD:	156dd	lor	WELL HEAD V	OC CONCENTR	ATION (ppm):			
TATIC DEPTH TO WATER (TOC):	the second s	5	STANDING WA	TER VOLUME	IN WELL (gailons):	.10	
YELL DEPTH (TOC):	13.9		THREE WELL	VOLUMES (gallo	ns):			
EET OF WATER IN WELL:	<u>6.7</u>	-5	ONE:		TWO:	THR	EE: 3.30)
Малон	e indicator para	PU	RGING DA	TA: W	aler avolu	h meter	is# 97	18073
IME BEGIN PURGING: 14:30	e moleator para	imeters after e	ach volume (at	1/2 volume if				
Time:	15:00	15:05	15:10	15:15	TIME END		Sample f	HAR IS I HE
	7.75				15:20	15:25	(5.32	15:35
Depth to Water (ft)	CT '9	7.75	7.82	785	7.85	7.85	7.87	787
Depth to bottom							•	
opening of	.0	11.0	11.0	11.		11 .		· · · ·
Purge Device (TOC)	1			11.0	((.0	11-0	11.0	11.0
Flow Rate (ml/min.)	25ml/m	25A1	25M1	25M/	25MI	25m1		
Volume of Water			1.2.1		ADM.)	25m	25ml
	750m							
Removed (gals)	1.2001	1						
рН	DE	6.90	691	6.81	6.80	6.82	7.00	7.08
Specific Conductivity (umhos)	ell ell	,962	-951 .	.99	.97	.94	. 821	.817
Dissolve Oxygen (DO)	56	19:45	10-9-7-9	2.60	2.41	2.01	2.02	2.02
Temperature (deg. C)	77	19.45	18.99	20.11	20.7	20.5		19.88
ORP (mV)		87	87	88		-	20.70	
	E				89	-90	89	88
					8.08	8.06	8.25	8.49
Turbidity (NTU)	EPTH TO W	34.8 (ATER ME	33.7 EASUREME	18.3 ENTS AFTI	B.OB	8-06 NG	8.25	8.44
			•				,	
Date	Time		Water (ft) Purge	Pre-Purge / "Sta	tic" Water ma (ft)		1	%
				Colu	cun (IC)	Water C	olumn (ft)	RECOVERY
······································	<u> </u>		<u>:</u>					ļ
	l		• • •					
es:								• <u></u>
r urging snould not exc	eed 5 volum	les						
 Determine water column in the b by subtracting the measured wat 	er level from	h "after purge	" and "static" o	conditions)				
,	ierei nom m	tatic" water co						

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	MPLIN	J MIC				<u>r</u> k		· · ·
PARSONS			CLIENT	:		WELL # :	MW	2-37
PROJECT (STUDY_ID):	554	p - 12	and the second se		DATE:	June	11200	ł
SWMU # (AREA):	-Brid	ting 813,	1814	-	LABORAT	ORY: C	heinfach	•
CREENED INTERVAL (TOC):				-	MONITOR	NG DATE:		
TATE WELL PERMIT #:			····	_	INSTRUM	IENT	DI	ETECTOR
WEATHER:		n 7 4 0		_	PID	/ FID		
REE PRODUCT (NO/ YES) Thicknes BOREHOLE DIAMETER FACTORS	<u> </u>							
MAMETER (INCHES):								
ALLONS/FOOT:	ا ا. 0.041 د. 0.0	1 1	3 4 0.367 0.6	5 554 1.02	6 7 1.47 2.0	8	9 10	
URGE METHOD:	Black			OC CONCENTR		2.61	3.30 5.8	7
TATIC DEPTH TO WATER (TOC):		5			ATION (ppm): IN WELL (gailons)	1.1	<u></u>	
ELL DEPTH (TOC):		10		VOLUMES (gallo		·		
EET OF WATER IN WELL:			ONE:	VOLUMES (gallo	TWO:	<u> </u>	E: 3.50	
- · · ·	· · · · · · · · · · · · · · · · · · ·	PUI	RGING DA	TA:	1w0:	THRE	E	
Measure Measure	indicator para				more than 3 re	quired*)	· · ·	4 C
IME BEGIN PURGING:	1 · · · · · · · · · · · · · · · · · · ·	,			TIME END F			
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	787	7.87	7.90	7.90	7.90
Depth to bottom		[110
opening of								
Purge Device (TOC)	[.0	([.0	11.0	11.0	11.0	11.0	11.	110
	16.11	2011	15-11				11.0	11.0
Flow Rate (ml/min.)	25m//m	25ml/m	25m//m	2-5ml/m	25m/m	25m/1m	250m	2-5m//m
Volume of Water								
Removed (gals)	·							3900 m
рН	718	7:18	7.17	7.17	716	7.16	7.16	7.16
Specific Conductivity (umhos)	.760	.7'68	.759	745	.736	.723	.712	· · · · · · · · · · · · · · · · · · ·
Dissolve Oxygen (DO)	1.96	1.95	1.94	1.93	1			.713
Temperature (deg. C)	20.06	20.18	19.91		1.90	1.90	. 1.90	1.90
				20.10	19.86	19.89	19.93	20.21
ORP (mV)	88	87	87	87	86	86	.86	86
Turbidity (NTU)	8.15	8.12	7.93	4.90	4.54	4.23	4.13	4.08
DE	PTH TO W	ATER ME	ASUREME	ENTS AFT	ER PURGIN	١G	· ·	
				•				[
Date	Time	Depth to " "After		Pre-Purge / "Sta		,		%
			. u.gc	Colu	mn (ft)	Water Co	ilumn (ft)	RECOVER
Nes:	L							
* Purging should not exc	and 5 volum		•				•	
(1) Determine water column in the b	orehole(for bor	i cs h "after nurge"	and "static" a	onditional				
by subtracting the measured wat	r level from th	e well point.						
Divide the "after purge" water co	lumn by the "s	tatic" water co	umn and mul	tiply by 100				
to determine the percent of recov	ery for the wel	l						
Sample # 122		1				ny porz		

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Well Number: MW 12-37		SAMPLING INFORM	ATION	
SAMPLING DEVICE: LOW LOW				
	1		<u> </u>	<u> </u>
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
NYS CLP ASP (Vac)	16:15	2-40ml Vat H4	4.08 tubility	
	<u> </u>			
· · · · · · · · · · · · · · · · · · ·	<u> </u>			
·				
	<u> </u>			
QA\QC:				
QA/QC DUPLICATE SAMPLE COLLEC Duplicate Sample Name: QA/QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED:	YES or	or NO NO		
·	(IDW): Date: fered to Drum: Drum Number:	1. Igul		
COMMENTS: Sample Collecte	J @	<i>[6].15 (222</i>	291	

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			· .			Pog	e lof3	
	MPLIN	G REC	ORD -	GROUN	DWAT	ER A	1W12-2	ilo i
PARSONS			CLIENT	:		WELL #: MW-40		
PROJECT (STUDY_ID):	_SEA				DATE:	JUne 11 2004		
SWMU # (AREA):	Builde	by 813/81	4	-	LABORAT			
SCREENED INTERVAL (TOC):	&.:	8 10 13	.23	-	MONITORI		T	
STATE WELL PERMIT #:			•	-	INSTRUM	······	DE	TECTOR
WEATHER:	SU	n 70°		-		/ FID		TECTOR
FREE PRODUCT (NO/ YES) Thickness		NA		-			<u> </u>	
BOREHOLE DIAMETER FACTORS		6						
DIAMETER (INCHES):	1 1.	/ /	3 4	5	6 7	8	9 10	
GALLONS/FOOT:		92 (0.162	0.367 0.6		1.47 2.0	0 2.61	3.30 5.8	7
PURGE METHOD:	Reader		WELL HEAD V	OC CONCENTRA	TION (ppm):			
STATIC DEPTH TO WATER (TOC):	8.65	the second s	STANDING WA	TER VOLUME I	N WELL (gallons)		75	
WELL DEPTH (TOC):	13.30		THREE WELL	OLUMES (gallor	is);			
FEET OF WATER IN WELL:	4.65		ONE:		TWO:	THRE	EE: 2.2	7
Measure	indicator nam		RGING DA					
TIME BEGIN PURGING: 0905	mulcator para	meters after ea	ch volume (at	1/2 volume if		-		
'Time:	09:35	09:40	09:45	0950	TIME END P 0955	10:00	11145	10:18
Depth to Water (ft)	9.15	9.15	4.15	9.15	9.15	9.15	10:05	9.15
Depth to bottom				<u> </u>			1.0	15
opening of			·					
Purge Device (TOC)	lott	10ff	loff	loft	Ioff	loff	10\$4	10ft
Flow Rate (ml/min.)	40ml/m	40ml/m	40ml/m	40 ml/m	AUMI/M	40 mL	40 ml/m	40min
Volume of Water	22							
Removed (gals)	•33	•						
рН	6.53	6.50	6.49	6.48	650	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	200	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	<i>ll.</i> 3	10.6	10.3	10.5	10.2
DE	РТН ТО W	ATER ME	ASUREME			-	10.3	10.0
					AT ORON			
Date	Time	Depth to V		Pre-Purge / "State	water			%
	Time	"After	Purge"	Colur	nn (ft)	Water Co	olumn (ft)	RECOVERY
Notas								
Notes: * Purging should not over								
a arging should not exc								
 Determine water column in the base by subtracting the measured wate 	r level from th	n aner purge" e well point	and "static" o	conditions)				
(2) Divide the "after purge" water co	umn by the "si	tatic" water col	umn and mul	tiply by 100				
to determine the percent of recov	ery for the well	l.						

		<u>g rec</u> o	<u> ORD</u> - (GROUN	DWAT	ER		
PARSONS			CLIENT:			WELL # :	MWI	2.40
ROJECT (STUDY_ID):	SEA	0 12	L		DATE:	JUNE 11		
VMU # (AREA):	Builde	m B13	/8/4	•	LABORAT	ORY :	.	
REENED INTERVAL (TOC):	8.38	to 13.		•	MONITORI	NG DATE:		
ATE WELL PERMIT #:				_	INSTRUM	ENT	DE	TECTOR
EATHER:	Sun	70°)	•	PID	/ FID		
REE PRODUCT (NO/ YES) Thicknes		NA						
DREHOLE DIAMETER FACTORS		۸						
AMETER (INCHES):	1 1.5	1 1	3 4	5	6 7	8	9 10	
LLONS/FOOT:	0.041 0.0		0.367 0.6		1.47 2.0	0 2.61	3.30 5.8	1
JRGE METHOD:	low flow		-	OC CONCENTRA			7.6	
ATIC DEPTH TO WATER (TOC):	8.65		STANDING WA	TER VOLUME II	N WELL (gallons)	:(75	<u>.</u>
ELL DEPTH (TOC):	13.50		•	OLUMES (gallon			E: 2.2	1
ET OF WATER IN WELL:	4.03		ONE: RGING DA	ΤΑ.	TWO:	THRE	E:	<u> </u>
Measur	e indicator para				more than 3 re	auired*)		
ME BEGIN PURGING:	e mercutor para				TIME END P			
Time:	10:15	10:20	10:15	[1:30	10:35	10:40	10:45	10:50
Depth to Water (ft)	9.15	9.15	9.15	9.5	9.15	9.15	9.15	9.15
			1.5	1.0		11.5		
Depth to bottom						•		
opening of	loft	10ff	löft	loft	·loft	JACI	1.0	
Purge Device (TOC)			· · · · ·			10ft	10ft	loft
Flow Rate (ml/min.)	40mlla	40milu	40m/m	40 mlim	40m/m	40 m/m	40 mil m	40ml/m
Volume of Water						12.		
• Removed (gals)	l.Ogal					1.3gal		
	6.64	6.65	6.67	6.89	6.90	7.00	7.00	7.00
pH	.75(.754	.700	.551	.550	.548	548	.547
Specific Conductivity (umhos)			1			170		
Dissolve Oxygen (DO)	1.89	1.84	1.79	1.75	1.73	1.12	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	176	77
Turbidity (NTU)	11.2	12.7	8.8	8.3	72	20	1.7	2.2
	EPTH TO W				ER PURGI	NG		
	T				•			•
ι,			Water (ft)	Pre-Purge / "Sta	tic" Water			%
Date	Time		Purge"		mn (ft)	Water Co	olumn (ft)	RECOVER
	(0;50	o 9.15 ft 8.65						
June 11 2004	10,00	1.0						

Sample # 122290 Collected at 10:50

Page 3 of 3

MW12-40		SAMPLING INFOR	MATION	· · · · ·
Well Number: <u>MW12-40</u> SAMPLING DEVICE: <i>IOW FLOW</i>				
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
VOC NYS CLPASP	10:50	2-40ml/10A Hel		2.2 ntu
	• •			
	· · ·		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
			· · · · · · · · · · · · · · · · · · ·	
			•	
			· · · ·	
			· · · · · · · · · · · · · · · · · · ·	
· · · · · · · · · · · · · · · · · · ·				
QA/QC DUPLICATE SAMPLE COLLECT Duplicate Sample Name: QA/QC RINSATE SAMPLE NAME: MATRIX SPIKE SAMPLE COLLECTED:	YES or	or NO NO	<u>د</u>	
INVESTIGATION DERIVED WASTE (· · · · · · · · · · · · · · · · · · ·	- -
Volume Transi		Jr. 4 2009 1. Sgal		-
	Drum Number			
		-		
COMMENTS:		• · ·	•	•
Somethe Cille	tail t	+122240	@ 10:50 2.2 n	10
Campe Cone				
		•		

Appendix C

Test Pit Logs

Appendic C Index of Test Pit Location IDs and Sample IDs SEAD-12 SRI Seneca Army Depot Activity, Romulus, NY

Location ID	Sample ID
TP813-1T	123682
TP813-2T	123683
TP813-3T	123684
TP813-3T (Dup)	123686
TP813-4F	123688
TP813-5F	123689
TP813-6F	123691
TP813-7T	123692
TP813-8T	123693
TP813-9T	123694
TP813-10F	123701
TP813-11F	123702
TP813-12F	123703
TP813-13F	123704
TP813-13F (Dup)	123705

PAGE	1	OF

		PAR	SONS		CLIENT:	USACOE	TEST PIT NO.:	SEAD 12
PROJECT: LOCATION			12 Test Pit t - East side	- Seneca Q Area			JOB NUMBER: 743156-03100 GROUND ELEV: INSPECTOR: S. Anderson	
TEST PIT I	DATA						CONTRACTOR: Environmental Products &	: Services
LENGTH	wi	DTH	DEPTH	E	CAVATION METHO	D	START DATE: 11/3/0	4
			3 to 8 ft	Excavator			COMPLETION DAT 11/11/0	4
		-					CHECKED BY: J. Rossmann	
MONITORING	DATA						QA/QC DUPLICATE SAMPLE: YES OR	NO
INSTRUME	INT	DE	TECTOR	BACKGROUND	TIME/D.	ATE	Duplicate Sample Number:	
PID				0	11/3/04		MRD Sample Number:	
FID				0	11/10/04 & 11/11/04		QA/QC Rinsate Sample Number:	
							Comments:	
							-	
		S	AMPLE	STRATA				
						SA	MPLE	REMARKS
DEPTH (FT)	voc	NÖ.	DEPTH			DESC	RIPTION	
			RANGE		(Ac per Burmeister	volor amain sina N	ALION COMPONENT Miner Composite	
·····	ļi			·			MAJOR COMPONENT, Minor Components size, density, stratification, wetness, etc.)	
1	-				naoil			
'- <u> </u>					psoil			
2								
				Bre	wn, fine/medium, TI	LL. Dry to m	oist.	
3								-
,		123689		Sa	nple collected at roug	hly same eleva	ation as other sides.	
4	6.3	12	3 to 4 feet		reading not on actua		ose proximity	ļ _
5				Gr	cy/brown SHALE frag	gments.		j –
3								–
6				En	d of excavation at the	drainage ditch	Original area of	-
					avation sloped - deptl	-	-	-
7								-
				L				_
8								
				-				-
9								
10								
							·	1 –
11								-
Pross Section: Wr M Stable		/ 58th	UNI /	9 2·3f ¹ *	123689	eel Shale	south side	

i

-	,				TE	ST PIT	REPO		AGE 1 OF
		PAR	50NS			CLIENT:	USACOE	TEST PIT NO.:	SEAD 12
PROJECT: LOCATION			12 Test Pit t - North side		Area	L		JOB NUMBER: 743156-03100 GROUND ELEV:	
TEST PIT D	ATA							INSPECTOR: S. Anderson CONTRACTOR: Environmental Products &	& Services
LENGTH		OTH	DEPTH		EXC	CAVATION METHO	D ·	START DATE: 11/3/0	
			3 to 8 ft	Excavator				COMPLETION DAT 11/11/0	14
								CHECKED BY: J. Rossmann	
MONITORING I	DATA		•	I				QA/QC DUPLICATE SAMPLE: YES OR	NO
INSTRUME	NT	DE	TECTOR	BACKGRO	OUND	TIMĖ/I	DATE	Duplicate Sample Number:	
PID				0		11/3/04		MRD Sample Number:	
FID			•	0		11/10/04 & 11/11/04		QA/QC Rinsate Sample Number: Comments:	
		S	AMPLE	STRATA			SA	MPLE	REMARKS
DEPTH (FT)	voc	NO.	DEPTH					RIPTION	
			RANGE						
								MAJOR COMPONENT, Minor Components size, density, stratification, wetness, etc.)	
							i		
1				_	Тор	soil			
2									-
					 Brov	vn, fine/medium, T	ILL. Dry to n	aoist.	-
3									
	_	1							_
4	0	123691	3 to 4 feet			ple collected at rou //brown SHALE fra		ation as other sides.	
5		1			_0103	OIGWII SIIALL II	igments.		-
				_					
6				_					
7						of excavation at the vation sloped - dep	-	h. Original area of South/West sides	· –
·				_		vation sloped - dep		South west sides.	-
8									
					_				_
9									
10									-
					_				1]
11							· · · · · ·		
Cross Section:							Dram	ng "Bitch	
			up stude	у - Л - Ц		12	3(09)	2 +03 Ft	
			D			5			East

			T	TEST PIT R	EPORT			
	PAR	SONS		CLIENT: U	JSACOE TES	TPIT NO.:	SEAD 12	
PROJECT: LOCATION:		12 Test Pit it - South sid	- Seneca Q Ar e	GROU	JOB NUMBER: 743156-03100 GROUND ELEV:			
		<u> </u>				CTOR: S. Anderson RACTOR: Environmental Products &	& Services	
TEST PIT DATA	VIDTH	DEPTH		EXCAVATION METHOD		T DATE: 11/3/200		
		10 ft	Excavator			PLETION DA' 11/11/200		
					CHEC	KED BY: J. Rossmann		
ONITORING DATA			DIGKODOLI	ND TIME/DAT		C DUPLICATE SAMPLE: YES C ate Sample Number:	DR NO	
INSTRUMENT PID		ETECTOR	BACKGROU	11/3/2004		Sample Number:		
FID			0	11/10/04 & 11/11/04		C Rinsate Sample Number:		
					Comm	-		
<u> </u>		SAMPLE	STRATA	<u> </u>				
			JIANIA		SAMPLE		REMARKS	
DEPTH (FT) VO	C NO.	DEPTH			DESCRIPTION			
		RANGE						
				(As per Burmeister: cold with amount modul	or, grain size, MAJOR Conternation the state of the state	OMPONENT, Minor Components ty, stratification, wetness, etc.)		
1				Topsoil				
			-					
2								
			-	Brown, fine/medium, TILL	. Dry to moist.			
3			+					
4							-	
·							-	
5								
							-	
6 6		5-6 ft		Fractured Shale mixed with				
	2; 1;			About 1 foot area of staine			-	
7				Excavated further at this lo	ocation to clear out t	the contamination.		
8							-	
			-					
9								
		1		Competent Bedrock			-	
10			+-					
11			-			· .		
	1	<u> </u>	L			1 4 ft extra J sicawation	0 11/1 203	
Cross Section:					Carm) excavation	Building 803	
					<	×	Sidewalk	
				A	(f)	- (
			AN ACCOUNT OF A DECISION		6	e e e e e e e e e e e e e e e e e e e		
			1. Alexandre and a second s		Ĭ	\sim		
	1070/				$\langle \cdot \rangle$	123693 (astur	exanding 4 mone	
		0	1			1 - 1 - 1	v	
1.20	n.	m3.00	2		C. C.	· 123072		
DA	×	Berm			\geq	• 123693 (atter • 123692	a of "Stammars	

AGE 1 OF

PAGE 1 C)F
----------	----

				T	EST	PIT REP	PORT			
		PARS	SONS			CLIENT: USACO	г no.:		SEAD 12	
PROJECT: LOCATION			12 Test Pit t - West side	- Seneca Q Are	a	GROUND E	JOB NUMBER: 743156-03100 GROUND ELEV: INSPECTOR: S. Anderson			
TEST PIT D	ATA						CONTRAC	TOR:	Environmental Products &	Services
LENGTH	wI	DTH	DEPTH		EXCAVA	TION METHOD	START DA	TE:	11/3/04	1
			10 ft	Excavator			COMPLETI	ION DAT	[11/11/04	1
				· · · · · · · · · · · · · · · · · · ·	<u></u>		CHECKED	BY:	J. Rossmann	
MONITORING I	DATA		L_	<u>1</u>			QA/QC DU	PLICAT	E SAMPLE: YES OR	NO
INSTRUME	· ···-	DE	TECTOR	BACKGROUN	D	TIME/DATE	Duplicate Sa			
PID				0	11/3/04	1	MRD Sampl	le Numb	er:	
FID				0	11/10/0	04 & 11/11/04	QA/QC Rins	sate Sam	ple Number:	
						· · · · · · · · · · · · · · · · · · ·	Comments:			
				l 1						
		s	SAMPLE	STRATA	<u>. I</u>					
							SAMPLE			REMARKS
DEPTH (FT)	voc	NO.	DEPTH				DESCRIPTION			
			RANGE							
					(As	per Burmeister: color, grain with amount modifiers and				
										_
1					Topsoil					-
2				-+.						
,	-			-'	Brown, fii	ne/medium, TILL. Dr	y to moist.			
3				+						-
4			1							-
	0.1	123688		一一,	Rusty met	al debris found about 4	.5 to 5 feet. Samp	oled		
5		123	_							_
		4								_
6	0	123694	5-6 ft	I		Shale mixed with Brow				
7			1	-'	" sewer I	ine found about 5.5 to 6	5 teet.			
·	1			+						-
8	1									-
9	[·····			4 –
	-		ŀ	-'	Competen	t Bedrock				-
10	ł									
11			ĺ							
<u> </u>	1	1	<u> </u>	<u>I</u>	. 1				<u>65</u>	- L
Cross Section:				B	adley		5°			
				Ŵ		1	Joh	1236	94	
				south	[er er		ا می ان	· · (north
							sotten			114

									AGE 1 OF		
					TE	ST PIT	<u>KEPO</u>	KI			
	I	PAR	SONS			CLIENT:	USACOE	TEST PIT NO.:	SEAD 12		
PROJECT: LOCATION			12 Test Pit t - Northeast		-						
TEST PIT D	ΑΤΑ							INSPECTOR: <u>S. Anderson</u> CONTRACTOR: Environmental Products	k Services		
LENGTH	1)TH	DEPTH		EX	CAVATION METHO	D	START DATE: 12/20/2004			
			10 ft	Excavator				COMPLETION DA1 12/21/20			
								CHECKED BY: E. Ashton			
MONITORING I	DATA							QA/QC DUPLICATE SAMPLE: YES O	R NO		
INSTRUME	NT	DE	TECTOR	BACKGR	DUND	TIME/D	DATE	Duplicate Sample Number:			
PID FID				0	·	12/20/2004		MRD Sample Number: QA/QC Rinsate Sample Number:			
TID			· · · · ·	0		12/21/2004	<u> </u>	Comments:			
								-			
			AMPLE	STRATA					<u> </u>		
DEPTH (FT)	voc	NO.	DEPTH	JIMIA				MPLE `` RIPTION	REMARKS		
			RANGE			(As per Burmeister:	color, grain size, h	MAJOR COMPONENT, Minor Components stze, density, stratutication, wetness, etc.)			
1					Тор	soil					
2											
					Вго	wn, fine/medium, T	ILL. Dry to m	noist.			
3		5			_						
4		123702	3-4 ft		123	702 collected on eas	et side of buildi	ng corner			
			5-4 II								
5		3701				701 collected on no		ding corner			
6		12	4-5 ft		und	er outlet of destroye	d sewer pipe		-		
					 Frac	tured Shale mixed	with Brown Til	1.			
7								ear NE corner of building			
					Con	npetent Bedrock					
8					-				-		
9					Ľ						
					F						
10				-							
11									-		

Cross Section:

PAGE 1 OF

• •				· · · · · · · · · · · · · · · · · · ·		ST PIT R				
	I	PARS	SONS			CLIENT: U	SACOE	TEST PIT NO.:		SEAD 12
PROJECT: <u>SEAD 12 Test Pit</u> - Seneca Q Area LOCATION: Test Pit - West side						JOB NUMBER: 74: GROUND ELEV:	3156-03100			
							· · · · ·	INSPECTOR: S.	Anderson	
TEST PIT D	ATA							CONTRACTOR: En	vironmental Products &	Services
LENGTH	WI	OTH	DEPTH		EXCAVATION METHOD		START DATE:	11/3/2004		
			10 ft	Excavator				COMPLETION DA1	12/21/2004	
								CHECKED BY: E	Ashton	
IONITORING E	DATA		· · · · · · · · · · · · · · · · · · ·		_			QA/QC DUPLICATE S	AMPLE: YES OR	NO
INSTRUMEN	T	DÈ	TECTOR	BACKGRO	UND	TIME/DAT	E	Duplicate Sample Num	ber:	
PID				0		12/21/2004		MRD Sample Number:		
FID				0		12/21/2004		QA/QC Rinsate Sample	Number:	
								Comments:		
								_		
			AMPLE	STRATA		<u> </u>			··	
							S	AMPLE		REMARKS
DEPTH (FT)	VOC NO. DEP		DEPTH			CRIPTION				
			RANGE							
								MAJOR COMPONENT, Mino		
			<u> </u>	<u> </u>		with amount modi	iters and grain	-size, densily, stratification, we	iness, etc.)	<u> </u>
1					_ Тор	soil				
¹					тор	501			• •	
2			1		-					
		703			 Bro	wn, fine/medium, TILI	. Dry to 1	noist.		
3		1237	2-3 ft		-		·			
					-					
4		704	3-4 ft		_					
		123	3-4 ft		_					
5										
					_ Frac	ctured Shale mixed wit	h Brown Ti	11.		
6					Exc	avation halted at 5'				
					_					
7					_					
_					_					
8					-					
					-					
9					_					
					-					
10					_					
			l		-					

Cross Section:

Appendix D

Laboratory SOP EML HASL-300 EPA Method 901.1

13-May-03

SOP Effective Date: 2/4/92 Revision 9 Effective June 2002 The Determination of Gamma Isotopes

GL-RAD-A-013-Rev 9 Page 1 of 12

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)

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of the fully executed

original.

Oeneral Engineering Laboratories, LLC P.O. Box 30712, Charleston, SC 29417 The Determination of Gamma Isotopes

TABLE OF CONTENTS

1.0	STANDARD OPERATING PROCEDURE FOR THE DETERMINATION OF GAMMA ISOTOPES 3
2.0	METHOD OBJECTIVE, PURPOSE, CODE AND SUMMARY
3.0	METHOD APPLICABILITY
4.0	DEPINITIONS
5.0	METHOD VARIATIONS
6.0	SAFETY PRECAUTIONS AND WARNINGS
7.0	INTERFERENCES
8.0	APPARATUS, MATERIALS, REAGENTS, EQUIPMENT, AND INSTRUMENTATION
9.0	SAMPLE HANDLING AND PRESERVATION
10.0	SAMPLE PREPARATION
11.0	PREPARATION OF STANDARD SOLUTIONS AND QUALITY CONTROL STANDARDS
12.0	INSTRUMENT CALIBRATION AND PERFORMANCE
13.0	ANALYSIS AND INSTRUMENT OPERATION
14.0	EQUIPMENT AND INSTRUMENT MAINTENANCE
15.0	DATA RECORDING, CALCULATION, AND REDUCTION METHODS
16.0	QUALITY CONTROL REQUIREMENTS
17.0	DATA REVIEW, APPROVAL, AND TRANSMITTAL
18.0	RECORDS MANAGEMENT
19.0	LABORATORY WASTE HANDLING AND WASTE DISPOSAL
20.0	REFERENCES

General Engineering Laboratories, LLC P.O. Box 30712, Charleston, SC 29417

The Determination of Gamma Isotopes SOP Effective Date: 2/4/92 GL-RAD-A-013-Rev 9 **Revision 9 Effective June 2002** Page 3 of 12 STANDARD OPERATING PROCEDURE FOR THE DETERMINATION OF GAMMA 1.0 **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 scaled 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. Method Bias (Accuracy): The method accuracy requirement for gamma 3.3 spectroscopy is $\pm 25\%$ 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 General Engineering Laboratorics, LLC P.O. Box 30712, Charleston, SC 29417

SOP	Effective	The Determination of Gamma Isotopes
		Date: 2/4/92 GL-RAD-A-013-Rev 9 cotive June 2002 Page 4 of 12
_		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 geometrics close to detection and in low ener 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	<u>False Positive</u> : An isotope that has failed one or more of several tests including halife, abundance, and energy tolerance $(\pm 2 \text{ KeV})$
	4.6	<u>Abundance Test</u> : The test where the software calculates the total possible lines fro the library and checks to see how many were actually seen. The cutoff for a positi- identification is 75%.
	4.7	<u>Energy Tolerance</u> : 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 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	<u>Half-Life Test</u> : The test to determine if the half-life of the isotope is long enough r 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	<u>Key Line</u> : 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	<u>Abundance</u> : 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.
i.0	Modi	HOD VARIATIONS fications to the procedure are limited to GEL's use of additional isotopes for the daily ation check and the inclusion of a more stringent calibration and resolution periodicit
.0	SAFE	TY 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.
		General Engineering Laboratories, LLC P.O. Box 30712, Charleston, SC 29417

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		The Determination of Gamma Isotopes ate: 2/4/92 GL-RAD-A-013-Re ive June 2002 Page 5 o	
	6.4	Personnel handling biological materials are trained in and follow the procedures outlined in GL-RAD-S-010 for Handling Biological Materials.	5
	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	INTE	FERENCES	
	7.1	Some Gamma isotopes emit gamma lines that may overlap with other isotopes. the energies of the two isotopes are within 2 KeV, the peaks may not be resolvable and will give a positive blas 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 m bias the results due to self-absorption of lower energy (<100 K).	nay
8.0	лрр/	latus, materials, reagents, equipment, and instrumentation	N
	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. 	3,
	8.3	Instrumentation	
		8.3.1 High purity germanium detector, with associated electronics and data reduction software	
		8.3.2 Top loader balance	
0.0	SAMI	E 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 ar preserved to pH2 with Nitric acid.	nđ
0.0	SAME	E PREPARATION	
	10.1	Soil sample preparation.	
		10.1.1 Prepare the sample for gamma counting in accordance with SOP GL-RAI A-021 "Soil sample preparation for the determination of radionuclides".	D-
		Genoral Engineering Laboratorics, LLC P.O. Box 30712, Charleston, SC 29417	

SOP Effective Date: 2/4/ Revision 9 Effective June		GL-RAD-A-013-Rev Page 6 of 1
10.1.2	Fill the appropriate the following steps	container with sample prepared from step 10.1.1 using
	•	analysis is required, the sample is placed in a 100cc
	Ra-226. Shorter in However, shorter in	mended that in-growth be allowed 14 days to quantify tervals can be used at the request of the client. 1-growth periods may decrease the accuracy of the data and mass of sample to fill the 100cc can, contact the er.
	Determine than 55 gr group leac	genized samples shall be placed in the 100cc can. the net weight of the sample. If the net weight is less ams or greater than 190 grams, contact the team or ler to determine the appropriate counting container. mple weight and date on sample container.
	in the 10c	insufficient sample to fill the 100cc can, place sample c petri dish, cap and seal. Record sample weight and mple container.
	the follow	insufficient sample to fill the 10cc petri dish, perform ing digestion process: Weigh out an appropriate aliquot into a labeled teflom beaker. Record this weight on the sample container.
	10.1.2.4.2	Add 10 mL of concentrated nitric acid to each sample
		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 s	ample preparation	

SOP #	(Factive)	Date: 2/4/9	The Determination of Gamma Isotopes
		ctive June 2	
		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 S	ample 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 as 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 tinse of the sample container. 500 mL is transferred to the Marinelli Beaker. The recorded volume on the que sheet should be (500 mL/850 m/) x 800 mL = 470.6 mL.
	10_4	Ptepara	tion 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	PREP STAN	ARATIO DARDS	N OF STANDARD SOLUTIONS AND QUALITY CONTROL
	Refer conce	to "Prepa ming the	ration of Radioactive Standards" (GL-RAD-M-001) for instructions preparation of standard solutions.
12.0	INSTI	RUMENT	CALIBRATION AND PERFORMANCE
	12.1	The gan months "Gamma	ima spectrometer should be calibrated for the appropriate geometry every 12 or when daily QC check standards indicate instrument problems. Refer to a Spectroscopy System Operating Procedure" (GL-RAD-I-001) for on instructions.
	. 12.2	Refer to instructi	"Gamma Spectroscopy System Operating Procedure" (GL-RAD-1-001) for ons concerning the Gamma Spectrometer.

General Engineering Laboratorics, LLC	
P.O. Box 30712, Charleston, SC 29417	

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SOD Editor	The Determination of Gamma Isotopes
SOP Effective Revision 9 Effe	
Reviatori 7 Elle	Page 8 of 12
12.3	Refer to "Counting Room Instrument Maintenance and Performance Checks" (GL- RAD-I-010) for instructions concerning instrument maintenance.
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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:

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

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 =
$$d = \frac{d}{e^{-\lambda}}$$

15.3 Counting uncertainty is calculated according to the following equation:

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

Where:

Ac = Activity from 15.2

General Engineering Laboratories, LLC P.O. Box 30712, Charleston, SC 29417 The Determination of Gamma Isotopes

SOP Effective Date: 2/4/92 Revision 9 Effective June 2002

GL-RAD-A-013-Rev 9 Page 9 of 12

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

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

MDA (pCi/unit) =
$$\frac{d^{*}(2.71 + 4.66\sqrt{cpm_{b}^{*}ct})}{2.22 * E * V * E^{*}ct}$$

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)

$$d = decay factor = d = \frac{1}{r + dt}$$

15.5 The absorption factor is calculated by the following equations:

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

$$l_0 = \frac{\ln((\text{SSTcpm - STcpm})/\text{ECcpm})}{(((\text{SSTcpm - Scpm})/\text{ECcpm}) - 1)}$$

$$ABS = \frac{l_1}{l_2}$$

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.

General Engineering Laboratories, LLC P.O. Box 30712, Charleston, SC 29417

		Date: 2/4/9	
Revisi	ion 9 Effi	ctive June	2002 Page 10 of 12
		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 volum and count time.
		15.7.3	The energy tolerance should be between 2 and 3 KeV.
		15.7.4	setting is
		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 leade
	15.8	The fol after en	lowing guidelines are used to accept unidentified lines on the peak search wironmental 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			NTROL REQUIREMENTS
	16.1	Analysi	and Method Verification
		Refer to 003) for	• "Analyst and Analytical Methods Validation Procedures" (G-RAD-D- r 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: contami	Performing a matrix spike on a soil sample would result in direct nation 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 $\leq 0.20\%$. The RPD is calculated as follows.
			Genoral Engineering Laboratories, LLC
			P.O. Box 30712, Charleston, SC 29417

SOP Effective Date: 2/4/92 Revision 9 Effective June 2002

GL-RAD-A-013-Rev 9 Page 11 of 12

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

or:

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

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:

$$LCS = \frac{observed_pCi/g}{known_pCi/g} *100$$

or:

$$LCS = \frac{observed_pCi/L}{known_pCi/L} *100$$

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

General Engineering Laboratories, LLC
P.O. Box 30712, Charleston, SC 29417

PAGE 12/ 16

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	The Determination of Gamma Isotopes	
SOP Effective Date: 2/4/92	•	GL-RAD-A-013-Rev 9
Revision 9 Effective June 2002		Page 12 of 12

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.

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Appendix E

Analytical Results

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

			1	1		1		1	TM(40.4			THUS					THEFT	TIMAG	T14/40.000
									TW12-1	TW12-1 (D)	TW12-3	TW12-4	TW12-5	TW12-6	TW12-7	TW12-8	TW12-9	TW12-22	TW12-23
									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
			Frequency		•	Number	Number	Number											
			of	Criteria	Action	of	of	of											
Parameter	Unit	Maximum	Detection		Level	Exceedances	Detections	Analyses	Value (Q)			· /	· · · · · · · · · · · · · · · · · · ·	· · · ·	· · · · · ·	Value			, , , , , , , , , , , , , , , , , , , ,
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane	µg/L	0	0%	NYSDEC CLASS GA	5 5	0	0	17 17	10 UJ 10 UJ	10 U 10 U	10 l 10 l		10 U 10 U	10 U 10 U	10 U 10 U	10		10 U 10 U	10 U
1,1,2,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10 UJ	10 U	10 0		10 U	10 U	10 U	10		10 U	10 U 10 U
1.1.2-Trichloroethane	µg/L	0	0%	NYSDEC CLASS GA	1	0	0	17	10 UJ	10 U	10 0		10 U	10 U	10 U	10		10 U	10 U
1,1-Dichloroethane	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10 UJ	10 U	10 0		10 U	10 U	10 U	10		10 U	10 U
1,1-Dichloroethene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10 UJ	10 U	10 0		10 U	10 U	10 U	10		10 U	10 U
1,2,4-Trichlorobenzene	µg/L	0		NYSDEC CLASS GA	5	0	0	17	10 UJ	10 U	10 0		10 U	10 U	10 U	10		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 0		10 U	10 U	10 U	10		10 U	10 U
1,2-Dibromoethane	µg/L	0	0%		0.004	0	0	17	10 UJ	10 U	101		10 U	10 U	10 U	10		10 U	10 U
1,2-Dichlorobenzene	μg/L μg/L	0	0%	NYSDEC CLASS GA	3	0	0	17	10 UJ	10 U	10 0		10 U	10 U	10 U	10		10 U	10 U
1,2-Dichloroethane	µg/L	0	0%	NYSDEC CLASS GA	0.6	0	0	17	10 UJ	10 U	10 0		10 U	10 U	10 U	10		10 U	10 U
1,2-Dichloropropane	µg/L	0	0%	NYSDEC CLASS GA	1	0	0	17	10 UJ	10 U	10 0		10 U	10 U	10 U	10		10 U	10 U
1,3-Dichlorobenzene	μg/L	0	0%	NYSDEC CLASS GA	3	0	0	17	10 UJ	10 U	10 0		10 U	10 U	10 U	10		10 U	10 U
1,4-Dichlorobenzene	μg/L	0	0%	NYSDEC CLASS GA	3	0	0	17	10 UJ	10 U	10 1		10 U	10 U	10 U	10		10 U	10 U
Acetone	μg/L	51	12%		0	0	2	17	50 UJ	50 U	50 1		50 U	50 U	50 U	50		50 U	50 U
Benzene	µg/L	0	0%	NYSDEC CLASS GA	1	0	0	17	10 UJ	10 U	10 l		10 U	10 U	10 U	10		10 U	10 U
Bromodichloromethane	μg/L	0	0%	NYSDEC CLASS GA	80	0	0	17	10 UJ	10 U	10 1		10 U	10 U	10 U	10		10 U	10 U
Bromoform	μg/L	0	0%	NYSDEC CLASS GA	80	0	0	17	10 UJ	10 U	10 1		10 U	10 U	10 U	10		10 U	10 U
Carbon Disulfide	μg/L	0	0%		00	0	0	17	10 UJ	10 U	10 1		10 U	10 U	10 U	10		10 UJ	10 UJ
Carbon Tetrachloride	μg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10 UJ	10 U	10 1		10 U	10 U	10 U	10		10 U	10 U
Chlorobenzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10 UJ	10 U	10 1		10 U	10 U	10 U	10		10 U	10 U
Chlorodibromomethane	µg/L	0	0%	NYSDEC CLASS GA	80	0	0	17	10 UJ	10 U	10 1		10 U	10 U	10 U	10		10 U	10 U
Chloroethane	μg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10 UJ	10 U	10 1		10 U	10 U	10 U	10		10 U	10 U
Chloroform	µg/L	0	0%	NYSDEC CLASS GA	7	0	0	17	10 UJ	10 U	10 1		10 U	10 U	10 U	10		10 U	10 U
cis-1,2-Dichloroethene	µg/L	41	6%	NYSDEC CLASS GA	5	1	1	17	10 UJ	10 U	10 ሀ		10 U	10 U	10 U	10		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 ไ		10 U	10 U	10 U	10		10 U	10 U
Cyclohexane	µg/L	0	0%		-	0	0	17	10 UJ	10 U	10 ไ		10 U	10 U	10 U	10		10 U	10 U
Ethyl Benzene	µg/L	0	0%	NYSDEC CLASS GA	5	0	0	17	10 UJ	10 U	10 ไ	J 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 ไ	J 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 l	J 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 l	J 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 ไ	J 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 l	JJ 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 l	J 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 l	J 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 l	J 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 l	J 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 l		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 l	J 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 l	J 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 l	J 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 l	J 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 l	J 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 l	J 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 l	J 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	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 l	J 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 ไ	J 10 U	10 U	10 U	10 U	10	U 10 UJ	10 U	10 U
Villy Onlonde	P9'-	•	070		-	U		17	10 03	100	10	100	100	100	100	10	10 00	100	100

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

		1		1				1	THU2 05 (T)		THUR 67	THU0.67		
									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
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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		0	0%	NYSDEC CLASS GA	0.6	0	0	17	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	µg/L	0			3	-	0	17	10 U	10 U	10 U	10 U	10 U	10 U
-	µg/L	-	0%	NYSDEC CLASS GA	-	0								
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	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%	NISDLC CLASS GA	5	0	0	17	10 U	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone		0	0%			0	0	17	50 U	50 U	50 U	50 U	50 U	50 U
, ,	µg/L	-				-	0							
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
View I Oble viele	µg/L	0	0%	NYSDEC CLASS GA	2	0	0	17	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	µy/L	0	0.0		~	0	0	11/	100	100	100	100	10 0	100

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							
SAMPLE ID		1					1		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							
STUDY ID									SRI							
			Frequency			Number	Number	Number								
_			of	Criteria	Action	of	of	of								
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances		Analyses	Value (Q)							
1,1,1,2-Tetrachloroethane	µg/L	0	0%			0	0	8	0.22 U							
1,1,1-Trichloroethane	µg/L	0	0%			0	0	8	0.24 U							
1,1,2,2-Tetrachloroethane	µg/L	0	0%			0	0	8	0.21 U							
1,1,2-Trichloroethane	µg/L	0	0%			0	0	8	0.24 U							
1,1-Dichloroethane	µg/L	0	0%			0	0	8	0.21 U							
1,1-Dichloroethene	µg/L	0	0%			0	0	8	0.16 U	0.16 U 0.21 U	0.16 U	0.16 U				
1,1-Dichloropropene	µg/L	-	0%			0	0		0.21 U		0.21 U	0.21 U				
1,2,3-Trichlorobenzene	µg/L	0	0%			0	0	8	0.18 U 0.28 U	0.18 U	0.18 U 0.28 U	0.18 U 0.28 U	0.18 U	0.18 U 0.28 U	0.18 U 0.28 U	0.18 U
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	µg/L	0	0% 0%	NYSDEC Class C	5	0	0	8	0.28 U	0.28 U 0.20 U	0.20 U	0.28 U	0.28 U 0.20 U	0.28 U	0.28 U	0.28 U 0.20 U
1,2,4-Trimethylbenzene	µg/L	0		INTSDEC Class C	5	0	0	8	0.20 U							
1,2-Dibromo-3-Chloropropane	μg/L μg/L	0	0% 0%			0	0	8	0.24 0 0.20 R							
1,2-Dibromo-3-Chioropropane		0	0%			0	0	8	0.20 R 0.20 U	0.20 R	0.20 R	0.20 R 0.20 U	0.20 R 0.20 U	0.20 R	0.20 R	0.20 R
1,2-Dichlorobenzene	μg/L μg/L	0	0%	NYSDEC Class C	5	0	0	8	0.20 U 0.17 UJ							
1,2-Dichloroethane	μg/L μg/L	0	0%	NI ODLO OIASS C	5	0	0	8	0.17 UJ 0.21 U	0.17 UJ 0.21 U	0.17 UJ	0.17 UJ 0.21 U	0.17 UJ 0.21 U	0.17 UJ	0.17 UJ	0.17 UJ 0.21 U
1,2-Dichloropropane	μg/L μg/L	0	0%			0	0	8	0.21 U							
1,3,5-Trimethylbenzene	µg/L	0	0%			0	0	8	0.21 U							
1,3-Dichlorobenzene	µg/L	0	0%	NYSDEC Class C	5	0	0	8	0.20 UJ	0.22 U	0.22 U	0.20 UJ	0.22 U	0.22 U	0.22 U	0.22 U
1,3-Dichloropropane	µg/L	0	0%	NTODEO Olassio	0	0	0	8	0.22 U	0.20 U	0.20 U	0.20 U	0.20 U	0.22 U	0.20 U	0.20 U
1.4-Dichlorobenzene	μg/L	0	0%	NYSDEC Class C	5	0	0	8	0.20 UJ	0.22 U	0.22 U	0.20 UJ	0.22 U	0.20 UJ	0.22 U	0.22 U
2,2-Dichloropropane	µg/L	0	0%			0	0	8	0.20 U							
2-Chlorotoluene	μg/L	0	0%			0	0	8	0.50 U							
Acetone	µg/L	0	0%			0	0	8	1.5 R							
Acrylonitrile	μg/L	0	0%			0	0	8	0.94 R							
Allyl Chloride	μg/L	0	0%			0	0	8	0.18 U							
Benzene	μg/L	0	0%			0	0	8	0.24 UJ							
Bromobenzene	μg/L	0	0%			0	0	8	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							
Butyl chloride	µg/L	0	0%			0	0	8	0.22 U							
Carbon Disulfide	µg/L	0	0%			0	0	8	0.18 U							
Carbon Tetrachloride	µg/L	0	0%			0	0	8	0.22 U							
Chlorobenzene	µg/L	0	0%	NYSDEC Class C	5	0	0	8	0.21 UJ							
Chlorodibromomethane	µg/L	0	0%			0	0	8	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							
cis-1,2-Dichloroethene	μg/L	0	0%			0	0	8	0.24 U							
cis-1,3-Dichloropropene	µg/L	0	0%			0	0	8	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							
Diisopropyl Ether	µg/L	0	0%			0	0	8	0.21 U							
Ethyl Benzene	µg/L	0	0%			0	0	8	0.21 UJ							
Ethyl ether	µg/L	0	0%			0	0	8	0.21 U							
Ethyl methacrylate	µg/L	0	0%			0	0	8	0.25 U							
Hexachlorobutadiene	µg/L	0	0%	NYSDEC Class C	0.01	0	0	8	0.17 U							
Hexachloroethane	µg/L	0	0%	NYSDEC Class C	0.6	0	0	8	0.20 U							
Isopropylbenzene	µg/L	0	0%			0	0	8	0.20 UJ							
Meta/Para Xylene	µg/L	0	0%			0	0	8	0.43 UJ							
Methacrylonitrile	µg/L	0	0%			0	0	8	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							
Methyl butyl ketone	µg/L	0	0%			0	0	8	1.1 U							
Methyl chloride	µg/L	0	0%			0	0	8	0.11 U							
Methyl cyclohexane	µg/L	0	0%			0	0	8	N/A	N/A	N/A	N/A		N/A	N/A	N/A
Methyl ethyl ketone	µg/L	0	0%			0	0	8	0.94 R							
Methyl iodide	µg/L	0	0%			0	0	8	0.14 U							
Methyl isobutyl ketone	µg/L	0	0%			0	0	8	1.0 U							
Methyl methacrylate	µg/L	0	0%			0	0	8	0.53 U							
Methyl Tertbutyl Ether	µg/L	0	0%			0	0	8	0.37 U							
Methylene bromide	μg/L	0	0%			0	0	8	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			Number	Number	Number								
			of	Criteria	Action	of	of	of								
Methylene Chloride	µg/L	0	0%	NYSDEC Class C	200	0	0	8	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					
Ortho Xylene	µg/L	0	0%			0	0	8	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					
p-Isopropyltoluene	µg/L	0	0%			0	0	8	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					
Propylbenzene	µg/L	0	0%			0	0	8	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					
Styrene	µg/L	0	0%			0	0	8	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					
tert-Butylbenzene	µg/L	0	0%			0	0	8	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					
Tetrahydrofuran	µg/L	0	0%			0	0	8	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					
trans-1,2-Dichloroethene	µg/L	0	0%			0	0	8	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					
Trans-1,4-Dichloro-2-butene	µg/L	0	0%			0	0	8	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					
Trichlorofluoromethane	µg/L	0	0%			0	0	8	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					

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					
SAMPLE ID									124250	124251	124252	124253	124254	124257	124255	124256
FOP 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	SA	SA SA	DU	SA SA	SA SA
STUDY ID									SRI	SRI	SRI	SRI	SRI	SRI	SRI	SRI
			Frequency	1		Number	Number	Number		UN	ON		UN			
			of	Criteria	Action	of	of	of								
Parameter	Units	Movimum	Frequency		Action Leve	Exceed	Detect	Analyses	Value (Q)	Value (Q)	Value (Q)					
1.1.1-Trichloroethane	UG/KG	0	0%	TAGM 4046	800	0		Analyses	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	00/10	0	0%	1701014040	000	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	00/10	0	0%	17.011 +0+0	0-00	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	00/100	0	0%	1710101 4040	100	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	00,110	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	00,110	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	00,110	0	0%		000	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	0.01110	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		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		0	5	8	2.0 J	2.3 J	12 UJ	7.4 J	7.2 J	5.7 J	12 UJ	12 UJ
rans-1,2-Dichloroethene	UG/KG	0	0%	TAGM 4046		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	00/10	0	0%	17.501 4040		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
	00/10		570	17.011 +0+0	200	5	U	0	11 00	0.10	12 00	14 00	0.00	12 00	12 00	12 00
Fotal 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
			Frequency			Number	Number	Number	Ora								
			of	Criteria	Action	of	of	of									
Parameter	Unit	Maximum	Detection	Type	Level	Exceedances	Detections	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 U.		0.18 U	510 U	490 U	390 U	, , , , , , , , , , , , , , , , , , , ,	590 U
1.1.2.2-Tetrachloroethane	µg/Kg	0	0%	TAGM 4046	600	0	0	15	0.35 UJ	71 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 U.	J 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 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 U.	J 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 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 U.	J 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 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 U.	J 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 U.		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 U.		0.20 U	510 U	490 U	390 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		1200 U
Carbon Tetrachloride	μg/Kg	0	0%	TAGM 4046	600	0	0	15	0.19 UJ	0.24 U		0.20 U	510 U	490 U	390 U		590 U
Chlorobenzene	μg/Kg	0	0%	TAGM 4046	1700	0	0	15	0.23 UJ	0.29 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 U		0.20 U	510 U	490 U	390 U		590 U
Chloroethane	µg/Kg	0	0%	TAGM 4046	1900	0	0	15	0.34 UJ	0.43 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 U.		0.16 U	510 U	490 U	390 U		590 U
cis-1.2-Dichloroethene	μg/Kg	2800	47%			0	7	15	13 J	19 J		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 U.		0.13 U	510 U	490 U	390 U		590 U
Ethyl Benzene	μg/Kg	0	0%	TAGM 4046	5500	0	0	15	0.16 UJ	0.20 U.		0.17 U	510 U	490 U	390 U		590 U
Meta/Para Xylene	μg/Kg	0	0%			0	0	15	0.34 UJ	0.42 U		0.35 U	510 U	490 U	390 U		590 U
Methyl bromide	μg/Kg	0	0%			0	0	15	0.46 UJ	0.58 U.		0.48 UJ	510 U	490 U	390 U		590 U
Methyl butyl ketone	μg/Kg	0	0%			0	0	15	2.1 UJ	2.6 U.		2.2 U	1000 U	980 U	780 U		1200 U
Methyl chloride	μg/Kg	0	0%			0	0	15	0.22 UJ	0.27 U		0.22 U	510 U	490 U	390 U		590 U
Methyl ethyl ketone	μg/Kg	4.5	7%	TAGM 4046	300	0	1	15	1.5 UJ	1.9 U.		1.5 U	1000 U	980 U	780 U		1200 U
Methyl isobutyl ketone	μg/Kg	0	0%	TAGM 4046	1000	0	0	15	1.6 UJ	2.0 U		1.6 U	1000 U	980 U	780 U		1200 U
Methylene Chloride	μg/Kg	0	0%	TAGM 4046	1000	0	0	15	0.44 UJ	0.56 U		0.46 UJ	510 U	490 U	390 U		590 U
Ortho Xylene	μg/Kg	0	0%			0	0	15	0.28 UJ	0.35 U.		0.10 UU	510 U	490 U	390 U	440 U	590 U
Styrene	μg/Kg	0	0%			0	0	15	0.20 UJ	0.26 U		0.20 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 U		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 U		0.48 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 U		0.10 U	510 U	490 U	390 U	440 U	590 U
trans-1,3-Dichloropropene	μg/Kg	0	0%		000	0	0	15	0.17 UJ	0.21 U.		0.20 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	10	15	0.15 UJ	0.19 U.		0.16 U	510 U	490 U	390 U	440 U	590 U
	P9/119	1.0	770		200	0	1	10	0.10 00	0.13 00	5, 5, 5,	0.100	510 0		5500	0 0++	0000
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		50.2

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
			Frequency			Number	Number	Number					<u> </u>	0.1.
			of	Criteria	Action	of	of	of						
Parameter	Unit	Maximum	Detection	Туре	Level	Exceedances	Detections	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	
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	
1,1,2-Trichloroethane	µg/Kg	0	0%			0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 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	
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	
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	
1,2-Dichloropropane	μg/Kg	0	0%			0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 U	
Acetone	μg/Kg	32	13%	TAGM 4046	200	0	2	15	1700 U	16 U	4.3 J	32	17 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	
Bromodichloromethane	μg/Kg	0	0%			0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 U	
Bromoform	μg/Kg	0	0%			0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 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	
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	
Chlorobenzene	μg/Kg	0	0%	TAGM 4046	1700	0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 U	
Chlorodibromomethane	μg/Kg	0	0%		1100	0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 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	
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	
cis-1,2-Dichloroethene	μg/Kg	2800	47%		000	0	7	15	430 U	4 U	1.5 J	4.9 J	4.3 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	
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	
Meta/Para Xylene	μg/Kg	0	0%			0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 U	
Methyl bromide	μg/Kg	0	0%			0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 U	
Methyl butyl ketone	μg/Kg	0	0%			0	0	15	860 U	8.1 UJ	3.2 UJ	9.9 UJ	8.6 U	
Methyl chloride	μg/Kg	0	0%			0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 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 U	
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 U	
Methylene Chloride	μg/Kg	0	0%	TAGM 4046	1000	0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 U	
Ortho Xylene	μg/Kg	0	0%			0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 U	
Styrene	μg/Kg	0	0%			0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 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	
Toluene	μg/Kg	100	7%	TAGM 4046	1500	0	1	15	430 U	4 U	1.6 U	4.9 U	4.3 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	
trans-1,3-Dichloropropene	μg/Kg	0	0%		000	0	0	15	430 U	4 U	1.6 U	4.9 U	4.3 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 4040	200	0	13	15	430 U	4 U	1.5 J	4.9 U	4.3 U	
	μ9/119	1.5	170		200	0	I	10			1.5 5	0	4.50	
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	то		50.7	11.5	03.1	01.3
	ingrity	0420	1370			U	4	10	ļ	ļ		<u> </u>		

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
MATRIX									SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE ID									123685	123687	123695	123696	123697	123698
TOP OF SAMPLE									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
SAMPLE DATE									11/3/2004	11/10/2004	12/9/2004	12/9/2004	12/9/2004	12/9/2004
QC CODE									SA	SA	SA	DU	SA	SA
STUDY ID									SRI	SRI	SRI	SRI	SRI	SRI
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Units	Maximum	Detection	Туре	Level	Exceedances	Detect	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	18	0.23 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
1,1,2,2-Tetrachloroethane	μg/Kg	0	0%	TAGM 4046	600	0	0	18	0.46 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
1,1,2-Trichloroethane	μg/Kg	0	0%	TAGM 4046	000	0	0	18	0.40 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
1,1-Dichloroethane	μg/Kg	0	0%	TAGM 4046	200	0	0	18	0.3 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
1,1-Dichloroethene	μg/Kg	0.65	6%	TAGM 4046	400	0	1	18	0.19 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
1,2-Dichloroethane		0.05	0%	TAGM 4046	100	0	0	18	2.7 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
-	µg/Kg			TAGM 4046	100	-	0			680 U		4.8 U		4.2 U
1,2-Dichloropropane	µg/Kg	0	0%		200	0	0	18	0.29 UJ		4.4 U 18 U		4.8 U	4.2 U
Acetone	µg/Kg	3.8	6%	TAGM 4046	200	0	1	18	6.4 UJ	2700 U		19 U	19 U	
Benzene	µg/Kg	0	0%	TAGM 4046	60	0	0	18	0.17 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Bromodichloromethane	µg/Kg	0	0%	TAGM 4046		0	0	18	0.29 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Bromoform	µg/Kg	0	0%	TAGM 4046		0	0	18	0.26 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	2	18	0.09 UJ	1400 U	8.8 U	9.5 U	9.6 U	8.4 U
Carbon Tetrachloride	µg/Kg	0	0%	TAGM 4046	600	0	0	18	0.26 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Chlorobenzene	µg/Kg	0	0%	TAGM 4046	1700	0	0	18	0.3 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Chlorodibromomethane	µg/Kg	0	0%	TAGM 4046		0	0	18	0.25 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Chloroethane	µg/Kg	0	0%	TAGM 4046	1900	0	0	18	0.45 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Chloroform	µg/Kg	0	0%	TAGM 4046	300	0	0	18	0.2 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
cis-1,2-Dichloroethene	µg/Kg	20	28%	TAGM 4046		0	5	18	3.3 J	680 U	2.4 J	2.6 J	1.7 J	4.2 U
cis-1,3-Dichloropropene	µg/Kg	0	0%	TAGM 4046		0	0	18	0.17 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Ethyl Benzene	µg/Kg	80	17%	TAGM 4046	5500	0	3	18	0.21 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Meta/Para Xylene	µg/Kg	150	6%	TAGM 4046		0	1	18	0.44 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Methyl bromide	µg/Kg	0	0%	TAGM 4046		0	0	18	0.61 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Methyl butyl ketone	µg/Kg	0	0%	TAGM 4046		0	0	18	2.8 UJ	1400 U	8.8 UJ	9.5 UJ	9.6 UJ	8.4 UJ
Methyl chloride	µg/Kg	0	0%	TAGM 4046		0	0	18	0.28 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Methyl ethyl ketone	µg/Kg	0	0%	TAGM 4046	300	0	0	18	2 UJ	1400 U	8.8 UJ	9.5 UJ	9.6 UJ	8.4 UJ
Methyl isobutyl ketone	µg/Kg	0	0%	TAGM 4046	1000	0	0	18	2.1 UJ	1400 U	8.8 UJ	9.5 UJ	9.6 UJ	8.4 UJ
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	2	18	0.59 UJ	950	4.4 U	4.8 U	4.8 U	4.2 U
Ortho Xylene	μg/Kg	42	11%	TAGM 4046		0	2	18	0.37 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Styrene	μg/Kg	0	0%	TAGM 4046		0	0	18	0.27 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Tetrachloroethene	μg/Kg	1.7	6%	TAGM 4046	1400	0	1	18	0.55 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Toluene	μg/Kg	210	6%	TAGM 4046	1500	0	1	18	0.22 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
trans-1,2-Dichloroethene	μg/Kg	1.3	6%	TAGM 4046	300	0	1	18	0.32 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Trans-1,3-Dichloropropene	μg/Kg	0	0%	TAGM 4046		0	0	18	0.22 UJ	680 U	4.4 U	4.8 U	4.8 U	4.2 U
Trichloroethene	μg/Kg	28000	94%	TAGM 4046	700	7	17	18	28000	1500	3100	190	110	9.3
Vinyl Chloride	μg/Kg	7.4	6%	TAGM 4046	200	0	1	18	0.2 UJ		4.4 U	4.8 U	4.8 U	4.2 U

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

LOCATION ID									SP813-6		SP813-7	SP813-8	SP813-9	SP813-10	SP813-11
MATRIX									SOIL		SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE ID									123699		123700	123706	123659	123660	123661
TOP OF SAMPLE									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
SAMPLE DATE									12/9/2004		12/9/2004	12/21/2004	7/22/2005	7/22/2005	7/22/2005
QC CODE									SA		SA	SA	SA	SA	SA
STUDY ID									SRI		SRI	SRI	SRI	SRI	SRI
			Frequency			Number	Number	Number	014						
			of	Criteria	Action	of	of	of							
Parameter	Units	Maximum	Detection	Туре	Level	Exceedances	Detect	Analyses	Value	(0)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
1,1,1-Trichloroethane	µg/Kg	0	0%	TAGM 4046	800	0	0	18	5.2	· · /	390 U	1.7 U	520 U	420 U	480 U
1,1,2,2-Tetrachloroethane	μg/Kg	0	0%	TAGM 4046	600	0	0	18	5.2	_	390 U	1.7 U	520 U	420 U	480 U
1,1,2-Trichloroethane	μg/Kg	0	0%	TAGM 4046	000	0	0	18	5.2		390 U	1.7 U	520 U	420 U	480 U
1,1-Dichloroethane	μg/Kg	0	0%	TAGM 4046	200	0	0	18	5.2	_	390 U	1.7 U	520 U	420 U	480 U
1,1-Dichloroethene	μg/Kg	0.65	6%	TAGM 4040	400	0	1	18	5.2	_	390 U	0.65 J	520 U	420 U	480 U
1,2-Dichloroethane	μg/Kg	0.05	0%	TAGM 4040	100	0	0	18	5.2	_	390 U	1.7 U	520 U	420 U	480 U
1,2-Dichloropropane		0	0%	TAGM 4040	100	0	0	18	5.2		390 U	1.7 U	520 U	420 U	480 U
• •	µg/Kg	3.8	6%	TAGM 4040	200	0	0	18	21		1500 U	3.8 J	340 U	1700 U	1900 U
Acetone Benzene	µg/Kg	0 0	0%	TAGM 4046		0	0	18	5.2		390 U	1.7 U	520 U	420 U	480 U
	µg/Kg	0			60	, v	0					1.7 U			
Bromodichloromethane	µg/Kg	0	0%	TAGM 4046		0	•	18	5.2	_	390 U		520 U	420 U	480 U
Bromoform	µg/Kg	0	0%	TAGM 4046	0700	0	0	18	5.2	_	390 U	1.7 U	520 U	420 U	480 U
Carbon Disulfide	µg/Kg	1	11%	TAGM 4046	2700	0	2	18	10		770 U	1 J	1000 U	830 U	960 U
Carbon Tetrachloride	µg/Kg	0	0%	TAGM 4046	600	0	0	18	5.2	_	390 U	1.7 U	520 U	420 U	480 U
Chlorobenzene	µg/Kg	0	0%	TAGM 4046	1700	0	0	18	5.2	_	390 U	1.7 U	520 U	420 U	480 U
Chlorodibromomethane	µg/Kg	0	0%	TAGM 4046		0	0	18	5.2	_	390 U	1.7 U	520 U	420 U	480 U
Chloroethane	µg/Kg	0	0%	TAGM 4046	1900	0	0	18	5.2		390 U	1.7 U	520 U	420 U	480 U
Chloroform	µg/Kg	0	0%	TAGM 4046	300	0	0	18	5.2	_	390 U	1.7 U	520 U	420 U	480 U
cis-1,2-Dichloroethene	µg/Kg	20	28%	TAGM 4046		0	5	18	5.4	-	390 U	20	520 U	420 U	480 U
cis-1,3-Dichloropropene	µg/Kg	0	0%	TAGM 4046		0	0	18	5.2		390 U	1.7 U	520 U	420 U	480 U
Ethyl Benzene	µg/Kg	80	17%	TAGM 4046	5500	0	3	18	5.2	-	390 U	1.7 U	33 J	80 J	480 U
Meta/Para Xylene	µg/Kg	150	6%	TAGM 4046		0	1	18	5.2		390 U	1.7 U	520 U	420 U	480 U
Methyl bromide	µg/Kg	0	0%	TAGM 4046		0	0	18	5.2	-	390 U	1.7 U	520 U	420 U	480 U
Methyl butyl ketone	µg/Kg	0	0%	TAGM 4046		0	0	18		UJ	770 U	3.3 UJ	1000 U	830 U	960 U
Methyl chloride	µg/Kg	0	0%	TAGM 4046		0	0	18	5.2	U	390 U	1.7 U	520 U	420 U	480 U
Methyl ethyl ketone	µg/Kg	0	0%	TAGM 4046	300	0	0	18	10	UJ	770 U	3.3 UJ	1000 UJ	830 UJ	960 UJ
Methyl isobutyl ketone	µg/Kg	0	0%	TAGM 4046	1000	0	0	18	10	UJ	770 U	3.3 UJ	1000 UJ	830 UJ	960 UJ
Methylene Chloride	µg/Kg	950	11%	TAGM 4046	100	1	2	18	5.2	U	390 U	1.7 U	520 U	420 U	480 U
Ortho Xylene	µg/Kg	42	11%	TAGM 4046		0	2	18	5.2	U	390 U	1.7 U	520 U	31 J	480 U
Styrene	µg/Kg	0	0%	TAGM 4046		0	0	18	5.2	U	390 U	1.7 U	520 U	420 U	480 U
Tetrachloroethene	µg/Kg	1.7	6%	TAGM 4046	1400	0	1	18	5.2	U	390 U	1.7 J	520 U	420 U	480 U
Toluene	µg/Kg	210	6%	TAGM 4046	1500	0	1	18	5.2	U	390 U	1.7 U	520 U	420 U	480 U
trans-1,2-Dichloroethene	µg/Kg	1.3	6%	TAGM 4046	300	0	1	18	5.2		390 U	1.3 J	520 U	420 U	480 U
Trans-1,3-Dichloropropene	µg/Kg	0	0%	TAGM 4046		0	0	18	5.2	-	390 U	1.7 U	520 U	420 U	480 U
Trichloroethene	μg/Kg	28000	94%	TAGM 4046	700	7	17	18	7400	_	1700	18000 J	160 J	110 J	410 J
Vinyl Chloride	μg/Kg		6%	TAGM 4046		0	1	18	5.2		390 U	7.4	520 U	420 U	480 U

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

LOCATION ID									SP813-12	SP813-13	SP813-14	SP813-15	SP813-16	SP813-17
MATRIX									SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE ID									123662	123663	123664	123665	123666	123667
TOP OF SAMPLE									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
SAMPLE DATE									7/22/2005	7/22/2005	7/22/2005	7/22/2005	7/22/2005	11/28/2005
QC CODE									SA	SA	SA	SA	SA	SA
STUDY ID									SRI	SRI	SRI	SRI	SRI	SRI
			Frequency			Number	Number	Number						
			of	Criteria	Action	of	of	of						
Parameter	Units	Maximum	Detection	Туре	Level	Exceedances	Detect	Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
1,1,1-Trichloroethane	µg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
1,1,2,2-Tetrachloroethane	μg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
1,1,2-Trichloroethane	μg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
1,1-Dichloroethane	μg/Kg	0	0%	TAGM 4046	200	0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
1,1-Dichloroethene	μg/Kg	0.65	6%	TAGM 4046	400	0	1	18	580 U	520 U	470 U	670 U	490 U	4.6 U
1,2-Dichloroethane	μg/Kg	0	0%	TAGM 4046	100	0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
1,2-Dichloropropane	μg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Acetone	μg/Kg	3.8	6%	TAGM 4046	200	0	1	18	2300 U	2100 U	1900 U	2700 U	1900 U	18 U
Benzene	μg/Kg	0.0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Bromodichloromethane	μg/Kg	0	0%	TAGM 4046	00	0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Bromoform	μg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Carbon Disulfide	μg/Kg	1	11%	TAGM 4046	2700	0	2	18	1200 U	1000 U	930 U	1300 U	970 U	0.48 J
Carbon Tetrachloride	μg/Kg	0	0%	TAGM 4046	600	0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Chlorobenzene	μg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Chlorodibromomethane	μg/Kg	0	0%	TAGM 4046	1700	0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Chloroethane	μg/Kg	0	0%	TAGM 4046	1900	0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Chloroform	μg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
cis-1,2-Dichloroethene	μg/Kg	20	28%	TAGM 4046	500	0	5	18	580 U	520 U	470 U	670 U	490 U	4.6 U
cis-1,3-Dichloropropene	μg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Ethyl Benzene	μg/Kg	80	17%	TAGM 4046	5500	0	3	18	580 U	54 J	470 U	670 U	490 U	4.6 U
Meta/Para Xylene	μg/Kg	150	6%	TAGM 4040	5500	0	1	18	580 U	150 J	470 U	670 U	490 U	4.6 U
Methyl bromide	μg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Methyl butyl ketone	μg/Kg	0	0%	TAGM 4040		0	0	18	1200 U	1000 U	930 U	1300 U	970 U	9.2 U
Methyl chloride	μg/Kg	0	0%	TAGM 4040		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
		0	0%	TAGM 4040	300	0	0	18	1200 UJ	1000 UJ	930 UJ	1300 UJ	970 UJ	9.2 U
Methyl ethyl ketone Methyl isobutyl ketone	µg/Kg	0	0%	TAGM 4040		0	0	18	1200 UJ	1000 UJ	930 UJ	1300 UJ	970 UJ	9.2 U
Methylene Chloride	µg/Kg	950	11%	TAGM 4040		1	2	18	580 U	520 U	470 U	670 U	490 U	0.38 J
Ortho Xylene	µg/Kg	42	11%	TAGM 4040		0	2	18	580 U	42 J	470 U	670 U	490 U	4.6 U
	µg/Kg			TAGM 4040		0	0	18					490 U	4.6 U
Styrene Tetrachloroethene	µg/Kg	0	0%	TAGM 4046		0	1	18	580 U	520 U 520 U	470 U	670 U		4.6 U
	µg/Kg	1.7	6%				1		580 U		470 U	670 U	490 U	
Toluene	µg/Kg	210	6%	TAGM 4046		0	1	18	580 U	210 J	470 U	670 U	490 U	4.6 U
trans-1,2-Dichloroethene	µg/Kg	1.3	6%	TAGM 4046		0	1	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Trans-1,3-Dichloropropene	µg/Kg	0	0%	TAGM 4046		0	0	18	580 U	520 U	470 U	670 U	490 U	4.6 U
Trichloroethene	µg/Kg	28000	94%	TAGM 4046		•	17	18	510 J	240 J	130 J	670 U	22000 J	3.4 J
Vinyl Chloride	µg/Kg	7.4	6%	TAGM 4046	200	0	1	18	580 U	520 U	470 U	670 U	490 U	4.6 U

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

LOCATION ID	1	1	1	T	1	SS12-106	SS12-10	7 7		SS12-107 (D)		CC10 400		0040 400		00101		
MATRIX			1			SOIL	SOIL	<u>"</u> +		SOIL		SS12-108 SOIL		SS12-109		SS12-117		
SAMPLE ID		1	1		1	123677	123676			123681		123673		SOIL		SOIL		
TOP OF SAMPLE		1	<u> </u>			0	0			0		0		<u>123672</u> 0		123674		
BOTTOM OF SAMPL	LE		1	1	1	0.2	0.2			0.2		0.2		0.2		0		
SAMPLE DATE]		1		6/24/2004	6/24/200)4		6/24/2004		6/24/2004		6/24/2004		0.2 6/24/2004		
QC CODE			1	T		SA	SA			DU		SA SA		SA		6/24/2004 SA		
STUDY ID						SRI	SRI			SRI		SRI		SRI		SRI		
			Frequency	Number	Number								1					
_			of	of	of													
Parameter	Unit	Maximum	Detection	Detections	+*+	Value (Q)		/alue	(Q) Uncertainty	Value (C) Uncertainty	Value (Q) Uncertainty	Value (C	2) Uncertainty	Value	(Q)	Uncertainty
Actinium-228	PCI/G	0.962	100%	11	11).851	0.228	0.844	0.193	0.946	0.194	0.779	0.223	0.760	-Arraliandara	.204
Americium-241	PCI/G	0	0%	0	11	0.0239 U			U 0.108	0.0153 L	······	-0.0957 U	0.120	0.0531 L		-0.0298		*****
Antimony-124	PCI/G	0	0%	0	11	0.0166 U			U 0.0232	0.0101 L		-0.0124 U	0.0213	-0.00663 L	J 0.0287	-0.0124	U 0	.0247
Antimony-125 Barium-133	PCI/G	0	0%	0	11	0.0275 U			U 0.0549	0.00617 L		-0.037 U		0.0128 L	J 0.0615	-0.0538	U 0	.064
Barium-140	PCI/G PCI/G	0	0%	0	11	-0.0106 U			U 0.0293	0.00336 L		0.00497 U		0.0014 L	J 0.0308	-0.000114	U 0	.0336
Beryllium-7	PCI/G	0	<u>0%</u> 0%	0	<u>11</u>	0.0291 U			U 0.165	0.0373 L		0.058 U		0.113 L		-0.0223	U 0	.150
Bismuth-212	PCI/G	0.747	100%	11	11	0.138 U 0.556			U 0.186	-0.0821 L		ç	0.170	0.0144 L		0.0661		
Bismuth-214	PCI/G	0.867	100%	11	11).572	0.287	0.566	0.238	0.434	0.327	0.747	0.326	0.484		.350
Cerium-139	PCI/G	0.007	0%	0	11	-0.00395 U		0.800	0.127 U 0.0167	0.754	0.124	0.706	0.106	0.787	0.139	0.637		.114
Cerium-141	PCI/G	0	0%	0	11	0.00766 U	·····		U 0.0167 U 0.0386	0.00231		<u>{</u>	0.0158	-0.00882 L		0.00217		
Cerium-144	PCI/G	0	0%	ō	11	-0.0462 U			U 0.114	0.0184 U -0.0166 U			0.0453	0.054		<u>}</u>	<u>U</u> 0.	
Cesium-134	PCI/G	0	0%	0	11	0.00 UJ			UJ 0.0334		0.111 J 0.0379	······································	0.110	-0.0427 L		-0.012	·····	
Cesium-136	PCI/G	0	0%	0	11	0.048 U			U 0.0631	0.00 U		<u>}</u>	0.0288	0.00335 L -0.0114 L		0.045		
Cesium-137	PCI/G	0.522	82%	9	11			.399	0.0595	0.440	0.0566	0.324	0.053	-0.0114 C 0.382	0.0672	0.0167		.0674 .0556
Chromium-51	PCI/G	0	0%	0	11	-0.0313 U			U 0.221	0.150 U		0.271 U		0.0206 U	<u></u>	0.124		
Cobalt-56	PCI/G	0	0%	0	11	0.0141 U			U 0.0467	-0.00981 U			0.0215	0.00696		0.0292		
Cobalt-57	PCI/G	0	0%	0	11	0.00773 U	0.0125 -0.00		U 0.014	-0.000322 U		0.00419 U		0.00397 U		-0.0066		*****
Cobalt-58	PCI/G	0	0%	0	11	-0.00491 U		0472	U 0.0233	0.0105 U		-0.00256 U		-0.00683 U			U 0.	
Cobalt-60	PCI/G	0	0%	0	11	0.000928 U		0093	U 0.0269	0.00727 U	0.0383	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	0.023	0.000628 U		0.0174		
Europium-152	PCI/G	0	0%	0	11	-0.0291 U			U 0.0593	-0.0493 U	0.0533	-0.0218 U	0.0566	0.0348 U			U 0.	
Europium-154	PCI/G	0	0%	0		0.057 U			U 0.077	0.00815 U	0.0635	-0.0285 U	0.0726	-0.0119 U	0.0844	0.0326		No. of the local data and the local data an
Europium-155 ridium-192	PCI/G PCI/G	0	0%	0	11	0.0532 U (U 0.0579		0.0833	0.0762 U	0.0787	0.0724 U	0.0665	0.00		
ron-59	PCI/G	0	0%	0	11	0.00731 U			U 0.0207	-0.00711 U		0.0237 U		0.00221 U	0.0225	0.00172	U 0.	0229
_ead-210	PCI/G	0	0%	0	<u>11</u> 11	0.00422 U (U 0.0535	-0.00572 U	~		0.0526	0.0374 U		-0.0591	U 0.	0567
_ead-211	PCI/G	0	0%	0	11	3.46 U 4			U 2.97	1.56 U		1.88 U		1.60 U		2.64		
_ead-212	PCI/G	0.966	100%	11	11	0.127 U (0.856 (······································		U 0.543	-0.431 U	~~	-0.129 U	······································	0.442 U	<u>کی سیمی میں میں میں میں میں میں میں میں میں </u>	0.270		
_ead-214	PCI/G	0.932	100%	11	11	······································		.948 .932	0.108	0.903	0.0918	0.940	0.113	0.775	0.095	0.759		0663
Manganese-54	PCI/G	0.0254	9%	1	11				U 0.0232	0.855 -0.00566 U	0.111	0.809	0.118	0.885	0.134	0.722		120
Mercury-203	PCI/G	0	0%	0	11	-0.00858 U (U 0.0276	0.00000 U			0.0393	0.0207 U		0.00675		
Neodymium-147	PCI/G	0	0%	0	11	0.00261 U (J 0.281	0.0203 U 0.0512 U			0.0282	0.0348 U	······	0.029		
Neptunium-239	PCI/G	0	0%	0	11	-0.0178 U (J 0.107	-0.00949 U		-0.0648 U	- <u>}</u>	0.0788 U -0.0409 U	0.303	0.306		
Niobium-94	PCI/G	0	0%	0	11	0.00928 U 0			J 0.0244	0.0141 U		-0.0118 U		-0.0409 U		-0.0769 0.0084		
Niobium-95	PCI/G	0	0%	0	11	-0.0188 U (J 0.0384	0.0343 U		0.0216 U		0.0285 U		0.0084		
Potassium-40	PCI/G	27.6	100%	11	11		1.94 2	21.5	1.91	23.0			2.02	20.1	1.80	18.2	1.	
Promethium-144	PCI/G	0	0%	0	11	-0.00695 U (J 0.0221	0.00425 U		-0.00283 U		0.011 U		0.00		
Promethium-146	PCI/G	0	0%	0	11	0.0227 U (0.0213 -0.00	604 l	J 0.0258	-0.000593 U		0.0112 U		0.00711 U		0.0123		
Radium-226	PCI/G	0.867	100%	11	11			800	0.127	0.754	0.124		0.106	0.787	0.139	0.637		114
Radium-228	PCI/G	0.962	100%	11	11			851	0.228		0.193		0.194	0.779	0.223	0.760		204
Ruthenium-106 Silver-110m	PCI/G		0%	0	11	0.0306 U 0			J 0.207	0.135 U	<u></u>	0.044 U		0.115 U		0.0861		
Sodium-22	PCI/G PCI/G	0	0%	0	11	-0.0236 U 0			J 0.0229	0.00231 U		0.0108 U		0.00223 U	0.0269	3.170E-05	U 0.	0245
hallium-208	PCI/G	0 0.327	0% 100%	0	11	0.0203 U 0			J 0.0277	0.00295 U		-0.0102 U		-0.00436 U		0.0118	U [0.	J279
horium-230	PCI/G	0.327	100%	11	<u>11</u> 11			245	0.0484		0.0423		0.0527	0.310	0.0547	0.251		0595
horium-234	PCI/G	0.007	0%	0	11	0.773 0 0.954 U 1		800	0.127		0.124		0.106		0.139	0.637		114
in-113	PCI/G	0	0%	0	11	-0.0184 U 0			J 1.13	0.453 U		<u> </u>		0.266 U		0.164		
ranium-235	PCI/G	0	0%	0	11	0.0332 U 0			J 0.0276 J 0.186	0.0162 U		0.00428 U		-0.0176 U		-0.0113		
ranium-238	PCI/G	0	0%	0	11	0.954 U 1			J 1.13	0.0828 U		0.107 U		0.00 UJ		0.140		
ttrium-88	PCI/G	0	0%	0	11	0.00253 U 0			J 0.0236	0.453 U 0.0085 U		1.04 U		0.266 U		0.164		
inc-65	PCI/G	0	0%	0	11	-0.0907 U 0			J 0.0617	0.0085 U		0.0122 U 0.00679 U		-0.00218 U		0.010		
irconium-95	PCI/G	0	0%	0	11	0.0328 U 0			J 0.0405	0.0271 U		0.00879 U 0.0274 U		-0.0264 U		0.0242		
		3			ł		1 0.000			0.02111 U	10.0072	U.UZ/4] U	0.030	0.0647 U	U.U457	-0.00139	U [0.	J457

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

LOCATION ID	1			1	1	SS12-118	6612 100	0010 100		
MATRIX				1		SOIL	SS12-109 SOIL	SS12-120	TP12-15A	TP12-15C
SAMPLE ID				1		123678	123670	SOIL	SOIL	SOIL
TOP OF SAMPLE				1.	<u> </u>	0	0	<u> </u>	123675	123680
BOTTOM OF SAMPL	E			1		0.2	0.2	0.2		0.5
SAMPLE DATE			1			6/24/2004	6/24/2004	6/24/2004	3.5	0.8
QC CODE						SA	SA SA	SA SA	6/24/2004	6/24/2004
STUDY ID		· · · · · · · · · · · · · · · · · · ·	1	<u> </u>	<u> </u>	SRI	SRI SRI	SRI SRI	SA SRI	
			Frequency	Number	Number					SRI
			of	of	of					
Parameter	Unit	Maximum	Detection	Detections	Analyses	Value (Q) Uncertaint	Value (Q) Uncert	ainty 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 Cerium-141	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-144	PCI/G 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
Cesium-134	PCI/G PCI/G	0	<u> 0% </u> 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-136	PCI/G PCI/G	0	0%	0	<u>11</u> 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-137	PCI/G	0.522	82%	9	11	-0.0218 U 0.0538 0.115 0.0366	-0.005312 U 0.0632	-0.0564 U 0.0647	0.00595 U 0.0505	-0.0318 U 0.0486
Chromium-51	PCI/G	0.522	0%	0	11	0.115 0.0366 -0.0501 U 0.185	0.2322 0.0474 0.0802 U 0.200	0.367 0.0684	-0.00818 U 0.0187	0.0134 U 0.0196
Cobalt-56	PCI/G	0	0%	0	11	-0.000664 U 0.0204	0.0273 U 0.0368	0.145 U 0.252	-0.047 U 0.161	0.173 U 0.222
Cobalt-57	PCI/G	0	0%	0	11	-0.00279 U 0.0112	-0.00714 U 0.0133	-0.00152 U 0.0291 -0.00877 U 0.0192	0.00292 U 0.0194	-0.0247 U 0.0199
Cobalt-58	PCI/G	0	0%	0	11	-0.0102 U 0.0193	0.00458 U 0.0214	-0.00877 0 0.0192 -0.00481 U 0.0248	-0.00029 U 0.0116	0.00312 U 0.0121
Cobalt-60	PCI/G	0	0%	0	11	0.00353 U 0.0239	-0.0125 U 0.024	-0.00306 U 0.0257	0.003 U 0.0188 0.000207 U 0.0196	-0.0191 U 0.0194
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	0.00957 U 0.0201 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 Lead-214	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
Manganese-54	PCI/G 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-04 Mercury-203	PCI/G	0.0254	<u>9%</u> 0%	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
Neodymium-147	PCI/G	0	0%	0	<u>11</u> 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
Neptunium-239	PCI/G	0	0%	0	11	0.0322 U 0.278 -0.0514 U 0.0855	0.01666 U 0.251	-0.00576 U 0.331	-0.12 U 0.232	-0.169 U 0.230
Niobium-94	PCI/G	0	0%	0	11	0.0201 U 0.0239	-0.01749 U 0.0984 5.900E-05 U 0.0198	0.016 U 0.146	0.0341 U 0.0906	0.0102 U 0.0951
Niobium-95	PCI/G	0	0%	0	11	0.0296 U 0.0582	0.0038 U 0.0295	-0.00871 U 0.0252 0.0418 U 0.0379	0.00326 U 0.0181	0.013 U 0.0167
Potassium-40	PCI/G	27.6	100%	11	11	24.5 1.98	20.09 1.75	20.3 1.88	0.0125 U 0.0248	0.0277 U 0.0255
Promethium-144	PCI/G	0	0%	0	11	0.00256 U 0.0183	-0.004 U 0.0198	0.00393 U 0.0253	27.6 2.09 0.00279 U 0.0172	26.4 2.17 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	0.0101 U 0.0194 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
horium-234	PCI/G	0	0%	0		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
Jranium-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
Jranium-238	PCI/G	0	0%	0		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
/ttrium-88 Linc-65	PCI/G		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
linc-65 Lirconium-95	PCI/G		0%			-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
	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

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Appendix F

Laboratory Certifications

Chemtech

Columbia Analytical Services (Rochester, NY)

NEW YORK STATE DEPARTMENT OF HEALTH WADSWORTH CENTER

Antonia C. Novello, M.D., M.P.H., Dr.P.H.



Expires 12:01 AM April 01, 2006 Issued April 07, 2005

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DIVYAJIT MEHTA CHEMTECH CONSULTING GROUP 284 SHEFFIELD STREET MOUNTAINSIDE NJ 07092 UNITED STATES NY Lab Id No: 11376 EPA Lab Code:

is hereby APPROVED as an Environmental Laboratory for the category ENVIRONMENTAL ANALYSES ANALYTICAL SERVICES PROTOCOL All approved subcategories and/or analytes are listed below:

CLP PCB/Pesticides CLP Semi-Volatile Organics CLP Volatile Organics CLP Inorganics

Serial No.: 26443

Property of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH WADSWORTH CENTER

Antonia C. Novello, M.D., M.P.H., Dr.P.H.



Expires 12:01 AM April 01, 2006 Issued April 05, 2005

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. MICHAEL PERRY COLUMBIA ANALYTICAL SERVICES 1 MUSTARD ST - STE 250 ROCHESTER NY 14609 UNITED STATES NY Lab Id No: 10145 EPA Lab Code: NY00032

is hereby APPROVED as an Environmental Laboratory for the category ENVIRONMENTAL ANALYSES ANALYTICAL SERVICES PROTOCOL All approved subcategories and/or analytes are listed below:

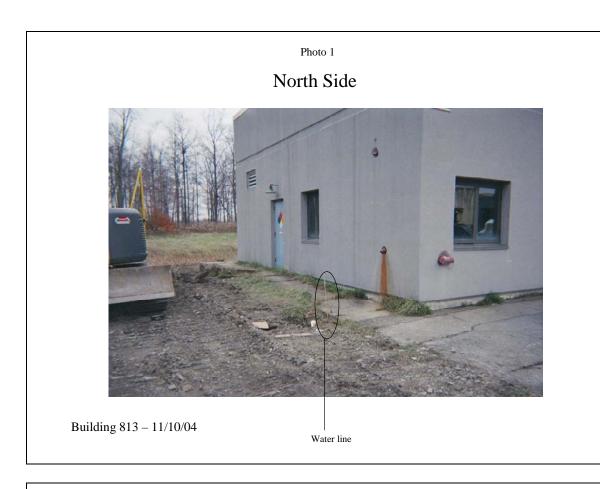
CLP PCB/Pesticides CLP Semi-Volatile Organics CLP Volatile Organics CLP Inorganics

Serial No.: 26394

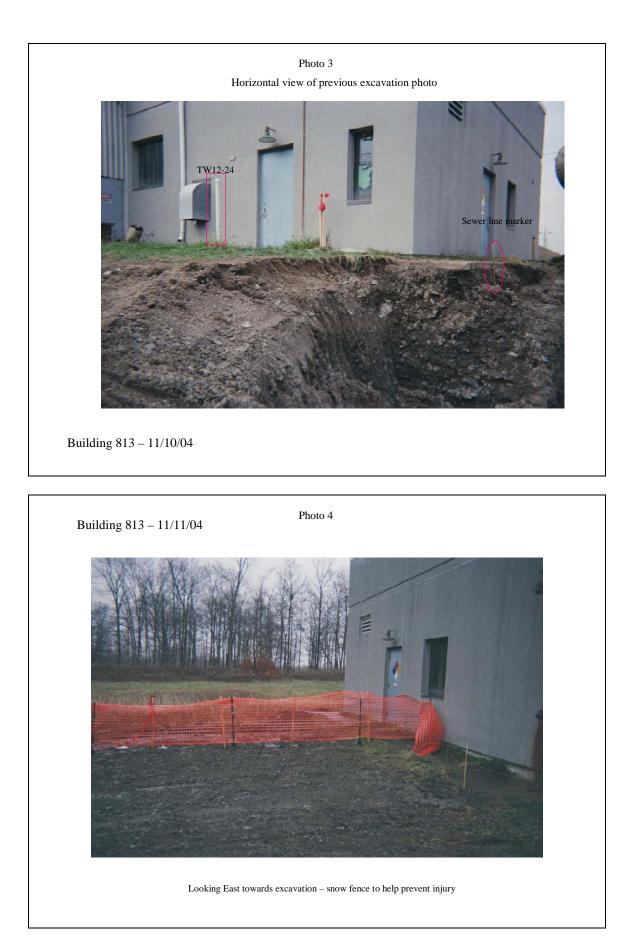
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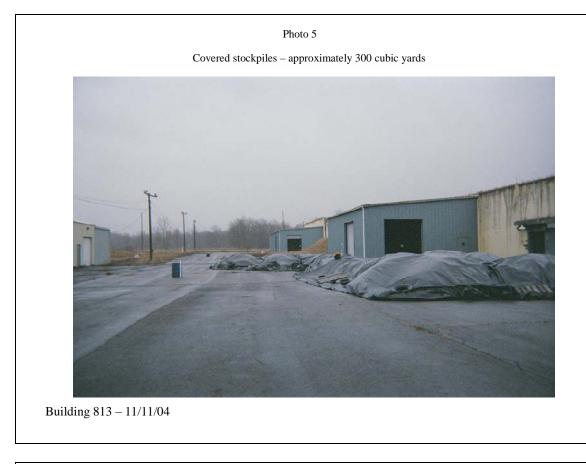
Appendix G

Excavation Photos















Appendix H

Response to Comments

NYSDEC

USEPA

Response to Comments from the New York State Department of Environmental Conservation

Subject: Draft Supplemental RI Report for SEAD-12 (May 2005) Seneca Army Depot Romulus, New York

Comments Dated: December 28, 2005

Date of Comment Response: February 13, 2006

Comment 1: The subject document has no mention of the analytical laboratory's name or current certifications of Standard Operating procedures (SOPs). Please add this information to the document.

Response 1: Agreed. Deviations and/or updates to the 1995 Generic RI/FS Workplan have been added to the Supplemental RI Report where appropriate. The name of the laboratory that provided the VOC analysis has been specified in Section 2.2 and the certifications have been included in Appendix F. Test pit excavation and test pit sample collection were conducted in accordance with the test pitting techniques outlined in the 1995 Generic RI/FS Workplan. This statement has been included in Section 2.2.3.1.

Comment 2: Both TCE and DCE in groundwater exceeded the NYSDEC GA standard during the most recent sampling round, and at concentrations that could result in indoor air exposure risk in buildings. DEC wants to evaluate further. Please provide the post excavation round of groundwater samples. Please see the USEPA comments on this issue also.

Response 2: Final, post-excavation groundwater sampling was not proposed or performed for the following reasons:

- No exceedances of TCE were detected in wells other than MW12-37 during the Supplement RI.
- MW12-37 has been removed and all the soils surrounding this well have been removed. Water quality downgradient of MW12-37 will only improve now that the contaminated soil and entrained water has been removed.

The indoor air at Building 813 may be evaluated in the future, if indeed a re-user is found to use Building 813. Currently, there are no utilities running to the building and no re-user has been identified for the building. If in the future a re-user is identified, actual indoor air monitoring may be conducted to assess the indoor air quality. Groundwater data are not necessary for this assessment.

Comment 3: Vapor intrusion – A deed restriction that requires indoor air sampling does not reduce the risk of exposure to future occupants for use of the building. Additional justification is needed to support the conclusions of no further action for Building 813/814, like indoor air quality.

Response 3: The planned future land use for SEAD-12 is institutional training. At this time, there are no future occupants of the buildings at SEAD-12. If in the future Building 813 is to be occupied, indoor air sampling will determine whether or not there is a risk and appropriate actions may then be taken. The Army does not feel that additional efforts to ensure there is no risk to occupants that do not exist is prudent use of their funds. However, the Army is willing to put land controls (e.g. an environmental easement) into place so that future investigations will take place before this building is occupied.

Specific Comments:

Comment 1: Page 1-6, Section 1.5.1.4, 3rd paragraph:

The results of the analysis of soil have metals which exceeded TAGM values. It is recommended that you address what action was implemented. The SRI needs to identify any further investigation or remediation which is required for this area or justify the position that the soil in the area is not of concern.

Response 1: Surface soil samples SS12-66, SS12-67, and SS12-68 were collected on the other side of the ditch to the northwest of Building 813/814 during the Remedial Investigation. The metals that exceeded the TAGM for these three samples are shown below.

Loc-id	Parameter	Value	Criteria Value	Maximum	Units
			(TAGM based	Background	
			on SEDA	Concentration	
			background)		
SS12-66	Thallium	1.1	0.855	1.2	Mg/kg
SS12-67	Calcium	154,000	124,300	293,000	Mg/kg
SS12-68	Copper	35.4	33	62.8	Mg/kg
	Lead	31.0	24.4	266	Mg/kg
	Nickel	53.1	50	62.3	Mg/kg

The values detected in these samples are below the maximum background concentration for SEDA. The RI reported that no risk was found within this area due to the presence of heavy metals in soils. The presence of TCE in groundwater at MW12-37 was the only significant source of risk in this area. The text of Section 1.5.1.4 will be revised to clarify this.

Comment 2: Page 3-4 the statement: "Phase II stockpile samples were also collected on December 9, and the Phase II stockpile samples were collected on December 21" is redundant. I believe it should read as Phase I on December 9 and Phase II on December 21. Clarification is requested.

Response 2: The sentence should read, "The Phase II stockpile samples were also collected on December 9, and the Phase III stockpile samples were collected on December 21." The text will be corrected.

Comment 3: Page 4-3 Recommendations: The text states "The stockpiles remaining on-site will be re-sampled in the spring...". Update the final version of the report with the results of that re-sampling.

Response 3: An update of the re-sampling of the stockpiles has been added to Section 3.3.2 and Section 4.2 and is summarized here.

Phase II and Phase III soils were re-sampled on July 22, 2005. Three additional grab samples were collected at random grid locations within the Phase II stockpile (see Figure 3-3). One additional sample was collected from this stockpile on November 28, 2005. Results indicated that TCE was detected below action levels for each sample and that this soil could be backfilled. Four additional grab samples were collected at random grid locations from the Phase IIIA stockpile. Results indicated that TCE was detected below action levels and that this soil could be backfilled. Two additional grab samples were collected from the Phase IIIB stockpile on a grid basis. One sample had concentrations that were below the TAGM for TCE. However, the other sample SP813-16 had TCE levels at 22,000 ug/Kg. Since this stockpile has not been sampled since July 2005, it will be re-sampled to see if levels have decreased since the summer months. This stockpile will be partitioned and sampled further to determine what portion of the soil may be returned to the excavation and what portion, if any, may need to be taken off-site for disposal. Four additional samples are being collected to make this determination.

Response to Comments from the United States Environmental Protection Agency

Subject: Draft Supplemental RI Report for SEAD-12 Seneca Army Depot Romulus, New York

Comments Dated: June 8, 2005

Date of Comment Response: February 13, 2006

This is in reference to the subject document received by this office on May 9, 2005. Please find our comments below.

General Comments:

Comment 1: The subject document makes reference to the old and outdated Generic RI/FS Workplan (Parsons, 1995), however, there is no mention of deviations and/or updates (i.e., laboratory's name, current certifications on SOPs, test pitting procedures, etc.) to it. It is recommended to add a section to address the above requirements.

Response 1: Agreed. Deviations and/or updates to the 1995 Generic RI/FS Workplan have been added to the Supplemental RI Report where appropriate. The name of the laboratory that provided the VOC analysis has been specified in Section 2.2 and the certifications have been included in Appendix F. Test pit excavation and test pit sample collection were conducted in accordance with the test pitting techniques outlined in the 1995 Generic RI/FS Workplan. This statement has been included in Section 2.2.3.1.

Comment 2: Both TCE and DCE in groundwater exceeded the NYSDEC GA standard during the most recent sampling round, and at concentrations that could result in indoor air exposure risk. Yet there is no mention of collecting a final, post-excavation, round of groundwater samples. There is a likelihood of continued groundwater impacts from TCE, and possibly DCE, that should be evaluated further. The highest TCE concentration, identified in MW12-37, increased by 50% between 1997 and 2004.

The SRI work completed was the result of groundwater impacts, and it consisted of soil excavation and removal. The excavation was halted at the building foundation, and the report recommended implementation of future deed restrictions regarding the need to conduct indoor air testing prior to building occupation. If no additional groundwater sampling and analysis is anticipated, how will future indoor air testing results be evaluated in the risk analysis?

Response 2: Acknowledged.

No final, post-excavation groundwater sampling has been proposed for the following reasons:

- No exceedances of TCE were detected in wells other than MW12-37 during the Supplement RI.
- MW12-37 has been removed and all the soils surrounding this well have been removed.

The indoor air at Building 813 may be evaluated in the future, if indeed a re-user intends on using Building 813. The Army will not evaluate future risk of indoor air exposure in anticipation that a

future re-user may someday use the buildings. Currently, there are no utilities running to the building and no re-user has been identified for the building. If in the future a re-user is identified, actual indoor air monitoring may be conducted by the re-user to assess the indoor air quality. Groundwater data are not necessary for this assessment. Text changes in Sections 2.2.1.2 and 4.2 addresses USEPA's concern.

Comment 3: Additional subsurface soil investigations were conducted in the target area to define impacts from TCE. The excavation, then sampling, then excavation, then sampling was used to limit the excavation needed to remove impacted soils surrounding the sewer line. However, the final excavation boundaries appeared to be arbitrary, and were sometimes based upon data apparently collected from elevations above potential areas of significant impact, particularly on the western (downgradient) side of the excavation. The text should be revised to better delineate the final excavation boundaries.

Response 3: Acknowledged. The excavation of soil was advanced to bedrock within the excavation area. Confirmatory soil samples were collected close to the bottom of excavation near the excavation boundary. At the western boundary, a soil sample was collected 3-4 ft bgs from the western excavation boundary. The samples were collected close to the excavation bottom (5 ft bgs.) where fractured shale mixed with brown till was met. The excavation limits were determined based on the confirmatory soil sample results. The western boundary of the wall was also guided by the results of TW12-6 which showed no detection of VOCs in the groundwater at this location. As the VOC concentrations in the confirmatory soil samples collected from the western side were all below the TAGMs, no excavation was conducted beyond the western boundary. Section 2.2.3.3 will be expanded to address this.

Comment 4: Simply implementing a deed restriction that requires indoor air sampling does not reduce the risk of exposure to future occupants of the building. It is not clear that the removal action has adequately addressed the risk of vapor intrusion. Additional justification is needed to support the conclusions of no further action for Building 813/814.

Response 4: The planned future land use for SEAD-12 is institutional training. At this time, there are no future occupants of the buildings at SEAD-12. If in the future Building 813 is to be occupied, indoor air sampling will be performed by the reuser to determine whether or not there is a risk and appropriate actions may then be taken. Additional efforts to ensure there is no risk to potential future occupants is not necessary or justified. However, the Army is willing to put land controls (e.g. an environmental easement) into place to ensure that the necessary evaluations are performed prior to any use of the building by a future reuser.

Comment 5: The results of the excavation work conducted as part of the supplemental investigations, combined with the anticipated future use of the site area for conservation/recreation, and the distance of the site area from sensitive receptors indicates that investigations of surface water and sediments are sufficient. The conclusion of the supplemental investigations that the drainage ditch did not indicate a significant impact to receiving surface water at or downgradient of the study is supported.

Response 5: Agreed.

Comment 6: The text of this report indicates that painting was conducted within the building and so specific VOC compounds, and total VOCs were investigated by means of groundwater and soil sample analysis, and soil gas surveys prior to this SRI. The SRI also included the installation of temporary monitoring wells in areas where high VOC concentrations were

observed in the soil gas. The initial and secondary results of the groundwater sampling and analysis did not confirm the presence of VOC impacts in groundwater that were indicated by colocated soil gas sample concentrations. Provide an explanation for this discrepancy.

Response 6: Soil gas investigations are generally conducted to assist in the planning of additional investigations. Soil gas results do not necessarily predict the concentrations of VOCs in groundwater immediately underlying them. Soil gas originating from groundwater will follow preferential paths within the matrix toward an accumulation or exit point. Some correlation between soil gas and groundwater impacts were found during the RI. Soil gas results near the northeastern portion of the building led to the installation of MW12-37 during the RI where groundwater impacts were found. Other areas showing elevated soil gas readings where no groundwater impacts are really used as a qualitative tool to plan additional investigations such as groundwater monitoring and could be used to plan future indoor air sampling programs if warranted in the future.

The above explanation has been included in Section 3.1.

Comment 7: No mention is made of as-built drawings documenting the sewer pipe location and construction methods. An evaluation of existing records should be added to the discussion. Furthermore, it is not clear from the text whether bedding materials were used beneath the abandoned sewer pipe. Additional documentation, such as photos of excavations, should be included. If a bedding conduit is still in place, it could be a pathway for VOCs partitioned from the groundwater to enter the building and impact indoor air. Has this potential pathway been investigated?

Response 7: No as built records showing existing sewer lines are available for this building. A 4-inch ductile iron (DI) pipe was found during the excavation near the 4-inch DI end within the foundation. Clay pipe fragments were also found in the excavation. No definitive bedding was found in the area of the pipes. The invert of the pipe was found approximately 4 to 5 feet bgs and the excavation was taken down to native bedrock (7 feet bgs). Therefore, any type of bedding materials, although not observed, would have been removed. The text of Section 2.2.3.1 has been expanded to explain this. Impacts to indoor air will not be investigated, as there is no planned receptor in this building. If in the future a re-user is established, further assessment of the indoor air quality may be performed.

A photo, now included in Appendix G, shows the pipe entering the foundation of the building. Observations made within the building indicate that the drains within the building are all plugged.

Photos of excavations have been included in Appendix G.

Comment 8: There is very limited information provided in the report regarding former painting operations. It is unclear why the detected VOCs are limited to chlorinated solvents, and in exactly what way they would be exclusively associated with the painting operations. Additional documentation should be included if available.

Response 8: A wide variety of materials could be found in paint depending on what type of coating/paint had been used at the site. Chlorinated solvents such as TCE could be used in paint and paint removers (ATSDR, 1997; HSDB, 2005). However, no additional information is available for the former painting operations. The targeted compounds of concern were based on

previous investigations which included a full list of VOCs, and metals. If VOCs other than chlorinated solvents were present in the soils and groundwater, they would have been detected during previous investigation efforts. The Army cannot hypothesize as to why no other VOCs were found. No text change has been made to the document.

Comment 9: The conclusion regarding no further action for EM-5 soils is supported. Soil sampling results support the conclusion that Pb-210 levels are not different from background.

Response 9: Agreed.

SPECIFIC COMMENTS

Comment 1: Page 1-5, Section 1.5.1.1, 1st paragraph: There should be some discussion of the lack of correlation between the soil gas survey and the subsequent groundwater monitoring well concentrations. If the soil gas survey during the remedial investigation "led to the implementation of the SRI," what conclusions can be drawn regarding the representativeness of the data?

Response 1: Soil gas investigations are generally conducted to assist in the planning of additional investigations. Soil gas results near the northeastern portion of the building led to the installation of MW12-37 during the RI where groundwater impacts were found. Other areas showing elevated soil gas hits were investigated during the SRI; however, no groundwater impacts were discovered at these locations. Response to General Comment 6 above explains why soil gas and groundwater results do not always correlate. The point is that soil gas investigation results were followed up with a more thorough groundwater investigation during this SRI and we now have the appropriate data to characterize the site and show that groundwater impacts were truly localized to the northeast corner of the building. Additional text will be added to Section 1.5.1.1 to clarify this point.

Comment 2: Page 2-2, Section 2.2.1.2: It is not clear why no additional groundwater sampling was performed at the conclusion of the SRI. Lack of groundwater sampling combined with lack of subsurface soil sampling to adequate depth creates uncertainty as to whether there are additional contributions to the TCE groundwater plume. At least one additional groundwater monitoring well pair located in the immediate downgradient location of former monitoring well MW12-37 should be done to further characterize the residual source area contributions.

Response 2: See response to general comment 2. Temporary wells were installed downgradient and in the immediate vicinity of MW12-37 (TW12-6, TW12-24, and TW12-26) and none of these wells showed any detections of VOCs prior to the removal action. TW12-6 was 30 feet from MW12-37; TW12-24 is 20 feet from MW12-37 and TW12-26 is 45 feet away from MW12-37. Groundwater impacts were isolated and confined to the area immediately around MW12-37 and this entire area (groundwater and soil) has been removed down to bedrock. No groundwater plume existed beyond the immediate area (within 20 feet of the original well) based on the groundwater data collected.

As discussed in response to general comment 3, soil confirmatory samples were collected on the sides of the excavation near the bedrock surface and all met the TAGM for TCE. Therefore, the soil characterization is sufficient to characterize the residual source area contributions.

Comment 3: Figure A-9, Appendix A, Temporary Well Construction Diagrams: Only two temporary monitoring wells were installed deeper than 15 feet, and both were located significantly upgradient of the area of concern. Why were only shallow monitoring wells installed on the remainder of the site, and how does this limitation affect the overall reliability of the conclusions regarding no further action for groundwater?

Response 3: As specified in Section 2.2.1.1, all temporary wells were advanced to auger refusal, which represents the top of bedrock. As shown in Figure 3-5 in the RI report, the depth to bedrock is greater in the upgradient area. Therefore, the upgradient monitoring wells were installed deeper than the other wells. As all wells were advanced to bedrock, the samples provide sufficient support for the conclusion of no further action for groundwater at the site. No text change has been made to the document.

Comment 4: Test Pit Reports, Appendix C: Soil screening for VOCs during test pit excavations was inconsistently conducted. Only two shallow (2-3 feet depth) soil samples were collected along an excavation wall approximately 45 feet in length. What criteria were used to establish the limit of the western excavation boundary?

Response 4: Two soil samples were collected 3-4 ft bgs from the western excavation boundary. The samples were collected close to the excavation bottom (5 ft bgs.) where fractured shale mixed with brown till was met. As the VOC concentrations in the samples were all below the TAGMs, no excavation was conducted beyond the western boundary. In addition, groundwater results from TW12-6 (non-detect for all VOCs) located 30 feet from MW12-37 (the impacted well) confirm that TCE is not present in the soils at concentrations contributing to groundwater contamination in this area. The text of Section 2.2.3.3 has been expanded to clarify this point.

Comment 5: Appendix C: There was no identification on the Test Pit Reports to correspond to the Test Pits identified on Figure 3-2. Revise accordingly.

Response 5: Test Pit Reports are presented in Appendix C for the eastern excavation limit (TP813-5F), northern excavation limit (TP813-6F), southern excavation limit (TP813-7T and TP813-8T), western excavation limit (TP813-13F), and the Building northeast corner excavation limit (TP813-10F and TP813-11F), respectively. The IDs for the samples associated with locations remaining after the final phase of the investigation are presented in the Test Pit Reports. A table correlating the Test Pit location ID (e.g. TP813-11F) and the sample ID given in the log (e.g. 123702) has been added to Appendix C to clarify where samples were taken.