AFCEE
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Depot Activity
Romulus NY

REMEDIAL DESIGN WORK PLAN AND DESIGN REPORT
FOR SEAD-4 AND SEAD-38
SENECA ARMY DEPOT ACTIVITY

FINAL

PARSONS

OCTOBER 2008

US Army Corps of Engineers

Air Force Center for Engineering and the Environment

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Seneca Army Depot Activity
Romulus, New York

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REMEDIAL DESIGN WORK PLAN AND DESIGN REPORT
FOR THE MUNITIONS WASHOUT FACILITY (SEAD-4)
AND THE BUILDING 2079 BOILER BLOWDOWN PIT (SEAD-38)
SENECA ARMY DEPOT ACTIVITY

AFCEE CONTRACT NO. FA8903-04-D-8675
TASK ORDER NO. 0031
CDRL A004 and A007

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

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SENECA ARMY DEPOT ACTIVITY, ROMULUS, NEW YORK

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ACRONYMS AND ABBREVIATIONS

AFCEE	Air Force Center for Environmental Excellence
AOC(s)	Area(s) of Concern
ARAR(s)	Applicable or Relevant and Appropriate Requirement(s)
AWQS	Ambient Water Quality Standard
BCT	Base Cleanup Team
bgs	Below Ground Surface
BOL	Bill of Lading
BRA	Baseline Risk Assessment
BRAC	Base Realignment and Closure
CAMP	Community Air Monitoring Plan
CAR	Corrective Action Report
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COC(s)	Contaminant(s) of Concern
COR	Contracting Officer's Representative
CQP	Construction Quality Assurance Plan
DOT	Department of Transportation
DQO	Data Quality Objectives
ESI	Expanded Site Inspection
FC/MR	Field Change/Modification Request
FD	Final Design
FFA	Federal Facility Agreement
FS	Feasibility Study
FSP	Field Sampling Plan
ft	Foot
GA	NYSDEC groundwater classification suitable as a source for drinking water
GPS	Global Positioning System
HSP	Health and Safety Plan
IAG	Interagency Agreement
IDW	Investigation-derived waste
LUC	Land Use Control
MCL	Maximum Contaminant Level
MS	Matrix Spike
NAD	North American Datum
NAVD	North American Vertical Datum
NCR	Non-Conformance Report
NPL	National Priorities List

ACRONYMS AND ABBREVIATIONS

NYCRR	New York Codes Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH(s)	Polycyclic Aromatic Hydrocarbon(s)
Parsons	Parsons Infrastructure & Technology Group Inc.
PCB	Polychlorinated Biphenyl
PCMMP	Post-Closure Monitoring and Maintenance Plan
PD	Preliminary Design
PHSO	Program Health and Safety Officer
PM	Project Manager
PM10	Particulate Matter less than 10 microns
POC	Point of Contact
PPE	Personal Protective Equipment
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RA	Remedial Action
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDWP	Remedial Design Work Plan
RI	Remedial Investigation
ROD	Record of Decision
RTK	Real-Time Kinematic
SAP	Sampling and Analysis Plan
SB	Soil Boring
SCO	Soil Cleanup Objective
SEAD	Acronym for the Seneca Army Depot used to designate SWMU numbers
SEDA	Seneca Army Depot Activity
Sf	square feet
SHARP	Safety, Health, and Risk Program
SHSO	Site Health and Safety Officer
SLERA	Screening Level Ecological Risk Assessment
SM	Site Manager
SPDES	State Pollutant Discharge Elimination System
SS	Surface Soil
SVOC(s)	Semivolatile Organic Compound(s)
SWMU(s)	Solid Waste Management Unit(s)
TAGM	Technical and Administrative Guidance Memorandum
TBC	To Be Determined
TCLP	Toxicity Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbon

ACRONYMS AND ABBREVIATIONS

UCL	Upper Confidence Limit
UFPO	Underground Facilities Protective Organization
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC(s)	Volatile Organic Compound(s)

1.0 INTRODUCTION

1.1 Document Objectives

This remedial design work plan and design report describes the approach the Parsons Infrastructure & Technology Group Inc. (Parsons) plans to use to remediate the soil, ditch soil, and lagoon at the Munitions Washout Facility (SEAD-4) and the former Building 2079 Boiler Blowdown Pit (SEAD-38), located at the Seneca Army Depot Activity (SEDA or the Depot) in Romulus, New York. SEAD-38 is the area to the north and northwest of the former Building 2079 where boiler blowdown solution was discharged. The area includes two small drainage ditches and is fully within the larger SEAD-4 area. The investigation of this AOC was combined with the investigation of the larger SEAD-4 area.

This document was developed to outline the necessary steps and guidance for completion of the proposed remediation for SEAD-4 and SEAD-38 (hereafter referred to as SEAD-4/38). The design includes the technical specifications and drawings that provide detail to the construction team to complete the remedial action. This document has been prepared for the U.S. Army, Seneca Army Depot Activity, and the Air Force Center for Engineering and the Environment (AFCEE) under Contract No. FA8903-04-D-8675, Task Order No. 0031.

Traditionally, the work plan and the design report are submitted as separate documents. As accepted during other remedial actions at SEDA (e.g., SEAD-25/SEAD-26 and SEAD-16/SEAD-17), the Army is proposing a streamlined schedule for remedial design (RD) that meets the intent of the Federal Facility Agreement (FFA). Section 9.2 of the FFA[1] states that "*deliverables are not necessarily discrete documents and may be consolidated with other primary documents and/or secondary documents as appropriate.*" The Army is proposing that the Remedial Design Work Plan (RDWP), the Preliminary Design (PD), and the Final Design (FD) are submitted as one document. Given the relatively simple nature of the remedial action work proposed, preliminary design (30%) will not be significantly different than the 100% final design and is, therefore, not warranted. As such, the RDWP is included in **Section 2** of this document and the simplified PD/FD is presented in **Section 3** through **Section 8**.

1.2 Site Background

The Seneca Army Depot previously occupied approximately 10,600 acres of land in Seneca County in the Towns of Romulus and Varick, New York. The property was acquired by the United States Government in 1941, and was operated by the Department of the Army from that time until

[1] Federal Facilities Agreement under CERCLA Section 120, Docket Number: II-CERCLA-FFA-00202, In the Matter of: Seneca Army Depot Activity, U.S. Environmental Protection Agency, Region II, U,.S. Department of the Army, and the New York State Department of Environmental Conservation, January 1993.

approximately September 2000 when the installation closed. Prior to the acquisition of the land and the construction of the Depot, the land was used for agriculture, farming, and residential purposes. A location map for SEDA is shown in **Drawing C-1**. As shown in **Drawing C-1**, SEDA is located between Seneca Lake and Cayuga Lake in Seneca County. SEDA is bordered by New York State Highway 96 on the east, New York State Highway 96A on the west, and sparsely populated farmland on the north and south.

Since its inception in 1941, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items. SEDA was proposed for the National Priorities List (NPL) in July 1989. In August 1990, SEDA's status was finalized when it was listed under Group 14 on the Federal Section of the NPL. To facilitate resolution of contamination issues at SEDA, the United States Environmental Protection Agency (USEPA), the New York State Department of Environmental Conservation (NYSDEC), and the Army entered into an FFA, also known as the Interagency Agreement (IAG). This agreement stated that future investigations would be based on Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidelines, and that the Resource Conservation and Recovery Act (RCRA) was an Applicable or Relevant and Appropriate Requirement (ARAR) pursuant to Section 121 of CERCLA. In October 1995, SEDA was designated for closure under the provisions of the Department of Defense's Base Realignment and Closure (BRAC) process.

SEAD-4/38 is located in the southwestern portion of SEDA (**Drawing C-1**), and consists of developed and undeveloped areas surrounded by open grassland and thick brush. Several man-made drainage ditches are present at SEAD-4/38 and most of them are approximately three feet (ft) deep. Seneca Road bisects the area running from south-southeast to north-northwest. Railroad tracks lead into the area and terminate in the vicinity of Building 2085. Eleven buildings previously existed at SEAD-4/38 but nine of the buildings, listed below, have been demolished:

- Munitions Washout Building, which was used in the washout process;
- Decontamination Building, which was used in the washout process;
- Unnamed Building, which was used in the washout process;
- Building T30, which was used to prepare the packing material;
- Building 2074;
- Building 2075;
- Building 2077;
- Building 2079, former Boiler House; and
- Water Tank 2081.

Buildings 2074, 2075, and 2079 and structures identified as 2077 (stack) and 2081 (water tank) were demolished in 2007 and the other four buildings were demolished before the RI was conducted at SEAD-4/38 (i.e., prior to 1998). The remaining buildings at SEAD-4/38 are not currently in use.

A man-made 150-foot diameter lagoon was created for the purpose of containing wastewater.

Drawing C-2 in **Appendix A** presents a map of SEAD-4/38 and the predominant features.

The Munitions Washout Facility was active between 1948 and 1963. Operations at this facility involved the dismantling of munitions and removing the explosives by steam cleaning. SEAD-38 is the blowdown area that is located to the north-northwest of former Building 2079, a boiler plant. The boilers reportedly discharged a total of 400 to 800 gallons of liquid per day. It is suspected that some of the discharged liquid flowed into the adjacent drainage ditch, while some may have infiltrated into the ground. It is presumed that the boiler blowdown contained water, tannins, caustic soda (sodium hydroxide), and sodium phosphate.

1.3 Previous Work

SEAD-4 and SEAD-38 were investigated, and the results were presented in the following reports:

- Final Expanded Site Inspection, Seven High Priority SWMUs, SEAD 4, 16, 17, 24, 25, 26, and 45, Parsons[2], 1995.
- Final Action Memorandum and Decision Document, Time-Critical Removal Actions, Three VOC Sites (SEADs 38, 39, & 40), Parsons, 2002b;
- Remedial Investigation Report at the Munitions Washout Facility (SEAD-4), Parsons, 2002a;
- Final Feasibility Study at the Munitions Washout Facility (SEAD-4), Parsons, 2005a;
- Proposed Plan (SEAD-4 and SEAD-38), Parsons, 2007; and
- Record of Decision (SEAD-4 and SEAD-38), Parsons, 2008.

SEAD-38 historically was defined as the area to the north and northwest of the former Building 2079. The area contains two man-made drainage ditches and was suspected to have received boiler blowdown liquid that was discharged from boilers located in the former Building 2079. SEAD-38 is physically located within the footprint of the area that is defined as SEAD-4. As a result, SEAD-38 characterization was conducted along with SEAD-4, during the SEAD-4 Expanded Site Inspection (ESI), RI, and Feasibility Study (FS). Although the titles of the SEAD-4 ESI, RI, and FS reports suggest that the documents pertain specifically to SEAD-4; the information, results, analysis, and conclusions provided in these documents also relate to conditions found at SEAD-38. Similarly, the remedial action proposed in the SEAD-4 FS incorporates consideration of needed action at SEAD-38.

A general site map and the location of historic surface soil, subsurface soil, ditch soil, lagoon soil, surface water, and groundwater samples are shown in **Figure 1-1**.

Buildings/Structures

Buildings/structures within SEAD-4 have been unused, abandoned, and not maintained since the early- to mid-1960s. As a result, their physical condition deteriorated, which resulted in the accumulation of dust, dirt, and debris within each of the buildings over the years of their abandonment. During the RI, the debris found within six of the buildings at SEAD-4 was investigated and characterized. Six soil/debris samples, one from each building, were collected from the inside of Buildings 2073, 2076, 2078, 2079, 2084, and 2085. Aroclor-1254 was detected in five of the six samples (all except Building 2078) and the maximum concentration (91,000 µg/Kg) was detected in the sample collected from the drains in Building 2073.

In 2007, Parsons demolished 19 buildings or structures at SEDA, including five within SEAD-4 (identified as Buildings 2074, 2075, and 2079 and structures identified as 2077 (stack) and2081 (water tank) at the request of the Army to address safety concerns. Each building/structure was demolished either to slab on grade (i.e., Buildings 2074, 2075, 2077, and 2079) or to grade. All debris and waste material generated during the demolition of structures at SEAD-4 was recycled, or disposed in an approved construction and demolition landfill.

In January 2008, floors and trenches within Buildings 2073, 2076, 2078, 2084, and 2085 were vacuumed and broom cleaned. The recovered debris was stabilized and disposed at an approved Subtitle D landfill. Wipe samples were collected from Buildings 2073, 2076, and 2084 trench/floor drains and analyzed for the Aroclor congeners (i.e., Aroclor-1016, -1221, -1232, -1242, -1248, -1254, -1260) and total polychlorinated biphenyls (PCBs). The total PCB concentrations for all wipe samples were below the USEPA limit of 10 µg/wipe (or 10 µg/100 cm^2). As a result, according to 40 C.F.R. §§ 761.120-761.135, the referenced buildings are suitable for unrestricted use. No contaminants of concern (COCs) are currently identified for debris within the historic SEAD-4/38 buildings.

Surface and Subsurface Soil

The 95% upper confidence limit (UCL)[3] of the arithmetic mean for SEAD-4/38 total soil (i.e., surface and subsurface soil) for all compounds in SEAD-4 and SEAD-38 total soil are below the NYSDEC Restricted Commercial and Industrial Use Soil Cleanup Objectives (SCOs).

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[2] Parsons is the preferred brand name for the Parsons Corporation of Pasadena California. Numerous business entities have operated under the Parsons brand name and have preformed work at the Seneca Army Depot since 1990. Parsons business entities conducting work at Seneca since 1990 include C. T. Main, Inc., Parsons Main, Inc., Engineering-Science, Inc., Parsons Engineering Science, Inc. and Parsons Infrastructure & Technology Group Inc. (current).

[3] Confidence limits for the mean (Snedecor and Cochran, 1989) are an interval estimate for the mean. Interval estimates are often desirable because the estimate of the mean varies from sample to sample. Instead of a single estimate for the mean, a confidence interval generates a lower and upper limit for the mean. The interval estimate gives an indication of how much uncertainty there is in our estimate of the true mean. The narrower the interval, the more precise is our estimate. The 95% upper confidence limit should approximately provide the 95% coverage for the unknown population mean (EPA, 2007).

In general, the detected concentrations of metals (e.g., chromium) were found to be highest in samples collected from an area located south of the lagoon, and from locations around the former Building T30.

At SEAD-38, total petroleum hydrocarbon (TPH) was detected in surface soil samples (0-2 inches below ground surface [bgs]) and surface soil samples (2-4 ft bgs). The TPH concentrations ranged from 85 mg/kg to 1,940 mg/kg. The TPH results indicate that the TPH impacts diminish with depth. There are no regulatory guidance values documented for TPH.

Ditch Soil

The UCLs for all compounds found in ditch soil are below the NYSDEC Commercial and Industrial SCOs. The maximum chromium concentration (4,800 mg/kg) was detected in the drainage ditch located to the southwest of the former Building T30.

Groundwater

Nine metals (antimony, beryllium, cadmium, chromium, iron, manganese, selenium, sodium, and thallium) were detected in at least one groundwater sample at concentrations that exceeded their respective NYSDEC Class GA Ambient Water Quality Standards (AWQSs) or federal Maximum Contaminant Levels (MCLs). Antimony results from three samples, collected from three different wells exceeded the State's GA standard, but none of these exceedances were repeated during subsequent sampling events at the same well. Similarly, vanadium results for three samples collected during the March/April RI sampling event exceeded the State's GA vanadium standard, but these exceedances were not confirmed during the July 1999 RI sampling event. For beryllium and cadmium, there was only one exceedance, which was observed at MW4-3 during the ESI; neither beryllium nor cadmium was detected in this well (i.e., MW4-3) during the two sampling rounds conducted in 1999. The maximum chromium concentration (260 µg/L) was observed at MW4-9 in March 1999; the chromium concentration detected at this same well in July 1999 was below the NYSDEC GA Standard (21.8 µg/L vs. 50 µg/L). The chromium concentrations detected in all the other wells at SEAD-4 were below the GA Standard. Iron, manganese, sodium, and thallium concentrations observed in SEAD-4/38 groundwater were consistent with the background levels detected at SEDA. Further, the metal levels found in SEAD-4/38 groundwater do not pose unacceptable risks to potential receptors based on the baseline risk assessment.

Individual sample concentrations of benzene, ethylbenzene, 4-nitrotoluene, and nitrobenzene exceeded their respective NYSDEC GA Standards. However, each of these compounds was only detected in one monitoring well (i.e., MW4-10) during one round of sampling (March 1999). None of these organics were detected in MW4-10 or any other groundwater monitoring wells in the second round of groundwater sampling in July 1999 or during the ESI.

Aroclor-1260 was detected in groundwater at MW4-10 at a concentration of 0.079 µg/L during the July 1999 sampling event. The detected concentration was lower than the NYSDEC GA Standard, which is 0.09 µg/L for the sum of PCBs. The 2004 analytical results indicated that none of the Aroclor congeners were present in groundwater at well MW4-10.

Lagoon Soil

Three samples were collected from the top 6 inches of the soil in the man-made lagoon. With the exception of chromium, the levels observed in lagoon soil do not pose unacceptable risks to potential human receptors or ecological receptors based on the baseline risk assessment. Chromium is identified as the COC for lagoon soil.

Surface Water

In general, the highest metal concentrations found in surface water were found at locations in the east-west trending drainage ditch at the northern edge of SEAD-4/38. Aluminum, cadmium, cobalt, copper, iron, lead, silver, vanadium, and zinc were detected in at least one surface water sample at concentrations exceeding their respective comparative values, which are To-Be-Considered values that are equivalent to the NYSDEC AWQS Class C Standards. Surface water at SEDA is not classified by the NYSDEC and no COCs were identified for surface water based on the baseline risk assessment results.

Determination of COCs

Baseline risk assessments (BRAs) were conducted for SEAD-4/38 using data collected from both AOCs during the various investigations to estimate potential human health and ecological risks. The proposed remedial action (RA) is driven by the COCs determined by the BRAs.

The current SEAD-4/38 conditions do not pose significant risks to potential human receptors (including residents) at the AOCs. SEAD-4/38 is suitable for unrestricted use and unlimited exposure for human receptors. The detailed discussion is presented in the ROD (Parsons, 2008b) and in the Remedial Investigation Report (Parsons, 2002a).

The results of the ecological risk assessment indicate that soil and lagoon soil at SEAD-4/38 potentially pose unacceptable risks to selected ecological receptors. The following contaminants were identified as COCs for SEAD-4/38 based on the screening level ecological risk assessment (SLERA):

- Chromium and lead in SEAD-4 soil;
- Chromium in SEAD-4 ditch soil and lagoon soil; and
- Vanadium at one location (i.e., SD4-28) within the bounds of SEAD-38.

Concentrations of various chemicals other than the aforementioned COCs were identified in the soil at levels that exceed the NYSDEC's Unrestricted Use SCOs and in the groundwater at levels that exceed New York's GA Groundwater Standards. However, the results of the human health risk assessment show that these chemicals do not pose unacceptable levels of carcinogenic risk or non-carcinogenic hazards for potential future users of the AOCs based on the unrestricted future use scenario. Further, these chemicals do not pose significant risks to the environment. The SEAD-4/38 groundwater concentrations of metals with GA Standard exceedances were either consistent with SEDA background or were observed only in a single round of sampling (i.e., not confirmed by another round of sampling at the same location).

As a result of the SLERA, the Army originally calculated risk-based cleanup goals (324 mg/kg for chromium and 167 mg/kg for lead) that would be protective of the sensitive ecological receptors (mourning dove and short-tailed shrew) at SEAD-4/38. The FS proposed soil cleanup goals for chromium and lead were subsequently revised in response to comments received from the NYSDEC. Revised cleanup goals of 60 mg/kg for chromium and 167 mg/kg for lead were established for the SEAD-4/38 remedial action based on the cost effectiveness (i.e., "knee of the curve") sensitivity analysis presented in the FS report (Parsons, 2005a).

Successful completion of the proposed remedial action discussed in this document, when demonstrated by the attainment of 95% UCLs of the post-excavation soil means of chromium and lead that are equivalent to or less than the defined soil cleanup goals (i.e., 60 mg/kg for chromium, and 167 mg/kg for lead), will reduce potential future risks to all ecological and human receptors to levels that will permit unrestricted use and unlimited exposures. The post-excavation soil data set includes all confirmatory samples and historic samples that represent the post-excavation conditions of the excavation areas, as discussed in **Section 2.1**.

1.4 Utilities

Overhead electrical lines are present along the roads at the proposed work site, but they are outside the limits of work. A 6-inch clay pipe is buried at SEAD-4/38, running between the east edge of the man-made lagoon and Seneca Road (**Drawing C-2**).

1.5 Document Organization

The first section of this document serves as an introduction to the RDWP and the Design Report. **Section 2** consists of the RDWP and includes a summary of project objectives and the remedial design activities. **Section 3** presents the design elements. **Section 4** presents a Field Sampling Plan (FSP). **Section 5** is the Construction Quality Plan (CQP) and **Section 6** includes the Post-Construction Monitoring and Maintenance Plan. **Section 7** is the Waste Management Plan. **Section 8** includes the remedial action schedule and the project team organization. References are provided in **Section 9**.

Appendix A presents the Design Drawings and **Appendix B** presents the Technical Specifications.

2.0 REMEDIAL DESIGN WORK PLAN

The purpose of this document is to identify the preferred remedial design for SEAD-4/38 and to provide a framework for completion of the remedial design. This work plan has been developed in accordance with requirements of the FFA between the USEPA, NYSDEC, and the Army, and conforms to appropriate USEPA and NYSDEC guidance documents. The work plan describes the elements of the design, the plans, and the technical specifications.

The remedial action objectives and the remedial design approach for this site are outlined in the Record of Decision for the Munitions Washout Facility (SEAD-4) and the Building 2079 Boiler Blowdown Pit (SEAD-38) (Parsons, 2008b). In general, the proposed remedial approach consists of excavation, removal, and off-site disposal of chromium and lead impacted soils, chromium impacted ditch soil and lagoon soil, and, vanadium impacted ditch soil; dewatering the lagoon; and restoration (e.g., grading, leveling, revegetating) of the AOCs.

2.1 Remedial Design Goals

The objectives of the remedial design at SEAD-4/38 are given below:

- Minimize exposure of wildlife to contaminated soils;
- Eliminate or minimize the migration of contaminants from soil to groundwater and downgradient surface water;
- Prevent off-site migration of constituents of concern above levels that are considered protective of public health and the environment under CERCLA; and
- Restore soil, ditch soil, and lagoon soil to levels that are protective of public health and the environment under CERCLA.

SEAD-4 and SEAD-38 are located in the "Training Area" that is located at the southern end of the former SEDA. In the Master Plan developed by the Seneca County Industrial Development Agency, training "is expected to be Homeland Security and training for first-responders"[4]. The cleanup goals were developed for soil, ditch soil, and lagoon soil at SEAD-4/38 based on the sensitivity analysis, summarized in **Table 2-1** and listed below. The baseline ecological risk assessment identifies chromium and lead as COCs for surface and subsurface soil, chromium as a COC for ditch soil and lagoon soil, and vanadium as a COC for ditch soil at a hot spot, sample location SD4-28.

[4] "Master Plan Revision for the Seneca Army Depot" prepared for the Seneca County Industrial Development Agency and the Economic Development Corporation, pg 30, Jeffrey Donohoe Associates and Clough Harbour & Associates, 2006.

	Cleanup Goals		
Compounds	Surface and Subsurface Soil	Ditch Soil and Lagoon Soil	Ditch Hot Spot (SD4-28)
Chromium (Total) (mg/kg)	60	60	--
Lead (mg/kg)	167	--	--
Vanadium (mg/kg)	--	--	150

In achieving these goals, no unacceptable risk will remain at the AOCs and the AOCs will be suitable for unrestricted use and unlimited exposures. The 95% UCL of post-excavation soil concentrations at SEAD-4/38 will be compared to the cleanup goals summarized above and in **Table 2-1** to determine whether or not the remedy is complete. The vertical limit of excavation will be based on the collection and analysis of confirmatory soil samples from the base of the excavation, unless bedrock is encountered, and on an evaluation of the resulting data versus the cleanup objectives for the AOCs. The horizontal limits are well defined by the historic soil samples (shown in **Figure 2-1**), and the USEPA and NYSDEC previously agreed with the Army that perimeter sampling to confirm the horizontal extent of excavation is not necessary. The post-excavation soil data set will include the following data:

- all confirmatory soil samples that are representative of the post-excavation soil conditions, and,
- historic soil samples used to identify the horizontal excavation limits.

2.2 Summary of Remedial Design

The remedial activities for SEAD-4/38 addressed in this work plan are the following:

- Excavating ditch soil until the cleanup goal for chromium (60 mg/kg) is reached;
- Excavating the hot spot SD4-28 with vanadium concentrations greater than 150 mg/kg;
- Excavating surface and subsurface soils until the cleanup goals for lead 167 mg/kg and chromium 60 mg/kg are achieved;
- Dewatering the man-made lagoon by pumping the water into the existing ditch paralleling the railroad tracks to the southwest of SEAD-4.
- Once the lagoon is empty, excavating soil from the base and sides of the man-made lagoon until the chromium cleanup goal of 60 mg/kg is achieved;
- Removing the temporary berm at the end of the storm water control basin and allowing the man-made lagoon to return to its natural condition;

- Stabilizing soil, ditch soil, and lagoon soil exceeding the waste characterization criteria in order to render it non-hazardous;
- Disposing of the excavated materials in an off-site landfill;
- Backfilling excavation areas that cannot be graded to promote positive drainage and excavation areas deeper than 4 feet near the road or buildings if necessary with clean backfill; and
- Submitting a Completion Report after completion of the remedial action.

Up to 16,000 cubic yards (cy) of soil, ditch soil, and lagoon soil is expected to be excavated from SEAD-4 and SEAD-38 and be disposed off-site. Because this remedy will result in no hazardous substances, pollutants, or contaminants remaining on-site consistent with levels that allow for unlimited use and unrestricted exposure, a statutory five-year review is not required.

The approximate extent of the planned excavations for chromium, lead, and vanadium in soil, ditch soil, and lagoon soil are shown in **Figure 2-1**. The outermost horizontal limits of planned excavation were delineated based on historic soil samples that met the cleanup goals. The depths of the planned excavations are based on data from historic soil borings and will vary depending on the results of confirmatory sampling.

2.3 Basis of Document

This document is based on information contained in the Administrative Record for the AOCs as listed in **Section 9**.

2.4 Remediation Requirements and Criteria

2.4.1 ARARs

Excavation and off-site disposal requirements and criteria include regulatory and disposal facility requirements.

2.4.1.1 Chemical-Specific Requirements

Chemical-specific requirements include the following:

- Transport and disposal of excavated soil and ditch soil to meet Federal and State of New York Department of Transportation (DOT) requirements as well as requirements based on the operation permit held by the disposal location.

2.4.1.2 Location-Specific Requirements

Location-specific requirements are associated with protecting existing resources that may potentially be impacted by site remediation activities.

Wetlands are not present at or adjacent to the area encompassed by SEAD-4 or SEAD-38.

Floodplain information was reviewed from the Federal Emergency Management Agency confirming that SEAD-4/38 are not within the floodplain of a 100-year or 500-year flood. Flood insurance rate maps indicate the entire Depot is outside the 100-year floodplain.

U.S. Fish and Wildlife Service (USFWS) indicated that no federally listed or proposed endangered or threatened species under their jurisdiction are known to exist in the area of SEAD-4/38. The NYSDEC Natural Heritage Program Biological and Conservation Data System identified no known species of special concern living within the Depot property.

2.4.1.3 Action-Specific Requirements

A water quality certification under Section 401 of the Federal Clean Water Act is not needed for this remediation project. Water accumulation in the excavation area is expected to be minimal.

2.4.2 Notification Requirements and Status

While formal permits are not needed for a CERCLA site remediation, any applicable state or local regulatory permit requirements will be met. Such requirements include disposal requirements for off-site disposal operations. No special local Town of Romulus requirements have been identified that will need to be met other than SEDA security procedures.

2.4.3 Access Needs During Remediation

Access is being obtained from the SEDA in order for the remediation work to be completed. SEAD-4/38 is located in the southwestern portion of the Depot. SEDA will provide contractor with keys to the necessary gates.

3.0 DESIGN ELEMENTS

This section provides a summary of design information for each aspect of the remedial action at SEAD-4/38: site preparation, dewatering the lagoon, excavation, disposal, and restoration.

Drawings (**Appendix A**) and technical specifications (**Appendix B**) present the detailed design information that will be implemented. Confirmatory sampling and disposal characterization sampling are described in the site-specific FSP in **Section 4**. The Construction Quality Plan (CQP) is included in **Section 5**, and the Post-Construction Monitoring and Maintenance Plan (PCMMP) is in **Section 6**.

3.1 Site Preparation

Site preparation will be required prior to construction activity at SEAD-4/38. As part of this document, specifications are developed for the following activities:

- Mobilization;
- Support areas;
- Off-site borrow source;
- Identification and qualification of off-site disposal facilities;
- Clearing and grubbing;
- Identification of obstructions and utilities, both overhead and underground;
- Control of run-on and run-off waters;
- Erosion and sedimentation control;
- Abandonment of monitoring wells;
- Site controls and security; and
- Health and safety.

3.1.1 Mobilization

Field personnel and equipment will be mobilized to the site. The subcontractor will bring all necessary equipment to the site, arrange for the necessary utilities, and obtain all permits needed.

Travel right-of-ways between the excavation areas, support zones, and equipment/material staging areas will be established and marked. Access and egress routes within the Depot will be identified and posted to direct and enhance traffic flow and to minimize the impact that construction equipment movement has on other activities underway at the Depot.

3.1.2 Support Areas

The perimeter of the site and its support zone will be marked using stakes and orange security ("snow") fencing. Entry/exit ways through the security fencing will be placed as required to support needed traffic flow. Parsons currently anticipates that the support area for the SEAD-4/38 activity will be established close to Seneca Road near the location of the former T30 building, outside the

work areas. The work support zone will be arranged to facilitate free and logical equipment movement to and from the work area, which will enhance safety, security and minimize the likelihood that contaminants will be introduced to new areas of the Depot.

Excavated material would be staged adjacent to the paved Seneca Road and loaded onto trucks which remain on the paved road; therefore, decontamination of the trucks would not be necessary. The roads in the immediate area would be wet down with a water truck to minimize dusting. At the conclusion of the job all equipment will be decontaminated at the support area. Personnel decontamination procedures are addressed in the Project Safety Plan and Site-Specific Health and Safety Plan for Seneca Army Depot Activity (Parsons, 2006).

3.1.3 Off-Site Borrow

Most of the excavations will be shallow (1 foot deep); therefore, backfilling will not be necessary. The shallow excavations will be graded to promote positive drainage. Excavation areas that cannot be graded to promote positive drainage (e.g., excavated areas located near roads or buildings), may require borrow material for backfilling, as necessary. An off-site borrow source will be identified for this project and data will be provided certifying that the material is suitable for use as clean fill. The soil from the borrow source will comply with the borrow source specifications (Section 02223) in **Appendix B**. Specifically, analytical data from the borrow source must meet the site cleanup goals for chromium, lead, and vanadium, must be less than the maximum metals concentrations in soils remaining at the site for other metals, must meet the NYSDEC Unrestricted Use Soil Cleanup Objectives (Table 375-6.8(a)) for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs).

The procedure to show acceptability of a borrow source for use as backfill at SEAD-4/38, which is consistent with NYSDEC's Draft DER-10 Technical Guidance for Site Investigation and Remediation (December 2002), is as follows:

1. Subcontractor identifies a potential borrow source for the SEAD-4/38 project. Subcontractor provides the name of the site owner, the location where the fill was obtained, and a brief history of the site which is the source of the fill.

2. Subcontractor collects one representative sample from the borrow source and submits for the analysis of metals, VOCs, and SVOCs. The results are provided to Parsons, Army, USEPA and NYSDEC.

3. The analysis results must meet the NYSDEC Unrestricted Soil Cleanup Objectives (Table 375-6.8(a)) for VOCs and SVOCs, meet the chromium, lead, and vanadium cleanup goals in **Table 2-1**, and be less than the maximum metals concentrations in soils remaining at the site for other metals.

4. If all results meet the requirements, the material is acceptable for use as backfill. If the results are not acceptable, a new borrow source will be located and the process will be repeated. The Army will provide the comparison of backfill results to the acceptability criteria to NYSDEC and USEPA for review prior to accepting the material onsite. The Army will consider the material approved if it meets all of the requirements as discussed above.

5. No additional borrow source samples will be required once the source is approved. The Army will monitor the incoming loads of backfill to document that the fill is free of extraneous debris or solid waste.

3.1.4 Identification and Qualification of Off-Site Disposal Facilities

Samples of the soil and ditch soil to be excavated will be collected and submitted for waste characterization analysis. The analytical results will be submitted to potential off-site disposal facility for approval prior to the initiation of the excavation activity. One sample will be collected for each 2,000 tons of excavated soil from SEAD-4/38 and analyzed to satisfy waste management facility requirements, as detailed in **Section 4**. This sampling requirement is based on the disposal facility's review of the historic sampling results at SEAD-4/38. The disposal facility will pre-approve acceptance of the soil based on the analytical data. The disposal characterization sampling will be completed prior to the commencement of construction activities. The disposal samples will be tested for contaminant leaching using the Toxicity Characteristic Leaching Procedure (TCLP) for metals as well as ignitability, corrosivity, and reactivity. The number of samples and the analyses may vary from this Work Plan depending on the requirements of the selected landfill.

Based on previous data, it is not expected that any soil will exceed the TCLP limits listed in Title 40 Code of Federal Regulations (CFR) Part 261.24. In the event that soil does exceed the TCLP limits, the soil will be stabilized on-site and then disposed as non-hazardous waste. Non-hazardous soil will be managed by the subcontractor (to be qualified and designated by Parsons) and will be transported to either the Seneca Meadows Landfill, Waterloo, New York; Ontario County Landfill, Flint, New York; or an equivalent licensed off-site facility for disposal. It is not expected that any materials will be disposed as hazardous waste.

3.1.5 Clearing and Grubbing

The SEAD-4/38 areas are covered with tall grasses and low, thick brush on all sides of the site. Brush overlying the areas will be mulched with a brush hog, left in place, and then removed with the excavated material. Established trees will be left in place and protected and the excavation will go around the trees.

3.1.6 Identification of Obstructions and Utilities

The subcontractor will call Underground Facilities Protective Organization (UFPO) and work with Parsons and the Army to locate and mark utilities and other obstructions in the immediate areas of the excavation area and the supporting work/staging areas. Currently, all power to the buildings on-site has been disconnected. The only possible existing power source is the overhead service at SEAD-4/38 from where the building power was terminated. All identified utilities within work/staging areas will either be terminated and disconnected, or if necessary, rerouted to ensure that service is not disrupted during the site remedial action operations.

3.1.7 Control of Run-on and Run-off Waters

Run-on waters in the excavation area will be controlled by installing berms and/or ditches to divert storm waters around the areas of excavation. The northwest-southeast trending ditch will be diverted to flow around the southern edge of the excavation area rather than flowing into the lagoon. Berms will be placed upgradient of open excavation areas as work proceeds. These berms will be constructed of clean soil or hay bales. The location of berms will be determined in the field after assessing conditions. Run-off waters will be retained within the excavation area through use of berms or hay bales and will be allowed to infiltrate or evaporate. Water collection will not be required.

All run-on, run-off, and erosion control measures will be inspected daily and repaired as necessary. Water management and control measures will be constructed throughout the project duration and will be adjusted as field conditions warrant.

3.1.8 Erosion and Sedimentation Control

Temporary erosion and sedimentation controls, such as silt fencing, hay bales, or soil berms, will be installed as required during operations to prevent migration of sediments and erosion. Prior to beginning any excavation work, temporary silt fencing (Specification Section 02370) will be erected, which will surround the downgradient sides of disturbed areas to prevent contaminated sediment transport, shown in **Drawing C-3**. The temporary silt fencing will be maintained throughout the project and will not be removed until permanent vegetation has been re-established. In addition, storm water from upgradient locations will be routed away from exposed materials, and storm water contact of exposed material will be minimized to the extent practical. Any temporary erosion control measures will be removed following remediation so as to return drainage patterns to their general conditions prior to remediation. The final grade will be based on site drainage restoration.

3.1.9 Abandonment of Monitoring Wells

Long-term monitoring the groundwater at SEAD-4/38 is not an element of the remedial action. As such, all the groundwater monitoring wells (13) located at SEAD-4/38 will be abandoned in accordance with NYSDEC's guidance document Groundwater Monitoring Well Decommissioning

Procedures (Pirnie, 1996). The procedure for well abandonment is outlined in the Monitoring Well Abandonment Work Plan for the Seneca Army Depot (Parsons, 2005b).

3.1.10 Site Controls and Security

SEAD-4/38 is located within the Depot which is surrounded by a fence with locked gates. The Army will provide site access to the remedial action team prior to and during construction activities. Site security is necessary to prevent exposure of unauthorized, unprotected individuals to the work area. The area immediately surrounding the work area will be clearly marked through the use of signs, barrier rope, tape, or fencing.

Site security will be enforced by the Site Health and Safety Officer (SHSO) or a designated alternate who will ensure that only authorized personnel are allowed in the work area. This person will also ensure that entry personnel have the required level of personal protective equipment (PPE), are trained under the requirements of Title 20 CFR Part 1910.120, and are on a current medical monitoring program.

All visitors to the work site are required to report to the site manager (SM) or the SHSO as soon as they arrive on site. The presence of visitors on site will be recorded in the field logbook, and information collected at the time of sign in will include the visitor's name, company, date, time, and activities performed while on site.

3.1.11 Health and Safety

All field activities conducted during the remedial action will be performed in accordance with the site-specific health and safety plan (HSP), Project Safety Plan and Site-Specific Health and Safety Plan for Seneca Army Depot Activity PBC II (Parsons, 2006b) in accordance with Parsons' Safety, Health, and Risk Program (SHARP) Manual. All subcontractors will review Parsons' HSP and develop their own HSP written specifically for the SEAD-4/38 remediation activities. The HSP will protect site workers through the identification, evaluation, and control of health and safety hazards.

3.2 Dewatering the Lagoon

Three lagoon water samples were previously taken and the sample analysis results were compared to the groundwater effluent limitations published by the State of New York Department of Environmental Conservation in the Division of Water Technical and Operational guidance Series (1.1.1) "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations", (June 1998 with errata updates in 1999, 2002, and 2004). The results of this analysis show the average iron concentration for the three water samples is 440 ppb, below the 600 ppb effluent limitation. There is one iron concentration in the lagoon water that exceeds its groundwater effluent limitation (i.e., 630 ppb vs 600 ppb limit). None of the other iron analytical results exceed the identified limitation (**Table 3-1**). The quality of the lagoon water has not changed since the

samples were collected, as the industrial processes that previously operated in this area ceased operation more than 40 years ago, and there are no known current industrial sources in the area.

The SEAD-4 lagoon will be dewatered using a 4-inch (") double diaphragm pump with a floating intake so the pond is dewatered from the top down to preclude disturbing the lagoon soil. When the water level reaches the lower limit, a skimmer will be attached to the suction line and if necessary a smaller pump will be used to pump pond water into the skimmer at a rate corresponding to the skimmer's capacity to complete the dewatering. Pumping will be discontinued before the lagoon soil could potentially be disturbed.

The water will be pumped to the existing drainage ditch that parallels the railroad tracks to the southwest of the pond. The pond currently has a 12" diameter pipe in the western berm which acts as an overflow during high water periods. This overflow drains into an existing depression which then sheet flows onto the ground surface and that water which does not percolate into the ground flows into the drainage ditch that parallels the railroad tracks to the southwest.

Once the pond is dewatered, the berm on the west side will be breeched so water will not accumulate and the soil will be allowed to dry. The breeched area will be shaped so the soil will drain through the existing depression where the overflow currently drains. At the point where the soil begin, two rows of staked hay bales lined with filter fabric will be installed to contain the soil within the lagoon area. This drainage area will be excavated to a minimum of four feet with confirmatory sampling as part of the overall removal program.

When the soil becomes dry, it is likely that their surface will crust over; and as such, it is unlikely that the soil will dust, unless the surface is abraded. Nonetheless, as a further safeguard, a fabric filter that is weighted down by sand bags will be placed over the top of the lagoon soil once it has dried. The fabric filter will prevent abrasion and help prevent incidental wind blown dusting.

3.3 Excavation and Disposal of Soil, Ditch Soil, and Lagoon Soil

The excavation and removal of soil and ditch soil at SEAD-4/38 is the main remedial activity stated in the ROD. The following outlines the aspects of excavation described in this section.

- Pre-excavation activities including surveying;
- Excavation of soil, ditch soil, and lagoon soil;
- Soils and waste material loading;
- Dust control and air monitoring measures; and
- Confirmatory sampling.

3.3.1 Pre-Excavation Activities

Survey

Before excavation commences, Parsons will survey and stake the perimeter of the excavations as shown in **Drawing C-3**.

3.3.2 Excavation of Soil, Ditch Soil, and Lagoon Soil

Soils within the areas of excavation will be excavated up to the depths specified in **Drawing C-3** (see table below) to the staked limits, or as directed by the Site Manager based on the results of confirmatory samples as discussed in **Section 4**.

Area	Depth of Excavation
Area 1B	Up to 3.5 feet bgs
Area 1C	Up to 8.5 feet bgs
Area 1D	Up to 6.5 feet bgs
Area 2B	Up to 6 feet bgs
Area 2C	Up to 3 feet bgs
Area 3A	Up to 3 feet bgs

All other areas will be excavated to a depth of 1 foot bgs.

The horizontal excavation limits of the 1-foot excavation areas are based on the historic soil sample results (as shown in **Figure 2-1**). The depths of excavation are based on data collected during the ESI and RI. The horizontal extents of deeper excavations have been revised from the plan presented in the Draft RDWP. **Drawing C-3** and **Figure 2-1** show that each deeper excavation surface area (Areas 1B, 1C, 1D, 2B, 2C, and 3A) has been reduced to focus on the area where chromium or lead concentrations greater than the cleanup goals (**Table 2-1**) were observed at depth. A limited number of subsurface soil samples were collected during the ESI and RI, which resulted in a significant distance between clean borings. As a result, the horizontal extents of the deeper excavation areas presented in the Draft RDWP were arbitrary since limited historic subsurface data were available. **Sections 3.3.5** and **Section 4** (FSP) describe that the horizontal delineation of each deeper excavation within the full excavation area will be confirmed through the collection of sidewall samples in locations where the base of excavation is more than 2 feet below the adjacent ground surface. The vertical extents in those areas are delineated based on the bottom depth at which subsurface contamination was observed and will be confirmed by the collection of floor samples (unless bedrock is encountered). The final depth limits of excavation will be verified with post-excavation confirmatory sampling.

The approximate excavation volumes for SEAD-4/38 are up to 16,000 cy of soil, ditch soil, and lagoon soil. The actual final volume of soil, ditch soil, and lagoon soil excavated will be contingent on the confirmatory soil sample results. All soils will be removed up to the specified depth or bedrock using an excavator equipped with a slope bucket.

Soil will be excavated by excavator, loaded onto off-road trucks, and stockpiled at the designated staging area near the former Building T30 location. The off-road trucks will travel on clean material to avoid cross contamination. The staging area, shown in **Drawing C-3**, includes 130 ft by 70 ft concrete/asphalt pad at the former Building T30 location and the proposed excavation area to the southwest of the pad. The concrete/asphalt pad will be covered with two layers of polyethylene or equivalent material to prevent potential contamination.

All of the excavation areas including ditches will be worked from the high to the low end to avoid cross contamination from runoff.

3.3.3 Soil and Waste Material Disposal

Soils will be temporarily placed in piles lined with 6 mil polyethylene sheeting within the designated staging area. The excavated soil will then be directly loaded from the staging area into the dump trucks for transportation to the off-site waste management facility selected as described in **Section 3.1.4** above. The trucks will enter the site through the western gate traveling to Seneca Road from the north. The traveling route by the trucks is shown in **Drawing C-3**. At all times the truck will remain on asphalt roads.

3.3.4 Dust Control and Air Monitoring Measures

Water will be utilized to keep haul roads wet to control dust in active areas. Polyethylene sheeting will also be utilized as a barrier on exposed material to control emissions. An air monitoring plan has been developed to protect the workers involved in the construction at SEAD-4/38. Public health and safety is ensured by monitoring within the work zone and creating an exclusion zone surrounding the construction area. The air monitoring will be conducted in accordance with the air monitoring program outlined in Section A8 of the HSP (Parsons, 2006b). In addition, perimeter air monitoring will be conducted in accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP). Based on requirements specified in the NYSDOH CAMP, the perimeter air monitoring program will consist of respirable airborne dust particulates (particulate matter less than 10 microns – PM10). Although the CAMP also requires real-time perimeter measurements for total VOCs, such monitoring is not applicable at SEAD-4/38 since VOCs are not contaminants of concern at the site.

3.3.5 Confirmatory Sampling

After the excavation of an area is completed, floor confirmatory samples will be collected from the excavation bottom, except when bedrock is encountered, to verify the vertical extent of impacted soils. Confirmatory samples will be collected at a frequency of one sample per 2,500 sf as a grab sample from a unique location, in accordance with the FSP included as **Section 4**. Soil confirmatory samples will be analyzed for chromium and lead and ditch soil and lagoon soil samples will be

analyzed for chromium. Ditch soil confirmatory samples collected from SEAD-38 will be analyzed for vanadium.

Section 4 describes the frequency and layout of the confirmatory samples, as well as a summary of the sample collection information. The vertical limit of excavation will be based on the collection and analysis of confirmatory soil samples from the base of the excavation, and on an evaluation of the resulting data versus the cleanup objectives for the AOCs. All results for soil representative of material remaining at the excavation areas (as discussed in **Section 2.1**) will be used to calculate the 95% UCL and the 95% UCL will then be compared with the soil cleanup objectives summarized in **Table 2-1** to determine whether or not the soil remedy is complete.

The horizontal soil excavation limits are established (as shown in **Figure 2-1**) based on the historic AOC characterization data. Perimeter samples for the soil excavation are not warranted for this RA. Sidewall samples will be collected when the base of excavation is greater than 2 feet below the adjacent ground surface. Sidewalls will be collected at a rate of 1 sidewall sample for every 50 linear feet (lf), or a minimum of one sidewall per side. Sidewall samples will be collected at a depth halfway between the base of excavation and the adjacent ground surface, or the location may be biased due to visual or olfactory observations. The exact location of sidewall samples are discussed in more detail in Section 4. For the ditch excavations, perimeter or sidewall samples are not warranted due to the shallow excavation (1 foot) and the fact that the entire width of the ditches will be excavated.

3.4 Transport of Excavated Soil

Non-hazardous soil will be loaded into DOT approved dump trucks or dump trailers for transportation to the disposal facility.

Representatives of the transportation companies will be required to attend an orientation prior to hauling the excavated soil off-site. The orientation will cover:

- Traffic patterns
- Project safety issues
- Communication issues
- Haul and disposal procedures
- Documentation issues
- SEDA specific issues

The orientation will be summarized in a handout that will be passed along to each driver involved with the hauling activities. The transportation company will be required to document that pertinent information is delivered to each driver, or drivers will not be loaded.

Coordination of the off-site disposal activities will be conducted by the Site Manager. Each load will be tracked utilizing a worksheet provided to the drivers as they arrive at SEDA. The worksheet will record:

- Transportation Company
- Trailer No.
- Site name/Excavation No.
- Tarped – Yes
- Bill of Lading (BOL)/Manifest No.
- Arrival time/date
- Driver's name
- Time loaded
- Release time
- Truck No.
- Material to be loaded
- Destination

All shipments to off-site facilities will be tracked utilizing the worksheet and a Parsons-developed database. The database allows for easy cross-referencing, reporting, and quantifying.

3.5 Backfilling

Backfilling of the 1-foot-deep excavation areas is not anticipated due to the shallow nature of the excavation. These excavation areas will be graded and blended into the surrounding grade. Portions where deeper excavations are performed and areas where additional soil may be needed to achieve an even grade may require additional soil for backfilling. It is expected that backfill will be required to promote positive drainage near buildings, roads or asphalt. The area near the lagoon for which excavating to 4 feet is proposed is not a subsurface excavation; the ground elevation contours, shown in **Drawing C-3**, show that soil is mounded in that area and that the proposed excavation will restore the ground surface in that area to the natural grade. Therefore the area west of the lagoon, which consists of mounded soil, should not require backfill to promote positive drainage once the excavation is complete.

Parsons will verify that the 95% UCLs of post remediation soil concentrations at the excavation areas meet the site-specific cleanup goals prior to backfilling, as needed. Confirmatory sampling will be performed in accordance with the FSP presented in **Section 4**. Soil for backfilling will be obtained from a borrow source, if needed. Parsons will verify that the borrow soil documentation meets the project requirement as specified in **Section 4.2.2** by reviewing results of sampling conducted by the subcontractor. Soil compaction will be achieved by three passes of a dozer.

3.6 Site Restoration and Demobilization

The main area at SEAD-4/38 is relatively flat and the area to the west of the lagoon slopes down to the west. The site is mainly vegetated with grasses and brush. Disturbed areas at SEAD-4/38, both within and outside the areas of excavation, that were vegetated prior to the remedial action will be seeded to promote vegetation and to prevent erosion.

Silt fence, hay bales, berms, and ditch checks installed to prevent erosion will be replaced or repaired, as required. These erosion and run-off controls will remain in place until post-construction inspections confirm that vegetation has been established in disturbed areas. Other drainage control features, such as berms disturbed by the site remedial action will be restored to functioning condition.

Demobilization activities include the following:

- All equipment and materials, including the decontamination pad, and site trailers, will be demobilized;
- A final inspection and housekeeping sweep of the work areas will be completed. The polyethylene sheeting used at the staging area will be removed and the concrete/asphalt pad will be cleaned. All trash and waste materials will be removed; and,
- All field personnel will be demobilized from the site. The shoulders of the road will be dressed and the adjacent roads will be returned to the condition prior to the commencement of construction. Final topography will be recorded so as-built drawings can be produced.

4.0 FIELD SAMPLING PLAN

4.1 Introduction

This FSP describes the approach that will be used to conduct the soil sampling necessary to complete the remediation at SEAD-4/38. The remediation at SEAD-4/38 entails the excavation and disposal of soil, ditch soil, and lagoon soil. The sampling proposed in this FSP has been designed to provide the information necessary (1) to confirm the removal of soils exceeding site cleanup goals at SEAD-4/38; (2) for acceptance of off-site fill, if needed; and (3) to characterize excavated soils for disposal. In addition, disposal requirements of waste residuals generated during sampling and air monitoring are discussed. Project-specific data quality objectives (DQOs) for sampling are described throughout this section.

For each type of work covered in this plan, this FSP specifies the following:

- Types of sampling required;
- Number of required samples;
- List of required analyses;
- Acceptance criteria for analytical results; and
- Sample labeling and recording system.

This FSP is supplemented by the "Final Sampling and Analysis Plan for Seneca Army Depot Activity (SAP)" (Parsons, 2006a). This SAP was provided to the agencies under separate cover. The SAP specifies the following:

- Data quality objectives;
- Specific field sampling procedures;
- Sample custody and management;
- Quality Control sample collection;
- Analytical methods;
- Data validation;
- Laboratory analytical requirements;
- Data management and evaluation;
- Performance assessment and system audits; and
- Preventative maintenance.

4.2 Task Description

The tasks required to complete field sampling for SEAD-4/38 are presented in this section. Field sampling details are presented in **Section 4.3**.

4.2.1 Confirmatory Sampling of Excavations

Confirmatory sampling is required to ensure that soils remaining at SEAD-4/38 after remediation meet the cleanup goals listed in **Table 2-1** (i.e., the 95% UCLs of residual concentrations at the excavation areas are lower than the cleanup goals). Most of the areas at SEAD-4 and SEAD-38 will be excavated to a depth of 1 foot (shown on **Drawing C-3**). There are six discrete areas where soil

will be excavated to a depth greater than 1 foot; the areas and the depths are specified in the table below.

Area	Depth of Excavation
Area 1B	Up to 3.5 feet bgs
Area 1C	Up to 8.5 feet bgs
Area 1D	Up to 6.5 feet bgs
Area 2B	Up to 6 feet bgs
Area 2C	Up to 3 feet bgs
Area 3A	Up to 3 feet bgs

All other areas will be excavated to a depth of 1 foot bgs.

In **Drawing C-3**, the excavation surrounding and including the lagoon is referred to as "Area 1" and is subdivided into four sections: Area 1A is the western most portion of the excavation area and the lagoon itself; Area 1B is the area immediately to the west of the lagoon; and Area 1C and 1D are 25 foot by 25 foot deep hot spot excavations. The excavation southwest of the former Building T-30 is referred to as "Area 2"; Area 2B and 2C are 25 foot by 25 foot deep hot spot excavation areas. The excavation southwest of Building 2084 is referred to as "Area 3" and Area 3B is a 25 foot by 25 foot deep hot spot excavation area. The ditches included in the area to be excavated are labeled so that the northwest-southeast trending ditch is "Ditch 1", the north-most branch perpendicular to Ditch 1 is "Ditch 2", and the south-most branch of Ditch 1 is referred to as "Ditch 3". The ditch located to the south of Building 2084 is referred to as "Ditch 4". The excavation for the vanadium hotspot in the ditch at SEAD-38 will be referred to as "Ditch 5".

Floor confirmatory samples will be collected to verify that the vertical extent of impacted soils have been removed. The outermost horizontal excavation limits have been established (as shown in **Figure 2-1**) based on the historic AOC characterization data; as such, perimeter samples will not be collected. The horizontal delineation of each deeper excavation within the full excavation area will be confirmed through the collection of sidewall samples in locations where the base of excavation is more than 2 feet below the adjacent ground surface. Prior to commencement of excavation, the limits of excavation will be outlined by stakes placed by the engineer. The analytical results of the confirmatory sampling will determine if the excavation is complete or if more soil must be removed.

4.2.2 Fill Material Sampling

An off-site borrow pit will be designated as a source of fill material for the project, should it be needed. One sample of material from the pit will be collected for characterization to determine that VOCs and SVOCs meet the NYSDEC Unrestricted Soil Cleanup Objectives (Table 375-6.8(a)), that chromium, lead, and vanadium meet the site cleanup goals listed in **Table 2-1**, and that they are less than the maximum metal concentrations in soils remaining at SEAD-4/38 for other metals.

4.2.3 Disposal Characterization Sampling

For disposal characterization, the disposal facility requires that one composite sample will be collected for every 2,000 tons of material and submitted for waste characterization analysis. This sampling requirement is based on the disposal facility's review of the historic sampling results at SEAD-4/38. The disposal facility will pre-approve acceptance of the soil based on the waste characterization results. The samples will be analyzed for TCLP metals, ignitability, pH, and reactivity.

Based on previous data, it is not expected that any soil will exceed the TCLP limits. In the event that soil does exceed the TCLP limits, the soil will be stabilized on-site and then disposed as non-hazardous waste. Soils that failed TCLP analysis at other SEDA sites have been stabilized using lime, cement, or other materials that bind the metals within the matrix. The stabilization materials have been added to the soil piles and mixed with a loader or excavator until TCLP analyses show that the soil has been rendered non-hazardous.

If the waste characterization results are within the TCLP limits, then the soil from the excavation will be loaded into dump trucks and transported to and disposed in an off-site Subtitle D landfill. Non-hazardous soil will be managed by the subcontractor and will be transported to either the Seneca Meadows Landfill, Waterloo, New York; Ontario County Landfill, Flint, New York; or an equivalent approved licensed off-site facility for disposal. It is not expected that any materials will be disposed as hazardous waste.

4.2.4 Waste Residuals

Waste residuals generated during the field sampling activities, including disposable sampling tools, plastic sheeting, and disposable personal protective equipment will be bagged and disposed in an on-site trash dumpster. Waste residuals are discussed further in **Section** 7.

4.2.5 Air Monitoring

An air monitoring plan has been developed to protect the workers involved in the construction at SEAD-4/38. Public health and safety is ensured by monitoring within the work zone and creating an exclusion zone surrounding the construction area. The air monitoring will be conducted in accordance with the air monitoring program outlined in Section A8 of the Project Safety Plan and Site-Specific Health and Safety Plan for Remediation of the Seneca Army Depot (Parsons, 2006b). In addition, perimeter air monitoring will be conducted in accordance with the NYSDOH Generic CAMP. Based on requirements specified in the NYSDOH CAMP, the perimeter air monitoring program will consist of real-time perimeter measurements for PM_{10}. Although the CAMP also requires real-time perimeter measurements for total VOCs, such monitoring is not applicable at SEAD-4/38 since VOCs are not contaminants of concern at the site.

4.3 Field Sampling Detail

This section provides a detailed description of the field activities that were outlined in the previous section. The SAP (Parsons, 2006a) includes a detailed description of the analytical program, including sample custody, sample management, and data validation. Specifics for this project are provided below. Quality control (QC) sample requirements are outlined in **Tables 4-1** through **4-3**, in accordance with the SAP.

4.3.1 Confirmatory Sampling of Excavation

Sampling of excavations will be performed to show that excavation is complete, site-specific cleanup goals are met, and site restoration can begin.

4.3.1.1 Sample Collection

The number and type of confirmatory samples required at SEAD-4/38 are summarized in **Table 4-1**. After excavation, confirmatory samples will be collected from the floor of the excavation at a frequency of one sample per 2,500 square feet (sf). Each confirmatory sample will be collected as a grab sample from a unique location.

Figure 4-1 shows the sampling grid for floor confirmatory samples at SEAD-4. The excavations have been divided into numbered grids for clarity, noted in **Figure 4-1**. Enlarged views of the individual grids are provided in **Figures 4-2**, **4-3**, and **4-4** for Area 1; Area 2 and Ditches 1, 2, and 3; and, Area 3 and Ditch 4, respectively. Based on the area of excavations shown, it is anticipated that confirmatory sampling for SEAD-4 will consist of approximately 74 samples from the excavation floor, as presented in **Table 4-1**. In the event that bedrock is encountered, a floor sample will not be collected. Field duplicates will be collected at a rate no less than one per 20 field samples.

Sidewall samples will be collected when the base of an excavation is greater than 2 feet below the adjacent ground surface. Sidewalls will be collected at a rate of 1 sidewall sample for every 50 lf, or a minimum of one sidewall per side. Sidewall samples will be collected at a depth halfway between the base of excavation and the adjacent ground surface, or the location may be biased due to visual or olfactory observations. Figures 4-2 through 4-4 show the sidewall sample locations.

For the SEAD-4/38 ditch excavation, confirmatory samples will be collected from the floor of the ditches at a frequency of one sample every 50 lf. One floor sample will be collected at the ends of each ditch. Based on the ditch lengths shown in **Figure 4-1** and **Table 4-1**, it is proposed that 26 confirmatory samples be collected from the floor of the four ditches and 3 samples be collected from SEAD-38. In addition, two field duplicate samples will be collected.

Samples at SEAD-4/38 will be collected using disposable sampling scoops and homogenized in a bowl. Samples will be collected following procedures outlined in the SAP. QC samples will be collected in accordance with the SAP and as outlined below and in **Table 4-1**. Six sample duplicates

and six matrix spike (MS) analyses are proposed to be collected with the confirmatory samples. This quantity may be adjusted during the project as long as a minimum of one set of QC samples (duplicate and MS) are collected for every 20 field samples submitted to the laboratory.

4.3.1.2 Sample Analysis

Confirmatory soil samples collected from SEAD-4 and SEAD-38 will be analyzed as follows by USEPA SW846 Method 6010B:

- SEAD-4 surface and subsurface soil: chromium and lead;
- SEAD-4 ditch soil and lagoon soil: chromium; and
- SEAD-38 ditch soil: vanadium.

These analytes are listed in the ROD and presented in **Table 2-1** as the COCs that have established cleanup goals. If the site-specific cleanup goals are not met, additional excavation will be performed based on visual observations and best professional judgment by the field engineer, and additional confirmatory samples will be collected based on the frequencies discussed above. The required reporting limits for each COC are listed alongside the project cleanup goals in **Table 4-2**. Sampling frequency and required parameters are presented in **Table 4-3**.

4.3.1.3 Sample Numbering

As a means to track the location of confirmatory samples, 50-foot by 50-foot grids will be laid out over the excavation areas as shown in **Figure 4-1**. For the surface, subsurface, and lagoon soils, sample labels will be associated with the grid in which the sample is located. For example, confirmatory samples from SEAD-4 will be labeled as follows:

S4EXFL-ZZ-XX (floor sample)

S4EXSW-ZZ-XX (sidewall sample)

The first two numbers note the AOC (i.e., SEAD-4). EX designates that the sample is from an excavation. FL denotes a sample collected from the floor of the excavation; SW denotes a sample collected from the sidewall of the excavation. ZZ is the grid name. XX is the sample number.

For example, a floor sample collected from grid G4 would be labeled S4EXFL-G4-01.

As discussed above in **Section 4.2.1**, the five ditches (including the SEAD-38 hot spot) included in the excavation area are numbered in **Figure 4-1** as Ditch 1 through Ditch 5. Confirmatory sample labels will be associated with the ditch number from which the sample was collected. For example, confirmatory samples will be labeled as follows:

S4EXDIT-D"Z"-"XX"

The first two characters note the AOC (i.e., SEAD-4). EX designates that the sample is from an excavation. DIT designates the type of sample, ditch soil from the floor of a ditch. D represents that the sample location is a ditch, and Z is the ditch number. XX is the sample number.

For example, a ditch soil sample collected from the floor of Ditch 2 would be labeled S4EXDIT-D2-01.

Every label will be unique. In the field, the engineer will keep a log of the sample locations and sketch a diagram of sampling grids and the sample locations.

4.2.3 Fill Material Sampling

It is not anticipated that fill material from an off-site borrow pit will be necessary at SEAD-4/38. However, in the event it is needed, fill material will be sampled to determine if it meets the NYSDEC Unrestricted Soil Cleanup Objectives (Table 375-6.8(a)) for VOCs and SVOCs, the site cleanup goals for chromium, lead, and vanadium, and be less than the maximum metals concentrations in soils remaining at the site for other metals, prior to acceptance. The subcontractor will provide Parsons with a sample that Parsons will submit for analyses. Results must indicate that the soil meets the acceptance criteria in order to be approved as fill.

4.3.2.1 Sample Collection

One sample will be collected from the backfill prior to use. The subcontractor will submit a representative sample from the borrow pit.

4.3.2.2 Sample Analysis

The soil sample will be submitted by Parsons for analysis for VOCs, SVOCs, and metals. Analytical data from the borrow soil must be below the NYSDEC Unrestricted Soil Cleanup Objectives (Table 375-6.8(a)) for VOCs and SVOCs, and meet site-specific cleanup goals for chromium, lead, and vanadium, and be less than the maximum concentrations in soils remaining at the site for other metals.

If any of these criteria are not met, the borrow pit will be rejected as a source of fill material for the project.

4.3.2.3 Sample Designation

The fill material will be designated as follows:

S4FM-SP"X"-"YY"

The first two characters note the AOC (i.e., SEAD-4) where the fill is to be used. "FM" indicates that the sample is fill material. SPX is the number of the source pit, assigned sequentially (e.g., SP1). YY

is the sample number.

4.3.3 Disposal Characterization Sampling

Disposal characterization samples will be collected and analyzed to determine if the excavated soils can be disposed as non-hazardous waste.

4.3.3.1 Sample Collection

The disposal facility requires that one composite sample be collected for every 2,000 tons of soil based on the disposal facility's review of the historic sampling results at SEAD-4 and SEAD-38. The samples will be collected prior to the initiation of excavation activities.

4.3.3.2 Sample Analysis

Each soil sample will be analyzed for TCLP metals, reactivity, flashpoint, and pH. Sampling frequency and required parameters are presented in **Table 4-3**.

4.3.3.3 Sample Numbering

The disposal samples will be numbered as follows:

S4DSZZ

The first two characters note the AOC (i.e., SEAD-4). DS designates the sample as a disposal characterization sample. ZZ is the sample number.

5.0 CONSTRUCTION QUALITY PLAN

The Construction Quality Plan describes the construction quality assurance (QA) and QC activities to be performed during the RA for SEAD-4/38 at the Seneca Army Depot Activity. This section addresses the quality assurance/quality control (QA/QC) procedures for site preparation, excavation, soil loading, and restoration. This CQP has been developed to ensure that implementation of the remedial action is in compliance with the project documents, including the plans and specifications, **Appendices A** and **B**, respectively. Remediation components include site preparation, dewatering the lagoon, excavation, soils management, soils disposal, backfilling, and site restoration. Inspections to verify compliance with the quality requirements will be performed during all phases of construction.

The objective of this plan is to ensure that proper materials, construction techniques, methods, and procedures are implemented in accordance with project specifications. This plan provides a means to identify problems that may occur during construction and provides appropriate methods for resolution of these problems.

5.1 Construction Project Organization

The various tasks outlined herein are being implemented by the Army with Parsons as its remediation Contractor. Parsons will provide constant site oversight during the remedial action.

Parsons will use the design documentation herein to hire a construction subcontractor, a laboratory subcontractor, and a surveying subcontractor. The overall construction quality assurance program will be implemented directly by Parsons.

Parsons has dedicated, experienced, and competent personnel to manage the remediation. Senior management and staff personnel have been selected based on their knowledge and abilities in areas of remediation and civil construction; management and administration of environmental contracts; regulatory and technical expertise; and health, safety, and quality awareness.

Responsibilities of key personnel are described in the following subsections.

The work effort at SEAD-4/38 is overseen and reviewed by USEPA, NYSDEC, and NYSDOH. The project organization is summarized in the table below:

Name	Title	Phone/Fax Number	Address
John Hill	AFCEE Contracting Officer's Representative (COR)	Office: (210) 536-5289 Fax: (210) 536-4330	HQ AFCEE/IWP 3300 Sidney Brooks Brooks City-Base, TX 78235 john.hill@brooks.af.mil
Stephen Absolom	Seneca Army Depot Activity's Point of Contact (POC)	Office: (607) 869-1309 Fax: (607) 869-1362	SEDA Attn: SMASE-BEC Building 123 Romulus, NY 14541 stephen.m.absolom@us.army.mil
Thomas Battaglia	Seneca Army Depot Activity's COR	Office: (607) 869-1353 Fax: (607) 869-1251	SEDA Building 125 Romulus, NY 14541 thomas.c.battaglia@nan02.usace.army.mil
Todd Heino	Parsons Project Manager (PM) and QA Manager	Office: (617) 449-1405 Fax: (617) 946-9777	Parsons 150 Federal St. 4th Floor Boston, MA 02110 todd.heino@parsons.com
Tim Mustard	Program Health and Safety Officer (PHSO)	Office: (303) 764-8810 Fax: (303) 831-8208	Parsons 1700 Broadway, Suite 900 Denver, CO 80290 tim.mustard@parsons.com
Tom Andrews	Site Manager	Office: (716) 541-0730 Cell: (716) 998-7473 Fax: (716) 541-0760	Parsons 40 LaRiviere Drive, Suite 350 Buffalo, NY 14202 tom.andrews@parsons.com
Beth Wasserman	Project Engineer	Office: (617) 449-1565 Fax: (617) 946-9777	Parsons 150 Federal St. 4th Floor Boston, MA 02110 beth.wasserman@parsons.com
Ben McAllister	QA/QC Manager and Site Health and Safety Officer (SHSO)	Office: (617) 449-1592 Cell: (207) 409-6151 Fax: (617) 946-9777	Parsons 150 Federal St. 4th Floor Boston, MA 02110 benedict.mcallister@ parsons.com

5.1.1 Project Manager

The Project Manager, Todd Heino, will manage the project from the Boston, Massachusetts office and will be on-site periodically during construction. Mr. Heino is the final decision authority, and will receive reports from the field from the Site Manager or the QC Officer. Mr. Heino will visit the work site, as necessary, to meet with the client and review work progress. Mr. Heino's responsibilities as PM are as follows:

- Managing project administration;
- Serving as primary AFCEE/Army interface on all project issues;
- Serving as primary interface with USEPA and NYSDEC on project issues;
- Resolving conflicts with AFCEE/Army or subcontractors;
- Reviewing and submitting project documentation.

5.1.2 Site Manager

The Site Manager, Tom Andrews, is directly responsible for all aspects of the contractor's performance including work assignments, approval of all contractor and subcontractor costs, and approval of all subcontracts and procurements. Mr. Andrews will be on-site one or two days a week during the construction phase of this project. Mr. Andrews shall also be responsible for the resolution of all QA issues that arise during construction. Other responsibilities of the SM include:

- Reviewing all construction documents to verify compliance with remedial action objectives;
- Developing a QA program to ensure that program objectives are met through a systematic process of QC and documentation;
- Ensuring that contractor personnel are experienced, competent, and qualified for their assigned tasks;
- Coordinating constructability review of project scoping documents;
- Coordinating with the Project Engineer and the SHSO/QC Officer in developing work plan implementation procedures during pre-construction;
- Selecting the construction subcontractors, as needed, and administering the construction subcontracts;
- Coordinating all construction activities associated with subcontractors; and,
- Coordinating with the SHSO/QC Officer to ensure that inspections, tests, and records are developed and performed adequately.

5.1.3 Project Engineer

The Project Engineer, Beth Wasserman, will support the PM in the office. It is not anticipated that Ms. Wasserman will be on-site, with the exception of an occasional visit, as necessary. The responsibilities of the Project Engineer include the following:

- Reviewing design issues;
- Modifying the design with regulators, if required;
- Reviewing analytical data to assess if results are satisfactory; and,
- Preparing AFCEE and regulatory submittal documents for approval, as required.

5.1.4 QA/QC Manager and Site Health & Safety Officer

Ben McAllister will serve in the dual role as the QA/QC Manager and as the Site Health and Safety Officer. Mr. McAllister will be on-site full time and will be responsible for all daily operations. Mr. McAllister's key responsibilities are as follows:

- Implementing the QA program, including conducting audits and/or surveillance of project and construction activities, as needed, to verify that project personnel are performing their duties in accordance with this work plan. Scope audits will include verification that project and construction activities are being properly performed and documented, and that health and safety-related or quality-related concerns, nonconformances, and deficiencies are being resolved in a satisfactory manner;
- Implementing the work plan;
- Supervising and coordinating all activities relating to field remediation operations on a daily basis and serving as the subcontractors' primary point of contact for daily and routine operations;
- Completing daily reporting tasks and review of any daily or weekly reports;
- Requisitioning labor, materials, and equipment to perform construction activities;
- Making routine field decisions;
- Identifying problems that cannot be resolved in the field, and reporting them to the SM or PM, as appropriate;
- Communicating QA/QC policies, objectives, and procedures to project personnel and subcontractors during project meetings and informal discussions;
- Conducting sampling and QA testing;
- Monitoring, controlling, and documenting the quality of on-site construction activities;

- Verifying that QC personnel are properly qualified and trained in specified plans and testing procedures;
- Verifying and documenting that construction QC activities involving inspection, testing, and records are complete, accurate, and in accordance with site-specific documents;
- Enforcing site health and safety policies and procedures as defined in this document and in the site-specific HSP (Parsons, 2006b);
- Conducting and documenting health and safety orientation and daily meetings, as required, prior to construction;
- Determining the appropriate levels of PPE for each construction activity; and,
- Overseeing construction QC operations performed by subcontractors.

Mr. McAllister will have the authority to stop work on any project activity due to nonconformance with this work plan. All on-site personnel will be encouraged to discuss any quality-related concerns with Mr. McAllister. In the event that Mr. McAllister detects or is informed of a potential nonconformance, he will investigate the matter, determine the corrective action required, document the incident, and report the incident to the SM or Project Engineer.

5.2 Inspection and Testing Requirements

A QC inspection and testing program has been developed for the remediation at SEAD-4/38 to verify that site preparation, excavation and removal of contaminated soil, ditch soil, and lagoon soil, dewatering the lagoon, and site restoration meet the project quality requirements. As detailed in **Sections 5.2.1**, **5.2.2**, and **5.2.3**, the QC inspections and testing program includes three phases of inspections for work in progress: pre-construction inspections, construction inspections, and post-construction inspections. Upon substantial completion of the work (or significant portions of the work), completion inspections will be conducted. Completion inspections are also a three-step process, consisting of the QC completion inspection, the pre-final inspection, and the final acceptance inspection. The specific on-site inspection and testing requirements are addressed in **Section 5.2.2**.

The Site QC Officer, Mr. McAllister, will have primary responsibility for conducting and documenting the QC inspections and tests described herein. In the event that QC inspection or testing results indicate nonconformance with the project specifications or this work plan, the SM will be notified of the nonconformance. Corrective action will be coordinated through the SM, and resolution of the nonconformance will be verified by Mr. McAllister, as appropriate.

5.2.1 General Requirements

The general components of inspection activities are provided below and are scheduled in the following three major phases:

1. Pre-construction;
2. Construction;
   a. Construction: Startup;
   b. Construction: In-progress; and,
3. Post-construction.

Specific inspection requirements for each of the major components of the remedial action are discussed in **Sections 5.2.2** and **5.2.3**.

Pre-Construction Inspections

Preparatory inspections will be performed prior to initiation of specific activities or definable features of work. This phase of inspection is conducted prior to initiating actual construction and will generally consist of the following:

- Review contract with subcontractors, if appropriate, and verify conformance to project objectives;
- Verify that materials and equipment from off-site sources have been inspected and/or tested as required;
- Verify that conformance documentations such as test results for performance data are submitted and approved prior to construction;
- Verify that QA/QC inspection procedures are in place;
- Discuss procedures for conducting the work and discuss quality concerns with project personnel who will perform the work; and,
- Review potential safety and environmental hazards that may be associated with the planned activity, including the presence of buried and overhead utilities.

The results of the preparatory inspections will be documented and incorporated with the Daily QC Report.

Construction: Startup

Initial inspections will be performed during the startup of field work. This phase of inspection will generally consist of the following:

- Examine the work area to ensure that all preliminary work has been accomplished in compliance with the contract documents;
- Physically examine required materials, equipment, and storage areas to ensure conformance with contract documents;
- Observe and verify that the construction methods and quality of workmanship meet the requirements set forth in the scoping documents;
- Perform receiving inspections, if required (as described below);
- Check dimensional requirements relevant to the specific work activity and compatibility with subsequent or adjacent work; and,
- Verify that safety procedures are strictly enforced and in full compliance with the HSP.

The results of all initial inspections will be documented and incorporated into the daily QC report.

Construction: In-progress

During construction, receiving inspections, periodic follow-up inspections, and work plan compliance inspections will be conducted. *Receiving inspections* will be performed when materials or equipment arrive at the project site. The inspections will be performed to verify that the materials or equipment received meet project requirements and specifications, are free of defects, have not been damaged in transport, and are being properly stored at the project site. Receiving inspections will be conducted by the Site QC Officer, Mr. McAllister, and will consist of the following:

- Verification of the quantities of the materials, supplies, or equipment received;
- Visual inspection of the materials, supplies, or equipment for damages, defects, or other quality aspects;
- Verification of truck and disposal weights using calibrated on-site truck scale.
- Acceptance of the transport manifests or other delivery documents;
- Coordination of material and equipment storage, if required, prior to construction or installation;
- Inspection and laboratory sampling of imported construction materials; and,
- Estimation of soil density by weighing a 5-gallon bucket of disposal soil on a daily basis.

A qualitative judgment based on visual inspection will be made by Mr. McAllister regarding the material conformance with specifications. Mr. McAllister will document the following information regarding the received materials and equipment in the daily QC report:

- Types and quantities of materials and equipment received;
- Visual description of the materials and equipment; and,
- Material and equipment storage details, including storage locations.

Follow-up inspections are conducted periodically during specific construction activities to verify that work in progress meets technical, contractual, and regulatory requirements. Follow-up inspections will be conducted no less frequently than indicated in **Sections 5.2.2** and **5.2.3**. Additional follow-up inspections may be performed to verify that any deficiencies noted have been corrected prior to the start of subsequent features of the work. Follow-up inspections will consist of the following types of inspection activities:

- Material quality testing to verify that materials being used conform with project requirements;
- Examination of the work area and QA/QC documentation to verify that all previous work has been accomplished in compliance with the project requirements;
- Placement testing to verify that materials are being placed and constructed in conformance with the plans and scoping documents; and,
- Final follow-up inspections to verify that final surface grades and completed work are in compliance with the project requirements.

The results of the follow-up inspections will be documented and incorporated into the daily QC report.

Regular construction inspections will be conducted to verify compliance with the work plan and design documents. These inspections will be performed by Mr. McAllister and/or Mr. Andrews and include the following:

- Overseeing earthwork to confirm that the excavation and removal of contaminated soils is being performed in accordance with the design drawings and technical specifications;
- Documenting that the subcontractors are taking appropriate measures to control and minimize dust emissions and to control erosion at the site related to the subcontractors' work activities;
- Documenting that security measures are being followed, including entry by authorized persons only, use of appropriate PPE, protection of SEDA property, and use of locks and security measures to prevent unauthorized entry to the work site on non-business hours;
- Documenting the effective use of barricades and other temporary controls to prevent impacted storm water and construction-related runoff;
- Overseeing the collection and laboratory submission of all confirmatory sampling in the excavated areas and subsequent final survey of the excavated area before backfill;

- Documenting the sampling procedure and chain-of custody procedure for all samples; and,
- Overseeing the re-grading of the excavation areas.

For SEAD-4/38 remedial activities, the Program Health and Safety Officer (PHSO), Tim Mustard, or the SHSO, Mr. McAllister, will conduct periodic health and safety inspections in accordance with the project HSP.

Post-Construction

Post-construction completion inspections will be conducted when the contract work, or specific definable component of the contract work, is substantially complete. Completion inspections are conducted to verify that the work is properly completed and that all specified components of the work have been constructed or installed.

Three types of completion inspections will be performed to verify that site work activities performed meet the requirements of project specifications. These inspections include:

- QC completion inspection;
- Pre-final inspection; and,
- Final acceptance inspection.

The QC completion inspection will occur when the contract work is nearing substantial completion. Based on AFCEE's and the Army's concurrence that substantial completion is achieved, and at least five days prior to the pre-final inspection, the Site QC Officer will conduct a QC Completion Inspection. The Army POC, Mr. Steve Absolom and the AFCEE COR, Mr. John Hill will be notified of the inspection date so that they may participate. Upon completion of the inspection, an itemized list of work that is not properly completed, work that exhibits inferior workmanship, or work that does not conform to project requirements will be prepared. The list will also include outstanding deliverables and appropriate record documents.

The Pre-Final Inspection will be conducted immediately following completion and/or correction of all deficiencies noted during the quality control completion inspection, and following completion of all construction activities. The Site QC Officer will notify the Army POC and the AFCEE COR at least five days prior to conducting the Pre-Final Inspection. The notice will include assurance that all specific items previously identified in the Quality Control Completion Inspection, along with all remaining contract work, will be completed and/or corrected by the date scheduled for the Pre-Final Inspection. The Pre-Final Inspection will be conducted by the Site QC Officer, the Army POC, and the AFCEE COR.

The Site QC Officer will notify the Army POC and the AFCEE COR when the work is ready for the Final Acceptance Inspection. The notice will be given to both at least five days prior to the Final Acceptance Inspection and will include assurance that all specific items previously identified as being

unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the Final Acceptance Inspection. The Site QC Officer, the Army POC, and the AFCEE COR will conduct the Final Acceptance Inspection.

Meetings

A pre-construction meeting will be held at SEAD-4/38 prior to beginning construction activities. AFFCEE COR, SEDA's POC and COR, the PM, the SM, the SHSO, appropriate subcontractors, USEPA, and NYSDEC will attend the pre-construction meeting. This site-specific CQP will be reviewed, with specific focus on methods for documenting and reporting inspection data and methods for distributing and storing documents and reports. The responsibility of each party will be reviewed and clearly understood, and the work area security and safety protocols will be transmitted to all participants. This meeting will occur after the procurement for the remedial action implementation has begun.

Progress meetings will be held on a weekly basis and chaired by the SM. The primary subcontractors must send an authorized representative to each meeting. Issues at this meeting may include the progress of work, future scheduling issues, and related topics.

Base Cleanup Team (BCT) and Restoration Advisory Board (RAB) meetings will be held as required. Parsons will attend all BCT and RAB meetings during the course of this contract. Subcontractors will not be required to attend these meetings unless requested by AFCEE, regulatory agencies, Army personnel, or Parsons. The intent of the meetings will be to provide the regulatory agency with a progress update of the project and to address any regulatory issues that might delay the progress of the work.

5.2.2 Pre-Construction Requirements

Field inspections will be performed during on-site construction activities in order to verify that all work is in conformance with the design drawings and specifications. The following subsections summarize the specific field testing and other QC requirements as components of the three phases of inspection for each of the primary work activities to be performed. Specific pre-construction inspection activities for each of the primary work activities are summarized in **Table 5-1**.

Site Preparation

Site preparation activities are listed in **Table 5-1** and include visual observations to ensure that all site preparation activities are completed prior to beginning construction. Site preparation will include finalizing the mark-out of the area to be excavated, finalizing the mark-out of utility locations, clearing and grubbing the excavation area, confirming approval and location for site trailers, and confirming that all necessary roads are accessible and access gates are working properly.

Utility Locating and Management

SEDA and local utility suppliers will provide electrical service to the work area, and the subcontractor will be responsible for the electrical connections to the site trailer. In addition, the earthwork subcontractor will be responsible for obtaining potable water from either the Army or the Town of Romulus.

Prior to the start of construction, the subcontractor will call UFPO and work with Parsons and the Army to locate and mark utilities and other obstructions in the excavation areas and the supporting work/staging areas. All identified utilities within work/staging areas will either be terminated and disconnected, or if necessary, rerouted to ensure that service is not disrupted during the site remedial action operations.

Site Surveying, Staking, and Clearing

Site surveying will be accomplished by a combination of visual and instrument surveying of the site and construction features. Parsons will perform the following surveys using a Trimble 5700 Real-Time Kinematic (RTK) global positioning system (GPS) unit:

- Pre-construction excavation area survey; and,
- Post-excavation survey.

Stakes will be placed along the designed excavation boundary according to the design drawings. Stakes shall be placed at the start and termination of each linear section, at 50-foot intervals along each linear segment, at 20-foot intervals along curves, and at any change in boundary direction not in a curve.

The excavation areas will be prepared for construction. Whenever possible, 20 feet will be cleared on either side of the work area. If this is not possible, the maximum path will be cleared and work will be coordinated to ensure constructability. All utilities will be clearly marked following the clearing and grubbing.

Disposal Characterization

For disposal characterization, the waste management facility requires that one composite sample will be collected for every 2,000 tons of excavated soil, as detailed in **Section 4**. Each disposal sample for SEAD-4/38 will be a composite of multiple grab samples from the soil excavation and the ditch excavation. The disposal characterization sampling will be completed prior to the commencement of construction activities. The disposal samples will be tested for TCLP metals as well as ignitability, corrosivity, and reactivity. However unlikely, soil considered hazardous (i.e., soil that fails the waste characterization test) will be stabilized on-site and then disposed as non-hazardous waste. If the disposal sample results indicate the soil in not hazardous, then the soil from the excavation will be loaded into dump trucks and transported to and disposed in an off-site Subtitle D landfill. It is

anticipated that either Seneca Meadows in Waterloo, New York or Ontario County Landfill in Flint, New York will be used.

5.2.3 Construction Requirements

The construction activities listed in **Table 5-2** include visual observations to ensure that equipment is operating properly and safely, site security is in place, erosion controls are maintained, health and safety monitoring is performed, and the as-built records of the excavated area are maintained. These inspection activities will ensure that the excavation is performed in accordance with the project scope of work and all components of reporting can be fully met.

Dewatering Man-Made Lagoon

The lagoon will be dewatered by pumping the water from the lagoon into the drainage ditch paralleling the railroad tracks to the southwest of the lagoon. The area of the man-made lagoon will be allowed to return to its natural condition once the lagoon soils are excavated.

Excavation

The area at SEAD-4/38 will be excavated to the designed depth using a tracked excavator, and the excavated soil will be loaded onto off-road trucks and stockpiled at the designated staging area for off-site disposal.

Observation and Inspection

Mr. McAllister will be on-site during the soil removal to confirm that the removal is conducted in accordance with the technical specifications. A photographic log will be performed throughout the removal of the sections to provide documentation of the process and procedure. In addition, a post-excavation survey will be performed. Mr. McAllister will visually observe the removal of the contaminated soil to the designed depth of excavation, and he will estimate the volume of the waste excavated, based on the dimensions of the excavation.

Confirmation of Removal

Following the excavation of the contaminated soil from a discrete excavation area, confirmatory samples will be collected by Mr. McAllister for chemical analysis. It has been determined that approximately 103 post-excavation confirmatory samples plus six field duplicates (**Table 4-1**) will be collected from SEAD-4/38. However, the number and location of soil confirmatory samples may be adjusted in the field based upon the actual area and quantity of soil removed. Confirmatory samples will be collected from the floor of the excavation at a frequency of one sample per 2,500 sf. In the event that the base of an excavation is greater than 2 feet below the ground surface, sidewall samples will be collected every 50 lf. For the ditch excavations, confirmatory samples will be collected from

the floor of the ditch at a frequency of one sample every 50 linear feet and from the end of the excavations.

The following is a summary of the confirmatory soil sample collection procedure:

1. Soil will be removed to the staked limits of excavation.

2. Once Mr. Andrews or Mr. McAllister verifies that the excavation has reached the staked limits and appropriate depth, confirmatory samples will be collected according to the frequency described above.

3. Confirmatory samples will be collected and sent to the project laboratory by courier for analysis under chain-of-custody procedures. Surface and subsurface soil from SEAD-4/38 will be analyzed for chromium and lead. Ditch soils and lagoon soils will be analyzed for chromium. Soil from Ditch 5 at SEAD-38 will be analyzed for vanadium. If warranted, samples will be submitted for a 72-hour turnaround time so the results can be approved by the Project Engineer and the excavation areas can be backfilled and/or graded as soon as possible. Soil samples will be collected, stored, preserved shipped and analyzed according to the procedures outlined in the SAP (Parsons, 2006a).

4. If the data from the confirmatory soil samples indicate the presence of chemical concentrations above the site cleanup goals, as discussed in **Section 2.1**, additional soil will be excavated in the direction where the sample was collected. The amount of additional soil excavation will be decided in the field by the SHSO/QC Officer or the SM in conjunction with the Army POC, based on their best professional judgment and visual observations.

5. If confirmatory soil samples indicate that the site cleanup goals have been achieved, the excavation will be complete and the regrading (or backfilling, if necessary) will start upon approval by the PM and Army POC. The excavation area will be blended into the surrounding grades.

Backfilling

Most of the excavations will be shallow, and, therefore, backfilling will not be necessary. Excavation areas that cannot be graded to promote positive drainage (e.g., excavated areas located near roads or buildings) may require borrow material for backfilling, as necessary. Soil for backfilling will be obtained from an off-site borrow source. The Project Engineer will verify that the borrow soil documentation meets the site cleanup goals for chromium, lead, and vanadium, is less than the maximum metal concentrations in soils remaining at the site for other metals, and meets the NYSDEC Unrestricted Soil Cleanup Objectives (Table 375-6.8(a)) for VOCs and SVOCs.

Mr. McAllister will observe the placement of backfill, if needed, and compaction of backfill. Soil compaction will be achieved by three passes of a dozer.

Areas that are not backfilled will be blended and graded to create positive drainage.

Post-Excavation Survey

The post-excavation survey will be performed following verification that confirmatory samples met the cleanup goals, but before the excavation area is blended into the surrounding grades. This survey will include the delineation of the excavated area. Survey measurements will be collected in North American Datum of 1983 (NAD83) - New York State Plane Central Coordinate System for horizontal control. Elevation measurements will be conducted using the North American Vertical Datum of 1988 (NAVD88) for depth of the excavation. The depth of excavation will be measured by Mr. McAllister.

Soil Disposal

Excavated materials deemed non-hazardous will be loaded into dump trucks and transported to and disposed in an off-site Subtitle D landfill. It is anticipated that either Seneca Meadows in Waterloo, New York or Ontario County Landfill in Flint, New York will be used for disposal of excavated soil. Wastes will be "packaged" by loading non-hazardous soil into DOT approved dump trucks or dump trailers. If hazardous soils are encountered, they will be treated on-site and then disposed off-site as non-hazardous materials.

Erosion Control Maintenance

Temporary erosion and sedimentation controls, such as silt fencing, hay bales, or soil berms, will be installed as required during operations to prevent migration of sediments and erosion. Prior to beginning any excavation work, temporary silt fencing (Specification Section 02370) will be erected, which will surround the downgradient sides of disturbed areas to prevent contaminated sediment transport. The temporary silt fencing will be maintained throughout the project and will not be removed until permanent vegetation has been re-established. In addition, storm water from upgradient locations will be routed away from exposed materials, and storm water contact of exposed material will be minimized to the extent practical. A visual inspection of the site will be conducted daily and during and after significant rainfall to ensure that control measures are in good condition and that there is no migration of sediments or evidence of erosion. Any temporary erosion control measures will be removed following remediation so as to return drainage patterns to their general conditions prior to remediation. The final grade will be based on drainage restoration. **Drawing C-3** shows where temporary silt fencing will be erected.

Site Security

All visitors to the work site are required to report to Mr. McAllister or the SM upon arrival. SEAD-4/38 is located within the Depot which is surrounded by a fence with locked gates. The Army will provide access to the field team prior to and during construction activities. Site security is necessary to prevent exposure of unauthorized, unprotected individuals to the work area. The area immediately

surrounding the work area will be clearly marked through the use of signs, barrier rope, tape, or fencing.

Site Restoration

Field inspection for site restoration activities is identified in **Table 5-3**. Inspection activities include observations to verify the final location of the excavation. Any vegetated areas disturbed as a result of remedial activities will be seeded. A final site survey will be conducted once construction is complete.

5.3 Subcontractor Quality Control

All subcontractors and material suppliers involved with on-site construction activities shall comply with this plan. Subcontractor personnel qualifications, technical performance levels, QA/QC procedures, acceptability levels, and documentation and submittal requirements will be clearly defined in the subcontractor's scope of work and procurement documents. The PM will review the scope of work and procurement documents to verify that all of the relevant QA/QC requirements have been adequately communicated to the subcontractor.

Each subcontractor shall identify a qualified individual within their organization to be responsible for QC and performance of QC testing. Mr. McAllister will coordinate all QC functions with the designated subcontractor QC representative. Mr. McAllister has authority over all subcontractor QC requirements. These activities will be documented on inspection reports, checklists, audit reports, field logs, or other forms appropriate to the function performed.

5.4 Quality Control Documentation

An effective QA/QC program depends on thorough monitoring of all construction activities. This is most effectively accomplished by observation and documentation during all phases of construction. Documentation shall consist of project submittals, daily QC inspection reports, weekly QC summary reports, non-conformance and corrective action reports, design and specification clarifications or modifications, photographic records, observation and testing data sheets, as-built documentation, and a summary report. This section describes the requirements of each of these aspects of the QC documentation.

5.4.1 Daily QC Inspection Reports

Mr. McAllister will prepare a Daily QC Report and submit it to the SM, who will sign it to acknowledge non-conformances and observations, and place it in the project files or begin the corrective action request. The Daily QC Reports will be submitted (daily, or at some other agreeable interval) to the AFCEE and Army contact, and will also be included as part of the weekly progress reports submitted to AFCEE and the Army.

The Daily QC Report will include the following information:

- Project name, location, and date;
- Personnel and equipment used;
- Estimated volume of excavated material shipped off-site during the day;
- Weather conditions;
- Narrative description of inspections, tests, and sampling;
- Description of kinds and types of material delivered and used;
- Narrative description of work performed, problems encountered, and corrective measures taken; and,
- Record of any data or measurements collected.

5.4.2 Weekly QC Summary Reports

The Site QC Officer will draft the Weekly QC Summary Report and submit it to the SM. The SM will review the report, and then submit it to the AFCEE and Army contacts.

The Weekly QC Summary Report will include the following information:

- Date, project name, and location;
- Summary of construction-related activities;
- Summary of QC activities;
- Attached inspection reports;
- Test results;
- Volume of soil shipped for disposal;
- Volume of soil shipped for disposal to other locations (e.g., off-site, if necessary);
- Non-Conformance Reports (NCRs);
- Non-Conformance/Corrective Action Tracking Log; and,
- Corrective Action Reports.

5.4.3 Non-Conformance Documents

As the Site QC Officer, Mr. McAllister will report each nonconforming item on a NCR form. The NCR form will include the information listed below:

- Name and job title of the individual who identified the non-conformance;
- Description of the non-conformance;
- Effect of non-conformance on suitability of the work for the intended purpose;
- Immediate corrective measures taken; and,
- Recommended corrective action or variance/field change to the project documents.

The Site QC Officer will describe the NCR in the Daily QC Report, and then log it on the Non-Conformance/Corrective Action Tracking Log. The Site QC Officer will include the revised log in

the Weekly QC Report. The SM will review this list and initiate a Corrective Action Report (CAR) if a non-conformance is not satisfactorily corrected in a timely manner. The CAR will include the following and will be signed by all responsible parties:

- Summary of the affected project requirements;
- The nature of the non-conformance;
- The corrective action to be taken;
- Action items/responsibilities for each affected individual;
- A schedule for completion of the corrective action; and
- Recommendations for preventing recurrence of the problem.

The PM will review unresolved CARs and take appropriate measures to ensure that the corrective actions are completed on schedule. The Site QC Officer will conduct an inspection to verify that the CAR is resolved, update the Non-Conformance/Corrective Action Tracking Log, and document the resolution in the Daily and Weekly QC Reports.

5.4.4 Design and Specification Clarifications or Modifications

The need to address design and specification changes or scope changes may arise. In such cases, the PM will notify the Army POC and the AFCEE COR. A design, specification, or scope of field change that will impact the project or its cost must be approved by the PM, the Army POC, and the AFCEE COR before it is implemented. Approvals by these parties may be obtained concurrently, if possible. Approval of USEPA/NYSDEC may be necessary if the proposed change affects the project's ability to achieve the performance objectives or impact the project goals. To approve a change, a Field Change/Modification Request (FC/MR) form will first be completed by the PM and then submitted to AFCEE. A standard FC/MR form will be completed which includes the following information:

- Date of request/order;
- FC/MR number;
- Name of originator of request/order;
- Summary of existing requirements;
- Description of requested/ordered changes in the affected requirements in sufficient detail for cost, schedule, and technical evaluation;
- Description of estimated cost impact of change; and,
- Approval signatures of the PM, the Army POC, and the AFCEE COR.

The PM will establish and maintain an FC/MR Log to track dates of requests, approvals, and completions.

5.4.5 Photographic Documentation

All phases of construction will be documented with photographs taken by QA/QC personnel. All photographs will be identified as to location, time, date, and initials of the person taking the photograph.

5.4.6 As-Built Drawings

The Site QC Officer will establish and maintain a set of project drawings in the project office for the purpose of noting changes. Changes will be noted in red ink or pencil and referenced to the approved FC/MRs. New drawings will be added to the set if required for major or extensive changes. Copies of all FC/MRs, change orders, notes, sketches, and memoranda will be available for reference in the project field office. As-built drawings will be available for review in the project field office at all times.

5.4.7 Summary Reporting

At the completion of construction, a Removal Action Completion Report will be issued. This report will include a description of the construction activities, QC testing results, waste disposal records, copies of the field reports, boring logs and as-built drawings.

6.0 POST-CONSTRUCTION MONITORING AND MAINTENANCE PLAN

This section presents a PCMMP for the post-remediation monitoring and maintenance activities to be performed at SEAD-4/38. Multiple rounds of groundwater monitoring indicated that the groundwater at SEAD-4/38 is not impacted by site historic activities. **Section 1.3** includes a discussion of the groundwater investigation. Based on the groundwater investigations, Land Use Controls (LUCs) are not recommended for groundwater at the site. As such, groundwater long-term monitoring is not included in the ROD as an element of the remedial action. Therefore, post-construction maintenance consists of routine inspections of the site security and access and ensuring that the site re-vegetate.

SEAD-4/38 will be inspected no less frequently than semi-annually to ensure site post-RA integrity. The following will be inspected:

- Condition of access road, gates, and fences; and,
- Establishment of re-vegetation of disturbed areas to prevent erosion.

A checklist of maintenance inspection elements to be used in the field is provided in **Table 6-1**. Any problems identified during the routine inspections should be noted in the field notebook. These problems should be corrected or disclosed to the SEDA POC as soon as possible.

7.0 WASTE MANAGEMENT PLAN

Investigation-derived waste (IDW) will include equipment decontamination rinseate and PPE. Soils from the excavation areas, run-on, or run-off are managed independently from IDW, as discussed in **Section 3.1** and **3.3**.

Since it is not anticipated that hazardous material will be encountered during the construction activities, any water used for decontamination can be collected in a frac tank.

Expendable sampling equipment, if needed, and materials that may be generated during field activities (e.g., PPE) will be bagged and disposed of in a trash dumpster located on-site. Miscellaneous trash generated during field activities (e.g., empty sand bags) will also be placed in the dumpster.

8.0 REMEDIAL ACTION SCHEDULE

Given the relatively simple nature of the remedial action work proposed, the Army proposed that the Remedial Design Work Plan, the Preliminary Design, and the Final Design be consolidated into one document.

This schedule allows for the full FFA review periods. A schedule for the remedial design is presented as **Figure 8-1**. The schedule allows 30 days for the Army, NYSDEC, and USEPA to review and provide comments on the design documents. It also allows 14 days for Parsons to incorporate comments into the design documents. This schedule will be updated on a continuing basis.

9.0 ADMINISTRATIVE RECORD

Army, United States Environmental Protection Agency (USEPA) Region 2, New York State Department of Environmental Conservation (NYSDEC), 1993. Federal Facilities Agreement under CERCLA Section 120 in the Matter of Seneca Army Depot, Romulus, New York, Docket Number: II-CERCLA-FFA-00202.

Parsons, 1995. Final Expanded Site Inspection, Seven High Priority SWMUs, SEAD 4, 16, 17, 24, 25, 26, and 45, December, 1995.

Parsons, 2002a. Final Remedial Investigation Report at the Munitions Washout Facility (SEAD-4), January, 2002.

Parsons, 2002b. Final Action Memorandum and Decision Document, Time-Critical Removal Actions, Three VOC Sites (SEADs 38, 39, & 40), August, 2002.

Parsons, 2005a. Final Feasibility Study at the Munitions Washout Facility (SEAD-4), March, 2005.

Parsons, 2005b. Monitoring Well Abandonment Work Plan for Seneca Army Depot Activity, May, 2005.

Parsons, 2006a. Final Generic Site-Wide Sampling and Analysis Plan for Seneca Army Depot Activity, July, 2006.

Parsons, 2006b. Project Safety Plan and Site-Specific Health and Safety Plan for Seneca Army Depot Activity PBC II, August, 2006.

Parsons, 2007. Proposed Plan for SEAD-4 and SEAD-38, Seneca Army Depot Activity, June, 2007.

Parsons, 2008a. Demolition Final Report, February, 2008.

Parsons, 2008b. Record of Decision for SEAD-4 and SEAD-38, Seneca Army Depot Activity. May. 2008.

SEDA, Land Use Control Remedial Design (LUC RD) Plan for SEADs 27, 66, and 64A. December 2006.

TABLES

Table 2-1
Cleanup Goals [1] for SEAD-4/38
SEAD-4 and SEAD-38 Remedial Design
Seneca Army Depot Activity

Compounds	Surface and Subsurface Soil	Ditch Soil and Lagoon Soil	SEAD-38 Ditch Soil [2]
Chromium (total) (mg/kg)	60	60	--
Lead (mg/kg)	167	--	--
Vanadium (mg/kg)	--	--	150

Notes:
1. The 95% UCL of post remediation soil concentrations at SEAD-4/38 will be compared to the cleanup goals to determine whether or not the soil remedy is complete.
2. In the adjacent area of Hot Spot (SD4-28).

Table 4-1
Confirmation Sampling at SEAD-4/38
SEAD-4 and SEAD-38 Remedial Design
Seneca Army Depot Activity

Areas	Anticipated Dimensions				Theoretical Number of Required FL Samples[2]	Proposed Number of FL Samples[3]	Theoretical Number of Required SW Samples[2,4]	Proposed Number of SW Samples[3,4]	QA/QC samples[5]		TOTAL[6]
	Ditch Length (ft)	Perimeter (ft)[1]	Depth (ft)	Area (SF)					Dups	MS	
Area 1A	NA	NA	1	115,801	47	49			--	--	49
Area 1B	NA	NA	3.5	8,066	4	3			--	--	3
Area 1C	NA	100	8.5	625	1	1	2	4			
Area 1D	NA	100	6.5	625	1	1	2	4			
Area 2A	NA	NA	1	19,729	8	8			--	--	8
Area 2B	NA	100	6	625	1	1	2	4			
Area 2C	NA	100	3	625	1	1	2	4			
Area 3A	NA	100	3	625	1	1	2	4	--	--	1
Area 3B	NA	NA	1	10,685	5	6			--	--	6
SEAD-4 Soil Excavations (Total)[7]					69	71	10	20	5	5	81
Ditch 1	517	NA	1	NA	11	11			--	--	11
Ditch 2	296	NA	1	NA	6	7			--	--	7
Ditch 3	107	NA	1	NA	3	3			--	--	3
Ditch 4	197	NA	1	NA	4	5			--	--	5
SEAD-38 Area	100	NA	1	NA	2	3			--	--	3
Ditch Excavation (Total)					26	29			2	2	33
					95	100			7	7	114

Notes:

NA = Not applicable

Dups - Sample field duplicate

MS - Matrix spike

1. The perimeter measurement is the perimeter of the interior deeper excavation areas.
2. The theoretical number of samples is based on the anticipated dimensions divided by the required frequency of collection.
   1 sample per 50 lf of ditch or sidewall, or 2500 sf of soil excavation area
3. The proposed number of samples is based on the required frequency, but takes into account the geometry of the excavation area. In order to ensure adequate coverage of all grids and perimeter lengths, additional samples are proposed as shown in Figure 4-1.
4. In the event that excavation of areas other than Areas 1C, 1D, 2B, 2C, and 3A results in sidewalls greater than 2 ft., additional sidewall samples will be collected at a frequency of 1 sidewall sample per 50 lf.
5. The number of QA/QC samples are calculated based on the total number of samples for each media type at each site. One field duplicate every 20 project samples.
   One MS for metals per 20 project samples. See Table 4-3. One of the QA/QC sample sets for the ditch soil will be collected from SEAD-38 and analyzed for vanadium, and at least one of the QA/QC sample sets for soils will be collected from the lagoon soil and analyzed from chromium.
6. The number of samples are based on the proposed number of samples plus QA/QC samples.
7. Total soil excavations includes the surface soil, subsurface soil, ditch soil, and lagoon soil excavations.
8. Additional details on the analytical requirements, including analytical methods, are provided in Table 4-3.

TABLE 4-2
Project Cleanup Goals and Laboratory Reporting Limits
SEAD-4/38 Remedial Design
Seneca Army Depot Activity

Compounds	Units	Project Cleanup Goal	Laboratory Method Detection Limits [1,2]	Laboratory Reporting Limits [1,2]
Metals				
Chromium	mg/Kg	60	0.09	0.5
Lead	mg/Kg	167	0.29	1
Vanadium	mg/Kg	150	0.095	0.5

Notes:
NA = Not Applicable
1. Laboratory Method Detection Limits and Reporting Limits from TestAmerica, Buffalo as of March 2007. For all the analytes, the laboratory will report analytical results above the method detection limits.
2. The laboratory method detection limits and reporting limits for soil are based on 100% solids. Samples with less than 100% solids will have limits greater than those listed in the table above.

TABLE 4-3
Field Sampling Matrix
SEAD-4 and SEAD-38 Remedial Design
Seneca Army Depot Activity

Sample Type	Sampling Frequency[1]	Analytical Requirements (Method)	Acceptance Criteria	Field Quality Assurance/Quality Control Sample Requirement
Confirmatory Samples				
SEAD-4 Soil Excavation	Floor - every 2,500 SF Sidewall[2] - every 50 LF	Chromium and lead (SW846 Method 6010B)	Cr - 60 mg/Kg; Pb - 167 mg/Kg	One field duplicate every 20 project samples. One MS for metals per 20 project samples. Rinsate Blank[3].
SEAD-4 Lagoon Soil	Floor - every 2,500 SF	Chromium (SW846 Method 6010B)	Cr - 60 mg/Kg	
SEAD-38 Ditch Soil Excavation	Floor - every 50 LF + 1 sample at downgradient end of excavation	Vanadium (SW846 Method 6010B)	V - 150 mg/Kg	
SEAD-4 Ditches	Floor - every 50 LF + 1 sample at downgradient end of excavation	Chromium (SW846 Method 6010B)	Cr - 60 mg/Kg	One field duplicate every 20 project samples. One MS for metals per 20 project samples. Rinsate Blank[3].
Fill Material Samples (if needed)				
Soil from Borrow Source	One sample per source	Metals (SW846 Method 6010B) and Mercury (SW846 Method 7471A) VOCs (SW846 Method 8260B) and SVOCs (SW846 Method 8270C)	Cr, Pb, and V below site cleanup goals, and other metals below maximum concentrations remaining on site VOCs and SVOCs below NYSDEC Unrestricted SCOs (Table 375-6.8(a))	Not Required
Disposal Characterization[4]				
Soil Samples	One composite for every 2000 tons)	TCLP Metals (EPA Method 1311) Ignitability (EPA Method 1030) pH Reactivity (40CFR 261.23)	RCRA definition of non-hazardous material	Not Required

1. In each excavation area, a minimum of one sample will be collected from the floor of excavation.
2. Sidewall samples will be collected at the specified frequency when the base of an excavation is greater than 2 ft below the adjacent ground surface.
3. If sampling equipment is not reused, no rinsate blank is required. Currently no sampling equipment is expected to be reused. However, when sampling equipment is decontaminated and reused, rinsate blank sample will be collected one per sampling event or one per 20 project samples, whichever is more frequent.
4. The exact number of samples and the specific analyses may vary depending on the requirements of the selected landfill.

TABLE 5-1
PRE-CONSTRUCTION INSPECTION ACTIVITIES FOR REMOVAL ACTION
SEAD-4 and SEAD-38
Seneca Army Depot Activity, New York

Preparatory Inspection Activity	Method	Frequency	Acceptance Criteria
Survey and Excavation Layout	Site Survey – Survey in area to be excavated and marked with grade stakes.	Once after final design approval.	Establish grade stakes along the designed excavation boundary according to the design drawings. Grade stakes shall be placed at the start and termination of each linear section, at 50-foot intervals along each linear segment, at 20-foot intervals along curves, and at any change in boundary direction not in a curve.
Excavation Area Clearing and Grubbing	Visual	Once within the excavated area prior to excavation of the area.	Confirm that the excavation area has been cleared of obstructions and that equipment can operate in the area with no obstructions.
Utility Mark Out	Call UGFPO and consult As-Built drawings provided by the facility	Once prior to commencing excavation.	Confirm all subsurface and overhead utilities are clearly marked and that excavation plans take the utilities into consideration.
Off- Site Access / Egress Approval	Visual	Once prior to commencing construction	Confirm approval for use of off-site roads for contaminated soil transportation. Confirm that all access gates are working properly.
Job Site Trailer and Lay-Down Approval	Visual	Once prior to start of construction	Confirm approval and location for site trailer and lay-down area and availability of electrical power.
Equipment Examinations (Earthwork)	Visual	Once upon arrival at site.	Determine that equipment type and size conform to project specifications and record information in field book. Determine that equipment conforms to OSHA safety requirements. Determine that equipment is in working order and is not leaking oil or fuel in quantities sufficient to be classified as a spill.
Soil Disposal Acceptance	TCLP Metals and waste characterization Analytical	1 sample per 2000 tons of soil to be excavated	For disposal as non-hazardous material, samples must pass TCLP test requirements..
Fill Material Acceptance (if needed)	Metals, VOCs, and SVOCs Analyses	1 sample per source	Compliance with the site cleanup goals for chromium, lead, and vanadium, less than the maximum concentrations of metals in soils remaining on-site, and VOCs and SVOCs no greater than NYSDEC Unrestricted Soil Cleanup Objectives (Table 375-6.8(a)).

TABLE 5-2
CONSTRUCTION INSPECTION ACTIVITIES FOR REMOVAL ACTION
SEAD-4 and SEAD-38
Seneca Army Depot Activity, New York

Construction Inspection Activity	Method	Frequency	Acceptance Criteria
Air Monitoring	Thermo 4000 dust monitor	During start-up and construction.	Readings below 1 ppm per the HSP Section 8 (HSP). Difference between upwind and downwind readings must be below 150 ug/m3 per NYSDEC CAMP.
Construction Methods Observation	Visual	During start-up and construction.	Ensure that the methods conform to standard construction practices and the worker safety is always a primary consideration
Site Security	Visual	Daily during construction.	Confirm that any open excavation is fenced off and the base perimeter is secure.
Confirmatory sampling	Analytical testing	Collect base samples every 2,500 sf for main excavation areas and collect base samples every 50 lf in the ditch. In deeper excavations at SEAD-4/38, collect base samples every 2,500 SF and sidewall samples every 50 lf.	Site cleanup goals for chromium and lead for SEAD-4 and vanadium for SEAD-38.
Backfill of excavation (if needed)	Visual	Every lift of backfill	Clean backfill will be placed in the excavation in 1 to 2 foot lifts and compaction as specified in the design
Erosion Control Maintenance	Visual	Daily and during and after significant rainfall events	Control measures in good repair and ensure no migration of sediments or evidence of erosion.
Location of Excavation	Site Survey	Once at each excavation after the backfill is placed, before site restoration	Survey the final location of each excavation for position and elevation.

TABLE 5-3
POST-CONSTRUCTION ACTIVITIES FOR REMOVAL ACTION
SEAD-4 and SEAD-38
Seneca Army Depot Activity, New York

Follow-Up Inspection Activity	Method	Frequency	Acceptance Criteria
Final Grading	Visual	At completion of backfill operation, if needed.	The final grade should prevent storm water run-off or collection.
AOC Restoration	Visual	Once for each excavation after construction has been completed.	To ensure that the excavated areas and staging areas are graded to the original grade and seeded to promote vegetation where pre-construction vegetation existed.
Revegetation	Visual	At least semi-annually.	The previously vegetated disturbed areas are re-vegetated and no erosion is occurring.

Table 6-1
Post-Closure Monitoring and Maintenance Plan
Routine Inspections Checklist
Seneca Army Depot – SEAD 4 & 38
Seneca Army Depot Activity

DATE:
INSPECTED BY: _____

Maintenance Inspections:

_____ (1) Confirm that vegetation is re-established in designated areas and erosion is not occurring. Designated areas include all disturbed areas that were previously vegetated and areas with an exposed layer of soil that were previously covered with gravel and/or asphalt.

_____ (2) Once inspection (1) is confirmed, erosion controls, such as hay bales, berms, and silt fencing will be removed. Confirm that drainage patterns have returned to their general conditions prior to remediation.

_____ (3) Review condition of access roads, gates, and fences.

FIGURES

N

LEGEND

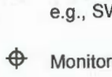
- Surface Soil Location, e.g., SS4-1
- Surface Boring Location, e.g., SB4-1
- Test Pit Location, e.g., TP4-1
- Surface Water/Sediment Location, e.g., SW/SD-4-1
- Monitoring Well Location, e.g., MW4-1

N 988000
N 987750
N 987500
N 987250
N 987000
N 986750
N 986500

E 744750
E 744500
E 744250
E 744000
E 745000
E 745250
E 745500
E 745750
E 746000

APPROXIMATE LOCATION OF OUTFALL
APPROXIMATE LOCATION OF 4" VERTICAL PIPE
FORMER DECONTAMINATION BUILDING FOUNDATION
FORMER WATER TANK
STEAM GENERATION BUILDING
2076
FORMER 2079
BERM
SEAD4A
Seneca Road
APPROXIMATE LOCATION OF BURIED 6" CLAY PIPE
APPROXIMATE LOCATION OF FORMER MUNITIONS WASHOUT BUILDING
FORMER 2077
FORMER 2075
FORMER 2074
2078
2073
Drainage Ditch
LAGOON
APPROXIMATE LOCATION OF FORMER BUILDING
SEAD4
FORMER 130
2085
2084
Drainage Ditch

300 0 300 600 Feet



PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-4 AND SEAD-38
REMEDIAL DESIGN WORK PLAN

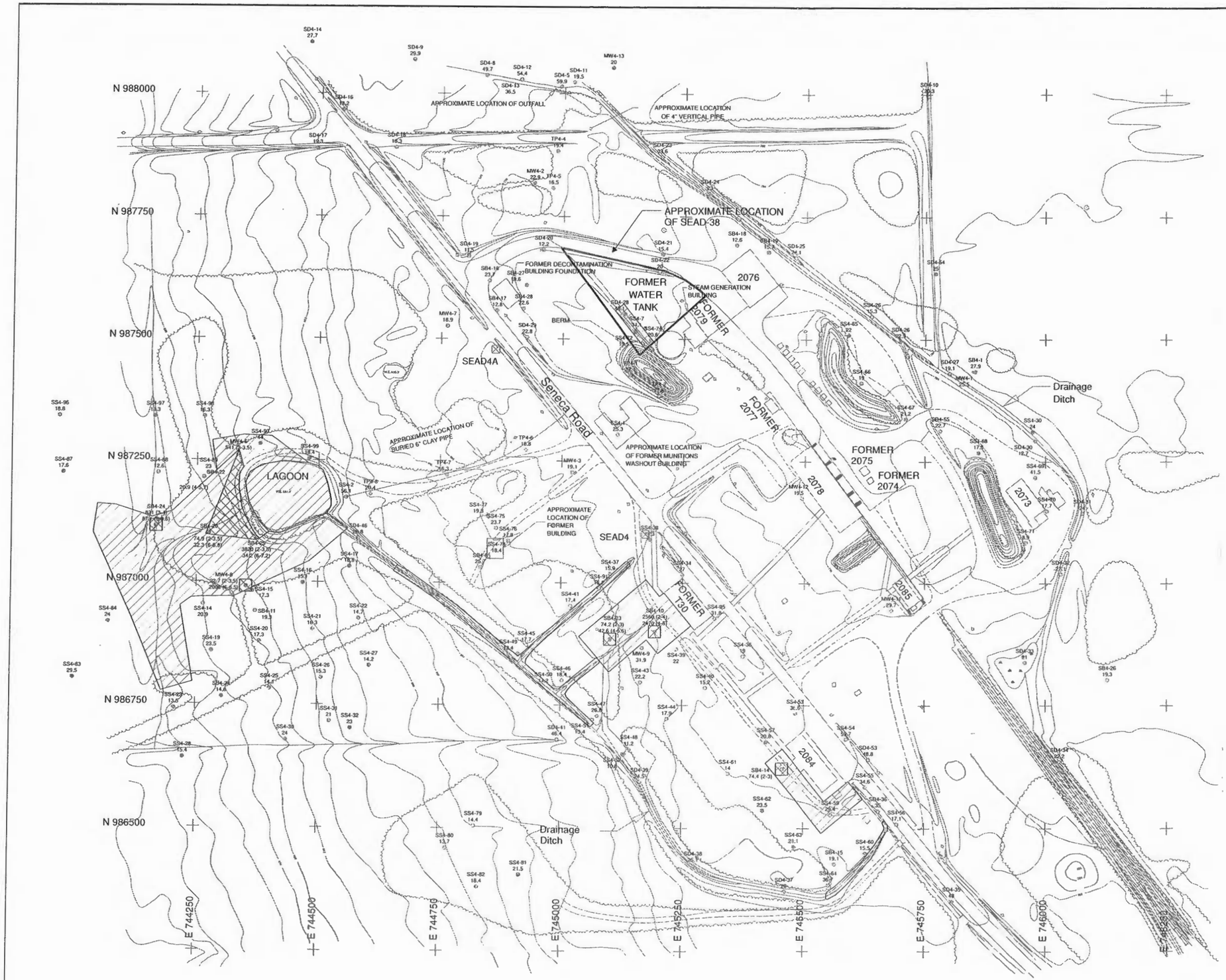
FIGURE 1-1

SEAD-4 and SEAD-38
HISTORIC SAMPLING LOCATIONS

JOB NUMBER: 745172-04300

DATE: AUGUST 2008

U:\seneca\sead-4\sead-4 rdwp.apr\figure 1-1



LEGEND

- SB4-22 / 20.9 (4-5.7) — SAMPLE LOCATION ID / CHROMIUM RESULT (mg/Kg) WITH DEPTH (FT. BGS)
- EXCAVATION DEPTH TO 1 FOOT
- EXCAVATION BEYOND 1 FOOT
- DEMOLISHED BUILDING
- APPROXIMATE LOCATION OF SEAD-38

NOTE:

UNLESS OTHERWISE SPECIFIED ALL RESULTS FROM SURFACE SOIL (0-2 FT BGS)

N
W E
S

100 50 0 100 200 300 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-4 AND SEAD-38
REMEDIAL DESIGN WORK PLAN

Figure 2-1
EXTENT OF PLANNED EXCAVATIONS AND SUPPORTING CHROMIUM SAMPLE RESULTS

1 = 200' | OCTOBER 2008

N

N 988000
N 987750
N 987500
N 987250
N 987000
N 986750
N 986500
E 744250
E 744500
E 744750
E 745000
E 745250
E 745500
E 745750
E 746000

AREA 1A
AREA 1B
AREA 1C
MAN-MADE LAGOON
SEAD-4
SEAD-4A
SEAD-38
APPROXIMATE LOCATION OF SEAD-38
Seneca Road
DITCH 1
DITCH 2
DITCH 3
DITCH 4
AREA 2
AREA 3A
AREA 3B
FORMER 2079
FORMER 730
2076
2077
2078
2073
2085
2084
PIPE
38DIT-D5-01
38DIT-D5-02
38DIT-D5-03

LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- BRUSH LINE
- UNPAVED ROAD
- RAILROAD
- GROUND SURFACE ELEVATION CONTOUR (760)
- FORMER BUILDING
- ROAD SIGN
- DECIDUOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- COORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- SURVEY MONUMENT
- CONFIRMATORY FLOOR SAMPLE
- 50-FOOT BY 50-FOOT GRID

100 0 100 200
(feet)

PARSONS

CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
REMEDIAL DESIGN
SEAD-4 AND SEAD-38

DEPT. ENVIRONMENTAL ENGINEERING | Dwg. No.

FIGURE 4-1
SEAD-4 AND SEAD-38
CONFIRMATORY SAMPLING LOCATIONS

SCALE 1" = 200' | DATE OCTOBER 2008

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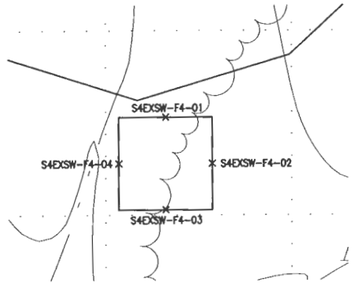
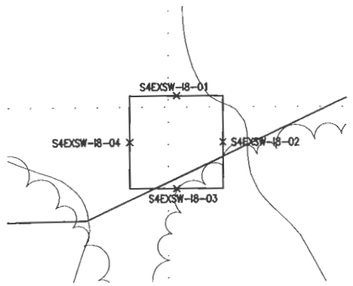
N



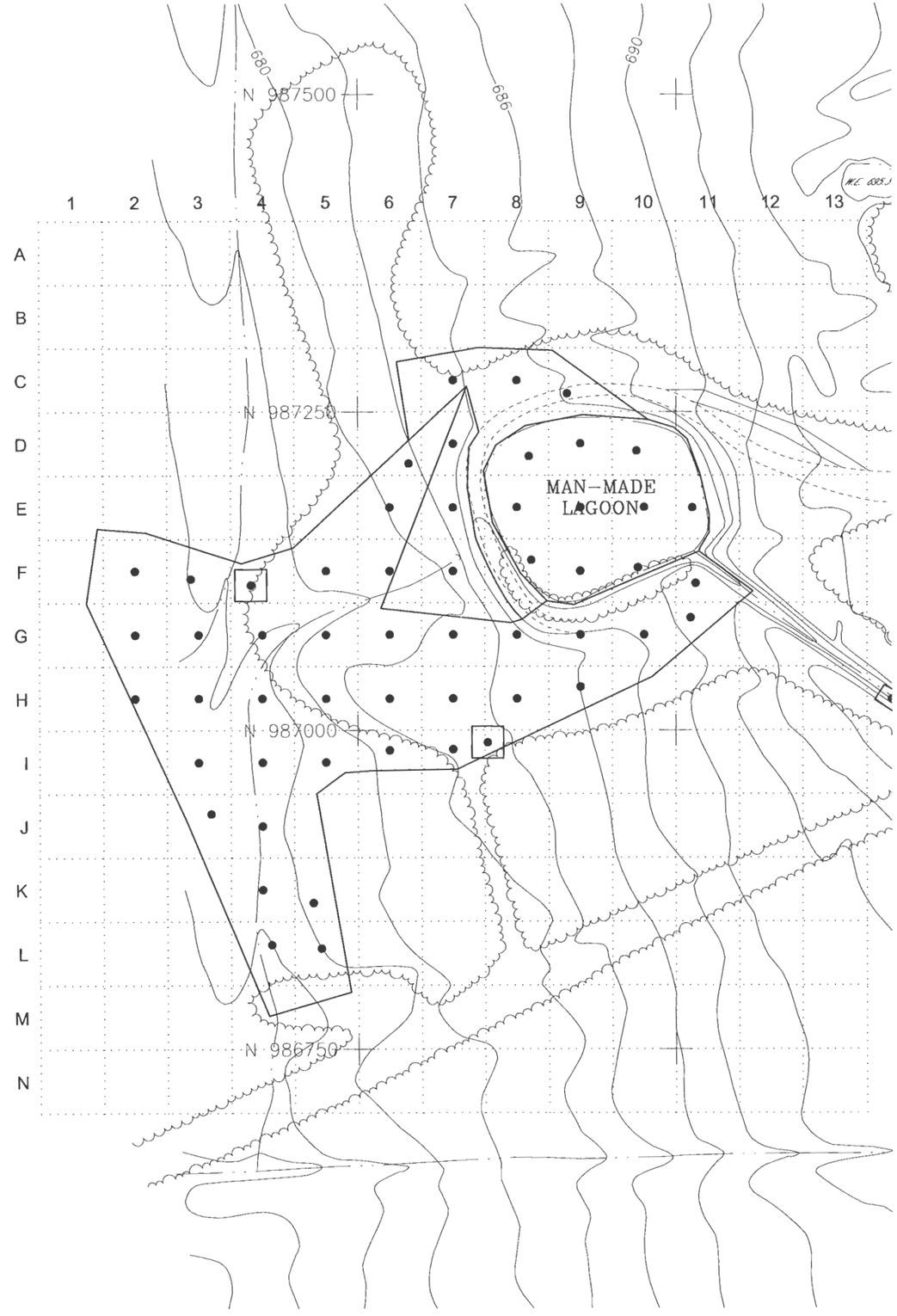
GRID F4 SIDEWALL SAMPLES

SCALE: 1" = 20'



GRID I8 SIDEWALL SAMPLES

SCALE: 1" = 20'



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- RAILROAD
- 760 GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDUOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- COORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- SURVEY MONUMENT
- CONFIRMATORY FLOOR SAMPLE
- SIDEWALL SAMPLE
- A 1 50 FOOT BY 50 FOOT GRID

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
REMEDIAL DESIGN
SEAD-4 AND SEAD-38

DEPT. ENVIRONMENTAL ENGINEERING | Dwg. No.

FIGURE 4-2

AREA 1
CONFIRMATORY SAMPLING LOCATIONS

SCALE 1" = 100' | DATE OCTOBER 2008

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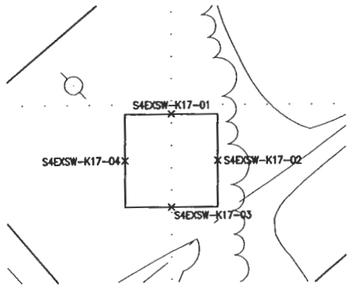
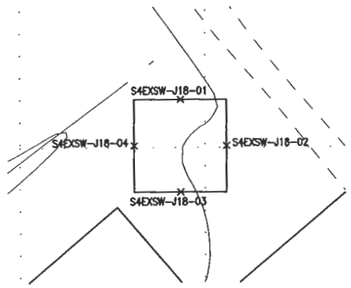


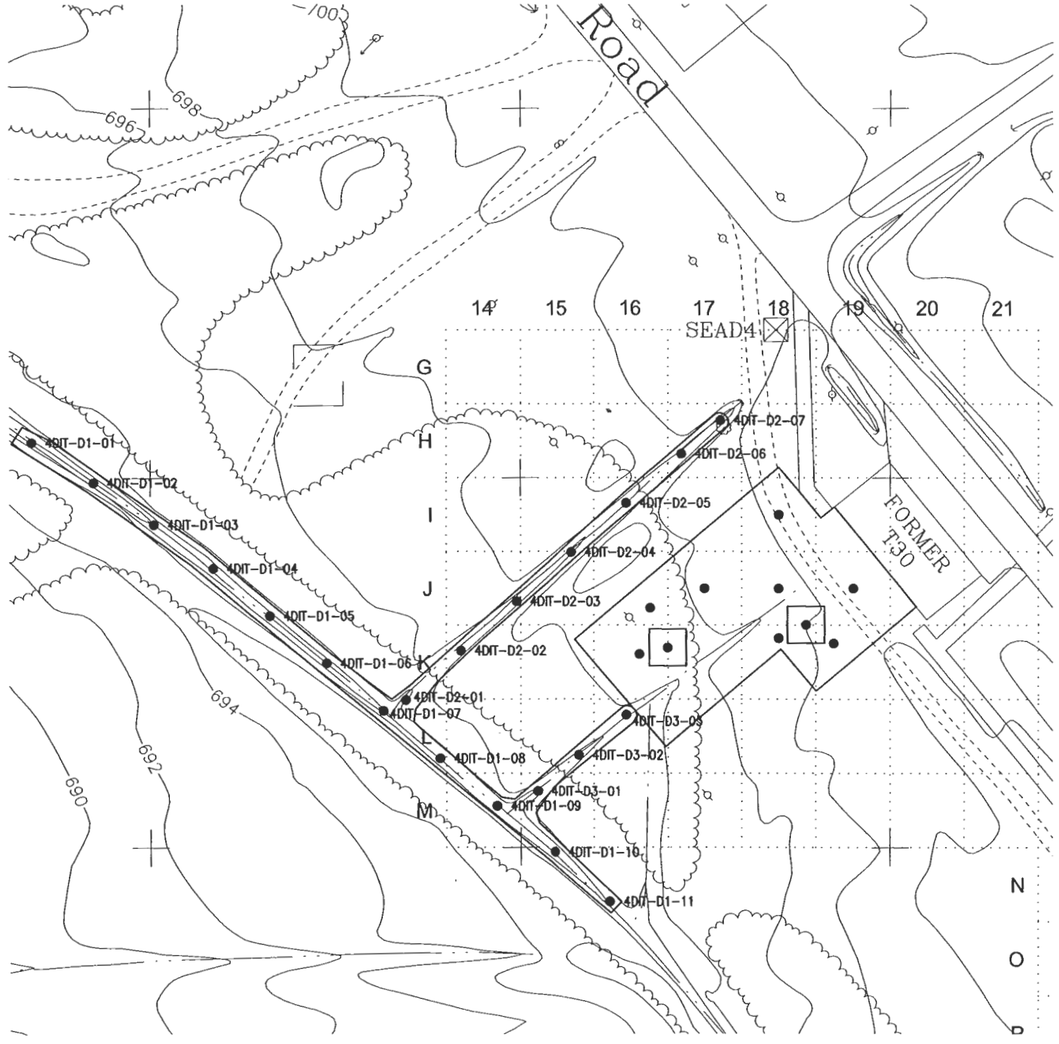
GRID K17 SIDEWALL SAMPLES

SCALE: 1" = 20'



GRID J18 SIDEWALL SAMPLES

SCALE: 1" = 20'



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- FORMER BUILDING
- BRUSH LINE
- UNPAVED ROADS
- RAILROAD
- 760 GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDUOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- COORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- SURVEY MONUMENT
- CONFIRMATORY FLOOR SAMPLE
- SIDEWALL SAMPLE
- 1 / A — 50 FOOT BY 50 FOOT GRID

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
REMEDIAL DESIGN
SEAD-4 AND SEAD-38

DEPT. ENVIRONMENTAL ENGINEERING | Dwg. No.

FIGURE 4-3

AREA 2 AND DITCHES 1, 2, & 3
CONFIRMATORY SAMPLING LOCATIONS

SCALE 1" = 100' | DATE OCTOBER 2008

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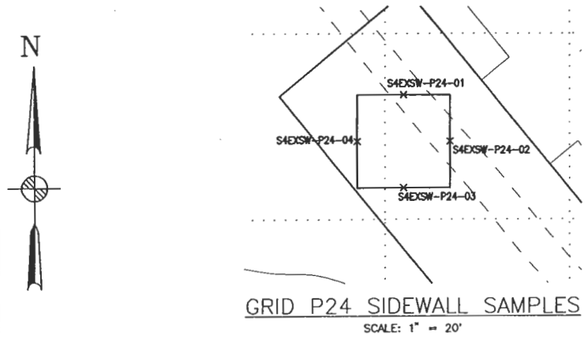
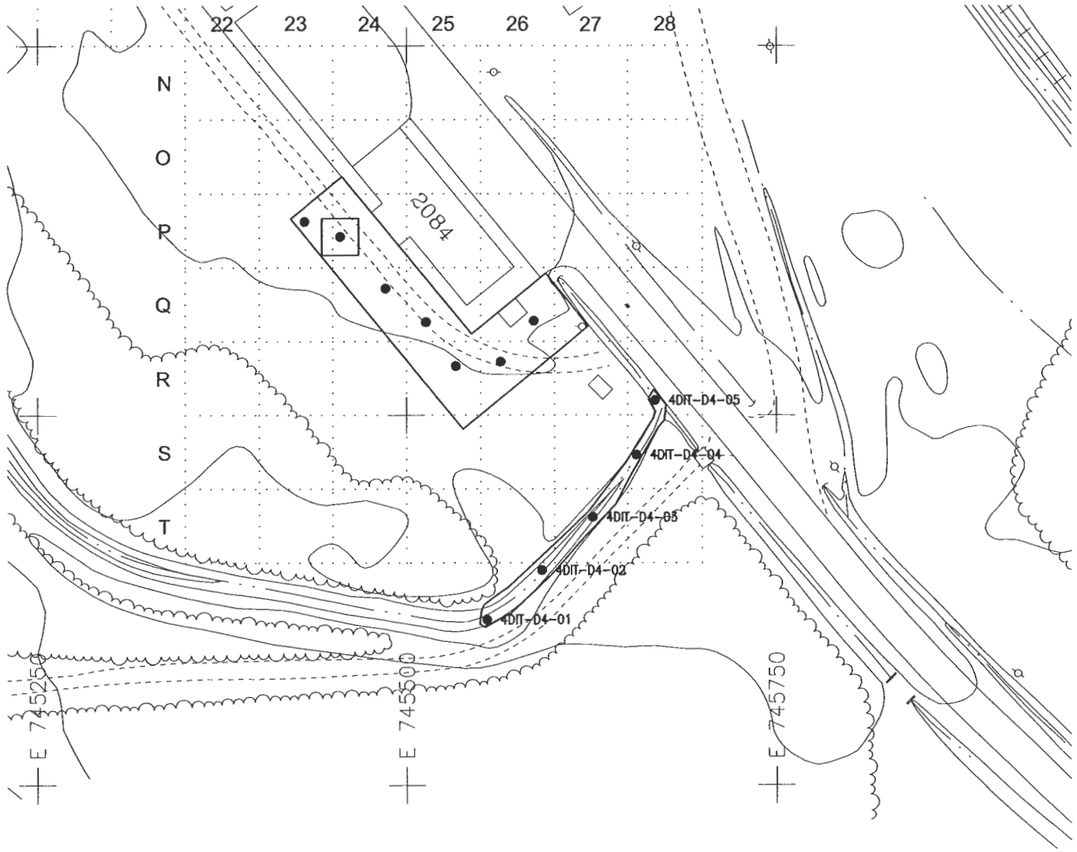


GRID P24 SIDEWALL SAMPLES

SCALE: 1" = 20'



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- RAILROAD
- 750 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDUOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- COORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- SURVEY MONUMENT
- CONFIRMATORY FLOOR SAMPLE
- × SIDEWALL SAMPLE
- 1 / A — 50 FOOT BY 50 FOOT GRID

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
REMEDIAL DESIGN
SEAD-4 AND SEAD-38

DEPT. ENVIRONMENTAL ENGINEERING | Dwg. No.

FIGURE 4-4
AREA 3 AND DITCH 4
CONFIRMATORY SAMPLING LOCATIONS

SCALE 1" = 100' | DATE OCTOBER 2008

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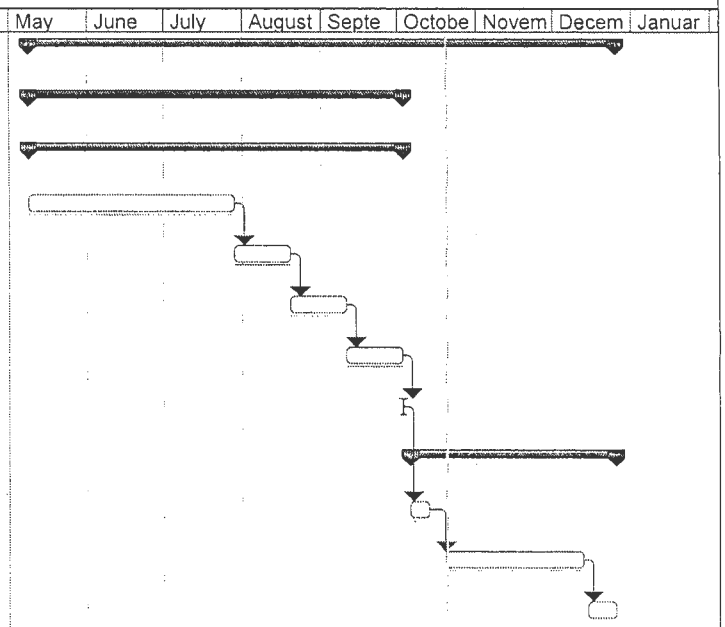
Figure 8-1
Remedial Design Schedule For SEAD-4/38 (FFA)
Seneca Army Depot Activity, Romulus, New York

ID	Task Name	Start	Finish	Predecessors
1	**Remediation of the SEAD-4 & SEAD-38**	**Fri 5/9/08**	**Thu 12/25/08**	
2	**Remedial Design WPs and Design**	**Fri 5/9/08**	**Fri 10/3/08**	
3	**Remedial Design Work Plan/RD (CDRL A004)**	**Fri 5/9/08**	**Fri 10/3/08**	
4	Prepare Draft Design	Fri 5/9/08	Mon 7/28/08	
5	Regulator Review of Draft Design	Tue 7/29/08	Tue 8/19/08	4
6	Prepare Final Design (FD)	Wed 8/20/08	Wed 9/10/08	5
7	Regulator Review of FD	Thu 9/11/08	Thu 10/2/08	6
8	Final RD Approved	Fri 10/3/08	Fri 10/3/08	7
9	**Remedial Action**	**Mon 10/6/08**	**Thu 12/25/08**	
10	Mobilization	Mon 10/6/08	Mon 10/13/08	8
11	Construction	Mon 10/20/08	Fri 12/12/08	10
12	Demobilization	Mon 12/15/08	Thu 12/25/08	11



Project: SEAD-4/38 Design
Date: Mon 10/20/08

Task

Summary

APPENDICES

Appendix A: Design Drawings

Drawing C-1	Title Sheet
Drawing C-2	SEAD-4 and SEAD-38 Existing Conditions Plan
Drawing C-3	SEAD-4 and SEAD-38 Excavation Plan

Appendix B: Technical Specifications

APPENDIX A

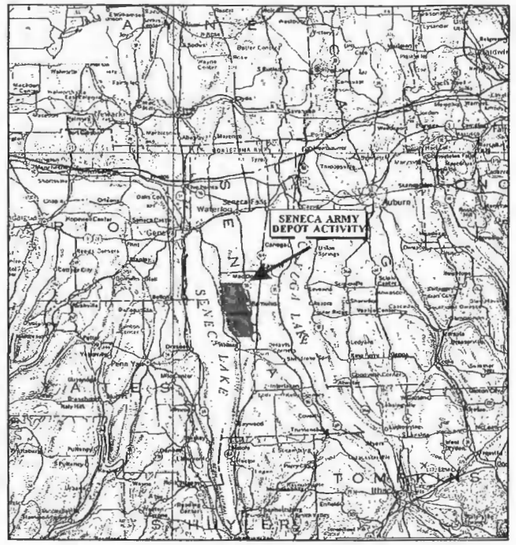
DESIGN DRAWINGS

PREPARED FOR:

AIR FORCE CENTER FOR ENGINEERING AND THE ENVIRONMENT

REMEDIATION OF MUNITIONS WASHOUT FACILITY (SEAD-4) AND THE FORMER BUILDING 2079 BOILER BLOWDOWN PIT (SEAD-38) SENECA ARMY DEPOT ACTIVITY ROMULUS, NEW YORK

DESIGN DRAWINGS
(OCTOBER 2008)



LOCATION MAP

DRAWING LIST

SHEET NO.	REVISION NO.	DESCRIPTION
C-1	A	TITLE SHEET
C-2	-	SEAD-4 & SEAD-38 EXISTING CONDITIONS PLAN
C-3	A	SEAD-4 & SEAD-38 EXCAVATION PLAN

SITE PLAN
NTS

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PARSONS

CLIENT/PROJECT TITLE
SENECA ARMY DEPOT
REMEDIAL DESIGN
SEAD-4 AND SEAD-35

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	745172-04200

C-1
TITLE SHEET

SCALE	DATE	REV
NA	OCTOBER 2008	A

N

APPROXIMATE LOCATION OF OUTFALL

APPROXIMATE LOCATION OF 4" VERTICAL PIPE

SUSPECTED LEACH FIELD

APPROXIMATE LOCATION OF SEAD-38

LUNCH ROOM

FORMER DECONTAMINATION BUILDING FOUNDATION

STEAM GENERATION BUILDING 2076

BERM

FORMER 2081 WATER TANK

FORMER 2077

GENERAL PURPOSE STORAGE

FORMER 2075

FORMER 2074

DRAINAGE DITCH

Seneca Road

APPROXIMATE LOCATION OF BURIED 6" CLAY PIPE

APPROXIMATE LOCATION OF FORMER MUNITIONS WASHOUT BUILDING

AMMO RENOVATION BUILDING

2078

2073

ROCKET OVERHAUL SHOP

MAN-MADE LAGOON

APPROXIMATE LOCATION OF 6" OVERFLOW PIPE

APPROXIMATE LOCATION OF FORMER BUILDING

FORMER 730

2085

AMMO RENOVATION BUILDING

AMMO RENOVATION SHOP

2084

DRAINAGE DITCH

N 988000
N 987750
N 987500
N 987250
N 987000
N 986750
N 986500
E 744250
E 744500
E 744750
E 745000
E 745250
E 745500
E 745750
E 746000

LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- FORMER BUILDING
- BRUSH LINE
- UNPAVED ROADS
- RAILROAD
- GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDUOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- COORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- SURVEY MONUMENT

100 0 100 200
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
REMEDIAL DESIGN
SEAD-4 AND SEAD-38

DEPT. ENVIRONMENTAL ENGINEERING | Dwg. No.

C-2

SEAD-4 AND SEAD-38
EXISTING CONDITIONS PLAN

SCALE 1" = 200' | DATE JUNE 2008

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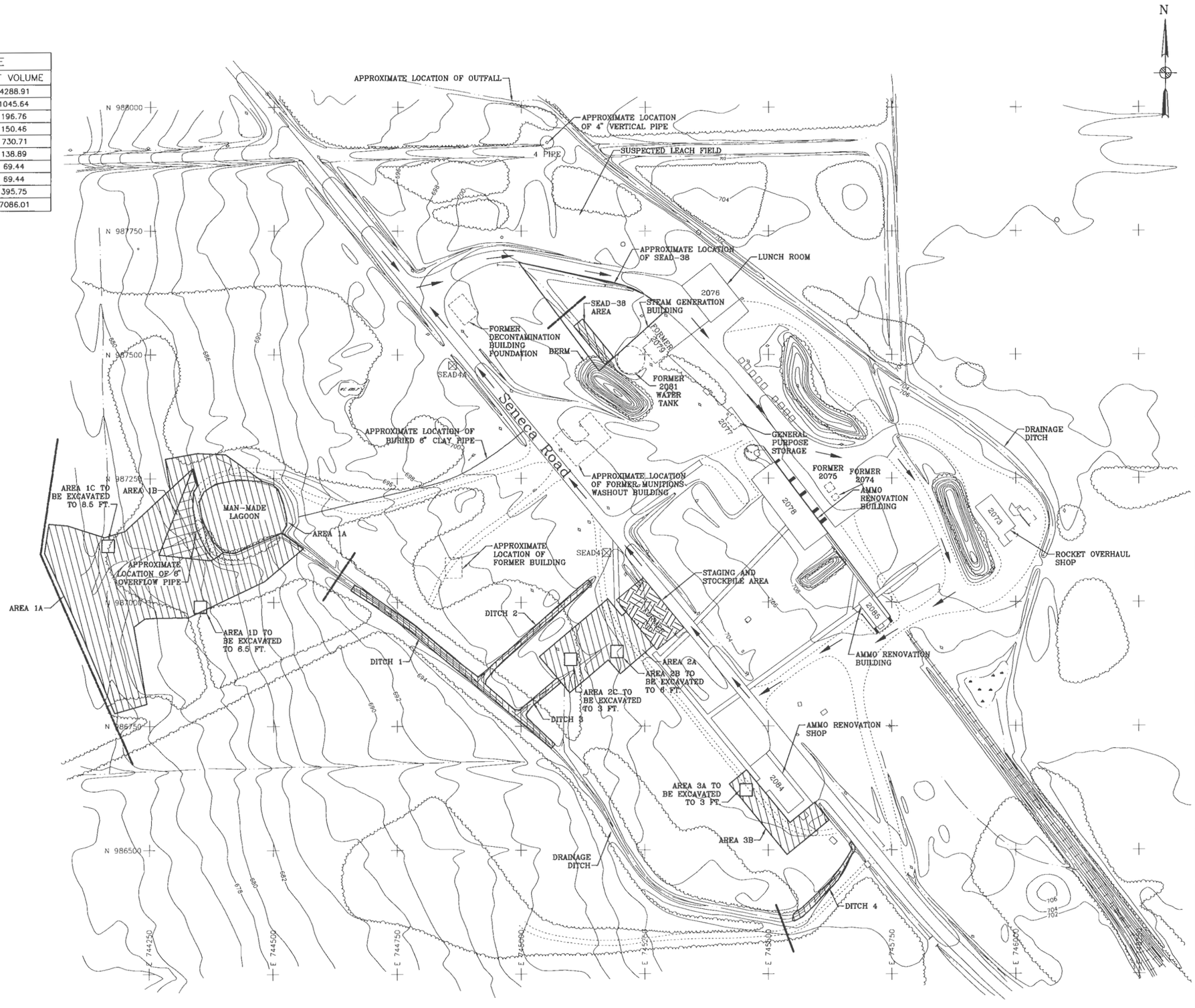
EXCAVATION TABLE			
AREA	SQ. FT.	DEPTH	CUT VOLUME
1A	115800.63	1 FT.	4288.91
1B	8066.37	3.5 FT.	1045.64
1C	625	8.5 FT.	196.76
1D	625	6.5 FT.	150.46
2A	19729.09	1 FT.	730.71
2B	625	6 FT	138.89
2C	625	3 FT.	69.44
3A	625	3 FT.	69.44
3B	10685.30	1 FT.	395.75
TOTAL VOLUME (C.Y.)			7086.01



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- BRUSH LINE
- UNPAVED ROADS
- RAILROAD
- GROUND SURFACE ELEVATION CONTOUR
- SILT FENCE
- FORMER BUILDING
- ROAD SIGN
- DECIDUOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- COORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- SURVEY MONUMENT
- Area to be excavated up to 4 ft
- Area to be excavated to 1 ft.
- HAUL ROUTING

NOTES:

1. TOPOGRAPHY BASED ON AERIAL SURVEY BY: LOCKWOOD SURVEY 38 KARLAN DRIVE ROCHESTER, NEW YORK
2. HORIZONTAL DATUM IS BASED ON NAD83 PER SENECA ARMY DEPOT SEAD-4 MONUMENTS SURVEY CONTROL COORDINATES DATED 1994.
3. VERTICAL DATUM BASED ON NAD88.
4. SILT FENCING SHALL BE PLACED AT AREAS SHOWN ON THE PLAN TO PREVENT TRANSPORT OF SOIL TO ONSITE DRAINAGE DITCHES.
5. SOIL EXCAVATION SHALL TERMINATE AT THE EDGE OF THE BUILDING STRUCTURE. NO EXCAVATION SHALL BE CONDUCTED BENEATH ANY BUILDING OR STRUCTURE.
6. AFTER ACCEPTANCE OF CONFIRMATORY SAMPLING RESULTS, THE ENGINEER WILL DIRECT THE CONTRACTOR TO REGRADE EXCAVATED AREAS TO PROMOTE POSITIVE DRAINAGE OR TO BACKFILL AREAS THAT CANNOT BE GRADED TO PROMOTE POSITIVE DRAINAGE AND EXCAVATION AREAS DEEPER THAN 4 FEET NEAR THE ROAD OR BUILDINGS IF NECESSARY.

100 0 100 200
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
REMEDIAL DESIGN
SEAD-4 AND SEAD-38

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	

C-3
SEAD-4 AND SEAD-38
EXCAVATION PLAN

SCALE	DATE	REV
1" = 200'	OCTOBER 2008	A

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APPENDIX B

TECHNICAL SPECIFICATIONS

SECTION 01010

SUMMARY OF WORK

PART I GENERAL

1.01 PROJECT DESCRIPTION

A. Work under this contract includes the excavation of impacted soil at SEAD-4 and SEAD-38 at the Seneca Army Depot Activity in Romulus, New York.

1.02 PROJECT SCOPE OF WORK

A. The Contractor shall furnish all labor, materials, equipment, and incidentals required and complete the work in its entirety as shown on the drawings and as specified herein.

B. The work required under this contract includes, but is not necessarily limited to, the following:

1. Project startup, including mobilization to the site;

2. Obtain all necessary permits;

3. Develop, implement and maintain a site-specific Health and Safety Plan;

4. Survey excavation areas (To be conducted by Engineer);

5. Install temporary sediment and erosion protection measures;

6. Clear and grub the site;

7. Dewater the man-made lagoon;

8. Excavate lead and chromium impacted surface and subsurface soil at SEAD-4;

9. Excavate chromium impacted ditch soil and man-made lagoon soil at SEAD-4;

10. Excavate vanadium impacted ditch soil at SEAD-38;

11. Load soils and transport to off-site disposal facility;

12. Conduct confirmation sampling (To be conducted by Engineer);

13. Backfill as needed and re-grade the soil excavation area at SEAD-4 and 38;

14. Demobilize.

1.03 DEFINITIONS

A. For the purposes of these Technical Specifications, Drawings, and other contract documents, the following definitions apply:

1. Owner: The Army

2. Engineer: Owner's Representative or Engineer (Parsons)

3. Contractor: The individual, firm partnership, or corporation designated as the Contractor in these contract documents

4. Vendor: The individual, firm, partnership, or corporation selected to supply certain major system equipment components

B. Term "provide" or "provided" shall mean "furnish, install in-place" and demonstrate to the satisfaction of the Engineer and in accordance with these plans and specifications.

C. The term "demonstrate" shall mean "to prove that the item of Work in question fulfills the requirements of the Drawings and Specifications to the satisfaction of the Engineer".

1.04 CONTRACTORS USE OF PREMISSES

A. The entrance to the site is through the main gate located on Route 96.

B. The Contractor shall notify the Engineer 7 days prior to the commencement of work.

END OF SECTION

SECTION 01011

ENGINEER'S DRAWINGS

PART 1 GENERAL

1.01 DIMENSIONS

A. If the Contractor discovers any discrepancies between the physical condition of the work and the drawings, he shall immediately notify the Engineer. Any work performed after such discovery without the agreement of the Engineer shall be at the Contractor's risk and expense.

1.02 CONTRACT DRAWINGS

A. The following Drawings are hereby included as part of the Contract Documents.

- Drawing C-1 Title Sheet
- Drawing C-2 SEAD-4 & SEAD-38 Existing Conditions Plan
- Drawing C-3 SEAD-4 & SEAD-38 Excavation Plan

END OF SECTION

SECTION 01039

COORDINATION AND MEETINGS

PART 1 GENERAL

1.01 WORK INCLUDED

A. This section describes the coordination and meetings that the Contractor shall comply with for the duration of the project.

1.02 PRE-CONSTRUCTION MEETING

A. A pre-construction meeting will be held at the site after all required permit approvals are obtained and after the contract has been awarded to the Contractor. The Contractor shall attend this meeting.

B. The purpose of the pre-construction meeting is to review in detail the operating concepts and the existing site conditions that will guide the project. The meeting will define, assign, and schedule the required submissions, key tasks to be performed, and the reporting plan to be implemented. Prior to the meeting, the Contractor shall submit a construction schedule and personnel list. After the meeting, the Contractor shall submit a revised construction schedule and personnel list, as necessary. Additional items to be addressed include Health & Safety, Submittals, and Environmental Protection.

C. At a minimum, the Contractor's Superintendent, Quality Control Officer, and Safety personnel shall be in attendance.

1.03 WEEKLY CONSTRUCTION MEETING

A. The Engineer shall conduct progress meetings to review the progress of the work, schedule, and budget. The Contractor's attendance shall be mandatory.

B. The meetings will be documented by the Engineer and copies of the meeting minutes will be distribute to the Contractor.

C. Progress meetings shall be held at least once a week, at which time the weekly progress report will be reviewed.

1.04 WEEKLY PROGRESS REPORTS

A. The Contractor shall provide written weekly progress reports to the Engineer outlining the current status of the work, budget status, budget impacts, unexpected conditions, updated schedule, and any information pertinent to the progress of the work. The Engineer will keep Daily Field Reports and submit Weekly Field Reports to the Engineer.

1.05 COORDINATION

A. The Contractor shall fully cooperate with all other Contractors and Subcontractors and shall assist in incorporating the work of other trades where necessary or required.

B. The Contractor shall fully cooperate with the Engineer and shall assist obtaining all samples for quality assurance testing.

C. All on-site work shall be coordinated by the Contractor, with the approval of the Owner.

D. Contractor shall submit a list of all personnel to be used on the project to the Engineer for coordination. Security badges will not be provided to contractor personnel; however, the Contractor shall insure all employees have contractor issued identification while on the installation.

E. The annual deer harvest occurs within the Depot limits during the months of November and December. The harvest will not be conducted within the work area and should not affect the construction schedule. During the construction period at the end of each week, the contractor shall also notify the Engineer regarding what work is intended for the following week. The Engineer may stop work at any time when an imminent danger/serious safety violation is found.

F. Site, facility, and utility access shall be coordinated through the appropriate utility authority in the Town of Romulus.

G. All key Contractor personnel proposed for the project and accepted by the Owner shall not be removed or re-assigned from the Project without the approval of the Owner or the Engineer.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01046

CONTROL OF WORK

PART 1 GENERAL

1.01 MATERIALS

A. Furnish materials and equipment which will be efficient, appropriate, and large enough to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the time stipulated in the Contract. If at any time such materials appear to the Engineer to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he/she may order the Contractor to increase the efficiency, change the character, or increase the materials and equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his/her obligations to secure the quality of the work and rate of progress required.

1.02 PRIVATE LAND

A. Do not enter or occupy private land outside the property boundary or easements, except by written permission of the Owner and the Engineer.

1.03 OPEN EXCAVATIONS

A. Excavations shall conform to the requirements of the OSHA Standards and Interpretations, Subpart P – Excavation, Trenching and Shoring.

B. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights, and other means to prevent accidents to persons and damage to property. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer.

C. Take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles, which could be dangerous to the public, shall be marked.

1.04 MAINTENANCE OF TRAFFIC

A. All work shall be completed so that vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, the Contractor shall repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the Owner.

B. Take precautions to prevent injury to the public due to open trenches.

1.05 CARE AND PROTECTION OF PROPERTY

A. Be responsible for the preservation of all public and private property and use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Owner.

B. The Contractor shall obtain an agreement with the Town of Romulus and the Owner and repair and restore the road to its original condition after construction.

1.06 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

A. Assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to building, utilities in the street, gas pipes, water pipes, fences, monitoring wells, hydrants, sewers, drains, and electric and telephone cables that are not specifically required to be demolished, removed, or disposed, whether or not they are shown on the Drawings. Carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by the Contractor at the Contractor's expense.

B. Assistance will be given to the Contractor by the Owner in determining the location of existing services.

C. Contractors shall contact Underground Facilities Protection Organization (UFPO) at 1-800-962-7962 prior to any earthwork operations or excavation.

1.07 CLEANUP AND DISPOSAL OF EXCESS MATERIALS

A. During the course of the work, keep the site of operations in as clean and neat a condition as is possible. Trash generated by the Contractor as a result of work performed shall be picked up and placed in containers that are emptied on a regular schedule. On completion, all areas shall be clean and natural looking to the maximum extent possible. Signs of temporary construction and activities necessary for construction of the permanent work shall be removed.

B. All trash generated by the Contractor will be transported and disposed of in a manner that complies with federal, state, and local requirements by the Town of Romulus and the Owner. The Owner will maintain a copy of any state and/or local permits or licenses that reflect such agency's approval and compliance with applicable solid waste disposal regulations. The permits or licenses and the location of the disposal area shall be provided prior to transporting any waste material.

C. Fueling and lubricating of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants and waste oil shall be disposed of by the Contractor at his expense, in accordance with approved procedures meeting federal, state, and local regulations.

D. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and its subcontractors shall

comply with all applicable Federal, State and local laws and regulations concerning waste material disposal as well as the specific requirements stated in this Section and elsewhere in the Specifications.

E. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and plains is strictly prohibited even if the permission of the Owner is obtained. Any violation of this restriction by the Contractor or any person employed by the Contractor will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the Contractor will be required to remove the fill at his/her own expense and restore the area impacted.

1.08 RESTORATION

A. Restore all areas outside limit of work as shown on the Drawings, to conditions that existed prior to construction.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01100

HEALTH AND SAFETY REQUIREMENTS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Contractor is responsible for implementation and enforcement of safe Work practices including, but not limited to, personnel exposure to waste and gases; use of shoring, materials handling, operation of equipment; and safety of public during progress of Work.

1.02 APPLICABLE REGULATIONS

A. Contractor shall plan for, and ensure that, all personnel comply with the basic provisions of OSHA Health and Safety Standards (29 CFR 1920) and General Construction Standards (29 CFR 1926), and any applicable local, state, and federal regulations related to worker health and safety. Workers directly involved in waste regrading or trenching operations shall meet applicable requirements of OSHA Hazardous Waste Operations and Emergency Response, Final Rule (29 CFR 1910).

1.03 OPERATIONS AND EQUIPMENT SAFETY

A. Contractor shall initiate, maintain, and supervise safety precautions and programs in connection with Work. Take necessary precautions for safety of employees on Project site and other persons that may be affected by Project.

B. Contractor's duties and responsibilities for safety in connection with Work shall continue until such time as Work is complete and the Owner or the Engineer has issued notice to Contractor that Work is complete.

1.04 HEALTH AND SAFETY PLAN

A. Contractor shall implement and enforce health and safety requirements and shall take necessary precautions and provide protection for the following:

1. Personnel working on or visiting Project site, irrespective of employer.

2. Work and materials or equipment to be incorporated in Work area on or off site.

3. Other property at or adjacent to Project site.

4. Public exposed to job related operations or potential release of toxic or hazardous materials.

B. Contractor shall prepare a site-specific health and safety plan (HSP) in accordance with Parsons' Safety, Health, and Risk Program (SHARP) Manual. Contractor is solely responsible for adequacy of HSP's preparation, monitoring, management, and enforcement. At a minimum, Contractor's HSP shall address the following:

1. Site description and history.

2. Project activities and coordination with other Contractors.

3. Hazard evaluation.

4. On-site safety responsibilities.

5. Work zones.

6. Personnel training.

7. Atmospheric monitoring (if required).

8. Personal protection, clothing, and equipment.

9. Emergency procedures.

C. The HSP shall be submitted in accordance with Section 01350 14 days prior to the start of work for approval by the Engineer. Work shall not commence without the Engineer's approval.

D. The Contractor shall make arrangements for all emergency services. The Owner does not have these services available from its staff.

E. If the Engineer observes situations, which appear to have potential for immediate and serious injury to persons, the Engineer may warn persons who appear to be affected by such situations. Such warnings, if issued, shall be given based on general humanitarian concerns, and the Engineer will not, by issuance of any such warning, assume any responsibility to issue future warnings or any general responsibility for protection of persons affected by Work.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish all labor, materials, and equipment to perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water, and land, and involves management of noise and solid waste, as well as other pollutants.

C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, berms, staked hay bales, silt curtains, seeding or other special surface treatments as are required to prevent transport of silt. All erosion control measures shall be in place in an area prior to any construction activity in that area.

D. This Section is intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.

E. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the applicable State and local laws and regulations.

1.02 APPLICABLE REGULATIONS

A. Comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement.

1.03 NOTIFICATIONS

A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or local requirements. After receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for this purpose. If the Contractor fails or refuses to comply promptly, the Engineer may issue an order stopping all or part of the work

until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.04 IMPLEMENTATION

A. Prior to commencement of the work, meet with the Engineer to develop mutual understanding relative to compliance with these provisions and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when approved by the Engineer, and incorporate permanent control features into the project at the earliest practicable time.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EROSION CONTROL

A. Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures, such as hay check dams and other equivalent techniques, shall be used as appropriate. Flow of surface water into excavated areas shall be prevented as much as is practical. Berms around construction area shall also be used to shed away water resulting from dewatering of excavated areas. At the completion of the work, ditches used for erosion control shall be backfilled and the ground surface restored to original condition.

3.02 PROTECTION OF STREAMS AND SURFACE WATERS

A. Take all precautions to prevent, or reduce to a minimum, any damage to any stream or surface water from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials in or near such streams or surface water. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the stream or surface water shall not be directly returned to the stream or surface water. Divert such waters, through a settling basin or filter before being directed into streams or surface waters, as approved by the Engineer.

B. Take all preventative measures to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with State and Federal Regulation and as approved by the Engineer.

3.03 PROTECTION OF LAND RESOURCES

A. Restore land resources within the project boundaries and outside the limits of permanent work to a condition, after completion of construction that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.

B. Outside of areas requiring earthwork for the construction of the new facilities, do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer.

C. Before beginning operations near them, protect trees that may possibly be defaced, bruised, injured, or otherwise damaged by the construction equipment or other operations, by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly.

D. Any trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to their original condition. The Engineer will decide the method of restoration to be used and whether damaged trees shall be treated and healed or removed and disposed of.

1. All scars on trees caused by equipment, construction operations, or by the removal of limbs larger than 1-inch in diameter shall be coated as soon as possible with an approved tree wound dressing. Experienced workmen shall perform all trimming or pruning in an approved manner with saws or pruning shears. Tree trimming with axes will not be permitted.

2. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed or replaced.

E. The location of the Contractor's temporary storage and other construction buildings shall be cleared as shown on the Drawings and approved by the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for approval of the Engineer.

F. If the Contractor proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least ten days prior to scheduled start of such temporary work.

1. A layout of all temporary roads, excavations, embankments, and drainage to be constructed within the work area.

2. Details of temporary road construction.

G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling, and plowing of roadways will be required to restore the area to near natural conditions, which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as described in Section 02990, or as approved by the Engineer.

3.04 PROTECTION OF AIR QUALITY

A. Burning – The use of burning at the project site for the disposal of refuse and debris will not be permitted.

B. Dust Control

1. Maintain all excavations, embankment, stockpiles, access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others, as approved by the Engineer.

2. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may be permitted with approval from the Engineer.

3. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor shall have sufficient competent equipment on the job to accomplish this. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer.

3.05 NOISE AND ODOR CONTROL

A. Make every effort to minimize noises caused by the construction operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with Federal and State regulations.

B. Conduct work in a manner to minimize odors to residences in the vicinity of work. If odors become a problem, as determined by the Engineer, provide an odor control material or procedure acceptable to the Engineer.

3.06 LITTER CONTROL

Provide litter control to keep exposed waste from blowing off-site. Collect litter present on site and dispose. Maintain site free of litter generated by Contractor's employees.

3.07 USE OF CHEMICALS

A. Chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, shall be approved by USEPA, U.S. Department of Agriculture, or any other applicable regulatory agency.

B. Use and dispose of chemicals and residues in compliance with manufacturer's instructions and applicable regulations.

3.08 FUEL AND LUBRICANTS

A. Comply with local, state and federal regulations concerning transportation and storage of fuels and lubricants.

B. Fuel storage area and fuel equipment shall be approved by the Engineer prior to installation.

C. Report spills or leaks from fueling equipment or construction equipment to the Engineer and cleanup as required.

D. The Engineer may require Contractor to remove damaged or leaking equipment from Project site.

END OF SECTION

SECTION 01350

SUBMITTALS

PART 1 GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. This section specifies the general methods and requirements of submissions and distributions applicable to Samples and other Submittals. Detailed submittal requirements are specified in the technical sections.

B. All submittals shall be clearly identified by reference to specification section number, paragraph, Drawing number, or detail as applicable. Submittals shall be clear and legible and of sufficient size for presentation of data and information.

1.02 SUBMITTAL OF CONTRACTOR FURNISHED SAMPLES AND LANDFILL DOCUMENTATION PARSONS WILL HANDLE THE T&D

A. Samples

A representative sample from an off-site borrow source will be necessary should backfill be required during grading of the site. Sample requirements are documented in Specification 02223 Backfilling. The name, owner, and representative sample of the borrow source shall be submitted to the Engineer 14 days prior to construction. Borrow source must be approved by the Engineer prior to use.

B. Landfill Documentation

All weigh tickets documenting the weight of deliveries of waste to the landfill shall be submitted to the Engineer within 5 business days. Parsons is handling T&D.

1.03 CONSTRUCTION SCHEDULE

A. The Contractor shall submit a construction schedule within five (5) calendar days after signing of Agreement. The schedule shall state the expected number of days needed to complete the entire project, and each individual project task.

B. The Contractor shall submit revised schedules as substantial variations are identified and required by the Owner.

C. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the start and finish dates and duration. Presentation shall be neat and accurate utilizing MS Project® or comparable project tracking software package.

D. The Contractor shall check with the Owner regarding the Owner-furnished equipment delivery dates, progress of construction by Others and to schedule the arrival of his materials, equipment and labor at the site so as to properly coordinate his and the work by Others. There will be no extra compensation for extra work,

which the Contractor must perform due to his failure to coordinate his work and the work of others.

1.04 PROPOSED SUBCONTRACTOR LIST

A. The Contractor shall submit a complete list of Subcontractors, with name, address, and experience within five (5) calendar days after signing of Agreement.

B. No work on the Contract shall commence until the Owner in writing has approved all the proposed Subcontractors.

C. If the Contractor plans to use a subcontractor that is not on the original subcontractor list submitted with their cost estimate, the Contractor may propose in writing an alternative Subcontractor or additional Subcontractors for the Owner or Engineer's approval.

D. No work on the Contract shall commence until the Owner in writing has approved all the proposed Subcontractors.

1.06 HEALTH AND SAFETY PLAN

A. The Contractor shall prepare a construction Health and Safety Plan and submit the plan to the Owner and Engineer for review and comments at least 14 days prior to the start of work. The Contractor shall address the Owner and Engineer's comments and resubmit the plan, as necessary. The Contractor shall complete the plan in accordance with the site-specific Health and Safety Plan, OSHA, NYSDEC, county, and local government requirements.

B. No work shall commence at the site until the plan has been approved and is in place.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.01 QUALITY CONTROL OF INSTALLATION

The Contractor shall:

A. Monitor quality control over products, services, site conditions, and workmanship to produce work of specified quality.

B. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

C. Perform work by persons qualified to produce workmanship of specified quality.

D. During freezing or inclement weather, or other adverse conditions, no work shall be performed except that which can be performed in a manner, which will ensure first class construction throughout.

1.02 WORKMANSHIP

A. The intent of these Technical Specifications is to describe definitely and fully the character of materials and workmanship required with regard to all ordinary features, and to require first-class work and material in all particulars.

B. For any unexpected features arising during the progress of the work and not fully covered herein, the specifications shall be interpreted by the Owner to require first-class work and materials; and such interpretation shall be accepted by the Contractor.

C. All labor shall be performed in the best and most workmanlike manner by mechanics skilled in their respective trades. The standards of the work required throughout shall be of such grade as will bring only first-class results.

1.03 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to current reference standards by contract documents date of issue, except where specified date is established by Code.

C. Obtain copies of standards when required by contract documents.

D. Should specified reference standards conflict with contract documents, request clarification from the Owner before proceeding.

E. The contractual relationship of the parties to the Contract shall not be altered from the contract documents by mention or inference otherwise in any reference document.

1.05 FIELD INSPECTION OF CONTRACTOR'S WORK

A. The Engineer will provide daily inspection of the Contractor's work, which will ensure that the work is being performed in accordance with the Drawings and specifications such that the end product will be in conformance with the Drawings and specifications.

B. The Contractor and its subcontractors are responsible for complete conformance to the Drawings and specifications for all work performed on the project.

C. The Contractor will provide ample opportunity for safe and easy access to the inspectors for proper inspection of the work.

D. The Contractor will inform the Engineer in advance of periods when the Contractor does not intend to work due to, but not limited to, inability to obtain materials or equipment or expected inclement weather. If ample warning is not given to the Engineer and unnecessary trips are made to the field, funds will be deducted from monies due to the Contractor to reimburse the Engineer for his/her time.

1.06 ON SITE AND LABORATORY TESTING

A. The Engineer shall be responsible for collecting samples and conducting tests related to identification of borrow source materials in order to meet the specifications.

1.07 VENDOR'S FIELD SERVICES AND REPORTS

A. When stated in individual specification sections, the Contractor is responsible for coordinating required material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces, conditions of installation, quality of workmanship, testing, as applicable, and to initiate instructions when necessary.

B. Contractor shall report to the Owner observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to Vendor's written instructions.

C. Submit report under provisions of Section 01350 (Submittals) within 30 calendar days of observation to the Owner for review.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 TEMPORARY CONSTRUCTION FACILITIES

A. The Contractor shall provide and pay for the provisions of a temporary construction office (trailer) to be used by on-site Contractor personnel only,

B. The location of the Contractor's office (trailer) may be setup up within the limit of work at SEAD-4 or SEAD-38 at the Owner's discretion.

C. Contractor shall park their vehicles in locations as directed by the Owner.

1.02 TELEPHONE

A. The Contractor will make arrangements with the local telephone company to provide and maintain telephone and facsimile service for the duration of the Work, if needed.

1.03 SANITARY FACILITIES

A. The Contractor shall provide and pay for temporary toilet facilities for the office personnel in addition to facilities for field personnel conforming to state and local health and sanitation regulations in sufficient number for use of the Contractor's, Owner's, Engineer's and subcontractor's personnel.

B. The Contractor shall maintain the facilities daily in clean and sanitary conditions.

1.04 WATER

A. Contractor shall provide all water necessary to complete the work, including drinking water for the Engineer and Owner.

1.05 TEMPORARY ELECTRICAL POWER AND LIGHTING

A. The Contractor shall provide all temporary electricity and lighting, including poles, transformers, and meters. All temporary distribution materials and installation shall conform to the requirements of the National Electrical Code and any applicable local codes.

B. Provide and maintain lamps, wiring, switches, sockets, and similar equipment required for temporary lighting and power tools.

C. Temporary lighting shall be sufficient to enable Contractor to complete Work and enable Owner or the Engineer to observe work as it is being performed. Illumination shall meet or exceed state code requirements.

D. Contractor shall provide and pay for electrical energy required for temporary heating and cooling of the Contractor's temporary construction offices.

1.06 CONSTRUCTION SIGNS

A. The Engineer shall provide signs at the office indicating the Contractor's and Engineer's name.

B. The Engineer shall provide directional signs to direct traffic into and within the site. The signs shall be relocated as Work progresses.

C. The Engineer shall design the signs and sign posts to withstand 60 mile per hour wind velocity.

D. The Engineer shall maintain the signs and signposts and repair as necessary. The Contractor shall remove signs and supports at completion of the Project and restore the area.

E. The number, size, and text of construction signs displayed at the jobsite shall be subject to review, prior to installation, by the Owner.

F. Owner furnished signs may be provided at the Owner's discretion at no cost to the Contractor. The Engineer is responsible for maintaining the sign at the site.

1.07 SECURITY

A. The Contractor shall assume sole responsibility for security at the site for the entire duration of the Work. The Owner will not provide site security.

B. The Contractor shall take at all times such usual and ordinary precautions as may be required to protect all materials, equipment and completed work that are susceptible to damage by sabotage or vandalism and that would cause loss of life or property, or would endanger the work of this or other contracts in connection with this project, or which would effect a substantial delay in the completion of the work of this or other contracts.

C. The Contractor shall make provisions to exclude all unauthorized persons from the vicinity of his construction operations.

1.08 SNOW REMOVAL

A. The Owner shall provide snow removal to gain access to the sites.

B. The Contractor shall be required to remove snow from the work area, should it be necessary. In the event of a major snowfall, the Contractor shall coordinate with the Owner for timely access as may be needed.

1.09 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. The Contractor shall remove temporary utilities, equipment, facilities, and materials prior to demobilization from the site.

B. The Contractor shall clean and repair damage caused by installation or use of temporary work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 02100

CLEARING AND GRUBBING

PART 1 GENERAL

1.01 DESCRIPTION

A. Remove debris, stumps, roots, and other objectionable materials within the excavation limits designated on the Drawings. Protect large well-established trees. Chip the above-grade portions of small trees and brush for erosion control measures and spread on-site. Grind stumps and leave grindings in place.

B. Work Included in this Section. Principal items are:

1. Selective debris removal to excavation limits shown on the Drawings.

2. Protection and preservation of trees and vegetation outside the clearing limits.

3. Protection and preservation of large, well established trees located within the clearing limits

4. Cutting and onsite use/disposal of small above-grade timber, if any.

5. Off-site disposal of debris and other objectionable materials.

C. Related Work Specified in Other Sections.

1. Section 02219 - Contaminated Soil Excavation and Disposal

2. Section 02370 - Erosion Control

1.02 CODE REQUIREMENTS AND ENVIRONMENTAL SAFEGUARDS

Accomplish disposal of material removed from site in accordance with applicable Federal, State, and local regulations. Comply with regulations to prevent pollution of air and water.

1.03 SITE INVESTIGATIONS

Carefully examine the site to determine the full extent, nature, and location of work required to conform with the Drawings and Specifications. Bring any inaccuracies or discrepancies between the Drawings and Specifications to the Engineer's attention in order to clarify the exact nature of the Work to be performed.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.01 CLEARING AND GRUBBING.

A Remove all vegetation, brush, shrubs, stumps, logs, roots, debris, metal debris, and boulders within the excavation area. Backfill holes outside of planned excavation areas resulting from the removal of underground structures and roots that extend below finished grade with unclassified fill or backfill.

B. Immediately restore or replace any damaged items.

C Above-Grade Material: Cut small above-grade timber within 12 inches of grade. Chip and dispose of above-grade timber on-site outside the excavation area as erosion control measures.

D. Below-Grade Material: Chip and grind below-grade material from grubbing, including roots, stumps and other materials, and leave on-site.

E. Provide a chipper and/or grinder of sufficient size to handle material expected from the cleared and grubbed areas.

F. Do not burn any materials on-site.

3.02 TOPSOIL REMOVAL

None required. Topsoil within the excavation limits is generally contaminated and must be removed and loaded directly onto a truck for off-site disposal. Reuse of site topsoil for site grading or backfilling is not permitted.

3.03 GUARANTEE

Guarantee that Work performed under this Section will not permanently damage trees, shrubs, turf, or plants designated to remain, or other adjacent work or facilities. If damage resulting from operations appears during a period up to 12 months after completion of the project, replace damaged items.

END OF SECTION 02100

SECTION 02140

CONSTRUCTION AND STANDING WATER MANAGEMENT

PART 1 GENERAL

1.1 WORK INCLUDED

A. Handling, storage, treatment (if necessary), and disposal (if necessary) of all construction water and associated residual sediments generated during construction in accordance with all applicable local, State, and Federal regulations.

B. The Contractor is to obtain (if necessary) and operate within all required local, State, and Federal permits and requirements required to implement the proposed construction water management plan. Any and all civil, criminal, and monetary penalties associated with non-compliance in any regard shall be the responsibility of the Contractor.

C. Provide materials and equipment required for containment of construction water in accordance with the Engineer-approved construction water management procedures.

1.2 RELATED SECTIONS

A. Section 01010 – Summary of Work

B. Section 02219 – Contaminated Materials Excavation and Disposal

C. Section 02370 – Erosion Control

1.3 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. The Contractor shall comply with applicable federal, state, and local applicable codes, ordinances, regulations, statues and standards.

1.4 DEFINITIONS

A. Construction water: Construction water shall be defined as the following:

1. Groundwater or surface water entering excavations.

2. Liquids generated during decontamination activities.

3. Surface water resulting from precipitation during construction which has come in contact with potentially contaminated soils, sediment, fill, or debris, except from potentially contaminated soil, sediment, fill, or debris which is in place and undisturbed.

4. Water or other liquids, which have come into contact with potentially exposed contaminated soils, sediment, or debris, in addition to that resulting from precipitation.

B. Construction Water does not include water contacting non-disturbed excavation areas. This water shall be diverted from the excavation area as required to minimize the potential for contact with the construction operations.

PART 2 PRODUCTS

2.1 GENERAL

A. Construction and Standing Water Management Procedures

1. All construction and standing water shall be contained with either: a. the excavation area by use of soil berms or haybales around the area of excavation, or b. the decontamination area by use of a 6 mil poly liner bounded by soil berms or haybales.

2. All contained waters within the excavation area shall be allowed to evaporate or infiltrate during excavation operations and will be allowed to drain prior to any soil removal from the area.

3. All contained waters within the decontamination area will be allowed to evaporate prior to dismantlement of the decontamination area. The acceptable methods of handling sediment with the decontamination area is to allow for drying, collect within the 6 mil poly liner and dispose off-site with excavated soil.

B. Facilities

1. The Contractor shall provide methods, means, and facilities required to manage construction water and residuals generated during construction water management.

C. Equipment

1. The Contractor shall provide equipment and personnel to manage construction water.

PART 3 EXECUTION

3.1 GENERAL

A. Contractor shall be responsible for estimating the quantity and quality of construction water expected for this project based on the existing site conditions.

B. It shall be the responsibility of the Contractor to investigate and comply with all applicable Federal, State, and local laws and regulations governing the handling, storage and disposal of construction water. All construction water shall be disposed of in a manner which meets applicable permit requirements, laws, and regulations.

C. The Contractor shall obtain all required permits, manifests, and approvals required for the handling, storage, transport, treatment, and disposal of construction water and

residuals generated during construction water management. _Parsons will supply the analytical and disposal. _Contractor to collect and transport.

D. Any sampling and analyses necessary to protect the health and welfare of the Contractor's employees and/or agents and/or to characterize collected water, or residuals shall remain the sole responsibility of the Contractor.

E. Construction water shall be handled using equipment compatible with anticipated contaminants which may be present.

3.3 OFF-SITE DISPOSAL OF WASTES

A. Contractor shall dispose of water related wastes with excavated soil in designated off-site facility.

B. Contractor shall dispose of wastes designated for off-site disposal within 90 days of filling the container.

C. Contractor shall mark, label, placard, package, and manifest wastes in accordance with applicable codes, regulations, and statues.

3.4 MINIMIZATION OF CONSTRUCTION WATER

A. The Contractor shall make every effort to minimize the generation of construction water and associated sediment and sludges. _Methods to minimize generation of construction water include, but are not limited to:

1. Erection of temporary berms using existing soil located at least 25 feet outside of the planned excavation areas or using clean approved borrow soil.

2. Use of low permeability tarpaulin or suitable means to cover exposed contaminated areas and materials.

3 Limiting the amount of exposed contaminated areas.

4. Grading to control run-on and run-off.

END OF SECTION

SECTION 02219

CONTAMINATED MATERIALS EXCAVATION AND DISPOSAL

PART 1 GENERAL

1.01 DESCRIPTION

A. The work specified in this section consists of the labor, equipment, tools, materials, and services needed to perform the excavation and disposal of contaminated materials (i.e., ditch soil, surface and subsurface soils, and lagoon soil) as described herein, shown on the Contract Drawings, or directed by the Engineer

B. Related Sections:

1. Section 02100 – Clearing and Grubbing

2. Section 02140 – Construction Water Management

3. Section 02223 – Backfilling

4. Section 02228 – Compaction

5. Section 02370 – Erosion Control

6. Section 02990 – Finish Grading and Seeding

1.02 SUBMITTALS

A. Name, location, and a copy of the operating permit for off-site disposal facilities to be utilized. Statement of acceptability from disposal facilities for each material to be received.

B. Procedures, materials, and equipment to be used for the excavation, transportation, and disposal of contaminated materials. Include a spill contingency plan as part of this submittal. Do not begin soil excavation work until the Engineer has approved this submittal.

1.03 REFERENCES

None.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum. Review subsurface investigation reports and other available site information.

B. Protect plants, lawns, and other features that have been designated on the Contract Drawings to remain.

C. Protect control points, bench marks, existing structures, features, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic. Repair or replace damaged items.

D. Prior to the start of construction, notify the appropriate organizations, and have staked or marked underground utilities. Contractors shall contact Underground Facilities Protection Organization (UFPO) at 1-800-962-7962 prior to any earthwork operations or excavation. Utilities include, but are not limited to water, gas, electric, telephone, cable, storm sewer, sanitary sewers, laterals, and services. If utility locations indicate a possible interference, or points of connection to existing facilities need to be identified, perform exploratory excavations to determine the utilities' location and elevation. Provide the utility owner with results from exploratory excavations for review. Allow the Engineer sufficient time to review exploratory excavation results and evaluate if changes are required to the design prior to start of construction.

E. Maintain existing manholes, catch basins, and other utility structures above and below grade in their pre-work condition. Promptly remove any material or debris entering same due to the operation.

F. Grade areas to receive compacted fill to prevent surface water run-off and ponding.

G. Establish exclusion zones for work areas in accordance with the HSP.

H. Establish decontamination area adjacent to the exclusion zone to prevent contamination of areas outside of the area of excavation.

I. Engineer will survey and stake the corners of the excavation according to the Contract Drawings or the Engineer.

J. Dewater the man-made lagoon to the southwest of the lagoon and work area.

3.02 EXCAVATION

A. Protect adjacent structures that may be damaged by excavation work, including but not limited to utilities, monitoring wells, and pipe chases. Repair or replace any structure damaged as a result of operations.

B. Excavate to the staked lines and to the depths shown on the Contract Drawings. Do not over-excavate any area without prior approval from the Engineer. Stop excavating if bedrock is encountered.

C. Shore or machine-slope banks to an angle that is safe for the material in which the excavation is made.

D. Excavations shall not interfere with the normal 45-degree bearing splay of foundations. Do not undercut excavation faces.

E. Remove lumped subsoil, boulders, and rock under 1 cubic yard in size.

F. Notify the Engineer of unexpected subsurface conditions, or of questionable soils encountered at required sub-grade elevations, and discontinue work in the area until notified to resume work.

G. Furnish and place backfill to meet the pre-construction grades, if needed. Spread and compact fill used for backfilling in conformance with the requirements of Section 02228 - Compaction.

H. Place excavated material directly in dump truck for off-site disposal, or as designated by the Engineer.

I. Keep varying contaminant types and concentrations segregated as necessary for disposal if directed by the Engineer.

J. Where required, the Engineer will perform confirmatory or post-construction sampling to evaluate the need for additional excavations. Allow a minimum of 72 hours for analytical test results.

K. Perform excavation in a manner that prevents migration of contaminants to clean areas. Remove and dispose of contamination that spreads beyond the existing contamination limits in accordance with this section.

L. Minimize the frequency with which equipment enters/leaves the exclusion zone by staging newly excavated soil within the area of excavation, but adjacent to a truck load-out area. Direct load excavated soil directly to dump trucks from the excavated soil staging area within the exclusion zone.

M. Grade the excavation perimeter to provide continuous drainage and prevent ponding. Direct surface water away from excavation areas. Contain and handle surface water and groundwater seepage that collect in disturbed excavation areas known to contain contaminated material in accordance with Section 02140.

N. Provide oil absorbent pads and/or booms to contain and collect oil sheens emanating from the excavation areas.

O. Transport excavated materials in accordance with Federal, State and Local requirements and in a manner that prevents spills and the spread of contamination. No free liquids will be allowed. All materials should be drained into a contained area prior to loading into trucks. All trucks will be covered.

P. Do not exceed legal load limits for truck weight.

Q. Stop work immediately and notify the Engineer if hazardous materials (i.e., drums, etc.) are encountered during excavation. Do not proceed with removal of hazardous materials without prior approval from the Engineer unless an emergency situation requiring immediate action exists.

R. Decontaminate equipment used for excavation of contaminated materials prior to reuse on clean material. Decontaminate equipment between distinct areas of excavation if directed by the Engineer. Decontamination shall occur within the decontamination area located directly adjacent to the area of excavation. Water from the decontamination area shall be managed in accordance with Specification 02140.

3.03 PROTECTION OF EXCAVATIONS

A. Prevent cave-ins or loose soil from falling into excavation.

B. Properly and legally maintain excavations while they are open and exposed. Install and maintain sufficient and suitable barricades, warning lights, flood lights, signs, etc., to protect life and property until the excavation has been backfilled and graded to a safe and satisfactory condition.

C. Make excavations in accordance with the Contractor's HSP.

3.04 DISPOSAL

A. Debris: Dispose of site debris with the contaminated materials unless specifically instructed otherwise.

B. Disposal of excavated materials will be coordinated by Parsons. Excavated materials will be loaded into trucks and transported off-site to either Seneca Meadows in Waterloo, NY or to Ontario County Landfill in Flint, NY.

C. All weigh tickets shall be submitted to the Contractor within 5 business days.

END OF SECTION

SECTION 02223

BACKFILLING (OPTIONAL)

PART 1 GENERAL

1.01 DESCRIPTION

The work specified in this section consists of the labor, equipment, tools, materials, and services needed to perform backfilling as described herein or shown on the Contract Drawings. Backfilling is not anticipated in the areas that will be excavated to a depth of 2 feet or less due to the shallow nature of the excavation. These areas will most likely be re-graded to match existing topography. It is expected that backfill will be required to promote positive drainage near buildings, roads or asphalt; specifically, it is likely that a portion of the excavated areas near Building 2084 and near the former T30 may be backfilled. If backfill is required, the specifications herein will be used.

A. Work included in this section:

1. Analytical testing of imported backfill materials prior to placement and compaction.

2. Site filling and backfilling.

3. Classification of materials.

B. Related sections:

1. Section 02219 – Contaminated Materials Excavation and Disposal

3. Section 02228 - Compaction

4. Section 02990 – Finish Grading and Seeding

1.02 SUBMITTALS

A. One sample for each material proposed. The name and owner of the borrow source provided to the engineer 14 days prior to construction. Materials must be approved by the Engineer prior to use.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. ASTM D2487 - Test Method for Classification of Soil for Engineering Purposes.

B. Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW)

1. EPA SW846 Method 8260B – Volatile Organic Compounds (VOCs) by Gas Chromatography/Mass Spectrometry (GC/MS).

2. EPA SW846 Method 8270C – Semivolatile Organic Compounds (SVOCs) by Gas Chromatography/Mass Spectrometry (GC/MS).

3. EPA SW846 Method 6010B – Metals by Inductively Coupled Plasma-Atomic Emission Spectrometry.

4. EPA SW846 Method 7471 – Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique).

1.04 QUALITY ASSURANCE

A. The Owner and the Engineer reserve the right to inspect proposed sources of off-site materials and to order tests of the materials to ascertain its quality and particle size. Engage an approved testing laboratory to perform such tests, and submit certified test results.

B. Do not use materials until approval is obtained from the Engineer. Use material from approved sources.

PART 2 PRODUCTS

2.01 OFF-SITE MATERIALS

A. Acceptability of off-site material follows procedure consistent with NYSDEC's Draft DER-10 Technical Guidance for Site Investigation and Remediation (December 2002).

1. Contractor identifies a potential borrow source for SEAD-4 and SEAD-38 and provides the name of the site owner, the location where the fill was obtained, and a brief history of the site which is the source of the fill. Fill is natural material from approved off-site sources, free from trash, debris, deleterious materials, snow, or ice.

2. Contractor collects one representative sample from the borrow source and submits it for the analysis of metals, VOCs, and cPAHs. The results are provided to the Engineer, USEPA, and NYSDEC.

3. Analytical results are compared to the chromium, lead, and vanadium cleanup goals at SEAD-4 and SEAD-38 or the maximum concentration of other metals in soils remaining on-site. VOCs shall not exceed NYSDEC criteria. cPAHs shall not exceed the 10 ppm benzo(a)pyrene Toxicity Equivalence (BTE) value.

4. If all results are lower than the requirements, the material is acceptable for use as backfill. If the results are not acceptable, a new borrow source will be located and the process will be repeated. The Owner will provide the comparison of backfill results to the acceptability criteria to NYSDEC and

USEPA for review prior to accepting the material onsite. The Owner will consider the material approved if it meets all of the requirements as discussed above.

5. No additional borrow source samples will be required once the source is approved. The Army will monitor the incoming loads of backfill to document that the fill is free of extraneous debris or solid waste.

B. Natural material from approved off-site sources, free from trash, debris, deleterious materials, snow, or ice.

C. Material free of hazardous wastes, hazardous substances, meeting the site-specific cleanup goals for metals at SEAD-4 and SEAD-38.

D. Materials classified in ASTM D 2487 as GW, GP, GC, SW, SP, and SC that are free from roots and other organic matter, trash, debris, frozen materials, and stone larger than 2 inch in any dimension.

PART 3 EXECUTION

3.01 GENERAL BACKFILLING REQUIREMENTS

A. Verify that fill materials are acceptable.

B. Confirm with the Engineer that confirmatory samples have been analyzed and are acceptable prior to backfilling.

C. Backfill the excavation areas that cannot be graded to promote positive drainage at SEAD-4 and SEAD-38.

D. Repair or replace settlement in the finished work.

E. Place and compact fill materials in continuous layers to meet appropriate requirements of Section 02228 - Compaction.

F. Remove surplus backfill materials from site and/or place in an accepted area.

3.02 TESTING

A. Collect and analyze one sample prior to acceptance as the borrow source. The sample will be analyzed for VOCs (EPA Method SW846 8260B), SVOCs (EPA Method SW846 8270C), Metals (EPA Method SW846 6010B including Mercury 7471), and classification of soil (ASTM D-2487).

END OF SECTION

SECTION 02228

COMPACTION

PART 1 GENERAL

1.01 DESCRIPTION

A. Areas that cannot be graded to promote positive drainage will be backfilled and graded. The compaction procedures for backfilled areas outlined in this specification will be followed.

B. Work included in this section:

1. Placement and compaction of imported backfill materials and relocated site materials.

C. Related Sections:

1. Section 02219 - Contaminated Materials Excavation and Disposal

2. Section 02223 - Backfilling

3. Section 02990 - Finish Grading and Seeding

1.02 SUBMITTALS

None.

1.03 REFERENCES

None.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.01 COMPACTION

A. Backfill soil shall be placed in maximum of 2 foot loose lifts prior to compaction. Each lift shall be compacted prior to placing the next lift. Compaction shall be achieved by three passes of a dozer or other equipment with suitable ground pressure.

3.02 QUALITY ASSURANCE/QUALITY CONTROL

A. The Contractor shall ensure that the backfilled areas have been compacted to meet final grades prior to demobilizing from the site.

3.03 PROTECTION

A. Do not compact a layer of fill on snow, ice, or frozen soil. Remove unsatisfactory materials prior to compacting fill.

END OF SECTION

SECTION 02370

EROSION CONTROL

PART 1 GENERAL

1.01 DESCRIPTION

The work specified in this section consists of the labor, equipment, tools, materials, and services needed to accomplish erosion control measures during and following construction as described herein, shown on the Contract Drawings.

A. Work included in this section:

1. Installation of temporary erosion control measures.

2. Controlling erosion from contaminated soil stockpiles, if any.

3. Inspection of erosion control measures during and after significant rainfall.

4. Repairing failed erosion control measures.

5. Removing and disposing of sediment deposits in a manner that does not result in additional erosion or pollution.

6. Removal of temporary erosion control measures once construction and permanent stabilization is complete.

B. Related Sections:

1. Section 02219 – Contaminated Materials Excavation and Disposal

2. Section 02223 - Backfilling

3. Section 02228 - Compaction

4. Section 02990 - Finish Grading and Seeding

1.02 PERFORMANCE REQUIREMENTS

A. Observe government policy established by United States Environmental Protection Agency (USEPA).

B. Conform to all erosion and sedimentation control measures established by the State of New York.

C. Temporary erosion and sediment control measures shall be installed as one of the first steps in construction, shall be maintained throughout the construction period, and shall not be removed until permanent cover is completely established and stabilized, with Engineer's approval.

1.03 SUBMITTALS

A. Product Data. Provide product data for each component to be used in erosion and sediment control.

PART 2 PRODUCTS

2.01 MATERIALS

A. Straw Bales

1. Shall be securely tied.

B. Silt Fence

1. Mirafi "Envirofence" or equivalent.

2. Rexius Ecoberm or equivalent.

C. Stakes and Fasteners

1. Shall be two rebar or two wood stakes for each hay/straw bale.

D. Oil Sorbents

1. Booms – New Pig Spaghetti Boom or equal shall be used.

2. Socks – New Pig Skimmer Socks or equal shall be used.

2.02 METHODS

A. Sediment Barriers - Sediment barriers shall be straw bales, stone, silt fences, ecoberms, or other approved materials that will prevent migration of silts and sediment to different areas.

B. Temporary Diversion Ditches – Temporary diversion ditches shall be installed by the Contractor to control surface water and minimize construction water.

C. Oil Sorbent Booms/Socks - Oil sorbent booms/socks shall be installed to contain oil sheens emanating from waste materials, if any. Keep a supply of clean oil sorbent booms/socks on-site at all times and install within one hour after discovery of a sheen.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. It is the Contractor's responsibility to implement and maintain erosion and sedimentation control measures to effectively minimize erosion and sedimentation.

B. Earthmoving activities shall be conducted in such a manner as to minimize erosion and sedimentation.

C. Install erosion and sedimentation control measures in accordance with manufacturer recommendations and where designated on the Drawings.

D. Erosion and sedimentation control measures shall be inspected by the Engineer and Contractor daily. Repairs shall be made as soon as practical.

E. Employ, construct, and maintain all temporary erosion and sediment control measures in accordance with *New York Standards and Specifications for Erosion and Sediment Control.*

3.02 SPECIAL CONDITIONS

A. Prohibited construction practices include, but are not limited to, the following:

1. Dumping of spoil material into any stream corridor, any wetlands, any surface waters, at unspecified locations, or locations not expressly approved by Engineer.

2. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, any wetlands, or any surface waters.

3. Pumping of silt-laden water from trenches or other excavations into any surface waters, any stream corridors or wetlands, or locations not expressly approved by Engineer.

4. Disposal of trees, brush, and other debris in stream corridors, wetlands, surface water, unspecified locations, or locations not expressly approved by Engineer.

5. Permanent or unspecified alteration of the flow line of any stream.

3.03 ADJUSTMENT OF PRACTICES

A. If the planned measures do not result in effective control of erosion and sediment runoff to the satisfaction of the regulatory agencies having jurisdiction over the project, the Contractor shall immediately adjust his program and/or institute additional measures so as to eliminate excessive erosion and sediment-runoff.

B. If the Contractor fails or refuses to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor.

END OF SECTION

SECTION 02990

FINISH GRADING AND SEEDING

PART 1 GENERAL

1.01 SUMMARY

A. The work specified herein includes the material, equipment, labor, and services necessary to final grade and seed and repair disturbed and/or damaged areas.

B. Related Sections:

1. Section 02370 - Erosion Control

1.02 SUBMITTALS

A. Materials and Products:

1. Grass Seed Vendors Certificate: Seed vendor's certified statement for the grass seed mixture required, stating common name, percentage by weight, and percentages of purity and germination.

2. Hydroseeding: Data concerning hydroseeding equipment (if used) including material application rates.

B. Installer - Name of subcontractors (if used) and Qualification Statements.

C. Manufacturer's Certification - Certify that products meet or exceed specified requirements.

1.03 REFERENCES

None.

1.04 QUALITY ASSURANCE

A. Label seed in accordance with USDA Rules and Regulations under the Federal Seed Act and applicable State seed laws. Furnish seed in sealed bags or containers bearing the date of the last germination which shall be less than six (6) months prior to commencement of planting operations. Inspect seeding material upon arrival at the job site. Remove unacceptable material from the job site. Seed shall be from same or previous year's crop. Each variety of seed shall have a purity of more than 85%, a percentage of germination more than 90%, a weed content of less than 1%, and contain no noxious weeds.

PART 2 PRODUCTS

2.01 GRASS SEED

A. A seed mixture beneficial to wildlife, as recommended by the US Fish and Wildlife Service, consisting of the following proportions or equal approved by the Owner:

Common Name	Species	Pounds per Acre
White Clover	*Trifolium repens*	5
Lancer perennial pea	*Lathyrus latifolius*	5
Perennial ryegrass	*Lolium perenne*	10
Timothy grass	*Phleum pratense*	10
Orchard grass	*Dactylis glomerata*	10
Smooth bromegrass	*Bromus intermis*	10

PART 3 EXECUTION

3.01 APPLICATION PROCEDURES

A. Excavation areas and disturbed surfaces outside the excavation limits that have been disturbed or damaged during completion of the work shall be final graded to promote positive drainage. Any areas that were vegetated prior to the remedial action shall be reseeded.

3.02 SEEDING

A. Apply seed mixture uniformly on the prepared surface with a hand or mechanical spreader. Lightly rake and roll seed into the surface.

B. Apply hydroseed (optional) uniformly on the prepared surface.

3.03 WARRANTY

A. One year warranty period for seed from the date of substantial completion or correction period. Maintain as necessary including repairs, re-seeding, so that an acceptable grass stand is established. The Engineer will provide approval and direction during the one-year warranty period.

END OF SECTION

APPENDIX C

RESPONSE TO COMMENTS

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

Subject: Draft Remedial Design Work Plan and Design Report for SEAD-4 & SEAD-38
Seneca Army Depot
Romulus, New York

Comments Dated: September 30, 2008

Date of Comment Response: October 21, 2008

Army's Response to Comments

SPECIFIC COMMENTS

Comment 1: Figure 8-1 data should be replaced with actual start and finish dates.

Response 1: The schedule has been updated.

Army's Response to Comments from the United States Environmental Protection Agency

Subject: Draft Remedial Design Work Plan and Design Report for SEAD-4 & SEAD-38
Seneca Army Depot
Romulus, New York

Comments Dated: October 3, 2008

Date of Comment Response: October 16, 2008

Army's Response to Comments

GENERAL COMMENTS

Comment 1: It does not appear that the boundaries of the excavations were defined prior to this remedial design. The Report should be revised to include perimeter confirmation samples from those excavations deeper than one foot at a minimum. This concern is more pressing due to the different estimates presented at the reference documents preceding this action (See also specific comment 3 below). Further, the adequacy of the single, unique, grab sample location to be used for confirmation of each 50 foot by 50 foot area needs to be presented as it is unclear how one such sample with truly characterize the area given the particulate nature of metals. It appears that multi-increment samples would be more appropriate to characterize this area. Revise the Report to address these concerns.

Response 1: The signed ROD documents that the horizontal extent of excavation is bounded; perimeter samples will not be collected. The ROD does indicate that the vertical extent of the excavation will be confirmed. The Army will collect sidewall samples from areas that are excavated to a depth greater than 2 feet below the adjacent ground surface. The sidewall samples will be collected at a minimum of once every 50 linear feet. If a sidewall sample fails to meet the cleanup goals, additional soil in that area will be removed and a new confirmatory sample will be collected.

Drawing C-3 of the Excavation Plan has been revised to show the anticipated sidewall sample locations. The drawing shows that the depths of excavation in certain areas have been modified. The current excavation plan focuses the deeper excavations on the historic boring locations corresponding to chromium or lead concentrations exceeding the cleanup goals at depth. Specifically, Area 1B was reduced and two 25-feet by 25-feet boxes are included instead; Area 2A was reduced in size and replaced with two 25-feet by 25-feet boxes; and Area 3 was reduced and replaced by one 25-feet by 25-feet box.

After the excavation of a 25 foot by 25 foot box, confirmatory samples will be collected from the bottom of the excavation. Sidewall samples will be collected at a depth halfway between the base of the excavation and the adjacent ground surface, or at a location biased based on visual or olfactory observations. If confirmatory sample data fails to meet the cleanup goals, additional soil will be

excavated and a new confirmatory sample will be collected. This cycle may repeat until data demonstrates that the soil remaining in the excavated area meets the cleanup goals.

Floor samples will be collected as grab samples from the center of the 50 by 50 foot grid, in a manner consistent with previous sampling events at similar projects conducted at the Depot.

Figures 2-1 and Figures 4-1 through 4-4 have been updated to reflect these changes.

Comment 2: Sections 3.3.2 and 3.3.3 discuss the use of a hauling route and stockpile/staging area shown on Figure C-3. Two hauling routes and stockpile/staging areas are shown on Figure C-3. Revise the Report to either discuss both areas on the Report or remove one from Figure C-3.

Response 2: Drawing C-3 has been revised. The only staging area will be located in the location of former Building T-30.

SPECIFIC COMMENTS

Comment 1: Section 1.3 Previous Work, Page 1-4. According to this section: "In January 2008, floors and trenches within Buildings 2073, 2076, 2078, 2084, and 2085 were vacuumed and broom cleaned. The recovered debris was stabilized and disposed at an approved Subtitle D landfill." However, Section 1.02.B.7 of specification 01010 (page 01010-1) requires the Contractor to "Remove debris and clean Buildings 2073, 2076, 2078, 2084, and 2085." If this work was previously completed, it is not clear why these buildings need to be cleaned again. Provide the basis for requiring additional cleaning of these buildings or further explanation.

Response 1: The text in Specification 01010 has been revised to remove reference to cleaning buildings since that work has been previously completed.

Comment 2: Section 2.2 Summary of Remedial Design, Page 2-3: The paragraph after the bullets contains a sentence that is incorrect. The second sentence should read "Because this remedy will result in no hazardous substances…"

Response 2: The sentence has been corrected and now reads "Because this remedy will result in no hazardous substances, pollutants, or contaminants remaining on-site consistent with levels that allow for unlimited use and unrestricted exposure, a statutory five-year review is not required."

Comment 3: Section 3.3.2 Excavation of Soil, Ditch Soil and Lagoon Soil, Page 3-7: The third paragraph in this section states: "The approximate excavation volumes for SEAD-4/38 are 16,200 cy of soil, ditch soil, and lagoon soil. The actual final volume of soil, ditch soil, and lagoon soil excavated will

be contingent on the confirmatory soil sample results." This volume of soil does not match the estimated volume stated in Appendix C of the Report, Figure A (Approximate Area of Excavation for Criteria-A Cr>60, Pb>167). The excavation volume estimated on Figure A is 25,049 cubic yards (cy). Figure A also shows excavation across larger areas at each excavation site than shown on the figures in the Work Plan and Design Report, and additional excavation areas such as the natural drainage channel west of the Staging and Stockpile Area, the area around Building 2073, the drainage ditch outfall at the north end of the 4/38 area, and much wider and deeper (as deep as 8 feet) excavation, than shown in the Work Plan and Design Report figures (e.g., Figure C-3, SEAD-4 and SEAD-38 Excavation Plan). The Work Plan apparently revised assumptions about the extent of excavation required, but no explanations for the differences are provided. Revise Section 3.3.2 to provide the basis for changed excavation volumes, or revise the excavation volumes to be consistent.

Response 3: It is acknowledged that the limits of the excavation area presented in the RDWP includes modifications from the limits presented in the ROD. This is a result of two factors. First, the area delineated in the ROD extended west of the railroad tracks. The excavation area has been revised so that the limits are bound on the eastern side of the railroad tracks, since contaminated material from the pond could not have been pushed past the railroad tracks. The presence of the tracks within the excavation area was only noticed after staking out the excavation areas. .

The second change that impacted the estimated volume is the modification of areas excavated to a depth greater than 1-foot, as discussed in response to General Comment 1. The original excavation area was based on conservative assumptions and limited subsurface soil data; the area presented in the ROD was bounded using clean samples at significant depths. A limited number of subsurface soil samples were collected during the RI, which resulted in a significant distance between clean borings. As stated above, the Army will excavate soil in a 25-foot square box around the locations of the impacted soil borings and will collect confirmatory samples to confirm that chromium and lead concentrations in the soil remaining at the site is below the cleanup goals. The Army will excavate additional soil, as necessary, if confirmatory soil data indicates that impacted soil remains at the site. This excavation method presents a potential lower volume calculation, while including a process (e.g., confirmatory sampling) that confirms and documents that contamination in the area is removed. The actual volume may be in line with the original volume estimates.