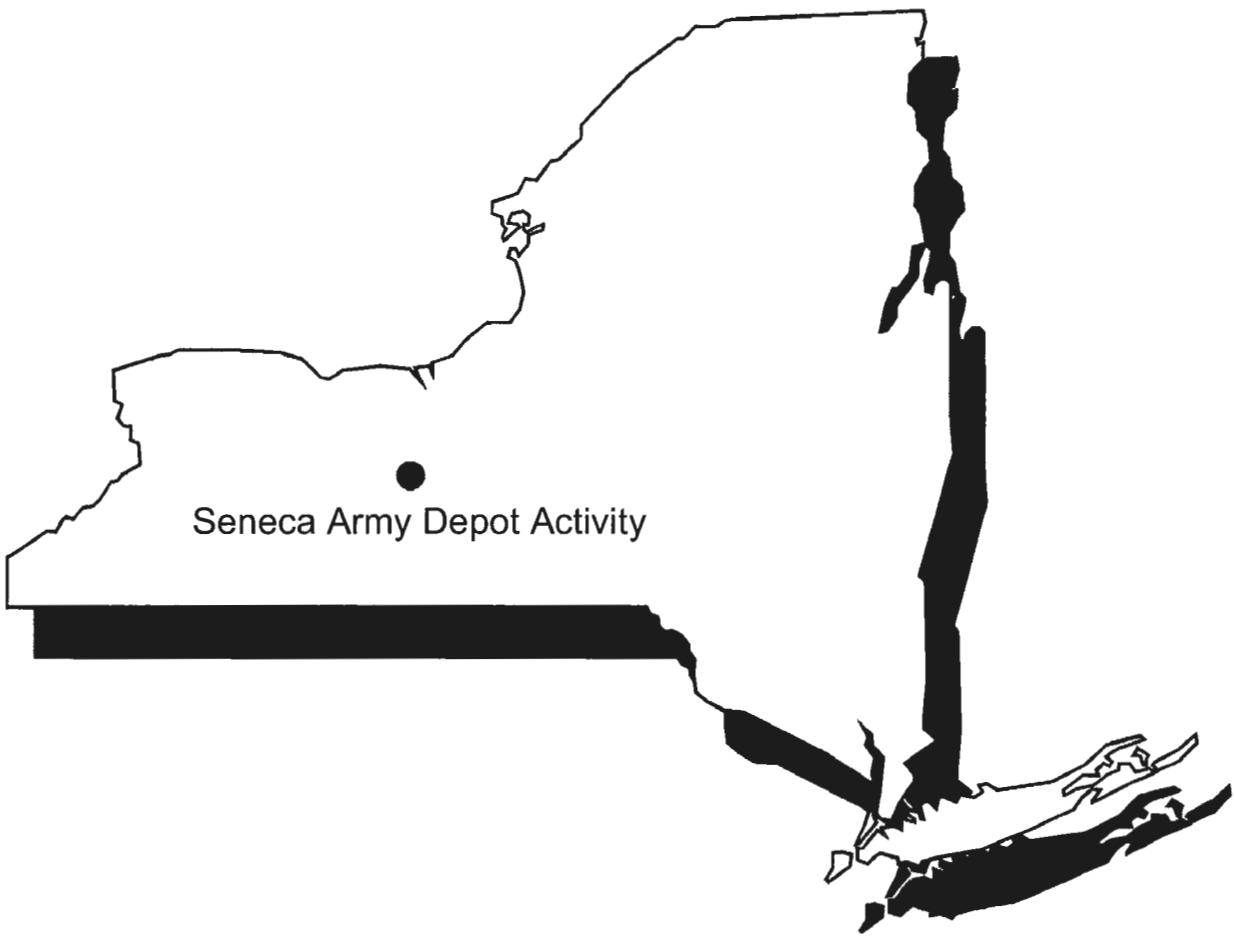
US Army, Engineering & Support Center
Huntsville, AL

289

Seneca Army Depot Activity
Romulus, NY



DRAFT
REMEDIAL ACTION OPERATIONS PLAN
FORMER SLUDGE WASTE PILES (SEAD-5)
SENECA ARMY DEPOT ACTIVITY

Contract No. W912DY-08-D-0003
Task Order No. 0006
EPA Site ID# NY0213820830
NY Site ID# 8-50-006

PARSONS
May 2009

DRAFT

REMEDIAL ACTION OPERATIONS PLAN

FORMER SLUDGE WASTE PILES (SEAD-5)
SENECA ARMY DEPOT ACTIVITY, ROMULUS, NEW YORK

Prepared for:

U.S. ARMY CORPS OF ENGINEERS, ENGINEERING AND SUPPORT CENTER

HUNTSVILLE, ALABAMA

and

SENECA ARMY DEPOT ACTIVITY

ROMULUS, NEW YORK

Prepared by:

PARSONS

150 Federal Street

Boston, MA 02110

Contract Number W912DY-08-D-0003
Task Order No. 0006
EPA Site ID# NY0213820830
NY Site ID# 8-50-006

June 2009

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Document Objectives

This remedial action operations plan (RAOP) describes and documents the U.S. Army's (Army's) planned approach for performing the selected remedial action at SEAD-5, the former Sewage Sludge Waste Piles Site within the former Seneca Army Depot Activity in Seneca County New York. Prior investigations at this location indicate that elevated levels of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) have been found in shallow soils that remain at SEAD-5 at levels in excess of State and Federal guidance levels. The results of a human health risk assessment performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements and guidance indicates that this soil may represent a potential continuing risk to future commercial and industrial receptors of the property. In response to the identified contamination and the continuing risk, the Army and the U.S. Environmental Protection Agency (EPA) have selected a remedial action and identified land use controls (LUCs) that are needed to safeguard human receptors that may use this land in the future. The selected remedial action involves the construction of a soil cover over the areas where cPAH contamination remains and where the risk to human health is located. In addition, the selected LUCs will be implemented, monitored, maintained, and periodically reported on to ensure that future uses of the site are consistent with allowable exposures. The selected remedial action and the essential LUCs are documented in the *Record of Decision (ROD) for Five Former Solid Waste Management Units (SWMUs) SEAD-1, Hazardous Waste Container Storage Facility; SEAD-2, PCB Transformer Storage Facility; SEAD-5, Sewage Sludge Waste Piles; SEAD-24, Abandoned Powder Burn Pit; and, SEAD-48, Row E0800 Pitchblende Storage Igloos, Seneca Army Depot Activity, Romulus, New York* (Parsons 2009). The New York State Department of Environmental Conservation (NYSDEC) concurred with the selected remedy and the LUCs as the authorized representative of the State of New York.

The engineered cover for SEAD-5 will consist of three layers. The first layer will be comprised of residual stockpiled soils that were generated during the Time Critical Removal Action (TCRA) conducted at SEAD-59 and SEAD-71 in the fall of 2000. This soil is not a characteristic hazardous waste as per the analytical analysis, and has been shown to be suitable for use as cover material within a commercial and industrial environment, based on the results of a CERCLA-compliant risk assessment that has been completed for the stockpiled soil. Following placement and grading of the residual stockpiled soil, a demarcation fabric will be placed above the spread material to delineate the lateral extent of the covered contaminated soil. Finally, a minimum 12-inch thick cover of clean backfill material that meets the New York's Restricted Commercial Use soil cleanup objectives (SCOs) will then be placed over the interred soil, the stockpile soil cover layer, and the demarcation fabric and graded to promote positive drainage away for the covered site. In addition to the construction of the engineered cover over the impacted soil, LUCs will be implemented, monitored, maintained, and periodically reported on at SEAD-5 to further safeguard human health and the environment. The selected LUCs are identified below:

- Prohibit use of the land within SEAD-5 for residential housing, elementary and secondary schools, childcare facilities, and playgrounds until unrestricted use and unlimited exposure criteria are attained;
- Prohibit access to, or use of, the groundwater underlying SEAD-5 until groundwater cleanup standards are achieved; and
- Prohibit unauthorized excavation or other activities at SEAD-5 that could compromise the integrity of the engineered cover placed over the interred, contaminated soil.

This RAOP provides guidance and identifies the steps that will be initiated and completed during this remedial action. The proposed remedial action will be conducted under the oversight of the EPA and the NYSDEC in accordance with the requirements of CERCLA and the Federal Facility Agreement (FFA) that has been entered into by the Army, the EPA, and the NYSDEC. Once this action is completed, and the LUCs are implemented, this site will be suitable for transfer to third-party re-users for approved commercial or industrial activities.

This document has been prepared by Parsons Infrastructure & Technology Group Inc. (Parsons) on behalf of the U.S. Army Corp of Engineers (USACE) and the Army's Base Realignment and Closure (BRAC) Office under Contract No.: W912DY-08-D-0003, Task Order No. 0006.

1.2 Background

SEDA previously occupied approximately 10,600 acres of land located in the Towns of Romulus and Varick in Seneca County, 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 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 **Figure 1-1**. SEDA is located in an uplands area, which forms a divide that separates two of New York's Finger Lakes; Cayuga Lake on the east and Seneca Lake on the west. The former Depot is partially 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.

SEDA's historic military mission included receipt, storage, distribution, maintenance, and demilitarization of conventional ammunition, explosives, and special weapons. In 1995, SEDA was designated for closure under the Department of Defense's (DoD's) BRAC process. With SEDA's inclusion on the BRAC list, the Army's emphasis expanded from expediting necessary investigations and remedial actions at prioritized solid waste management units (SWMUs) to including the release of non-affected portions of the Depot to the surrounding community for beneficial reuses (i.e., industrial, municipal, and residential). Since the closure of SEDA, more than 8,000 acres have been released to the community. An additional 270 acres of land have been transferred to the U.S. Coast Guard for continued operation of a LORAN Station.

SEAD-5 Description

SEAD 5 is located in the east-central portion of SEDA, approximately 3,000 feet west-southwest of the Depot's main entrance off State Route 9 and encompasses approximately 3.1 acres. SEAD-5 was used to stockpile sewage sludge generated from two on-site wastewater treatment plants (WWTP) between 1980 and through June 1992. The sludge was removed from the WWTP drying beds and transported to SEAD-5 at two month intervals. SEAD 5 was also reportedly used as part of the Depot's public works storage and staging area for heavy equipment, materials, and supplies.

The northern boundary of SEAD-5 is defined by an east-west oriented, unnamed dirt road that runs from the intersection of South Avenue and Administration Avenue in the Depot's former administration area (east of SEAD-5) towards SEAD-16 (west of SEAD-5) and the former location of Building 311. SEAD-59 is comprised of a small wooded area to the west and a grassy area to the south which abuts the western boundary of SEAD-5. Building 130 and an inactive aboveground storage tank are located in the area north of SEAD-5. SEAD-71 is located directly beyond these buildings to the north and northeast.

Approximately 5,000 cubic yards (cy) of stockpiled soils generated during the TCRA for SEAD-59 and SEAD-71 is currently stage within, and at locations in close proximity to SEAD-5. The approximate location of the soil stockpiles in relation to SEAD-5 are shown on **Figure 1-2.**

The topography surrounding SEAD 5 suggests a planned man-made variable terrain. An intermittent drainage ditch originates at the northwestern corner of SEAD 5 (south of the unnamed dirt road) and slopes to the west towards SEAD 59. This ditch intersects a large drainage ditch running north-south along the western boundary of SEAD 59. The terrain south of SEAD-5 remains relatively flat and grassy, interrupted by only an intermittent east-west trending drainage ditch located approximately 250 feet south of the Area of Concern (AOC).

1.2.1 Future Land Use

The Seneca County Board of Supervisors established the Seneca Army Depot Local Redevelopment Authority (LRA) in October 1995 to prepare a plan for redevelopment of the SEDA property. The Land Reuse Plan was adopted and approved by the LRA and the Seneca County Board of Supervisors in 1996 which designated parcels of land within the Depot for reuse into eight categories: Planned Industrial/Office Development, Warehousing, Prison, Conservation/Recreation, Institutional, Housing, Airfield/Special Events, and Federal to Federal Transfer. In 2005, the Seneca County Industrial Development Agency (SCIDA) revised the planned future use of property within the former Depot and added Institutional Training, Residential/Resort, Green Energy, Development Reserve, Training Area, and Utility uses. The planned future land use for SEAD-5 was not impacted by this addition and is located in the Planned Industrial/Office Development (PID) or Warehousing area as shown on **Figure 1-3**.

1.2.2 Geological Setting

SEDA is located within a distinct unit of glacial till that covers the entire area between the western shore of Lake Cayuga and the eastern shore of Lake Seneca. The till is consistent across the entire Depot

although it ranges in thickness from less than 2 feet to as much as 15 feet, with the average being a few feet thick. Top soil and/or fill consisting of brick and/or concrete fragments were generally encountered above the till at SEAD-5. The thickness of the till varied from approximately 2 to 9 feet thick at SEAD-5. The till is generally characterized by brown to gray-brown silt, clay and fine sand with few fine to coarse gravel-sized inclusions of weathered shale. The glacial tills underlying SEDA has a high percentage of silt and clay with trace amounts of fine gravel. A zone of gray weathered shale of variable thickness is present below the till in almost all locations at SEDA.

1.2.3 Hydrogeology

The saturated thickness of the till/weathered shale overburden aquifer at SEDA ranges between 1 and 8.5 feet below ground surface (bgs). The aquifer's thickness appears to be influenced by the hydrologic cycle based on review of available data. The variations of the water table elevations at SEDA are attributed to the seasonal phenomenon since some monitoring wells dry up completely during certain times of the year. It has been observed that the overburden aquifer is thickest during the spring recharge months, thinnest during the summer and early fall, and during late fall and winter the saturated thickness of the aquifer increases. Depth to groundwater, which varies by season and location, ranges from 1 foot to 10 feet bgs.

Historical groundwater data for SEAD-5 indicates that groundwater flow is towards the southwest. Groundwater elevations range from a high of approximately 2.7 feet bgs (MW5-2) during the winter months, to a low of approximately 7.2 feet bgs (MW5-1) during the summer months.

Surface water flow from SEAD-5 is primarily to the west. An intermittent drainage ditch originates at the northwestern corner of SEAD 5 (south of the unnamed dirt road) and slopes to the west towards SEAD 59. The topography of SEAD-5 slopes gently to the west and runoff not channeled to the drainage ditch flows into the grassy field located south of the AOC.

1.2.4 Previous Investigations and Activities

1.2.4.1 Sludge Characterization – 1985

Samples of the sewage sludge were collected by the State of New York (NY) in February of 1985, and separately by the Army in October, November, and December of 1985. NY State analyzed the sludge samples for select metals, classical parameters (i.e., ammonia – nitrogen, nitrate – nitrogen, nitrite – nitrogen, total and volatile solids, total Kjeldahl nitrogen, total phosphorous), polychlorinated biphenyls (PCBs), and extractable volatile and total organic halogens. The Army's analyses were limited to percent solids, total organic halogens, and copper. Both the Army's and NY State's data indicated that elevated concentrations of copper were present in the sewage sludge. The sludge was subsequently removed from the AOC and disposed off-site.

1.2.4.2 Sludge Characterization and Removal – 1992

Samples were taken from the sewage sludge piles located on the Site in January 1992 to characterize the sludge for off-site disposal at the Seneca Meadows Municipal Landfill. The samples were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) analyses for metals, organic

extractable pesticides, volatile organic compounds (VOCs), and organic extractable base neutrals and acids. Cadmium was the only constituent detected in either of the samples at concentrations above the analytical detection limits. In June of 1992, approximately 560 tons of sewage sludge from SEAD-5 was removed and disposed at an off-site landfill.

1.2.4.3 Expanded Site Inspection

An Expanded Site Inspection (ESI) was performed at SEAD-5 in 1994 and the results were documented in the *Draft Final ESI Report, Eight Moderately Low Priority AOCs, SEADs 5,9,12 (A and B), (43, 56, 69) 44 (A and B), 50, 58 and 59* (Parsons 1995). The ESI consisted of: geophysical survey; test pits operations, installation of groundwater monitoring wells, and analysis of subsurface soils, groundwater, surface water, and sediment. Samples were analyzed for Target Compound List (TCL) VOCs, semi-volatile organic compounds (SVOCs), and pesticides/PCBs, and Target Analyte List (TAL) metals, cyanide, and nitrates.

Five test pits were advanced through five existing sewage sludge piles located at SEAD-5 at the time of the ESI. In each case, the test pit bisected the entire pile allowing for a complete visual inspection of the material. One soil/sludge sample was collected from each test pit. Three groundwater monitoring wells (MW5-1, MW5-2, and MW5-3) were installed at the AOC and groundwater samples were collected from each well. The soil and groundwater samples were analyzed for the parameters identified above.

Concentrations detected in the soil/sludge samples from the ESI were compared to the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046. VOCs were not detected in the soil samples from the test pits. Six cPAHs, [i.e., benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and dibenz(a,h)anthracene] were detected at concentrations above their respective TAGM values in one or more of the samples analyzed. Concentrations of 4-chloroaniline and several inorganic compounds (antimony, calcium, copper, lead, magnesium, mercury, silver, sodium, zinc, and cyanide) exceeded their respective TAGM values in at least one sample. The Army subsequently excavated the sludge piles and disposed of the material at an off-site landfill. Since the sludge piles were removed from SEAD-5 sometime in 1992, analytical results from the ESI soil/sludge samples are not representative of actual site conditions.

No VOCs, SVOCs, or pesticides/PCBs were detected in the three groundwater samples. Eighteen metals were detected in the groundwater samples. Iron, manganese, and sodium were the only metals detected in groundwater at concentrations above their respective NYSDEC Ambient Water Quality (AWQ) Class GA Standards. The maximum concentrations found for 15 of the metals were observed in the sample collected from MW5-3, but these are believed to be associated with the elevated turbidity level (greater than 100 NTUs) observed in this sample.

1.2.4.4 SEAD-5 Time Critical Removal Action

A TCRA was performed at SEAD-5 between 2003 and 2006 by Weston Solutions, Inc. (Weston) and the results were documented in the *Final Completion Removal Report, TCRA, Industrial Waste Site (Sludge* Piles) - *SEAD-5, Seneca Army Depot Activity, Seneca County, Romulus, New York* (Weston

2006). The SEAD-5 TCRA goal was to reduce concentrations of select metals (e.g., copper, mercury, and zinc) and select cPAHs [benzo(a)pyrene toxicity equivalent (BTE)[1] level] found in the shallow soil at the AOC. The cleanup goals established for the TCRA were that the average concentrations reported for metals would approach TAGM values, and the average level of cPAHs would achieve a BTE level of 10 mg/Kg or less.

A total of approximately 1,740 cy (i.e., 2,313 tons) of soil was excavated during three excavation phases conducted at SEAD-5 between August 2003 and May 2005. Soil excavations continued (e.g., second and third phases) since confirmatory sampling results indicated that soil contamination still remained at the AOC. All excavated soil removed during the TCRA at SEAD-5 was disposed off-site at Waste Management landfills located in Chaffee, Bergen, and Fairport New York as non-hazardous soil.

Approximately 900 cy of soil was excavated during the Phase I activities conducted in August 2003 at SEAD-5 Excavations were performed at five individual sites within SEAD-5 where visible evidence of the historic sludge stockpiles existed and the excavation depths for each area was limited to 6 inches bgs, with a depth tolerance of plus or minus (+/-) 2 inches. Confirmatory grab samples were collected from the base and perimeter of the excavations and analyzed for 17 PAHs and selected metals.

The Phase I confirmatory sampling results were compared to TAGM values. One or more of the PAHs compounds and metals were found in all of the confirmatory samples. The site-wide average concentrations detected for benzo(a)anthracene, chrysene, benzo(a)pyrene, dibenzo(a,h)anthracene, copper, mercury, silver, and zinc exceeded their respective TAGM values. Based on the initial findings, additional soil samples were collected in October 2003 to further delineate the extent of the elevated contaminant concentrations detected in the soils.

Weston remobilized to SEAD-5 in February 2005 to begin the Phase II excavations which involved expanding the limits of the five AOC previously excavated during Phase I. The average excavation depth was 12 inches bgs, with a depth tolerance of +/- 2 inches. Approximately 640 cy (i.e., 898 tons) of soil was excavated and transported off-site for disposal as non-hazardous soil. Fifty (50) confirmatory grab samples were collected from the excavations and analyzed for selected PAHs and metals, similar to what was done during the Phase I work.

Phase II confirmatory sample results indicated that individual cPAH compounds were still present in the shallow soils at concentrations above their respective guidance levels but that the average BTE concentration remaining at the excavation area was 2 mg/Kg below the BTE cleanup goal of 10 mg/Kg. In regards to the metals, mercury was still present in individual samples at concentrations above its TAGM value. The average concentration detected for mercury and copper across the AOC

[1] The Benzo(a)pyrene Toxicity Equivalent (BTE) was a screening tool previously recommended by the NYSDEC as a screening tool that was applied to PAH concentrations at sites. A value of 10 mg/Kg (ppm) of BTE was established by the Army as a SEAD 5 clean up goal prior to the TCRA. BTE is computed by summing the concentrations of benzo(a)pyrene and dibenzo(a,h)anthracene at full value; the concentrations of benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene at one-tenth (0.1 times) their reported value; and, benzo(k)fluoranthene and chrysene at one-one hundredth (0.01 times) their reported value.

still exceeded their respective TAGM values. Although the cleanup goals for cPAHs had been achieved, excavations continued to remove the metal contaminated soil.

Phase III activities began in May 2005. Approximately 200 cy (i.e., 324 tons) of soil was removed from six AOC at SEAD-5. The maximum excavation depths were 12 inches bgs, with a depth tolerance of +/- 2 inches. The excavated soil was transported off-site for disposal as non-hazardous soil. A total of 17 confirmatory grab samples were collected from the excavations and analyzed for PAHs and metals. The Phase III results continued to indicate that there were still some areas where concentrations of select PAH compounds and metals exceeded their respective TAGM values, although the average wide concentrations for BTE, copper, mercury, and zinc were below their respective TAGM values.

A review of the Phase III data shows that three of the highest mercury levels were located near or at the southern boundary of the largest excavated area, and at two of these locations the highest BTE concentration were also detected. As a result, 29 soil samples were collected in July 2005 to delineate the extent of the exceedances found in the shallow soils. The approximate sample locations are shown on **Figure 1-4**. Samples collected beyond the excavation boundary were identified as PX-77 through PX-83 and were collected from three depths of 0 to 6 inches bgs, 6 to 12 inches bgs, and 12 to 18 inches bgs. Samples were also collected from four previous sampling locations (FX-63, FX-65, PX-75 and PX-76) within the excavation to assess the concentrations below the surfical soils. These samples were collected from 6 to 12 inches bgs, and 12 to 18 inches bgs. The soil samples were analyzed for PAHs and metals. The results for the delineation sampling conducted in July 2005 are summarized on the tables presented in **Appendix A**.

Another round of delineation sampling was conducted in October 2005 since concentrations of contaminates of concern (COC) found in the July 2005 samples continued to exceed their respective TAGM values. The October 2005 samples (PX-84 through PX-108) were reportedly collected up to 100 feet down gradient from the largest excavation limits and each location was approximately 20 feet apart from each other. The approximate sample locations are shown on **Figure 1-4.** The majority of samples were typically collected from the interval of 0 to 6 inches bgs, and 6 to 12 inches bgs. Six samples were collected from 12 to 18 inches bgs at locations PX-84, PX-89, PX-91, PX-100, PX-104 and PX-108. Three samples were also collected from 18 to 24 inches bgs at three previous sampling locations (PX-75, PX-81 and PX-83).

The October soil samples were also analyzed for PAHs and metals and the results are summarized on the tables included in **Appendix A**. The TCRA was terminated since the results of these additional samples indicated that the overall average concentration found for BTE, copper, mercury and zinc down gradient of the excavation area were still below the TCRA cleanup goals.

1.3 Nature and Extent

Based on the data collected during the various characterization investigations conducted at SEAD-5, the data indicate that impacts to the surficial and shallow soils have occurred at the Site. Despite the removal of approximately 1,740 cy of soil as part of the TCRA conducted at the site, concentrations

of select cPAHs and metals continue to be detected above State and Federal guidance levels for soil, and at concentrations that pose a potential continuing risk to future commercial and industrial occupants of the site. The extent of the contaminated soil still present at SEAD-5 as compared to the New York's Restricted Commercial Use SCOs is shown on **Figure 1-4**.

1.4 Summary of SEAD-59 and SEAD-71 Time Critical Removal Action

The Army conducted a TCRA at SEAD-59 and SEAD-71 between September and November 2002 to remove debris and associated fill materials contaminated with hazardous substances and the results were documented in the *Final Draft Removal Report, SEAD-59 AND 71, TCRA, Seneca Army Depot Activity, Romulus, New York* (ENSR 2002). The SEAD-59 and SEAD-71 TRCA was performed based on the data collected during the ESI (Parsons 1999) and the Phase I Remedial Investigation (Parsons 2002) which indicated that potential risks existed at the AOC due to the presence of miscellaneous unknown debris (e.g. drums, paint cans, and other containers) and elevated levels of PAHs and metals detected in the soil. The objective of the TCRA for both AOC was to eliminate or significantly reduce potential risk to human health and the environment.

At the conclusion of the SEAD-59 and SEAD-71 TCRA approximately 5,428 cy of soil excavated from the AOCs remained in stockpiles placed in close proximity to SEAD-5. Based on sampling and analysis and the results of a human health risk assessment results, the stockpiled soil was found to contain residual levels of hazardous substances including PAHs, cPAHs, and selected metals, but at concentrations that did not pose unacceptable risks to future commercial and industrial occupants of the area. Furthermore, the stockpiled soil was also determined not to be a characteristic hazardous waste. As such, this material was retained by the Army for future use as fill at other sites within commercial and industrial land use areas at the Depot.

1.5 Document Organization

The first section of this report provides an introduction to the RAOP, and includes a site description and a summary of site background conditions. **Section 2** consists of the removal action objectives. **Section 3** presents the removal action elements. **Section 4** presents a Field Sampling Plan (FSP). **Section 5** is the Construction Quality Plan (CQP) and **Section 6** includes the Waste Management Plan. **Section 7** includes the remedial action schedule and the project team organization. References are provided in **Section 8**.

2.0 OBJECTIVES

Parsons was tasked under USACE Contract Number W912DY-08-D-0003, Task Order No. 0006 to perform and complete the SEAD-5 remedial action. The selected remedy for SEAD-5 will limit soil and groundwater as exposure pathways for potential future commercial and industrial receptors. The response action selected in the ROD for SEAD-5 is necessary to protect human health and the environment from actual or threatened releases of hazardous substances into the environment or from actual or threatened releases of pollutants or contaminants, which may present an imminent and substantial endangerment to public health or welfare.

2.1 Remedial Action Objective

The primary objective of the planned remedial action for SEAD-5 is to inter surficial and near-surface soils beneath an engineered cover so to minimize the likelihood of incidental contact with soils that contain residual levels of cPAHs at concentrations that pose potential risks to future commercial and industrial users and occupants of the land. In addition, as part of the overall remedial action, a LUC Remedial Design will be prepared and submitted as a separate component of the overall remedy and will implement LUCs that:

- Prohibit use of land at SEAD-5 for residential housing, elementary and secondary schools, childcare centers, and playgrounds.
- Prohibit access to, or use of, the groundwater until groundwater cleanup standards are achieved.
- Prohibit unauthorized excavation or other activities at SEAD-5 that could compromise the integrity of the engineered cover.

2.2 Summary of Remedial Action

The remedial activities for SEAD-5 addressed in this RAOP are the following:

- Relocate residual stockpiled soil associated with removal actions completed at SEAD-59 and SEAD-71 to SEAD-5 and spread and grade it out over the areas where elevated concentrations of cPAHs remain in the shallow site soils.
- Place colored demarcation fabric over the initial cover material to delineate the extent of the base layer of soil cover placed over the SEAD-5 contaminated soil.
- Place a minimum of 12-inches of backfill that meets New York's Restricted Commercial Use SCOs over the interred soil, the base layer of stockpiled soil cover, and the demarcation fabric.
- Grade the final cover material to promote positive drainage away from the site.
- Submit a Completion Report documenting the work performed and completed subsequent to the completion of the remedial action.

2.3 Basis of Document

The RAOP is based on data and information that is documented and reported in the following reports:

- *Expanded Site Inspection, Eight Moderately Low Priority AOCs, SEADs 5, 9, 12 (A and B), (43, 56, 69), 44 (A and B), 50, 58, and 59*, Draft Final, December 1995.
- *Completion Removal Report, TCRA, Industrial Waste Site (Sludge Piles) - SEAD-5, Seneca Army Depot Activity, Seneca County, Romulus, New York*, Final, February 2006.
- *Record of Decision for Five Former Solid Waste Management Units (SWMUs) SEAD-1, Hazardous Waste Container Storage Facility; SEAD-2, PCB Transformer Storage Facility; SEAD-5, Sewage Sludge Waste Piles; SEAD-24, Abandoned Powder Burn Pit; and, SEAD-48, Row E0800 Pitchblende Storage Igloos, Seneca Army Depot Activity, Romulus, New York*, Final, April 2009.

2.4 Remediation Requirements and Criteria

2.4.1 Applicable and Relevant and Appropriate Requirements (ARARs)

The off-site disposal requirements and criteria include regulatory and disposal facilities permit requirements.

2.4.1.1 Chemical Specific Requirements

Only solid wastes (e.g., personal protective equipment, polyethylene underliners, etc.) are expected to be generated during this remedial action. These wastes will be collected, containerized, and disposed at licensed landfills in accordance with solid waste disposal regulations.

In the unlikely event that regulated, hazardous wastes are identified, and removed from materials that are being used to construct the engineered cover over SEAD-5, it will be recovered, isolated, sampled and analyzed, and when necessary, treated, and then disposed in accordance with prevailing hazardous waste regulations. If suspected hazardous wastes is encountered and handled, necessary personnel and equipment decontamination procedures will be conducted, and decontamination wastes will be captured and segregated pending determination of disposal requirements. Resulting analytical data from samples of suspected hazardous waste or decontamination wastes will be assessed and materials will be disposed at licensed facilities in accordance with prevailing requirements and regulations.

2.4.1.2 Location Specific Requirements

These requirements are associated with protecting existing resources potentially impacted by site remediation activities.

Based on information obtained from the Unites States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), wetlands are not present within the bounds and/or vicinity of SEAD-5.

Floodplain information was reviewed from the Federal Emergency Management Agency (FEMA) confirming that SEAD-5 is not within the floodplain of a 100-year or 500-year flood. Flood Insurance Rate Map 01-06 shows that the entire Depot is outside of the 100-year floodplain.

USFWS indicated that no federally listed or proposed endangered or threatened species under their jurisdiction are known to exist in the area of SEAD-5. The NYSDEC Natural Heritage Program Biological and Conservation Data System identified no known species of special concern living within the AOC property.

2.4.1.3 Action Specific Requirements

Backfill used as the final component of the engineered cover must be chemically characterized and the results of the analyses must be compared to the State of New York's Restricted Commercial Use SCOs. If all analytical results are less than or equal to the New York's Restricted Commercial SCOs listed in Title 6 New York Code of Rules and Regulations (NYCRR), Part 375-6.8(b) then the backfill is suitable for use as the final cover material. Analytical results must be provided to and approved by the NYSDEC and the EPA.

2.4.2 Notification Requirements and Status

No state and local notification requirements have been identified that will need to be met other than SEDA security procedures.

2.4.3 Access Needs during Remediation

Access will be obtained from SEDA in order for the remediation work to be completed at SEAD-5 for Parsons and the subcontractor.

3.0 REMEDIAL ACTION ELEMENTS

This section provides a summary of the elements that comprise the RAOP. Performance of the planned remedial action at SEAD-5 will require implementation and completion of discrete tasks along a course that is generally sequential. Frequently, work tasks will be interlocked and overlapping, but generally the required work will follow a path that includes site preparation, site construction, verification of construction completion, site restoration, site demobilization, post completion actions, and documenting the results of the of the action. This document provides details pertinent to the planning for the action. Details of subsequent actions listed are provided below.

3.1 Site Preparation

Site preparation will be required prior to the commencement of construction activities at SEAD-5. Site preparation activities are listed below and are discussed in more detail below:

- Site Health and Safety;
- Site Control and Security Requirements;
- Mobilization;
- Support and Staging Areas;
- Clearing and Grubbing Requirements;
- Identification of Obstructions and Utilities;
- Erosion and Sediment Controls;
- Site Survey (Pre and Post Excavation); and
- On and Off-Site Borrow Material.

3.1.1 Site Health and Safety

Field activities conducted during the remedial action will be performed in general accordance with the site-specific health and safety plan (HSP), *Accident Prevention Plan and Generic Site Wide Health and Safety Plan for Seneca Army Depot Activity* (Parsons, 2005) in accordance with Parsons' *Safety, Health, and Risk Program* (SHARP) Manual. Supplemental health and safety information necessary to complete the removal action at SEAD-5 is included in **Appendix B.**

All subcontractors will review Parsons' HSP and develop their own HSP written specifically for the removal action. The HSP will protect site workers through the identification, evaluation, and control of health and safety hazards.

3.1.2 Site Control and Security Requirements

SEAD-5 is located within the portion of the PID Area within the Depot which is close proximity to the Army's continuing BRAC offices and adjacent to land that is currently used by the Seneca County Highway Department as a depot and storage yard. The Army will provide site access to the field team prior to and during the performance of construction activities.

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 29 Code of Federal Regulations (CFR) 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) and/or the SHSO as soon as they arrive on Site. The presence of visitors on site will be recorded in the field logbook, including the visitor's name, company, date, time, and activities performed while on-Site.

3.1.3 Mobilization

The remedial action subcontractor shall submit, for the project manager's/engineer's approval, their plan for work/staging area arrangement, a minimum of five working days prior to commencement of work.

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 site, 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.

As part of the mobilization task, Parsons will schedule and coordinate a kick-off meeting (e.g., pre-construction meeting) that will include participation of Parsons, subcontractor personnel, as well as appropriate Army representatives including the SEDA Base Environmental Commander (BEC), Contracting Officer Representative (COR), and the New York District's Project Manager. The focus of the kick-off meeting will be to review the objective and requirements of the RAOP, and potential concerns of the proposed remedial action. Other topics to be reviewed may include personnel health and safety concerns, vehicular and personnel access and restrictions at the site and the Depot, and impacts on other occupants and users of property surrounding SEAD-5.

3.1.4 Clearing and Grubbing Requirements

The ground surface of SEAD-5 is currently covered with soil stockpiles, grass/weeds, and sporadic small trees/bushes. Prior to installing the cover, the subcontractor will mow the grass/weeds where present, so that it is 1-inch tall or less. In addition any small trees or shrubs shall be removed prior to placement of the soil cover. All of this area will be cleared as part of site mobilization effort prior to the placement of the soil cover at SEAD-5.

3.1.5 Identification of Obstructions and Utilities

The subcontractor will contact Underground Facilities Protective Organization (UFPO) and work with Parsons and the Army to locate and mark utilities and other obstructions located at SEAD-5. All identified utilities within work/staging areas of SEAD-5 will either be terminated and disconnected, or if necessary, rerouted to ensure that service is not disrupted during site operations.

3.1.6 Establishment of Erosion and Sedimentation Controls

Temporary erosion and sedimentation controls, such as silt fencing or hay bales, will be installed as required during operations to prevent the migration and erosion of soil from SEAD-5. Prior to beginning the remedial activities, temporary silt fencing will be erected at a minimum along all temporary storage piles locations; and along the perimeter of the areas where the soil cover will be placed.

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.

3.1.7 Site Survey (Pre and Post Construction Activities)

Prior to the initiation of the construction activities, a preconstruction survey will be conducted with a global positioning system (GPS) to identify and stake the approximate area for placement of the engineered cover material. Subsequent to the completion of the construction activities, GPS will be used to delineate the final extent of the covered area. Resulting data will be recorded.

3.1.8 Final Cover Borrow Material

Clean, crushed concrete material and gravel currently staged in the area of SEAD-16 and SEAD-17 will be evaluated as a potential source for the final cover layer. The crushed concrete material is a residue of building demolition actions that were preformed at various locations within the former Depot to remove abandoned, dilapidated structures that previously posed safety hazards to occupants, visitors, and trespassers at the Depot. The gravel is a by-product of historic Depot maintenance activities and delivered quantity overages that have been accumulated at the Depot through the years of property use and occupation. In addition, an off-site source of borrow material will be identified.

Samples will be collected from all potential sources for the final cover layer (e.g., on-Depot and off-Depot sources) and the resulting analytical data will be used to confirm that the identified borrow material is suitable for use as cover material over the SEAD-5 site. Results of the chemical characterization samples must be compare to New York's Restricted Commercial SCOs, and the data must be submitted for review and approval to the EPA and the NYSDEC. Further, the borrow material used as cover material at the site from on-Dept or off-Depot sources must be free of undesirable substances including debris, rubble, wood, chemicals, and stones larger than three inches. The procedure to show acceptability of the on and off site source of the borrow material for use as final cover at SEAD-5 is consistent with NYSDEC's Draft DER-10 Technical Guidance for Site Investigation and Remediation (December 2002), and is as follows:

1. Subcontractor identifies a potential off-site borrow source for SEAD-5. 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 off site borrow source and the on-site borrow source and submits the samples for the analysis of TAL Metals, TCL VOCs, TCL

SVOCs, PCBs, pesticides and radiological contaminants. The results are provided to Parsons, the Army, EPA, and NYSDEC.

3. Analytical results compared to the NYSDEC part 375 SCOs for Restricted Commercial Use to determine whether backfill is clean, and suitable for use, as backfill.

4. If all results meet the requirements, the on and off-site materials are acceptable for use as backfill. If the results are not acceptable for either the on and off-site sources, 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 EPA 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 Parson QA/QC representative, or their designee, will monitor the incoming loads of backfill to document that the fill is free of extraneous debris or solid waste.

3.2 Construction of Soil Cover

The stockpiled soil generated during SEAD-59 and SEAD-71 remedial actions will be relocated to SEAD-5 for use as the initial cover material to be placed over the contaminated soil at SEAD-5 (refer to **Figure 1-2** for the location of the soil stockpiles). At present, the SEAD-59 and SEAD-71 stockpiles are staged on plastic sheeting, and are located at various locations within SEAD-5, and at other areas immediately adjacent to SEAD-5. Prior to relocation and use of any stockpile material to SEAD-5, the subcontractor will confirm that the stockpile originated from SEAD-59 and SEAD-71 stockpiles with the Army.

It is anticipated that many of the remotely situated stockpiles will be excavated and loaded into dump trucks that will transport the soil to SEAD-5 to minimize tracking the loose material onto the other local Depot roads. Other stockpiles staged in close proximity to the affected SEAD-5 soils will be spread by the dozer directly over the impacted area. During all soil stockpile material handling, loading, or relocation actions, the subcontractor will exercise due care to safeguard the integrity of the polyethylene liner upon which the stockpiled soil has been staged.

Samples of the stockpiled soil will not be collected and analyzed prior to it being spread out at SEAD-5, since its quality was characterized during the SEAD-59 and SEAD-71 remedial action. Furthermore, no samples will be collected from beneath the polyethylene liner upon which the soil has been staged. Finally, no confirmatory samples will be collected from the area of the interred soil at SEAD-5 since samples were collected during and after the TCRA at SEAD-5.

Miscellaneous debris (e.g., construction, demolition rubble, waste metal, large cobbles, etc.) is not anticipated to be present in the soil stockpiles based on a review of the Construction Completion Report for the TCRA (ENSR 2002); however if debris is found, or if objects greater than 4 inches in diameter are observed, the debris/objects will be removed and segregated from the stockpile. This material will not be used as part of the base cover layer, and will be shipped off-site for disposal at State licensed landfills. Similarly, if the stockpiled soil is found to contain hazardous chemical

substances based on field observations, it will be removed and segregated from other non-affected soils, and staged in a lined storage area pending characterization and off-site disposal.

Groundwater monitoring wells MW5-1 and MW59-6, located within the work area, will be abandoned. The bottom of the wells will be punch out, and the interior annulus will be grouted with a Portland cement/bentonite/water slurry that is consistent with State of New York groundwater monitoring well decommissioning guidance. The well's protective casing will be pulled using a backhoe/loader as grout is added to the evacuated space. The well casing and any well construction materials will be placed into a dumpster for off-site disposal at a licenses landfill. The concrete pads will be broken up and added to the concrete debris that is staged at the Depot.

As the stockpiled soil is relocated to SEAD-5, it will be dispersed over the affected surface area. The area to receive the soil cover is presently estimated to be approximately 1.8 acres out of the 3.1 acres that comprises SEAD-5. The approximate extent of the soil cover is shown on **Figure 1-4**.

The area extending from the southern edge of the largest SEAD-5 excavation area south and southeasterly are the areas where TCRA confirmatory and delineation samples showed residual concentrations of cPAH compounds at levels above Federal and State guidance values and at levels indicative of potential human health risks. Former sampling locations with chemical concentrations of specific concern are identified in **Figure 1-4**. As a result, placement of the initial cover material will start in the northern section of SEAD-5 and proceed to the south and southeast, so construction equipment does not come in contact with the residual surficial soil contamination that has been identified. Remotely situated stockpiled soil will be relocated to the northern edge of the largest excavation, along the southern side of the unnamed dirt road, and then spread towards the south, initially filling the existing footprint of the largest excavation area and then overspreading the area of the delineation sampling locations to the south. Stockpiled soil existing within the immediate vicinity of the SEAD-5 excavation areas will supplement the base coat material moved from the remote locations. The initial soil cover will extend a minimum of 10 feet beyond the outside perimeter sampling locations for only those locations where concentrations exceeds the State and Federal guidance values. It is estimated that approximately 18 to 24 inches of the stockpiled soil will be placed over the AOC and will serve as the base layer of the engineered cover.

The soil will be dispersed in 6 to 12-inch loose lifts and will not be excessively wet or dry at the time of placement to ensure that adequate compaction is obtained. Each layer will be compacted by a minimum of four passes of a 10 ton vibratory roller or other equivalent compaction equipment. The material will be spread out in such a manner that promotes positive drainage away from the site, with surface flow directed to the existing man-made drainage channels.

Following completion of the spreading and grading of the initial cover material, a layer of "demarcation fabric" will be placed over the entire extent of the initial cover by the subcontractor. The demarcation fabric will either be comprised of a web of colored "snow" fence or a woven geotextile fabric. The layer of demarcation fabric will then be over-covered with a minimum of 12-inches of on/off-site borrow material that meets New York State's Restricted Commercial Use SCOs. It is anticipated that the final cover material (e.g., on/off-site borrow) will extend a minimum of 10

feet beyond the initial cover material. The borrow material will be dispersed in 6-inch lifts and will not be excessively wet or dry at the time of placement to ensure that adequate compaction is achieved. Each layer will be compacted by a minimum of four passes of a 10 ton vibratory roller or other equivalent compaction equipment. The final cover will be graded to promote positive drainage away from the AOC as shown on **Figure 3-1**.

3.2.1 Dust Control and Air Monitoring Measures

Conventional methods will be used to suppress dust generated during the remedial action, including:

- Wetting equipment and any disturbed areas as needed with water including during the placement of the cover;
- Applying water on buckets during relocation and loading/unloading of stockpiled soil;
- Keeping driving speeds to below 10 miles per hour; and,
- Applying a water spray during soil handling activities and to vehicle haul roads at the site, as needed.

Due to the short travel distances and likely low travel speeds between the loading locations of stockpiled soil that is outside of SEAD-5, and the dumping locations within the area of the historic SEAD-5 excavations, it is unlikely that transported loads will need to be covered with tarps during transport. However, if excessive dusting is noted during the transport of loaded materials to SEAD-5, either tarps will be applied or water will be added to each load prior to transport to minimize dust. Tarps or other cover methods will be used for any load of soil, backfill, or waste that is transported extended distances within Seneca (e.g., greater that 1 mile), or which is transported to or away from the Depot.

Public health and safety is ensured by monitoring within the work zone and creating an exclusion zone surrounding the construction area at each site. The air monitoring will be conducted in accordance with the air monitoring program outlined in Section A8 of the HSP (Parsons, 2005).

3.3 Site Restoration

Re-vegetation of the covered area at SEAD-5 will not be performed since the area may subsequently be used as a hard-stand parking or equipment staging area. The temporary silt fencing will be removed upon completion of the final grading since the site will not be re-vegetated.

3.4 Progress Reports

Weekly reports will be prepared documenting the progress during the fieldwork phase of the project. The contents of the weekly reports are provided in **Section 5.4.2** of the CQP.

3.5 Demobilization

Demobilization activities include the following:

- All equipment and materials will be demobilized;

- A final inspection and housekeeping sweep of the work areas will be completed including the areas where the stockpiled soils from SEAD-59 and SEAD-71 were located. All trash and waste materials will be removed; and
- All field personnel will be demobilized from the site. Final topography will be recorded so as-built drawings can be produced.

3.6 Removal Action Completion Report

Results and records of the removal action will be documented in a Completion Report for submittal to USACE, NYSDEC, and EPA. The contents of the completion report are provided in **Section 5.4.7** of the CQP.

4.0 FIELD SAMPLING PLAN

4.1 Introduction

Waste materials, other than used polyethylene sheeting previously used as underliners for soil stockpiles, abandoned well construction materials and PPE, are not expected to be generated as a result of this remedial action. Therefore, a field sampling plan is not required for this action.

Project specific data quality objectives (DQOs) for sampling are described throughout this section. For each type of work, 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 *Revised Final Generic Site-Wide Sampling and Analysis Plan for Seneca Army Depot Activity* (SAP) (Parsons, 2006). The SAP was provided to the agencies under separate cover. The SAP specifies the following:

- Data quality objectives;
- Specific field sampling procedures;
- Sample preservation methods, container volumes, and holding times;
- Sample custody and management;
- QC sample collection;
- Analytical methods;
- Data validation;
- Laboratory analytical requirements;
- Data management and evaluation;
- Performance assessment and system audits;
- Preventative maintenance.

4.2 Project Scope and Objectives

The project focuses on preventing contact with the residual contamination present in the soils at SEAD-5 since the results of a human health risk assessment, which included the future use of the property for commercial or industrial activities, indicate that there is a potential of an elevated cancer risk for future commercial or industrial workers due to the presence of cPAHs, including predominantly benzo(a)pyrene in the soil.

In order to accomplish this project, several different sampling tasks are required. These are outlined below and discussed in further detail in the SAP.

4.2.1 Task Description

The tasks required to complete field sampling for SEAD-5 are presented in this section. Field sampling details are presented in **Section 4.3**.

4.2.1.1 Waste Residuals

Waste residuals generated during the construction activities may include plastic sheeting, and disposable PPE will be bagged and disposed in an on-site trash dumpster.

4.2.1.2 Air Monitoring

An air monitoring plan has been developed to protect the workers involved in the construction at SEAD-5. Public health and safety will be ensured by monitoring within the work zone and creating an exclusion zone surrounding the construction area. Refer to the site specific HSP and **Appendix B** for information regarding the air monitoring plan to be implemented during the remedial action.

4.3 Field Sampling Detail

This section provides a detailed description of the field activities that were outlined in the previous sections. Refer to the SAP (Parsons, 2006) for a more detailed description of the analytical program, including sample custody, sample management, and data validation.

4.3.1 Surficial Soils at SEAD-5 and Residual SEAD-59 and SEAD-71 TCRA Stockpiled Soil

Samples will not be collected from the stockpiles associated with the SEAD-59 and SEAD-71 TCRA soil that are left at and in the immediate vicinity of SEAD-5. The character and quality of this material has been determined and is documented in the "Draft Final, Phase II Remedial Investigation Report, Fill Area West of Building 135 (SEAD-59) and the Alleged Paint Disposal Area (SEAD-71)" (Parsons, 2006). This soil has been found not to be hazardous by chemical analysis, but is known to contain residual levels of hazardous substances at levels that do not pose unacceptable risks to potential human receptors under commercial and industrial exposure scenarios. Furthermore, the quality of surficial soils currently remaining at SEAD-5 are known and has been documented in the "ROD for Five Former Solid Waste Management Units (SWMUs) SEAD-1, Hazardous Waste Container Storage Facility; SEAD-2, PCB Transformer Storage Facility; SEAD-5, Sewage Sludge Waste Piles; SEAD-24, Abandoned Powder Burn Pit; and, SEAD-48, Row E0800 Pitchblende Storage Igloos, Seneca Army Depot Activity, Romulus, New York, Final" (Parsons, 2009). Therefore, no samples will be collected from beneath the polyethylene liner upon which the soil has been staged.

4.3.2 On and Off Site Borrow Material

Representative samples of on and off site borrow material will be submitted for acceptability as suitable backfill material (e.g., meets New York's Restricted Commercial Use SCOs). The samples will be submitted to the appropriate laboratory for chemical characterization analyses based on a 5-day turn-around time. Samples of each borrow material anticipated for use as the final cover material will be collected and analyzed for chemical characteristic.

4.3.2.1 Sample Analysis

The samples will be collected for chemical characterization and analyzed for the following:

- TCLP VOCs by EPA Method 8260B,
- TCLP SVOCs by EPA Method 8270C,
- Pesticides/PCBs by EPA Method 8082/8081A, and
- TCLP Metals by EPA Method 6010B/7471A.

4.3.2.2 Sample Numbering

The borrow material samples will be numbered as follows:

5OSBMMDD or 5OFBMMDD

Five (5) is the SEAD number. OSBM designates that the sample is collected from within the Depot and OFBM designates that the sample is collected from off-site. MMDD is the month and the day that the sample is collected.

5.0 CONSTRUCTION QUALITY PLAN

The Construction Quality Plan (CQP) describes the construction quality assurance (QA) and quality control (QC) activities to be performed during the remedial action at SEAD-5. This section addresses the quality assurance/quality control (QA/QC) procedures for site preparation, construction of the initial and final soil covers, and restoration. This CQP has been developed to ensure that implementation of the remedial action is in compliance with the project documents. Inspections to verify compliance with the quality requirements will be performed during the various 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 remedial action work plan herein to hire a construction 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-5 is overseen and reviewed by the Army, EPA, and NYSDEC. The project organization is summarized in the table below:

Name	Title	Phone/Fax Number	Address
John Nohrstedt COR	USACE Contracting Officer's Representative (COR)	Office: (256) 895-1639 Fax: (256) 895-1602	USACE, Engineering and Support Center, Huntsville 4820 University Square Huntsville, AL 35816 john.nohrtedt@usace.army.mil
Stephen Absolom	SEDA 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
Randall Battaglia	USACE Project Manager (PM)	Office: (607) 869-1523 Fax: (607) 869-1362	SEDA Attn: Mr. Randall Battaglia Building 125 Romulus, NY 14541 randy.w.battaglia@usace.army.mil
Thomas Battaglia	SEDA's COR	Office: (607) 869-1353 Fax: (607) 869-1251	SEDA Building 125 Romulus, NY 14541 thomas.c.battaglia@usace.army.mil
Todd Heino	Parsons Program Manager and QA Manager	Office: (617) 449-1405 Fax: (617) 946-9777	Parsons 150 Federal St. 4th Floor Boston, MA 02110 todd.heino@parsons.com
Jeff Adams	Parsons Project Manager	Office: (617) 449-1570 Fax: (617) 946-9777	Parsons 150 Federal St. 4th Floor Boston, MA 02110 Jeff.adams@parsons.com
Tim Mustard	Parsons 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	Parsons 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
Ben McAllister	Parsons 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 Program Manager

The Program Manager, Todd Heino, will oversee and provide technical and quality direction on the project from the Boston, Massachusetts office. Mr. Heino is the final decision authority, and will receive reports from the Project Manager. Mr. Heino will visit the work site, as necessary, to meet with the client and review work progress. Mr. Heino's responsibilities as Program Manager are as follows:

- Serving as primary Army interface on all programmatic issues;
- Providing consistency in programmatic approaches to environmental issues at the SEDA;
- Ultimately resolving conflicts with Army or subcontractors;
- Reviewing project documentation.
- Resolve conflicts between Site Manager and QA/QC Manager.

5.1.2 Project Manager

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

- Managing project administration;
- Serving as primary Army interface on all project issues;
- Reviewing design issues;
- Modifying the design with the Army and regulators, as required;
- Reviewing analytical data to assess if results are satisfactory; and,
- Serving as primary Contractor interface with Army and regulators on project issues;
- Resolving conflicts with Army or subcontractors; and
- Preparing, reviewing, and submitting project documentation.

5.1.3 Site Manager

The Site Manager (SM), 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 Manager 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.

5.1.4 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 the RAOP. 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, non-conformances, and deficiencies are being resolved in a satisfactory manner;
- Implementing the RAOP;
- 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, 2005);
- 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 remedial actions to be implemented at SEAD-5. 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 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 on and 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 RAOP 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 the work plan, 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;
- Acceptance of the transport manifests or other delivery documents (if required);
- 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 (if required).

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 RAOP 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 construction of the initial and final soil covers are 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, and protection of SEDA property;;
- Documenting the effective use of barricades and other temporary controls to prevent impacted storm water and construction-related runoff;
- Overseeing the collection of samples for laboratory analysis (if required); and
- Documenting the sampling and chain-of custody procedures for all samples (if required).

For SEAD-5 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 USACE'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, Mr. John Nohrstedt (USACE COR), and the SEDA COR Mr. Tom Battaglia 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 QC completion inspection, and following completion of all construction activities. The Site QC Officer will notify the Army POC, the USACE COR and the SEDA 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 QC 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, the USACE COR and the SEDA COR.

The Site QC Officer will notify the Army POC, the USACE COR, and the SEDA 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 SEDA COR will conduct the Final Acceptance Inspection.

Meetings

A pre-construction meeting will be held at SEAD-5 prior to beginning construction activities. USACE COR, SEDA's POC and COR, the PM, the SM, the SHSO, appropriate subcontractors, EPA, and NYSDEC will be asked to 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 (if appropriate) 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 USACE 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 work is in conformance with the RAOP. 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 at SEAD-5. 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 at a minimum finalizing the mark-out of the soil cover perimeter, finalizing the mark-out of utility locations, clearing and grubbing, finalizing the mark-out of the soil stockpiles to be relocated, confirming approval and location for site trailer (if appropriate), 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 (if appropriate). 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 use a Trimble 5700 Real-Time Kinematic (RTK) GPS unit (or equivalent).

- Pre-construction survey-placement of stakes along the perimeter of the area to be covered according to the drawings; and,
- Post-construction survey-identify the extent and location of the soil cover at SEAD-5.

All utilities will be clearly marked following the clearing and grubbing activities.

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 are maintained. These inspection activities will ensure that the construction activities are performed in accordance with the RAOP and all components of reporting can be fully met.

Relocation of the Stockpiled Soils

Stockpiled soil generated during SEAD-59 and SEAD-71 TCRA will be relocated to SEAD-5 to be used as initial cover material placed over the contaminated soil at SEAD-5. The stockpiled material will be excavated and loaded into dump trucks that will transport the soil to SEAD-5 so to minimize tracking the loose material onto other local Depot roads. The soil will be visually screened for miscellaneous debris pieces during the loading and relocation process. Pieces greater than 4 inches in diameter will be removed, stockpiled, and segregated for off-site disposal. Similarly, if stockpiled soil is found to contain hazardous chemical substances, it will also be segregated from other non-affected soils, and staged in a lined storage area for off-site disposal. Soil will be removed from the stockpiles so that the liners remain intact and there is no stockpile material in contact with the underlying soils.

Construction of Initial Soil Cover

The stockpiled soil will be dispersed over the impacted areas of SEAD-5 in 6 to12-inch loose lifts. The material will not be excessively wet or dry at the time of placement to ensure that adequate compaction is achieved. Each layer will be compacted by a minimum of four passes of a 10 ton vibratory roller or other equivalent compaction equipment. The material will be spread out in such a manner that promotes positive drainage away from the site, with surface flow directed to the existing man-made drainage channels.

Installation of Demarcation Fabric

Following completion of the initial cover, a colored demarcation fabric will be placed over the entire extent of the initial cover.

Construction of Final Soil Cover

A minimum 12-inch cover consisting of either (or both) on and off-site borrow material will be placed over the demarcation fabric. The Project Engineer will verify that the borrow soil documentation meets the meets the NYSDEC Restricted Commercial Use SCOs (Table 375-6.8(b)). The borrow material will be spread out over SEAD-5 in two 6-inch lifts. As similar to the initial cover, the on-off site borrow material will not be excessively wet or dry at the time of placement to ensure that adequate compaction is achieved. Each layer will be compacted by a minimum of four passes of a 10 ton vibratory roller or other equivalent compaction equipment. The final cover will be graded to promote positive drainage away from the interred materials.

Observation and Inspection

Mr. McAllister will be on-site during the construction activities to confirm that the remedial action is conducted in accordance with the RAOP. A photographic log will be performed to provide documentation of the process and procedures implemented during the remedial action. In addition, a post-construction survey will be performed.

Post-Construction Survey

The post-construction survey will include the extent and location of the cover material placed over the contaminated soils at SEAD-5. 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).

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 and erosion of soil from SEAD-5. Prior to beginning any excavation work, temporary silt fencing will be erected, which will surround the down gradient sides of disturbed areas to prevent contaminated soil transport. The temporary silt fencing will be maintained throughout the project and will not be removed until the completion of the soil cover.

In addition, storm water from up-gradient locations will be routed away from SEAD-5 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 or evidence of soil erosion.

Site Security

All visitors to the work site are required to report to Mr. McAllister or the SM upon arrival. 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.

Site Restoration

Field inspection for site restoration activities is identified in **Table 5-3**. Inspection activities include observations of final grading promotes positive drainage and the site has been restored (disposal of trash, etc) to pre-remedial conditions.

5.3 Subcontractor Quality Control

All subcontractors and material suppliers involved with on-site construction activities shall comply with the RAOP. 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 USACE and Army contact, and will also be included as part of the weekly progress reports submitted to USACE and the Army.

The Daily QC Report will include the following information:

- Project name, location, and date;
- Personnel and equipment used;
- Estimated volume of stockpile soil relocated to SEAD-5;
- Weather conditions;
- Narrative description of inspections, tests, and sampling (if appropriate);
- 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 Progress Reports

The Site QC Officer will draft the Weekly Progress Report and submit it to the SM. The SM will review the report, and then submit it to the USACE and Army contacts. The Weekly Report will include the following information:

- Date, project name, and location;

- Summary of construction-related activities;
- Minutes of all meetings;
- Summary of QC activities;
- Attached inspection reports;
- Test results;
- Volume of material disposed off-site if applicable;
- Non-Conformance Reports (NCRs);
- Non-Conformance/Corrective Action Tracking Log;
- Corrective Action Report;
- Status Report on all milestones during the period including explanations for milestones not met during the preceding period and an assessment of milestones scheduled for the next reporting period;
- Personnel staffing status; and
- Community relation activity update.

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 Work Plan Clarifications or Modifications

The need to address work plan changes or scope changes may arise. In such cases, the PM will notify the Army POC and the USACE COR. A work plan or scope of field change that will impact the project or its cost must be approved by the PM, the Army POC, and the USACE COR before it is implemented. Approvals by these parties may be obtained concurrently, if possible. Approval of EPA/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 USACE. 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 USACE 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 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 Removal Action Completion Report

At the completion of construction, a Removal Action Completion Report will be issued. This report will include:

- Description of the work performed;
- Variations from the RAOP and associated project plans, if any;
- Land survey results documenting the final limits of the remedial action;
- Air monitoring results;
- Other relevant data; and
- Certification by the Project Professional Engineer.

6.0 WASTE MANAGEMENT PLAN

Work-derived waste (WDW) will include well construction material, liners and PPE. 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 including plastic sheeting will be disposed in dumpster located on the Depot.

7.0 REMEDIAL ACTION SCHEDULE

A schedule for the implementation of the RAOP is presented as **Figure 7-1**. The schedule allows 30 days for the Army, NYSDEC, and EPA to review and provide comments on the RAOP. It also allows 14 days for Parsons to incorporate comments into the Final RAOP. The current schedule projects the commencement of construction activities in the summer of 2009. This schedule will be updated on a continuing basis during the project based on field conditions, weather and other factors.

If at any time field activities at the SEAD-5 are required to be temporarily halted to unexpected conditions for more than two consecutive days, Parsons will try and deploy the subcontractor and Parsons personnel to other areas of SEDA that may require maintenance and or construction repairs at the other AOC. In such cases, the PM will notify the Army POC and the USACE COR prior to demobilization from SEAD-5 to remobilize to another area of SEDA as identified and agreed upon with the Army.

8.0 REFERENCES

New York State Department of Environmental Conservation (NYSDEC), 1994. Technical and Administrative Guidance Memorandum (TAGM) 4046 - Determination of Soil Cleanup Objectives and Cleanup Levels. HWR-94-4046. January 1994.

New York State Department of Environmental Conservation (NYSDEC), 2004. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. Division of Water Technical and Operational Guidance Series (1.1.1).

New York State Department of Environmental Conservation (NYSDEC), 2009. Groundwater Monitoring Well Decommissioning Procedures.

Parsons, 1995. Draft Final, Expanded Site Inspection, Eight Moderately Low Priority AOCs, SEADs 5, 9, 12 (A and B), (43, 56, 69), 44 (A and B), 50, 58, and 59. December 1995.

ENSR, 2002. Final Draft Removal Report, SEAD-59 and 71, Time Critical Removal Action, Seneca Army Depot Activity, Romulus, New York. December 2002.

Weston, 2006. Final Completion Removal Report, Time Critical Removal Action, Industrial Waste Site (Sludge Piles) - SEAD-5, Seneca Army Depot Activity, Seneca County, Romulus, New York. February 2006.

Parsons, 2006. Draft Final, Phase II Remedial Investigation Report, Fill Area West of Building 135 (SEAD-59) and the Alleged Paint Disposal Area (SEAD-71), Seneca Army Depot Activity, Romulus, New York. April 2006.

Parsons, 2009. Record of Decision for Five Former Solid Waste Management Units (SWMUs) SEAD-1, Hazardous Waste Container Storage Facility; SEAD-2, PCB Transformer Storage Facility; SEAD-5, Sewage Sludge Waste Piles; SEAD-24, Abandoned Powder Burn Pit; and, SEAD-48, Row E0800 Pitchblende Storage Igloos, Seneca Army Depot Activity, Romulus, New York, Final. April 2009.

TABLES

TABLE 5-1
PRE-CONSTRUCTION INSPECTION ACTIVITIES
SEAD-5 Remedial Action Operations Plan
Seneca Army Depot Activity, New York

Preparatory Inspection Activity	Method	Frequency	Acceptance Criteria
Survey of Area	GPS	Once prior to the start of construction	Stake area for placement of the soil cover according to the drawings.
Location of Stockpiled Soils	Visual	Once prior to the start of construction.	Confirm that soils to be relocated to SEAD-5 have been identified and agreed upon with the Army.
Clearing and Grubbing of Work Areas	Visual	Once prior to the start of construction.	Confirm that the 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 the start of construction.	Confirm all subsurface and overhead utilities are clearly marked and that plans take the utilities into consideration.
Off Site Access/Egress	Visual	Once prior to the start of construction	Confirm that access/egress gates on-site and off-site are working properly.
Job Site Trailer and Lay-Down Approval (if Required)	Visual	Once prior to the start of construction	Confirm approval and location for site trailer, lay-down area and availability of electrical power.
Equipment Examinations (Earthwork)	Visual	Once upon arrival at site.	Determine if equipment type and size conforms to project details, conforms to OSHA safety requirements and record information. Determine that equipment is in working order and is not leaking oil or fuel in quantities sufficient to be classified as a spill.
Staging Areas	Visual	Once prior to the start of construction	Determine that the staging areas & equipment conforms to work plan.
Erosion & Sedimentation Control Installation	Visual	Once prior to the start of construction	Assess if control measures are appropriately located throughout the site.
Fill Material (if needed)	Verification of Acceptance	1 sample per source	Compliance with NYSDEC Unrestricted Soil Cleanup Objectives (Table 375-6.8(a).

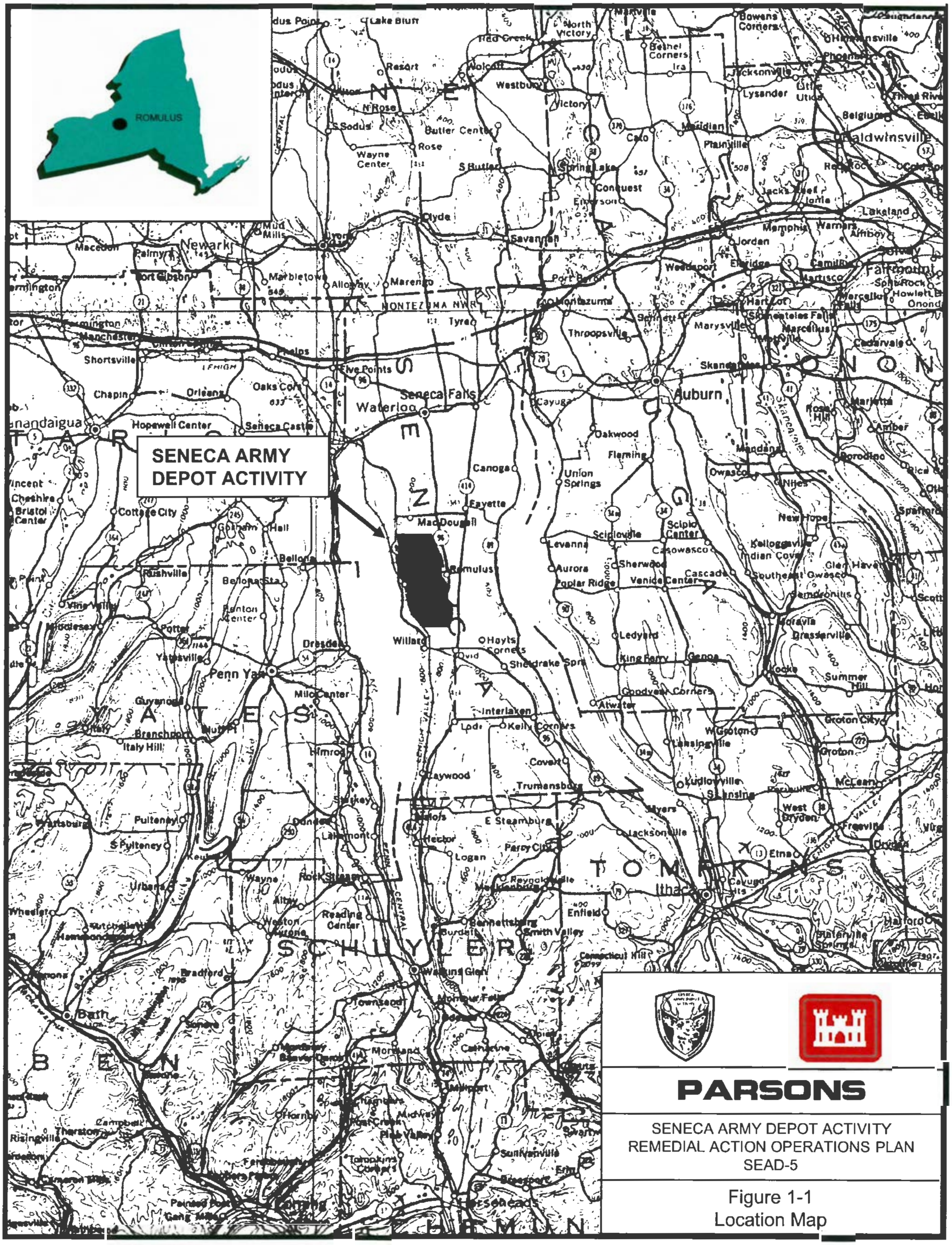
TABLE 5-2
CONSTRUCTION INSPECTION ACTIVITIES
SEAD-5- Remedial Action Operations Plan
Seneca Army Depot Activity, New York

Construction Inspection Activity	Method	Frequency	Acceptance Criteria
Hazardous Air Monitoring	PID/OVM	At start-up and during construction	Refer to Section A8 of the HSP
Particulate Air Monitoring		At start-up and during construction	Refer to Section A8 of the HSP
Wind Direction Monitoring	Wind direction indicator	At start-up and during construction	Survey flagging tied to stake located up wind of work area
Construction Methods Observation	Visual	At start-up and during construction.	Ensure that the methods conform to standard construction practices and worker safety is always a primary consideration.
Site Security	Visual	Daily during construction and at end of day.	Confirm that base perimeter is secure.
Erosion Control Maintenance	Visual	Daily and during and after significant rainfall events	Control measures in good repair and ensure no migration of soil or evidence of erosion.
Material Disposal	Analytical testing	If necessary	Requirements of disposal facility.
Initial Soil Cover	Visual	Every lift	Stockpiled soil from SEAD-59 & 71 will used to as the initial cover material. Soil will be machine compacted in 1 foot lifts with 4 runs over the material
Installation of Demarcation Fabric	Visual	Once after installation	Demarcation fabric to extend over the perimeter of the initial soil cover.
Final Soil Cover	Visual	Every lift	Clean soil from either an on or off site borrow material will be used as the final cover material. Soil will be machine compacted in 6-inch lifts; each lift will be compacted with 4 runs over the material with 10 ton vibratory roller.
Post Construction Survey	GPS	Once at completion of cover	Survey and identify the extent of the soil cover placed over the contaminated soils at SEAD-5.

TABLE 5-3
POST-CONSTRUCTION INSPECTION ACTIVITIES
SEAD-5 Remedial Action Operations Plan
Seneca Army Depot Activity, New York

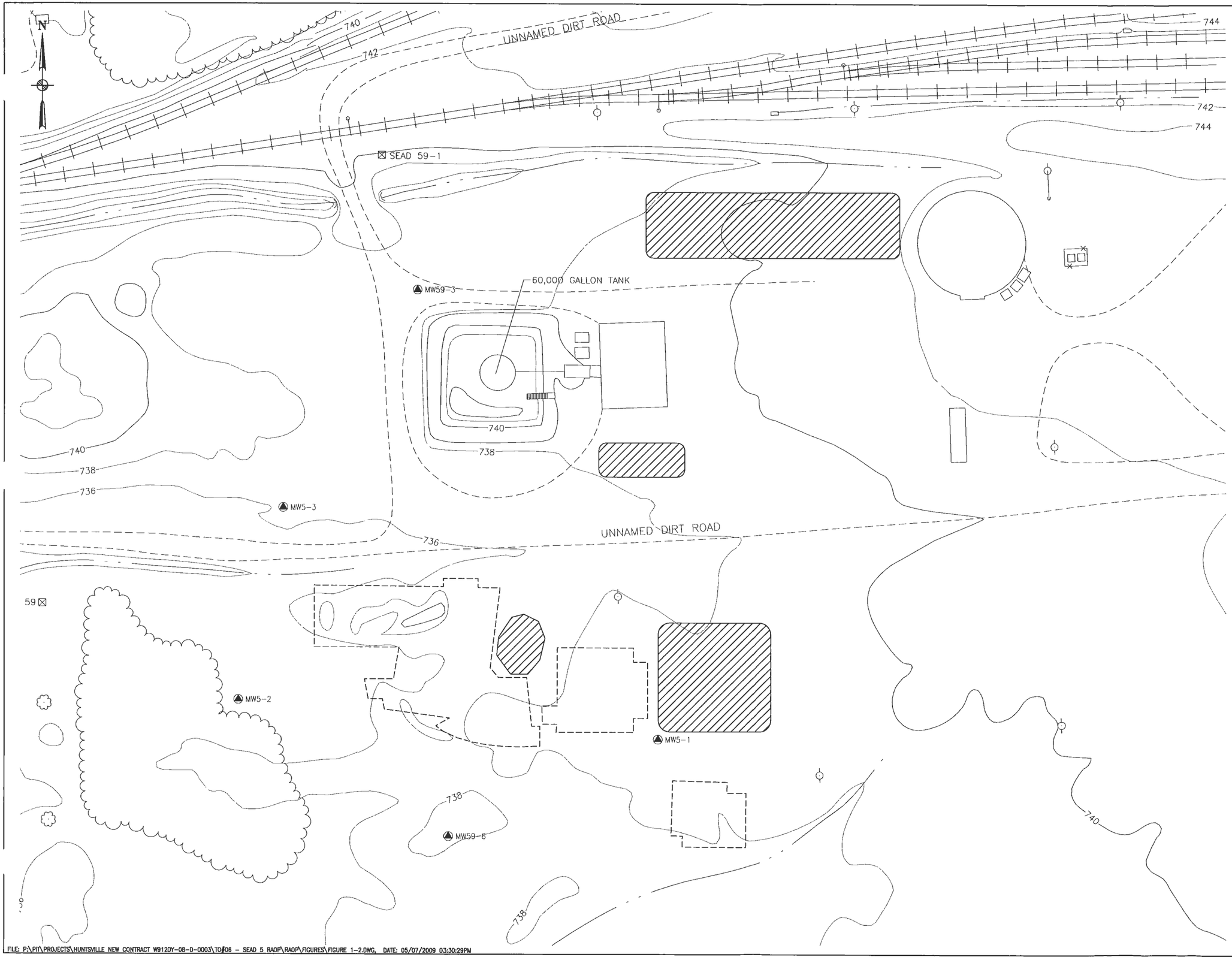
Follow-Up Inspection Activity	Method	Frequency	Acceptance Criteria
Final Grading	Visual	Once.	Final grade should. promotes positive drainage away from the site, with surface flow directed to the existing man-made drainage channels
Site Restoration	Visual	Once.	Confirm that all equipment and materials have been demobilized. Confirm that the trash and waste materials have been removed from work areas including the areas where the stockpiled soils from SEAD-59 and SEAD-71 were located.

FIGURES



SENECA ARMY DEPOT ACTIVITY
REMEDIAL ACTION OPERATIONS PLAN
SEAD-5

Figure 1-1
Location Map



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- MAILBOX/RR SIGNAL
- POLE
- UTILITY BOX
- OVERHEAD UTILITY POLE
- MW5-1 GROUNDWATER MONITORING WELL
- APPROXIMATE LOCATION OF SOIL STOCKPILES (SEE NOTE 1)
- APPROXIMATE EXTENTS OF PREVIOUSLY EXCAVATED AREAS (SEE NOTE 2)

NOTES:

1. LOCATIONS OF SOIL STOCKPILES EXCAVATED FROM SEAD-59 AND SEAD-71 ARE APPROXIMATE AND ARE BASED ON THE DATA CONTAINED IN THE REMOVAL REPORT, SEAD-59 AND 71, TIME CRITICAL REMOVAL ACTION, SENECA ARMY DEPOT ACTIVITY, PREPARED BY ENSR CORPORATION, DECEMBER 2002.
2. LOCATION OF THE EXCAVATIONS WITHIN SEAD-5 ARE APPROXIMATE AND ARE BASED ON THE INFORMATION CONTAINED IN THE COMPLETION REMOVAL REPORT, TIME CRITICAL REMOVAL ACTION, INDUSTRIAL WASTE SITE (SLUDGE PILES) – SEAD-5, ROMULUS, NEW YORK PREPARED BY WESTON SOLUTIONS, FEBRUARY 2006.

30 15 0 30 60

SCALE

PARSONS
150 FEDERAL STREET, 4TH FLOOR - BOSTON, MA 02110-1713

CLIENT/PROJECT TITLE:

SENECA ARMY DEPOT ACTIVITY
REMEDIAL ACTION OPERATIONS PLAN
SEAD-5 FORMER SEWER SLUDGE WASTE PILES

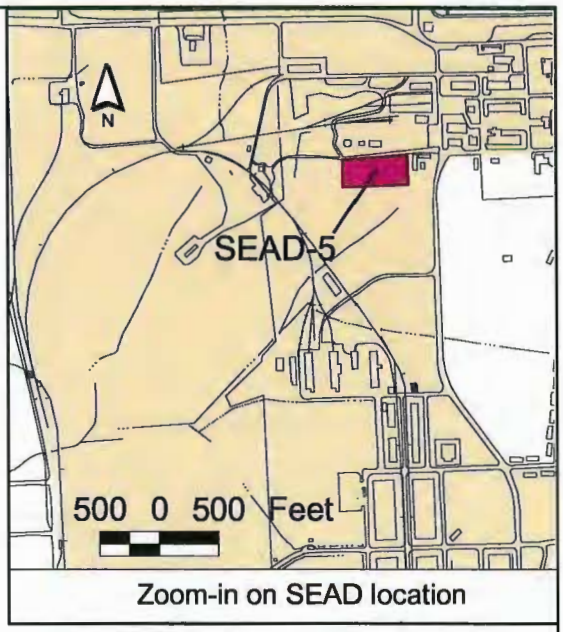
DEPT:	JOB NO:
ENVIRONMENTAL ENGINEERING	746856-01000

FIGURE TITLE:

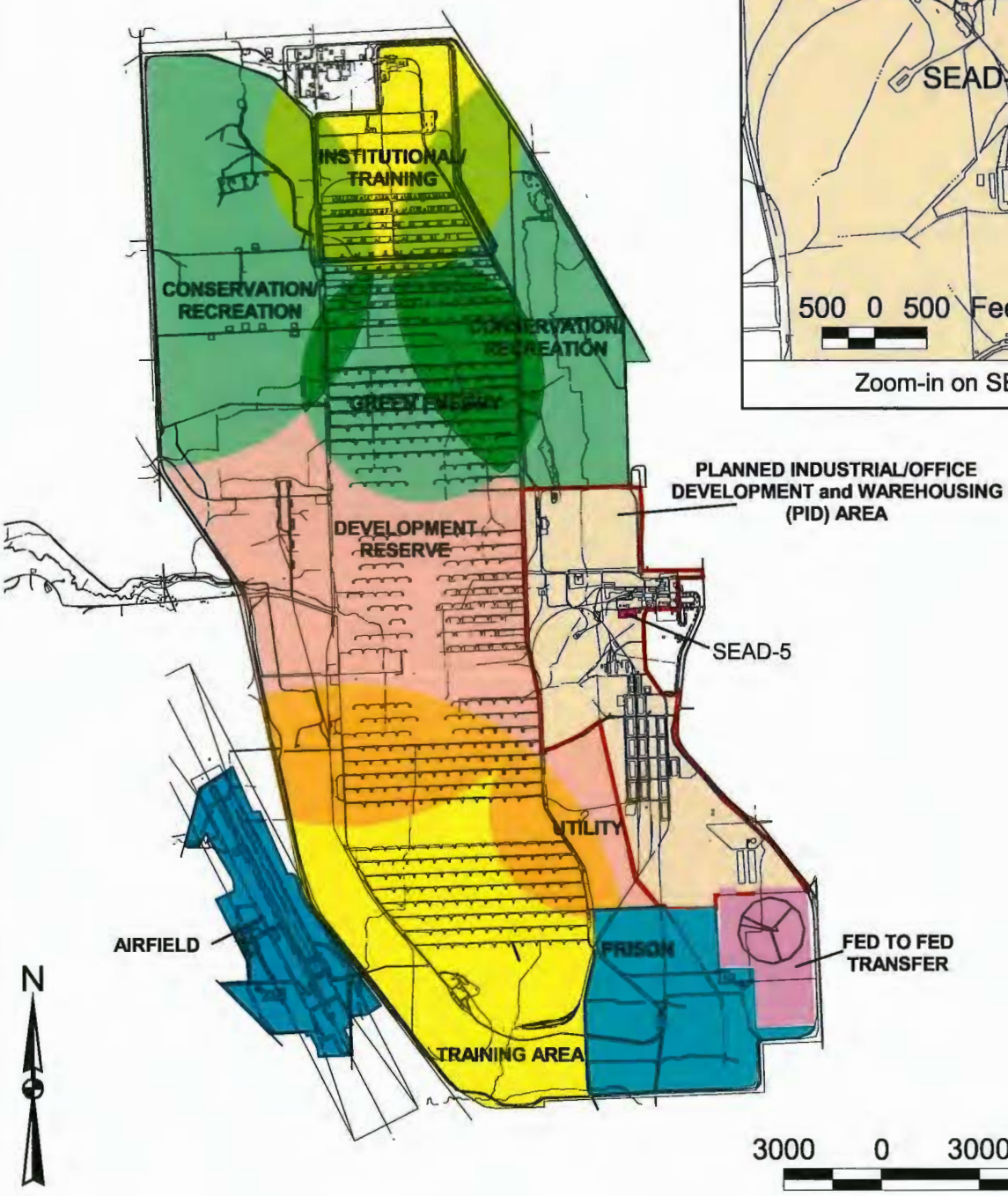
FIGURE 1-2
SEAD-5 FORMER SEWER SLUDGE
WASTE PILES SITE PLAN

SCALE:	DRWN:	CHKD:	APPD:	DATE:	REV:
AS SHOWN	RR	CC	JA	4/22/09	-

FILE: P:\PIT\PROJECTS\HUNTSVILLE NEW CONTRACT W912DY-08-D-0003\TO#06 - SEAD 5 RAOP\RAOP\FIGURES\FIGURE 1-2.DWG, DATE: 05/07/2009 03:30:29PM



Zoom-in on SEAD location



SEAD Requiring Remedial Action and LUCs

- **SEAD 5, former Sewage Sludge Waste Piles.**
- cover contaminated soil with demarcation fabric and at least 12 inches of fill that meets NYS Restricted Commercial SCOs
- prohibit unauthorized excavations/activities that might compromise the integrity of the engineered cover
- prohibit groundwater access/use
- prohibit residential housing, elementary/secondary schools, childcare facilities, and playgrounds.

Extent of PID LUCs.

- prohibit groundwater access/use
- prohibit residential housing, elementary/secondary schools, childcare facilities, and playgrounds.

PARSONS

SENECA ARMY DEPOT ACTIVITY
Remedial Action Operations Plan
SEAD-5
Former Sewer Sludge Waste Piles

Figure 1-3
SEDA Future Land Use

June 2009

O:\Seneca\SEAD-1-2-5-24-46\rod_sites_map.apr

LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- MAILBOX/RR SIGNAL
- POLE
- UTILITY BOX
- OVERHEAD UTILITY POLE
- MW5-1 GROUNDWATER MONITORING WELL
- APPROXIMATE LOCATION OF SOIL STOCKPILES (SEE NOTE 1)
- APPROXIMATE EXTENTS PREVIOUSLY EXCAVATED AREAS (SEE NOTE 2)
- APPROXIMATE EXTENT OF SOIL COVER
- PX-95 SAMPLE LOCATION WITHOUT EXCEEDANCE
- PX-90 SAMPLE LOCATION WITH EXCEEDANCE

NOTES:

1. LOCATIONS OF SOIL STOCKPILES EXCAVATED FROM SEAD-59 AND SEAD-71 ARE APPROXIMATE AND ARE BASED ON THE DATA CONTAINED IN THE REMOVAL REPORT, SEAD-59 AND 71, TIME CRITICAL REMOVAL ACTION, SENECA ARMY DEPOT ACTIVITY, PREPARED BY ENSR CORPORATION, DECEMBER 2002.
2. LOCATION OF THE EXCAVATIONS WITHIN SEAD-5 ARE APPROXIMATE AND ARE BASED ON THE INFORMATION CONTAINED IN THE COMPLETION REMOVAL REPORT, TIME CRITICAL REMOVAL ACTION, INDUSTRIAL WASTE SITE (SLUDGE PILES) – SEAD-5, ROMULUS, NEW YORK PREPARED BY WESTON SOLUTIONS, FEBRUARY 2006.
3. SOIL SAMPLE LOCATIONS ARE APPROXIMATE AND ARE BASED ON DATA CONTAINED IN THE REPORTED REFERENCE IN NOTE 2.
4. SOIL EXCEEDANCES ARE BASED ON A COMPARISON TO NYSDEC 6 NYCRR PART 375 – SOIL CLEANUP OBJECTIVES FOR RESTRICTED COMMERCIAL USE.

PARSONS
150 FEDERAL STREET, 4TH FLOOR - BOSTON, MA 02110-1713

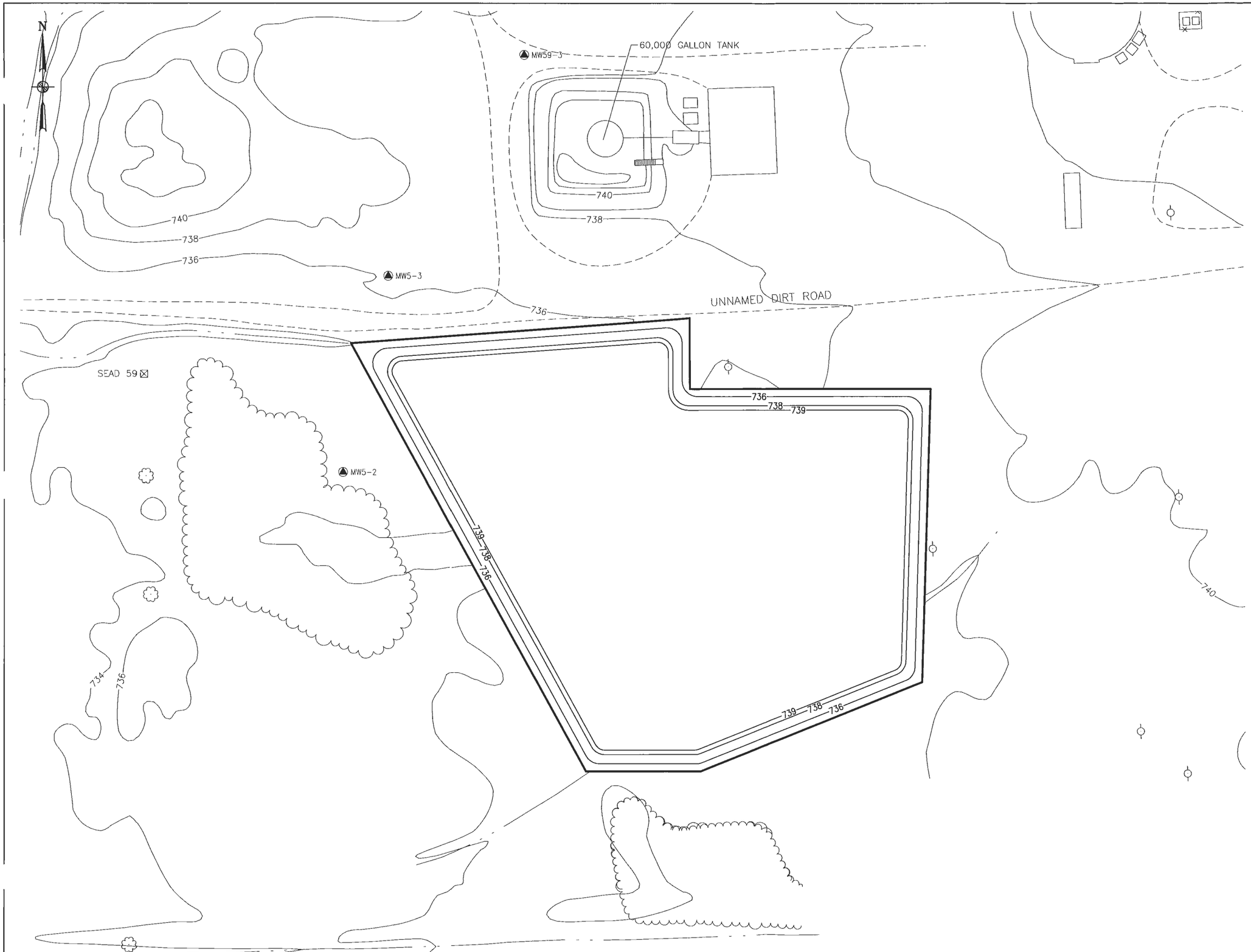
CLIENT/PROJECT TITLE:
SENECA ARMY DEPOT ACTIVITY
REMEDIAL ACTION OPERATIONS PLAN
SEAD-5 FORMER SEWER SLUDGE WASTE PILES

DEPT:	JOB NO:
ENVIRONMENTAL ENGINEERING	746856-01000

FIGURE TITLE:
FIGURE 1-4
SEAD-5 FORMER SEWER SLUDGE WASTE PILES APPROXIMATE EXTENT OF SOIL COVER

SCALE:	DRWN:	CHKD:	APPD:	DATE:	REV:
AS SHOWN	RR	CG	JA	4/22/09	-

FILE: P:\PIT\PROJECTS\HUNTSVILLE NEW CONTRACT W912DY-08-D-0003\TO#06 - SEAD 5 RAOP\RAOP\FIGURES\FIGURE 1-4.DWG, DATE: 05/07/2009 03:29:52PM



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- MAILBOX/RR SIGNAL
- POLE
- UTILITY BOX
- OVERHEAD UTILITY POLE
- MW5-1 GROUNDWATER MONITORING WELL
- APPROXIMATE EXTENT OF SOIL COVER
- 738 PROPOSED GRADING CONTOUR

NOTES:

1. LOCATIONS OF SOIL STOCKPILES EXCAVATED FROM SEAD-59 AND SEAD-71 ARE APPROXIMATE AND ARE BASED ON THE DATA CONTAINED IN THE REMOVAL REPORT, SEAD-59 AND 71, TIME CRITICAL REMOVAL ACTION, SENECA ARMY DEPOT ACTIVITY, PREPARED BY ENSR CORPORATION, DECEMBER 2002.
2. LOCATION OF THE EXCAVATIONS WITHIN SEAD-5 ARE APPROXIMATE AND ARE BASED ON THE INFORMATION CONTAINED IN THE COMPLETION REMOVAL REPORT, TIME CRITICAL REMOVAL ACTION, INDUSTRIAL WASTE SITE (SLUDGE PILES) – SEAD-5, ROMULUS, NEW YORK PREPARED BY WESTON SOLUTIONS, FEBRUARY 2006.
3. THE EXTENT OF SOIL COVER AND ASSOCIATED GRADING ARE ONLY APPROXIMATE AND MAY CHANGE BASED ON ACTUAL FIELD CONDITIONS. THE EXTENT OF THE SOIL COVER SHALL BE VERIFIED UPON COMPLETION OF CONSTRUCTION.

30 15 0 30 60
SCALE

PARSONS
150 FEDERAL STREET, 4TH FLOOR - BOSTON, MA 02110-1713

CLIENT/PROJECT TITLE:
SENECA ARMY DEPOT ACTIVITY
REMEDIAL ACTION OPERATIONS PLAN
SEAD-5 FORMER SEWER SLUDGE WASTE PILES

DEPT:	JOB NO:
ENVIRONMENTAL ENGINEERING	746856--01000

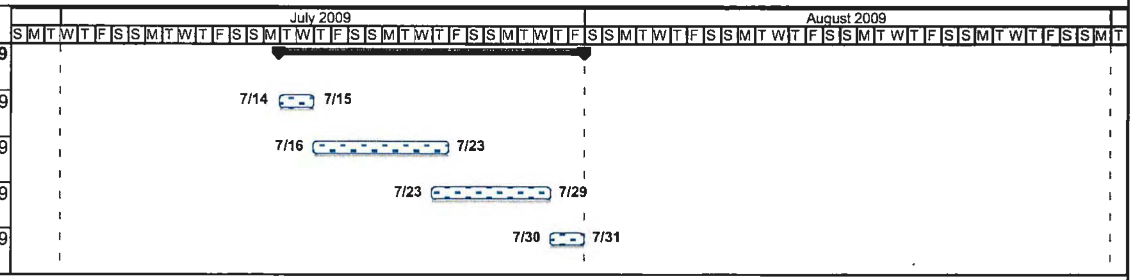
FIGURE TITLE:
FIGURE 3-1
SEAD-5 FORMER SEWER SLUDGE WASTE PILES APPROXIMATE GRADING PLAN

SCALE:	DRWN:	CHKD:	APPD:	DATE:	REV:
AS SHOWN	RR	CG	JA	5/06/09	--

FILE: P:\PIT\PROJECTS\HUNTSVILLE NEW CONTRACT W912DY-08-D-0003\TO#06 - SEAD 5 RAOP\RAOP\FIGURES\FIGURE 3-1.DWG, DATE: 05/08/2009 09:47:30AM

Figure 7-1
REMEDIAL ACTION OPERATIONS PLAN SCHEDULE AT SEAD-5 FORMER SEWER SLUDGE WASTE PILES
SENECA ARMY DEPOT ACTIVITY, ROMULUS, NEW YORK

ID	Task Name	Duration	Start
1	**Removal Action SEAD-5**	**14 days**	**Tue 7/14/09**
2	Mobilization	2 days	Tue 7/14/09
3	Relocation of Soil Stockpiles & Disperse Soil	6 days	Thu 7/16/09
4	Demarcation Fabric Installtion & Final Cover Placement	5 days	Thu 7/23/09
5	Site Survey/Demobilization	2 days	Thu 7/30/09



Project: SEAD-5 Project Schedule_0507
Date: Fri 5/8/09

Task	Summary	Rolled Up Progress	Project Summary
Progress	Rolled Up Task	Split	Group By Summary
Milestone	Rolled Up Milestone	External Tasks	Deadline

fIGURE 7-1 SEAD-5 Project Schedule_050709.mpp

APPENDICES

Appendix A Time Critical Removal Action Delineation Sampling

Appendix B Supplemental Health and Safety Information

APPENDIX A

TIME CRITICAL REMOVAL ACTION DELINEATION SAMPLING

Table Notes

1. The Cleanup goal is based on the New York Technical Administrative Guidance Memorandum (TAGM) No. 4046 Recommended Soil Cleanup Objectives. Values denoted as Site Background ("SB") in TAGM 4046 were compared with the highlighted values (95th percentile of Seneca Army Depot (SEDA) Site Background) in lieu of the TAGM "SB" since no background cleanup objectives exist for certain parameters.

≤5th percentile of SEDA Site Background

Result Exceeds Cleanup Criteria

2. Benzo(a)pyrene TEQ = for carcinogenic PAHs calculated by multiplying the concentration of the individual cPAHs by the following factors:
Benzo(a)pyrene = 1.0
Dibenzo(a,h)anthracene = 1.0
Benzo(a)anthracene = 0.1
Benzo(b)fluoranthene = 0.1
Indeno(1,2,3-cd)pyrene = 0.1
Benzo(k)fluoranthene = 0.01
Chrysene = 0.01

NA - Not Analyzed
U - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
NE - New York TAGM Not Established for this compound
MDL - Method Detection Limit
SB - Site Background Levels
FX - Sample ID such as "SEAD5-FX-SS-038FS means sample was collected from the bottom floor of the excavation.

For Delineation samples collected in July and October 2005:
FS1 samples - Delineation samples collected at a depth of 0" to 6" bgs
FS2 samples - Delineation samples collected at a depth of 6" to 12" bgs
FS3 samples - Delineation samples collected at a depth of 12" to 18" bgs
FS4 samples - Delineation samples collected at a depth of 18" to 24" bgs

Table A-5
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Post-Excavation Soil Samples Remaining On Site After All Phases of Excavation

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1] (mg/kg)	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil)	SEAD5-PX-SS-003-FS2		SEAD5-PX-SS-004FS		SEAD5-PX-SS-005FS		SEAD5-PX-SS-005-FS1		SEAD5-PX-SS-005-FS2		SEAD5-PX-SS-008-FS2		SEAD5-PX-SS-009FS		SEAD5-FX-SS-011FS		SEAD5-FX-SS-012FS		SEAD5-PX-SS-016FS		SEAD5-PX-SS-019FS		SEAD5-PX-SS-020-FS2		SEAD5-PX-SS-021-FS2		SEAD5-PX-SS-024FS	
Sampling Depth			0" - 6"		0- 6"		0- 6"		6" -12"		0" - 6"		0" - 6"		0- 6"		0- 6"		0- 6"		0- 6"		0- 6"		0" - 6"		0" - 6"		0- 6"	
Sampling Date			10/2/2003		8/14/2003		8/14/2003		10/2/2003		10/2/2003		10/2/2003		8/14/2003		8/14/2003		8/14/2003		8/15/2003		8/15/2003		10/2/2003		10/2/2003		8/15/2003	
Matrix			Soil		Solid		Solid		Soil		Soil		Soil		Solid		Solid		Solid		Solid		Solid		Soil		Soil		Solid	
Polyaromatic Hydrocarbons (ug/Kg - dry)																														
Naphthalene	13,000	190,000	290	U	320	U	290	U	320	U	300	U	290	U	270	U	260	U	280	U	300	U	290	U	320	U	340	U	280	
2-Methylnaphthalene	36400	NA	290	U	320	U	290	U	320	U	300	U	290	U	270	U	260	U	280	U	300	U	290	U	320	U	340	U	280	
Acenaphthylene	41,000	NA	290	U	320	U	290	U	320	U	300	U	83	J	270	U	130	J	110	J	300	U	290	U	320	U	150	J	280	
Acenaphthene	50,000	29,000,000	290	U	320	U	290	U	320	U	300	U	290	U	270	U	110	J	81	J	300	U	290	U	320	U	340	U	280	
Fluorene	50,000	26,000,000	290	U	320	U	290	U	320	U	300	U	290	U	270	U	130	J	180	J	300	U	290	U	320	U	340	U	280	
Phenanthrene	50,000	NA	290	U	320	U	290	U	320	U	100	J	420		340		1800		2500		69	J	290	U	110	J	810		280	
Anthracene	50,000	100,000,000	290	U	320	U	290	U	320	U	300	U	130	J	98	J	440		650		300	U	290	U	320	U	170	J	280	
Fluoranthene	50,000	22,000,000	61	J	150	J	290	U	320	U	170	J	790		610		2700		2800		140	J	290	U	250	J	2000		280	
Pyrene	50,000	29,000,000	290	U	140	J	290	U	320	U	170	J	790		320		2300		2400		140	J	290	U	250	J	1800		280	
Benz(a)anthracene	224	2,100	290	U	100	J	290	U	320	U	79	J	430		310		1200		1200		89	J	290	U	140	J	1000		280	
Chrysene	400	210,000	290	U	110	J	290	U	320	U	83	J	420		300		1200		1100		84	J	290	U	140	J	1000		280	
Benzo(b)fluoranthene	1,100	2,100	290	U	120	J	290	U	320	U	96	J	630		380		1400		1300		86	J	290	U	170	J	1300		280	
Benzo(k)fluoranthene	1,100	21,000	290	U	320	U	290	U	320	U	300	U	220	J	140	J	510		420		300	U	290	U	83	J	550		280	
Benzo(a)pyrene	61	210	290	U	94	J	290	U	320	U	67	J	410		300		1100		1000		86	J	290	U	130	J	980		280	
Dibenzo(a,h)anthracene	14	210	290	U	320	U	290	U	320	U	300	U	290	U	270	U	170	J	180	J	300	U	290	U	320	U	150	J	280	
Indeo(1,2,3-cd)pyrene	3,200	2,100	290	U	320	U	290	U	320	U	300	U	290	U	230	J	760		730		300	U	290	U	81	J	650		280	
Benzo(g,h,i)perylene	50,000	NA	290	U	72	J	290	U	320	U	300	U	250	J	180	J	680		580		300	U	290	U	86	J	590		280	
[2]Benzo(a)pyrene TEQ	10,000	NA	672.8		472.3		672.8		742.4		418.33		841.4		666.4		1623.1		1518.2		437.34		672.8		491.13		1440.3		649.6	
ICP Metals (mg/Kg - dry)																														
Arsenic	8.24	1.6	3.9	J	4.6	J	5	J	3	J	2.4	J	2.9	J	4.7	J	4.4	J	3.7	J	3.8	J	5.8	J	8.3		9.2		4.8	
Barium	300	67,000	72		92		120		130		110		74		64		53		72		71		110		100		93		120	
Cadmium	2.3	450	0.71	U	0.3	J	0.3	J	0.19	J	0.19	J	0.22	J	0.29	J	0.19	J	0.56	J	0.23	J	0.71	U	0.32	J	0.32	J	0.19	
Chromium	29	450	20		16		18		19		18		17		19		19		20		16		21		18		19		18	
Copper	29.6	41,000	22		NA		NA		21		26		32		NA		NA		NA		NA		NA		21		27		NA	
Lead	400	800	29		26		24		21		39		50		27		52		41		22		15		37		40		15	
Selenium	2	5,100	0.71	U	0.58	J	0.56	J	0.4	J	0.75	U	0.71	U	0.44	J	0.43	J	0.7	U	0.73	U	0.71	U	0.76	U	0.79	J	0.72	
Silver	0.763	5,100	0.35	U	2.2	U	2	U	2.2	U	2.1	U	0.89	J	1.9	U	1.8	U	2	U	2.1	U	2	U	2.1	U	0.52	J	2	
Zinc	108.9	100,000	79		NA		NA		70		73		81		NA		NA		NA		NA		NA		86		80		NA	
Mercury (mg/Kg - dry)																														
Mercury	0.13	310	0.048	J	0.076		0.11		0.071		0.096		0.081		0.067		0.037	J	0.045	J	0.074		0.048	J	0.068		0.078		0.068	

Table A-5
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Post-Excavation Soil Samples Remaining On Site After All Phases of Excavation

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1] (mg/kg)	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil)		SEAD5-FX-SS-026FS		SEAD5-PX-SS-032FS		SEAD5-PX-SS-038-FS2		SEAD5-PX-SS-039-FS1		SEAD5-PX-SS-039-FS2		SEAD5-FX-SS-039-FS		SEAD5-FX-SS-040-FS		SEAD5-FX-SS-041-FS		SEAD5-FX-SS-042-FS		SEAD5-FX-SS-043-FS		SEAD5-FX-SS-044-FS		SEAD5-FX-SS-044-FS		SEAD5-FX-SS-045-FS		SEAD5-PX-SS-045-FS		SEAD5-FX-SS-047-FS		SEAD5-FX-SS-048-FS
Sampling Depth				0- 6"		0- 6"		0" - 6"		6" -12"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0- 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"
Sampling Date				8/15/2003		8/20/2003		10/3/2003		10/3/2003		10/3/2003		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005
Matrix				Solid		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil
Polyaromatic Hydrocarbons (ug/Kg - dry)																																		
Naphthalene	13,000	190,000	U	290	U	250	U	280	U	300	U	270	U	97	J	170	J	91	J	66	J	76	J	380		370	U	270	U	180	J	70	J	82
2-Methylnaphthalene	36400	NA	U	290	U	250	U	280	U	300	U	270	U	320	U	60	J	280	U	280	U	280	U	110	J	370	U	270	U	210	J	270	U	290
Acenaphthylene	41,000	NA	U	290	U	250	U	280	U	300	U	270	U	320	U	190	J	110	J	280	U	280	U	110	J	370	U	270	U	380	U	270	U	290
Acenaphthene	50,000	29,000,000	U	290	U	250	U	280	U	300	U	270	U	320	U	170	J	280	U	66	J	280	U	670		370	U	270	U	1300		270	U	290
Fluorene	50,000	26,000,000	U	290	U	250	U	280	U	300	U	270	U	320	U	340		60	J	64	J	280	U	520		370	U	270	U	1900		270	U	290
Phenanthrene	50,000	NA	U	290	U	100	J	500		200	J	85	J	510		5600		700		500		210	J	4900		75	J	270	U	27000		270	U	510
Anthracene	50,000	100,000,000	U	290	U	250	U	110	J	100	J	270	U	120	J	1500		220	J	160	J	63	J	1100		370	U	270	U	7800		270	U	170
Fluoranthene	50,000	22,000,000	U	290	U	120	J	970		400		160	J	950		7700		1300		750		400		5800		180	J	270	U	37000		270	U	1100
Pyrene	50,000	29,000,000	U	290	U	100	J	790		380		130	J	980		7000		1300		730		380		5600		170	J	270	U	32000		270	U	1000
Benz(a)anthracene	224	2,100	U	290	U	56	J	430		220	J	92	J	550		3700		850		470		230	J	3200		120	J	270	U	20000		270	U	600
Chrysene	400	210,000	U	290	U	96	J	450		320		110	J	510		3000		680		370		230	J	2700		110	J	270	U	14000		270	U	610
Benzo(b)fluoranthene	1,100	2,100	U	290	U	86	J	540		450		140	J	540		3800		810		450		310		3300		130	J	270	U	14000		270	U	730
Benzo(k)fluoranthene	1,100	21,000	U	290	U	250	U	200	J	160	J	270	U	190	J	1000		290		170	J	92	J	1000		370	U	270	U	3300		270	U	220
Benzo(a)pyrene	61	210	U	290	U	250	U	360		240	J	96	J	370		2700		610		340		210	J	2500		88	J	270	U	8700		270	U	520
Dibenzo(a,h)anthracene	14	210	U	290	U	250	U	60	J	300	U	270	U	68	J	440		110	J	60	J	280	U	410		370	U	270	U	1200		270	U	290
Indeo(1,2,3-cd)pyrene	3,200	2,100	U	290	U	250	U	260	J	180	J	60	J	250	J	2000		470		260	J	170	J	1800		370	U	270	U	3700		270	U	370
Benzo(g,h,i)perylene	50,000	NA	U	290	U	250	U	210	J	190	J	55	J	230	J	1600		420		230	J	150	J	1500		370	U	270	U	3000		270	U	310
[2]Benzo(a)pyrene TEQ	10,000	NA		672.8		542.66		549.5		629.8		399		579		4130		942.7		523.4		564.22		3777		524.8		626.4		13843		626.4		988.3
ICP Metals (mg/Kg - dry)																																		
Arsenic	8.24	1.6	J	5.4		64	U	9.4		9		6.3	J	13.3		7.57		10.8		14.1		10.9		9.32		12.1		11.6		15.4		6.47	J	4.75
Barium	300	67,000		110		45	J	69		56		24	J	72.3		35.3		70.5		83.7		65		64.2		101		77.3		89.5		58.9		36.4
Cadmium	2.3	450	J	0.73	U	6.4	UJ	0.26	J	0.3	J	0.17	J	0.07	J	0.676	U	0.664	U	0.663	U	0.0713	J	0.195	J	0.285	J	0.686	U	0.197	J	0.0758	J	0.202
Chromium	29	450		19		8.2	J	15		29		9.3		21.9		12.9		19.5		25		10.8		10.7		20		22.6		24.9		17.3		10.8
Copper	29.6	41,000		NA		27	J	26		30		13		28.3		24.7		36.6		24.8		16.8		17.6		31		32.7		25.9		24		15.1
Lead	400	800		11		24	J	23		96		27		58.3		37.5		52		22.3		15.5		78.4		61.6		30.9		76.6		24.8		17.6
Selenium	2	5,100	U	0.75	U	0.64	U	0.69	U	0.73	U	0.63	U	17	J	13.4	J	13.8	J	15.9		8.53	J	16.4	U	18.7	J	21.4		16.8	J	16.7		15.6
Silver	0.763	5,100	J	2	U	18	U	1.9	U	0.37	J	1.8	U	0.237	J	1.89	U	1.86	U	0.248	J	0.257	J	1.91	U	0.334	J	0.275	J	0.521	J	1.91	U	0.232
Zinc	108.9	100,000		NA		99		71		84		34		66.2		47.8		109		81.1		35.7		42.8		82.3		81.5		91.8		50.3		47.4
Mercury (mg/Kg - dry)																																		
Mercury	0.13	310		0.043	J	0.041	J	0.088		0.12		0.0079	J	0.036	J	0.0316	J	0.0409	J	0.058		0.0913		0.0576		0.0776		0.0307		0.0738		0.0783		0.0829

Table A-5
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Post-Excavation Soil Samples Remaining On Site After All Phases of Excavation

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1] (mg/kg)	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil)	SEAD5-FX-SS-049-FS		SEAD5-FX-SS-050-FS		SEAD5-PX-SS-050-FS		SEAD5-FX-SS-051-FS		SEAD5-PX-SS-051-FS		SEAD5-FX-SS-053-FS		SEAD5-PX-SS-053-FS		SEAD5-FX-SS-054-FS		SEAD5-FX-SS-054-DP		SEAD5-PX-SS-054-FS		SEAD5-PX-SS-055-FS		SEAD5-FX-SS-055-FS		SEAD5-FX-SS-056-FS		SEAD5-FX-SS-057-FS		SEAD5-PX-SS-057-FS		SEAD5-FX-SS-058-FS	
Sampling Depth			0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"	
Sampling Date			2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005	
Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Polyaromatic Hydrocarbons (ug/Kg - dry)																																		
Naphthalene	13,000	190,000	J	77	J	100	J	110	J	78	J	81	J	310	U	64 J		89	J	69	J	130	J	94	J	82	J	310	U	330	U	81	J	64	J
2-Methylnaphthalene	36400	NA	U	300	U	300	U	130	J	320	U	80	J	310	U	290	U	330	U	330	U	270	U	290	U	310	U	310	U	330	U	300	U	320	U
Acenaphthylene	41,000	NA	U	300	U	240	J	280	U	320	U	300	U	310	U	290	U	330	U	330	U	200	J	290	J	310	U	310	U	330	U	300	U	320	U
Acenaphthene	50,000	29,000,000	U	300	U	300	U	280	U	320	U	300	U	310	U	290	U	330	U	330	U	100	J	57	J	310	U	310	U	330	U	300	U	320	U
Fluorene	50,000	26,000,000	U	300	U	120	J	280	U	320	U	300	U	310	U	290	U	330	U	330	U	130	J	290	U	310	U	310	U	330	U	300	U	320	U
Phenanthrene	50,000	NA		180	J	2000		130	J	180	J	840		310	U	260	J	330	U	330	U	1600		1100		310	U	310	U	330	U	300	U	320	U
Anthracene	50,000	100,000,000	J	300	U	580		280	U	320	U	250	J	310	U	81	J	330	U	330	U	510		340		310	U	310	U	330	U	300	U	320	U
Fluoranthene	50,000	22,000,000		470		4100		170	J	290	J	2700		240	J	620		330	U	330	U	2500		3100		310	U	310	U	330	U	75	J	320	U
Pyrene	50,000	29,000,000		430		4000		210	J	250	J	2700		240	J	580		330	U	330	U	2600		3100		310	U	310	U	330	U	83	J	320	U
Benz(a)anthracene	224	2,100		180	J	2100		140	J	160	J	1600		200	J	330		330	U	330	U	1500		1700		310	U	310	U	330	U	300	U	320	U
Chrysene	400	210,000		260	J	2100		150	J	110	J	1300		160	J	320		330	U	330	U	1400		1700		310	U	310	U	330	U	300	U	320	U
Benzo(b)fluoranthene	1,100	2,100		310		2400		240	J	160	J	1600		210	J	400		330	U	330	U	1900		2300		310	U	310	U	330	U	70	J	320	U
Benzo(k)fluoranthene	1,100	21,000	J	130	J	820		280	U	320	U	400		74	J	160	J	330	U	330	U	450		630		310	U	310	U	330	U	300	U	320	U
Benzo(a)pyrene	61	210		210	J	1800		150	J	110	J	1100		160	J	290		330	U	330	U	1400		1600		310	U	310	U	330	U	300	U	320	U
Dibenzo(a,h)anthracene	14	210	U	300	U	89	J	280	U	320	U	150	J	310	U	290	U	330	U	330	U	250	J	270	J	310	U	310	U	330	U	300	U	320	U
Indeo(1,2,3-cd)pyrene	3,200	2,100		190	J	1300		120	J	82	J	660		130	J	230	J	330	U	330	U	1100		1300		310	U	310	U	330	U	300	U	320	U
Benzo(g,h,i)perylene	50,000	NA		160	J	1100		110	J	74	J	580		100	J	210	J	330	U	330	U	940		1100		310	U	310	U	330	U	300	U	320	U
[2]Benzo(a)pyrene TEQ	10,000	NA		581.9		2498.2		484.3		474.5		1653		526.34		680.8		765.6		766		2,119		2423.3		719		719.2		765.6		673		742.4	
ICP Metals (mg/Kg - dry)																																		
Arsenic	8.24	1.6	J	8.73		10.4		10.8		9.35		14.7		9.54		12.7		11.6		8.44		11.4		12.2		11.4		6.93	J	6.95	J	15.3		8.75	
Barium	300	67,000		54.7		49.6		24.5	J	147		129		156		91		113		124		75.5		81.2		125		76.7		71.2		105		126	
Cadmium	2.3	450	J	0.0747	J	0.159	J	0.101	J	0.229	J	0.774	U	0.224	J	0.0879	J	0.131	J	0.849	U	0.161	J	0.321	J	0.167	J	0.726	U	0.636	J	0.0803	J	0.81	J
Chromium	29	450		17.3		19.2		6.22		22.9		29.5		18.4		26.1		19.5		26.5		20		17.3		24.3		18.7		20.6		20.3		23.6	
Copper	29.6	41,000		16.8		22.9		20.4		21.3		31.4		22.2		25.1		15.6		12.5		23.3		29.4		14.4		14.2		24.1		27.5		15.2	
Lead	300	800		17.7		949		14		19.8		27.7		68.9		32.4		24.3		15.4		102		58.7		22.4		9.99		19.3		17.7		14.8	
Selenium	2	5,100	J	18.1	J	20.5		16.9	U	12.8	J	17.7	J	18.6		7.74	J	20.6		17.5	J	11.1	J	15.2	J	11		11.7	J	11.7	J	14.9	J	6.91	J
Silver	0.763	5,100	J	2.12	U	2.17	U	0.338	J	2.09	U	0.352	J	2.15	U	0.758	J	2.31	U	2.38	U	0.188	J	0.315	J	2.21	U	2.03	U	2.21	U	0.228	J	2.27	U
Zinc	108.9	100,000		84.5		65.3		34.5		104		101		85.6		97.4		102		98.3		76.5		88.5		95.5		91.9		73.5		85.6		101	
Mercury (mg/Kg - dry)																																		
Mercury	0.13	310		0.0875		0.0987		0.0618		0.069		0.111		0.0485	J	0.0683		0.0581	J	0.0581	J	0.031		0.0648		0.0581	J	0.026	J	0.0578	J	0.0389	J	0.0558	J

Table A-5
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Post-Excavation Soil Samples Remaining On Site After All Phases of Excavation

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1] (mg/kg)	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil)	SEAD5-PX-SS-058-FS		SEAD5-FX-SS-059-FS		SEAD5-PX-SS-059-FS		SEAD5-FX-SS-060-FS		SEAD5-PX-SS-060-FS		SEAD5-FX-SS-61-FS		SEAD5-PX-SS-061-FS		SEAD5-FX-SS-62-FS		SEAD5-FX-SS-62-DUP		SEAD5-PX-SS-062-FS		SEAD5-FX-SS-63-FS		SEAD5-FX-SS-63-FS2		SEAD5-FX-SS-63-FS3		SEAD5-PX-SS-063-FS		SEAD5-FX-SS-64-FS		SEAD5-PX-SS-064-FS		SEAD5-FX-SS-65-FS	
Sampling Depth			0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		6" - 12"		12" - 18"		0" - 6"		0" - 6"		0" - 6"		0" - 6"	
Sampling Date			2/10/2005		2/10/2005		2/10/2005		2/10/2005		2/10/2005		5/18/2005		2/10/2005		5/18/2005		5/18/2005		2/10/2005		5/18/2005		7/21/2005		7/21/2005		2/10/2005		5/18/2005		2/10/2005		5/18/2005	
Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Polyaromatic Hydrocarbons (ug/Kg - dry)																																				
Naphthalene	13,000	190,000	80	J	170	J	92	J	84	J	82	J	280	U	69	J	330	U	290	U	110	J	360	U	280	U	280	U	81	J	280	U	80	J	7000	
2-Methylnaphthalene	36400	NA	290	U	490		310	U	350	U	340	U	280	U	300	U	330	U	290	U	480	U	360	U	280	U	280	U	360	U	280	U	320	U	5300	
Acenaphthylene	41,000	NA	290	U	320	U	61	J	350	U	340	U	280	U	300	U	220	J	94	J	480	U	360	U	280	U	280	U	120	J	280	U	140	J	960	
Acenaphthene	50,000	29,000,000	290	U	320	U	310	U	350	U	340	U	280	U	300	U	330	U	290	U	480	U	360	U	280	U	280	U	360	U	280	U	320	U	30000	
Fluorene	50,000	26,000,000	290	U	320	U	310	U	350	U	340	U	280	U	300	U	330	U	290	U	480	U	360	U	280	U	280	U	360	U	280	U	320	U	30000	
Phenanthrene	50,000	NA	88	J	200	J	170	J	350	U	110	J	280	U	570		330	U	290	U	480	U	480		280	U	280	U	380		280	U	340		250000	
Anthracene	50,000	100,000,000	290	U	320	U	96	J	350	U	340	U	280	U	140	J	330	U	290	U	480	U	110	J	280	U	280	U	150	J	280	U	160	J	82000	
Fluoranthene	50,000	22,000,000	190	J	140	J	370		350	U	230	J	280	U	1200		330	U	290	U	480	U	690		280	U	280	U	1000		280	U	870		300000	
Pyrene	50,000	29,000,000	200	J	140	J	390		350	U	230	J	280	U	1100		330	U	290	U	480	U	570		280	U	280	U	1000		280	U	850		220000	
Benz(a)anthracene	224	2,100	110	J	88	J	250	J	350	U	140	J	280	U	580		330	U	290	U	480	U	360		280	U	280	U	620		280	U	570		140000	
Chrysene	400	210,000	130	J	100	J	280	J	350	U	150	J	280	U	600		330	U	290	U	480	U	350	J	280	U	280	U	560		280	U	490		110000	
Benzo(b)fluoranthene	1,100	2,100	150	J	140	J	380		350	U	180	J	280	U	620		330	U	290	U	480	U	250	J	280	U	280	U	740		280	U	680		140000	
Benzo(k)fluoranthene	1,100	21,000	290	U	320	U	130	J	350	U	70	J	280	U	230	J	330	U	290	U	480	U	360	U	280	U	280	U	240	J	280	U	220	J	17000	
Benzo(a)pyrene	61	210	90	J	71	J	230	J	350	U	110	J	280	U	440		330	U	290	U	480	U	360	U	280	U	280	U	540		280	U	520		110000	
Dibenzo(a,h)anthracene	14	210	290	U	320	U	310	U	350	U	340	U	280	U	79	J	330	U	290	U	480	U	360	U	280	U	280	U	89	J	280	U	87	J	9900	
Indeo(1,2,3-cd)pyrene	3,200	2,100	81	J	78	J	230	J	350	U	100	J	280	U	310		330	U	290	U	480	U	250	J	280	U	280	U	420		280	U	420		55000	
Benzo(g,h,i)perylene	50,000	NA	69	J	66	J	210	J	350	U	95	J	280	U	280	J	69	J	290	U	480	U	290	J	280	U	280	U	370		280	U	400		53000	
[2]Benzo(a)pyrene TEQ	10,000	NA	418.3		425.8		630.1		812		494.2		649.6		678.3		765.6		672.8		1113.6		813.1		649.6		649.6		815		649.6		781.1		154670	
ICP Metals (mg/Kg - dry)																																				
Arsenic	8.24	1.6	12.1		9.52		10.5		10.7		10.2		5.8	J	10.9		7.37	J	7.52		11.8		9.77		8.33		7.75		10.9		8.33		15.2		7.49	
Barium	300	67,000	38.1		73.1		50.6		241		48.9		37.6		80.1		73.8		72.5		79.1		86.5		156		147		115		71.2		116		226	
Cadmium	2.3	450	0.121	J	0.761	U	0.152	J	0.0479	J	0.1	J	0.655	U	0.0784	J	0.785	U	0.731	U	1.14	U	0.999		0.242	J	0.117	J	0.2	J	0.718	U	0.626	U	0.951	U
Chromium	29	450	14.5		31.6		17		44.3		17.7		8.95		16.8		18.1		18.9		22.1		24.9		15.9		14		19		20.6		31.2		58.9	
Copper	29.6	41,000	23		17.5		27.9		25.7		23.9		17.4		31.9		16.5		17.5		16.8		117		20		11.9		24.4		27.3		22.3		32.3	
Lead	400	800	41.2		54.1		48.6		34		31.1		6.43		48.7		13.4		10.4		20.1		66.1		236		39.2		42.5		14.4		35.9		29.8	
Selenium	2	5,100	12.4	J	13.3	J	16.3	J	15.8	J	18.5	J	5.6	J	11.9	J	3.93	J	5.22	J	27.3	U	11.9	J	2.45	J	4.16	J	7.62	J	5.79	J	11.8	J	3.44	J
Silver	0.763	5,100	0.278	J	2.13	U	0.316	J	2.34	U	2.35	U	1.84	U	2.16	U	2.2	U	2.05		0.455	J	8.12		1.07	J	0.976	J	0.295	J	2.01	U	0.436	J	1.77	U
Zinc	108.9	100,000	56.7		75.6		62.8		118		74.7		54.9		62.5		62		77.4		72.9		241		116		63		83.7		72.2		100		84.7	
Mercury (mg/Kg - dry)																																				
Mercury	0.13	310	0.0226	J	0.0892		0.0716		0.117		0.0344	J	0.0134	J	0.0407	J	0.0306	J	0.0322	J	0.053	J	3.14	J	0.0715		0.0639		0.0985		0.0385		0.0843		0.146	

Table A-5
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Post-Excavation Soil Samples Remaining On Site After All Phases of Excavation

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1] (mg/kg)	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil)	SEAD5-FX-SS-65-FS2		SEAD5-FX-SS-65-FS3		SEAD5-PX-SS-065-FS		SEAD5-FX-SS-66-FS		SEAD5-PX-SS-066-FS		SEAD5-FX-SS-67-FS		SEAD5-FX-SS-68-FS		SEAD5-FX-SS-69-FS		SEAD5-PX-SS-70-FS		SEAD5-PX-SS-71-FS		SEAD5-PX-SS-72-FS		SEAD5-PX-SS-73-FS		SEAD5-PX-SS-74-FS		SEAD5-PX-SS-75-FS		SEAD5-PX-SS-75-FS2		SEAD5-PX-SS-75-FS3		SEAD5-PX-SS-76-FS	
Sampling Depth			6" - 12"		12" - 18"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		0" - 6"		6" - 12"		12" - 18"		0" - 6"	
Sampling Date			7/21/2005		7/21/2005		2/10/2005		5/18/2005		2/10/2005		5/18/2005		5/18/2005		5/18/2005		5/18/2005		5/18/2005		5/18/2005		5/18/2005		5/18/2005		5/18/2005		7/22/2005		7/22/2005		5/18/2005	
Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Polyaromatic Hydrocarbons (ug/Kg - dry)																																				
Naphthalene	13,000	190,000	280	U	290	U	77	J	310	U	91	J	270	U	290	U	310	U	270	J	76	J	1700		300	U	290	U	74	J	80	J	100	J	450	
2-Methylnaphthalene	36400	NA	280	U	290	U	320	U	310	U	320	U	270	U	290	U	310	U	640		59	J	1100		300	U	290	U	320	U	60	J	86	J	440	
Acenaphthylene	41,000	NA	280	U	290	U	130	J	310	U	320	U	100	J	75	J	310	U	840		400		1400		300	U	290	U	280	J	520		580		1900	
Acenaphthene	50,000	29,000,000	280	U	290	U	320	U	76	J	75	J	270	U	290	U	310	U	280	J	190	J	3300		300	U	290	U	170	J	240		340		2700	
Fluorene	50,000	26,000,000	280	U	290	U	320	U	100	J	84	J	270	U	290	U	310	U	380		240	J	6000		300	U	290	U	220	J	440		710		7000	
Phenanthrene	50,000	NA	280	U	290	U	330		140	J	640		190	J	380		310	U	2500		2100		54000		90	J	81	J	1900		5700		7800		74000	
Anthracene	50,000	100,000,000	280	U	290	U	140	J	310	U	200	J	64	J	99	J	310	U	1000		650		14000		300	U	290	U	370		1300		2200		15000	
Fluoranthene	50,000	22,000,000	280	U	290	U	740		310	U	800		390		790		92	J	3700		3500		70000		230	J	190	J	3200		8600		11000		92000	
Pyrene	50,000	29,000,000	280	U	290	U	760		310	U	760		340		640		72	J	3600		2900		51000		200	J	160	J	2500		7500		9500		68000	
Benz(a)anthracene	224	2,100	280	U	290	U	480		310	U	430		220	J	390		310	U	2000		1700		31000		130	J	110	J	1600		4300		5600		40000	
Chrysene	400	210,000	280	U	290	U	550		310	U	380		220	J	390		310	U	1900		1600		25000		130	J	120	J	1400		4000		5000		32000	
Benzo(b)fluoranthene	1,100	2,100	280	U	290	U	720		310	U	460		91	J	350		310	U	2900		2100		33000		300	U	290	U	2000		5500		6500		42000	
Benzo(k)fluoranthene	1,100	21,000	280	U	290	U	200	J	310	U	170	J	270	U	290	U	310	U	700		440		7400		300	U	290	U	460		1900		2300		14000	
Benzo(a)pyrene	61	210	280	U	290	U	500		310	U	330		270	U	150	J	310	U	2300		1500		25000		300	U	290	U	1300		4100		5000		32000	
Dibenzo(a,h)anthracene	14	210	280	U	290	U	92	J	310	U	320	U	270	U	82	J	310	U	470		340		4800		300	U	290	U	290		280		350		5600	
Indeo(1,2,3-cd)pyrene	3,200	2,100	280	U	290	U	390		310	U	260	J	150	J	280	J	310	U	1600		1100		15000		98	J	94	J	990		2600		2900		19000	
Benzo(g,h,i)perylene	50,000	NA	280	U	290	U	350		310	U	240	J	180	J	290		310	U	1900		1200		15000		110	J	92	J	1000		3300		3700		19000	
[2]Benzo(a)pyrene TEQ	10,000	NA	649.6		672.8		758.5		719.2		770.5		591		340.8		719.2		3446		2350.4		38024		657.1		633.5		2067.6		5679		6923		48160	
ICP Metals (mg/Kg - dry)																																				
Arsenic	8.24	1.6	6.93	J	9.2		15.3		8.23		19.5		6.63		7.94		7.99		7.2		8.01		6.1	J	6.94	J	8.16		9.5		9.74		7.98		5.81	J
Barium	300	67,000	113		110		119		162		161		51		69.2		119		97.4		86.6		57.5		36.1		189		119		86.4		66.1		61.1	
Cadmium	2.3	450	0.0981	J	0.16	J	0.601	U	0.791	U	0.112	J	0.822	U	0.179	J	0.0273	J	0.679	U	0.0875	J	0.625		0.722	U	0.72	U	0.625	U	0.551	J	0.59	J	0.0551	J
Chromium	29	450	16.1		14.4		30		24.5		123		19		18.1		20.7		21.8		21.9		16.7		10.6		58.8		19.9		18		21.4		11.4	
Copper	29.6	41,000	13.7		16		19.3		18.9		71.3		25.8		26.3		22.7		26.8		45.9		18.1		19.2		40.2		30.9		29.5		25.7		17.9	
Lead	400	800	19.6		17.9		64.2		13.8		1470		25.4		31.9		20.8		43.1		30.5		469		17.2		25.9		70.4		93.3		74.3		37.8	
Selenium	2	5,100	5.2	J	4.95	J	6.41	J	5.36	J	15.7	J	3.13		7.33	J	6.01	J	6.47	J	8.97	J	15	U	9.47	J	5.39	J	7.83	J	16.1		16.9		5.41	J
Silver	0.763	5,100	1.06	J	1.2	J	0.335	J	2.22	U	1.24	J	1.74	U	1.97		2.07	U	1.9	U	1.99		1.75	U	2.02	U	2.02	U	2.31	U	2.15		2.03		0.211	J
Zinc	108.9	100,000	69.9		61.2		93.7		94.4		158		64.2		95.8		76.6		93.9		110		61.9		57.3		122		88.5		74.8		70.9		57.3	
Mercury (mg/Kg - dry)																																				
Mercury	0.13	310	0.0773	J	0.0784	J	0.0747		0.0686		0.0933		0.0368		0.12		0.111		0.203		0.471		0.0696		0.0512		0.0731		0.172		0.455		0.448		0.0829	

Table A-8
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Downgradient Delineation Samples - July and October 2005

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1]	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil) *	SEAD5-PX-SS-77-FS1		SEAD5-PX-SS-77-FS2		SEAD5-PX-SS-77-FS3		SEAD5-PX-SS-78-FS1		SEAD5-PX-SS-78-FS2		SEAD5-PX-SS-78-FS3		SEAD5-PX-SS-79-FS1		SEAD5-PX-SS-79-FS2		SEAD5-PX-SS-79-FS3		SEAD5-PX-SS-80-FS1		SEAD5-PX-SS-80-FS2		SEAD5-PX-SS-80-FS3		SEAD5-PX-SS-80-DUP	
Sampling Depth			0" - 6"		6" - 12"		12" - 18"		0" - 6"		6" - 12"		12" - 18"		0" - 6"		6" - 12"		12" - 18"		0" - 6"		6" - 12"		12" - 18"		0" - 6"	
Sampling Date			7/21/2005		7/22/2005		7/22/2005		7/21/2005		7/22/2005		7/22/2005		7/21/2005		7/22/2005		7/22/2005		7/21/2005		7/22/2005		7/22/2005		7/21/2005	
Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Polyaromatic Hydrocarbons (ug/Kg - dry)																												
Naphthalene	13,000	190,000	280	U	68	J	280	U	270	U	100	J	300		64	J	290	U	310	U	290	U	99	J	240	J	260	
2-Methylnaphthalene	36400	NA	280	U	60	J	280	U	270	U	120	J	230	J	290	U	290	U	310	U	290	U	100	J	300	J	210	
Acenaphthylene	41,000	NA	100	J	180	J	110	J	180	J	350		820		210	J	75	J	310	U	290	U	130	J	210	J	3600	
Acenaphthene	50,000	29,000,000	130	J	230	J	120	J	110	J	310		1200		150	J	290	U	310	U	290	U	180	J	280	J	990	
Flourene	50,000	26,000,000	170	J	400		190	J	140	J	530		2400		140	J	290	U	310	U	290	U	190	J	360		34000	
Phenanthrene	50,000	NA	2100		4200		2400		2100		7100		24000		1400		380		310	U	81	J	1800		4000		12000	
Anthracene	50,000	100,000,000	560		970		470		580		1700		6500		440		99	J	310	U	290	U	490		1300		50000	
Flouranthene	50,000	22,000,000	3500		5800		3500		3900		11000		29000		2500		790		92	J	190	J	3000		5800		41000	
Pyrene	50,000	29000000	3100		5100		3100		3400		9300		23000		2400		640		72	J	160	J	2600		5200		28000	
Benz(a)anthracene	224	2100	1700		2800		1600		2100		5000		14000		1400		390		310	U	110	J	1500		3400		23000	
Chrysene	400	210,000	1700		2600		1700		1900		4900		12000		1400		390		310	U	120	J	1500		2800		27000	
Benzo(b)fluoranthene	1,100	2,100	2200		3500		2000		2900		6000		14000		1800		350		310	U	290	U	2000		3700		10000	
Benzo(k)fluoranthene	1,100	21,000	900		1000		830		880		2600		4600		650		290	U	310	U	290	U	780		1100		22000	
Benzo(a)pyrene	61	210	1600		2500		1500		2100		4700		12000		1400		150	J	310	U	290	U	150		2800		4100	
Dibenzo(a,h)anthracene	14	210	340		480		320		150		980		2400		280		82	J	310	U	290	U	260		530		12000	
Indeo(1,2,3-cd)pyrene	3,200	2,100	1000		1500		920		1300		2800		6800		850		280	J	310	U	94	J	960		1500		14000	
Benzo(g,h,i)perylene	50,000	NA	1300		1900		1200		1700		3500		8300		1100		290		310	U	92	J	1200		1900		310	
[2]Bezo(a)pyrene TEQ	10,000	NA	2456		3796		2297.3		2907.8		7135		18046		2105.5		340.8		719.2		633.5		878.8		4229		21290	
ICP Metals (mg/Kg - dry)																												
Arsenic	8.24	1.6	9.34		9.44		9.83		8.14		9.36		9.91		9.09		9.6		11.7		8.16		7.72		7.77		7.35	
Barium	300	67,000	79.2		71.2		69.6		101		115		130		95.5		88.1		99.2		63.2		66.5		62.4		45.7	
Cadmium	2.3	450	0.198	J	0.11	J	0.072	J	0.107	J	0.201	J	0.112	J	0.213	J	0.165	J	0.079	J	0.157	J	0.104	J	0.0488	J	0.179	
Chromium	29	450	17		20.4		20.6		17		19.2		20.3		16		20.1		44.6		17.4		13.1		16.3		9.69	
Copper	29.6	41,000	29		32.4		34.3		23		23.5		27.8		35.1		31.5		28.3		25.9		22.1		20.3		19.4	
Lead	400	800	41		44.6		37		33.6		32.4		43.2		130		33.5		33.5		36.6		29.6		26.6		25.6	
Selenium	2	5,100	12	J	10.3	J	16.2	J	10.6	J	14.3	J	14.5	J	13.2	J	17	J	14.6	J	12.8	J	18.1		19.2	J	17.8	
Silver	0.763	5,100	1.08	J	0.738	J	0.644	J	1.21	J	1.08	J	1.02	U	1.17	J	1.41	J	1.26	J	1.44	J	1.18	J	1.12	U	0.815	
Zinc	108.9	100,000	81.8		63.4		63.6		84.4		80.7		79.4	J	82.3		78.4		75.3		100		86.2		69.6		60.9	
Mercury (mg/Kg - dry)																												
Mercury	0.13	310	0.231		0.0757		0.0829		0.0927		0.0794		0.0576		0.089		0.0963		0.094		0.176		0.0884		0.0607		0.147	

Table A-8
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Downgradient Delineation Samples - July and October 2005

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1]	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil) *	SEAD5-PX-SS-81-FS1	SEAD5-PX-SS-81-FS2	SEAD5-PX-SS-81-FS3	SEAD5-PX-SS-81-FS4	SEAD5-PX-SS-82-FS1	SEAD5-PX-SS-82-FS2	SEAD5-PX-SS-82-FS3	SEAD5-PX-SS-83-FS1	SEAD5-PX-SS-83-FS2	SEAD5-PX-SS-83-FS3	SEAD5-PX-SS-83-FS4	SEAD5-PX-SS-84-FS1
Sampling Depth			0" - 6"	6" - 12"	12" - 18"	18" -24"	0" - 6"	6" - 12"	12" - 18"	0" - 6"	6" - 12"	12" - 18"	18" - 24"	0" - 6"
Sampling Date			7/21/2005	7/22/2005	7/22/2005	10/13/2005	7/21/2005	7/22/2005	7/22/2005	7/21/2005	7/22/2005	7/22/2005	10/13/2005	10/11/2005
Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Polyaromatic Hydrocarbons (ug/Kg - dry)														
Naphthalene	13,000	190,000	U 300	U 260	U 140	J 260	U 110	J 120	J 750	200	J 270	U 110	J 250	J 340 U
2-Methylnaphthalene	36400	NA	U 300	U 260	U 62	J 260	U 120	J 110	J 730	150	J 270	U 120	J 250	J 340 U
Acenaphthylene	41,000	NA	U 120	J 170	J 210	J 61	J 1300	1300	1700	1100	620	880	320	200 J
Acenaphthene	50,000	29,000,000	U 300	U 130	J 280	260	U 180	J 220	J 640	280	270	U 110	J 180	J 110 J
Flourene	50,000	26,000,000	U 300	U 130	J 280	260	U 250	J 290	1100	360	65	J 81	J 260	J 120 J
Phenanthrene	50,000	NA	U 280	J 1400	2200	180	J 1700	2300	7400	2400	690	1200	1400	1200
Anthracene	50,000	100,000,000	U 94	J 500	760	58	J 1400	1500	3200	1400	550	810	600	390
Flouranthene	50,000	22,000,000	J 480	2500	3100	330	4000	5000	9500	3900	2000	2500	1900	2300
Pyrene	50,000	29000000	J 450	2200	2700	300	4500	5200	10000	4100	2300	3000	1900	2000
Benz(a)anthracene	224	2100	U 260	J 1500	1800	150	J 2700	3100	5600	2500	1500	1800	1100	1200
Chrysene	400	210,000	U 250	J 1300	1600	250	J 2700	2900	5300	2400	1300	1600	1100	1300
Benzo(b)fluoranthene	1,100	2,100	U 320	1900	2500	260	J 4400	4600	6900	3600	2200	2600	1500	2100
Benzo(k)fluoranthene	1,100	21,000	U 130	J 610	920	98	J 1600	1600	2500	1200	630	890	450	550
Benzo(a)pyrene	61	210	U 260	J 1400	1800	140	J 3700	3800	5800	3000	1800	2200	1200	1500
Dibenzo(a,h)anthracene	14	210	U 64	J 250	340	260	U 600	590	790	480	130	J 160	J 220	J 290
Indeo(1,2,3-cd)pyrene	3,200	2,100	U 190	J 800	980	140	J 2200	2200	2800	1700	1100	150	720	890
Benzo(g,h,i)perylene	50,000	NA	U 310	1000	1300	140	J 2800	2900	3500	2300	1600	2100	770	970
[2]Bezo(a)pyrene TEQ	10,000	NA	404.8	2089.1	2693.2	458.48	5273	5425	8198	4296	2429.3	2839.9	1767.5	2227.5
ICP Metals (mg/Kg - dry)														
Arsenic	8.24	1.6	8.23	7.11	8.73	9.34	J 8.28	8.24	10	8.56	8.31	8.43	10.5	7.41
Barium	300	67,000	90.1	90.8	80.8	50.4	115	79.1	92.5	79	92.1	77.5	95.7	78.9
Cadmium	2.3	450	J 0.237	J 0.237	J 0.155	J 0.648	U 0.319	J 0.246	J 2.3	0.161	J 0.0997	J 0.206	J 0.168	J 0.119 J
Chromium	29	450	16.2	13.2	11.4	23.4	18.1	23.7	20.2	23.4	19.3	20	16.5	17.2
Copper	29.6	41,000	36.5	28.9	26.1	33.7	26.6	24	60.8	26.6	25.6	23.7	24.6	30.8
Lead	400	800	32.5	31.6	26.5	25.6	52	41.1	997	79.3	36.1	31.5	41.4	46.4
Selenium	2	5,100	J 8.5	J 15.3	16.4	J 10.6	J 14.5	J 15.1	J 10.7	J 12.5	J 12	J 14	J 13.9	J 29.1
Silver	0.763	5,100	2.08	1.54	J 1.25	J 0.356	J 0.99	J 0.946	1.03	J 0.933	J 1.16	J 1.07	J 0.482	J 1.79 U
Zinc	108.9	100,000	107	72.8	63.6	64.7	107	86.1	119	125	111	97.7	99.1	100
Mercury (mg/Kg - dry)														
Mercury	0.13	310	0.59	0.543	0.361	0.0229	0.149	0.0966	0.0796	0.275	0.172	0.158	0.206	0.439

Table A-8
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Downgradient Delineation Samples - July and October 2005

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1]	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil) *	SEAD5-PX-SS-84-FS2		SEAD5-PX-SS-84-FS3		SEAD5-PX-SS-85-FS1		SEAD5-PX-SS-85-DUP1		SEAD5-PX-SS-85-FS2		SEAD5-PX-SS-86-FS1		SEAD5-PX-SS-86-FS2		SEAD5-PX-SS-87-FS1		SEAD5-PX-SS-87-FS2		SEAD5-PX-SS-88-FS1		SEAD5-PX-SS-88-FS2		SEAD5-PX-SS-89-FS1		SEAD5-PX-SS-89-FS2	
Sampling Depth			6" - 12"		12" - 18"		0" - 6"		0" - 6"		6" - 12"		0" - 6"		6" - 12"		0" - 6"		6" - 12"		0" - 6"		6" - 12"		0" - 6"		6" - 12"	
Sampling Date			10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005	
Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Polyaromatic Hydrocarbons (ug/Kg - dry)																												
Naphthalene	13,000	190,000	310	U	110	J	310	U	310	U	87	J	300	U	320	U	330	U	290	U	290	U	280	U	290	U	810	
2-Methylnaphthalene	36400	NA	310	U	300	U	310	U	310	U	300	U	300	U	320	U	330	U	290	U	290	U	280	U	290	U	450	
Acenaphthylene	41,000	NA	120	J	81	J	110	J	82	J	110	J	300	U	320	U	330	U	290	U	290	U	280	U	250	J	960	
Acenaphthene	50,000	29,000,000	78	J	200	J	96	J	76	J	190	J	300	U	320	U	330	U	290	U	290	U	280	U	180	J	2100	
Flourene	50,000	26,000,000	100	J	180	J	100	J	73	J	210	J	300	U	320	U	330	U	290	U	290	U	280	U	310		3500	
Phenanthrene	50,000	NA	1100		1900		1100		680		1800		300	U	320	U	80	J	290	U	290	U	280	U	3700		34000	
Anthracene	50,000	100,000,000	280	J	420	J	380		210	J	500		300	U	320	U	330	U	290	U	290	U	280	U	1100		9300	
Flouranthene	50,000	22,000,000	1900		2900		2700		1200		2600		300	U	320	U	180	J	290	U	290	U	280	U	6700		46000	
Pyrene	50,000	29000000	1700		2500		2500		1200		2400		300	U	320	U	170	J	290	U	290	U	280	U	5600		33000	
Benz(a)anthracene	224	2100	990		1400		1800		740		1500		300	U	320	U	93	J	290	U	290	U	280	U	3400		20000	
Chrysene	400	210,000	990		1400		1800		660		1200		300	U	320	U	110	J	290	U	290	U	280	U	2900		17000	
Benzo(b)fluoranthene	1,100	2,100	1500		1700		3200		1000		1900		300	U	320	U	140	J	290	U	290	U	280	U	4200		23000	
Benzo(k)fluoranthene	1,100	21,000	430		530		870		290	J	580		300	U	320	U	65	J	290	U	290	U	280	U	1300		6300	
Benzo(a)pyrene	61	210	1100		1300		2400		700		1400		300	U	320	U	110	J	290	U	290	U	280	U	3100		17000	
Dibenzo(a,h)anthracene	14	210	180		280	J	480		140	J	250	J	300	U	320	U	330	U	290	U	290	U	280	U	540		3500	
Indeo(1,2,3-cd)pyrene	3,200	2,100	600		740		1300		430		770		300	U	320	U	69	J	290	U	290	U	280	U	1800		9800	
Benzo(g,h,i)perylene	50,000	NA	670		800		1500		450		820		300	U	320	U	78	J	290	U	290	U	280	U	1800		9500	
[2]Bezo(a)pyrene TEQ	10,000	NA	1603.2		1983.3		3536.7		1066.5		2084.8		696		742.4		471.95		672.8		672.8		649.6		4622		26013	
ICP Metals (mg/Kg - dry)																												
Arsenic	8.24	1.6	8.56		10		9.9		8.88		10		8.28		7.21	J	8.1	J	8.42		6.31	J	6.92	J	7.17		11.2	
Barium	300	67,000	89.8		84.9		111		95.1		92.4		97.2		133		91		85.7		82.3		115		64.4		75.3	
Cadmium	2.3	450	0.138	J	0.339	J	0.111	J	0.0929	J	0.764	U	0.75	U	0.752	U	0.836	U	0.759	U	0.698	U	0.73	U	0.0551	J	0.0151	J
Chromium	29	450	23.6		16.5		23.6		20.8		19.7		22.6		19.7		21.6		22.8		16.4		23.6		17.2		15.5	
Copper	29.6	41,000	26.8		32.7		34.8		31.7		25.6		20.3		18.6		25.6		21		20.4		14.2		19.4		30	
Lead	400	800	93		64.5		112		113		64.4		18.1		14.4		55.3		14		50.1		14.7		36		56.5	
Selenium	2	5,100	31		1.5	U	32.1		3.99	J	18.1	J	16.2	J	11.7	J	37.2		12	J	30.4		38.9		2.66	J	21.2	
Silver	0.763	5,100	2.14	U	0.783	J	2.18	U	2.03	U	2.14	U	0.244	J	0.194	J	2.34	U	0.215	J	1.95	U	2.04	U	0.405	J	1.93	U
Zinc	108.9	100,000	113		98.5		105		94.7		82.8		89.5		122		97.3		87.9		79		72.3		80.4		79.5	
Mercury (mg/Kg - dry)																												
Mercury	0.13	310	0.256		0.129		0.169		0.135		0.0961		0.0699		0.0673		0.138		0.0479	J	0.111		0.0623		0.0669		0.0567	

Table A-8
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Downgradient Delineation Samples - July and October 2005

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1]	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil) *	SEAD5-PX-SS-89-FS3		SEAD5-PX-SS-90-FS1		SEAD5-PX-SS-90-DUP1		SEAD5-PX-SS-90-FS2		SEAD5-PX-SS-91-FS1		SEAD5-PX-SS-91-FS2		SEAD5-PX-SS-91-FS3		SEAD5-PX-SS-92-FS1		SEAD5-PX-SS-92-FS2		SEAD5-PX-SS-93-FS1		SEAD5-PX-SS-93-FS2		SEAD5-PX-SS-94-FS1	
Sampling Depth			12" - 18"		0" - 6"		0" - 6"		6" - 12"		0" - 6"		6" - 12"		12" - 18"		0" - 6"		6" - 12"		0" - 6"		6" - 12"		0" - 6"	
Sampling Date			10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005		10/11/2005	
Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Polyaromatic Hydrocarbons (ug/Kg - dry)																										
Naphthalene	13,000	190,000	540		290	U	1100		130	J	390	U	330	U	300	U	280	U	330	U	340	U	330	U	270	U
2-Methylnaphthalene	36400	NA	380		290	U	400		270	U	390	U	330	U	300	U	280	U	330	U	340	U	330	U	270	U
Acenaphthylene	41,000	NA	1400		290	U	83	J	72	J	390	U	330	U	64	J	280	U	330	U	340	U	330	U	180	J
Acenaphthene	50,000	29,000,000	1900		290	U	1000		220	J	390	U	330	U	300	U	280	U	330	U	340	U	330	U	110	J
Flourene	50,000	26,000,000	5600		290	U	1100		220	J	390	U	330	U	300	U	280	U	330	U	340	U	330	U	140	J
Phenanthrene	50,000	NA	54000		470		8100		2100		150	J	150	J	100	J	280	U	330	U	68	J	330	U	2100	
Anthracene	50,000	100,000,000	15000		140	J	2100		670		390	U	330	U	300	U	280	U	330	U	340	U	330	U	580	
Flouranthene	50,000	22,000,000	55000		850		9300		3300		340	J	290	J	200	J	62	J	330	U	130	J	330	U	3900	
Pyrene	50,000	29000000	43000		700		7800		2900		320	J	240	J	190	J	280	U	330	U	120	J	330	U	3400	
Benz(a)anthracene	224	2100	24000		490		4800		1800		190	J	160	J	120	J	280	U	330	U	81	J	330	U	2100	
Chrysene	400	210,000	18000		460		4000		1600		210	J	160	J	120	J	280	U	330	U	86	J	330	U	1900	
Benzo(b)fluoranthene	1,100	2,100	26000		560		4800		2000		270	J	180	J	140	J	58	J	330	U	100	J	330	U	2900	
Benzo(k)fluoranthene	1,100	21,000	8500		270	J	1900		800		110	J	88	J	70	J	280	U	330	U	340	U	330	U	880	
Benzo(a)pyrene	61	210	19000		470		3800		1600		200	J	150	J	130	J	280	U	330	U	340	U	330	U	2100	
Dibenzo(a,h)anthracene	14	210	3700	J	80	J	730		290		390	U	330	U	300	U	280	U	330	U	340	U	330	U	150	
Indeo(1,2,3-cd)pyrene	3,200	2,100	11000		280	J	2000		870		120	J	93	J	65	J	280	U	330	U	340	U	330	U	1300	
Benzo(g,h,i)perylene	50,000	NA	11000		290		2000		900		150	J	96	J	96	J	280	U	330	U	74	J	330	U	1700	
[2]Bezo(a)pyrene TEQ	10,000	NA	29065		690.3		5749		2381		651.2		525.78		464.4		627.4		765.6		736.36		765.6		2907.8	
ICP Metals (mg/Kg - dry)																										
Arsenic	8.24	1.6	11.5		8.55		7.93		8.3		7.35	J	6.09	J	9.29		7.37		7.76	J	9.89		7.45	J	8.2	
Barium	300	67,000	89.3		90.9		75.5		64.6		91.3		102		64.6		85.3		132		129		79.6		74.6	
Cadmium	2.3	450	0.31	J	0.0209	J	0.699	U	0.683	U	0.934	U	0.0445	J	0.247	J	0.708	U	0.815	U	0.162	J	0.817	U	0.0773	J
Chromium	29	450	20.2		17.2		22.3		15.7		16.3		19.3		15.2		22.8		27.8		25.4		20.7		28.2	
Copper	29.6	41,000	22.1		25.7		26.3		22.2		26.8		23.9		19.1		20.3		20		23.9		24.5		33.8	
Lead	400	800	33.7		33.9		42.3		29.9		78.9		53.9		42.9		22.8		23.4		61.1		14.7		37.2	
Selenium	2	5,100	1.5	U	28.7		28.4		15.3	J	35.7		31.9		1.5	U	23.9		44	J	40.4		40.7		38.9	
Silver	0.763	5,100	0.558	J	1.95	U	1.96	U	1.91	U	2.61	U	2.29	U	0.427	J	1.98	U	2.28	U	2.28	U	2.29	J	2.28	U
Zinc	108.9	100,000	113		80.4		83.8		63.5		82.2		81.9		68.4		75.2		79.7		116		75.6		124	
Mercury (mg/Kg - dry)																										
Mercury	0.13	310	0.0702		0.125		0.146		0.0821		0.164		0.136		0.0911		0.0848		0.0743		0.153		0.0306		0.49	

Table A-8
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Downgradient Delineation Samples - July and October 2005

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1]	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil) *	SEAD5-PX-SS-94-FS2	SEAD5-PX-SS-94-DUP2	SEAD5-PX-SS-95-FS1	SEAD5-PX-SS-95-FS2	SEAD5-PX-SS-96-FS1	SEAD5-PX-SS-96-FS2	SEAD5-PX-SS-97-FS1	SEAD5-PX-SS-97-FS2	SEAD5-PX-SS-98-FS1	SEAD5-PX-SS-98-FS2	SEAD5-PX-SS-99-FS1	SEAD5-PX-SS-99-FS2	SEAD5-PX-SS-100-FS1
Sampling Depth			6" - 12"	6" - 12"	0" - 6"	6" - 12"	0" - 6"	6" - 12"	0" - 6"	6" - 12"	0" - 6"	6" - 12"	0" - 6"	6" - 12"	0" - 6"
Sampling Date			10/11/2005	10/11/2005	10/11/2005	10/11/2005	10/11/2005	10/11/2005	10/11/2005	10/11/2005	10/11/2005	10/11/2005	10/12/2005	10/12/2005	10/12/2005
Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Polyaromatic Hydrocarbons (ug/Kg - dry)															
Naphthalene	13,000	190,000	160 J	87 J	82 J	290 U	290 U	300 U	370 U	280 U	290 U	290 U	130 J	100 J	230
2-Methylnaphthalene	36400	NA	72 J	270 U	130 J	290 U	290 U	300 U	370 U	280 U	290 U	290 U	120 J	130 J	340
Acenaphthylene	41,000	NA	160 J	260 J	98 J	110 J	72 J	300 U	86 J	280 U	290 U	290 U	440	860 U	980
Acenaphthene	50,000	29,000,000	330	300	300 U	290 U	290 U	300 U	370 U	280 U	290 U	290 U	72 J	270 J	1500
Flourene	50,000	26,000,000	390	390	300 U	290 U	62 J	300 U	370 U	280 U	290 U	290 U	89 J	320	2200
Phenanthrene	50,000	NA	3200	3400	490	320	480	180 J	250 J	87 J	290 U	290 U	730	2400	24000
Anthracene	50,000	100,000,000	940	1000	150 J	120 J	150 J	59 J	94 J	280 U	290 U	290 U	390	1100	6700
Flouranthene	50,000	22,000,000	4100	4900	960	770	650	350	570	170 J	290 U	290 U	1500	4500	36000
Pyrene	50,000	29000000	3600	4200	890	720	570	290 J	520	150 J	290 U	290 U	1300	4300	29000
Benz(a)anthracene	224	2100	2100	2700	550	480	350	200 J	340	120 J	290 U	290 U	1000	2400	17000
Chrysene	400	210,000	1900	2100	530	430	300	190 J	300 J	110 J	290 U	290 U	960	2400	13000
Benzo(b)fluoranthene	1,100	2,100	2700	3100	730	700	450	280 J	430	150 J	290 U	290 U	1500	3800	17000
Benzo(k)fluoranthene	1,100	21,000	740	1100	260 J	180 J	130 J	82 J	180 J	64 J	290 U	290 U	630	1000	5500
Benzo(a)pyrene	61	210	1900	2300	550	470	320	190 J	340 J	110 J	290 U	290 U	1300	3000	13000
Dibenzo(a,h)anthracene	14	210	370	480	110 J	97 J	88 J	300 U	370 U	280 U	290 U	290 U	210	460	2600
Indeo(1,2,3-cd)pyrene	3,200	2,100	1100	1400	310	280 J	190 J	110 J	200 J	85 J	290 U	290 U	860	1900	6300
Benzo(g,h,i)perylene	50,000	NA	1200	1500	330	290	210 J	120 J	220 J	85 J	290 U	290 U	1000	2100	8200
[2]Bezo(a)pyrene TEQ	10,000	NA	2886.4	3532	826.9	719.1	511.3	551.72	811.8	427.24	672.8	672.8	1861.9	4304	19815
ICP Metals (mg/Kg - dry)															
Arsenic	8.24	1.6	8.88	8.41	8.31	4.72 J	5.53 J	8.72	8.46 J	8.35	6.41	8.17	7.97	7.36 J	8.33
Barium	300	67,000	83	76.3	77.3	43.2	62	76.1	93.7	60	95.6	88	102	96.1	93.7
Cadmium	2.3	450	0.0212 J	0.0682 J	0.723 U	0.696 U	0.749 U	0.749 U	0.905 U	0.679 U	0.702 U	0.706 U	0.0665 J	0.282 J	0.761
Chromium	29	450	18	18.8	23.3	9.88	22.3	19.8	22.5	19.9	19.9	18.7	20.8	17.7	20.2
Copper	29.6	41,000	20.4	20.4	24.9	6.7	25.7	23.2	29.9	17.4	13.7	20.4	28.6	32.5	19.4
Lead	400	800	37.4	37	44.5	27.4	22.4	48.6	37.7	28.4	25.4	25.2	44.2	27.5	38.3
Selenium	2	5,100	15.9 U	19.4	32.4	19.8 J	26.7	24.4	42.8	32	33.3	33	14.2 J	16.7 U	28.5
Silver	0.763	5,100	1.85 U	1.81 U	2.02 U	1.95 U	2.1 U	2.1 U	2.53 U	1.9 U	1.97 U	1.98 U	2.04 U	0.326 J	2.13
Zinc	108.9	100,000	72.8	77.8	87.7	33.7	105 J	82.9 J	123	105	60.7	68.4	122	101	93.4
Mercury (mg/Kg - dry)															
Mercury	0.13	310	0.0807	0.0581	0.103	0.056	0.0572	0.0585	0.0777	0.0594	0.0607	0.0266	0.241	0.0863	0.0925

Table A-8
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Downgradient Delineation Samples - July and October 2005

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1]	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil) *		SEAD5-PX-SS-100-FS2		SEAD5-PX-SS-100-FS3		SEAD5-PX-SS-101-FS1		SEAD5-PX-SS-101-FS2		SEAD5-PX-SS-102-FS1		SEAD5-PX-SS-102-FS2		SEAD5-PX-SS-102-DUP2		SEAD5-PX-SS-103-FS1		SEAD5-PX-SS-103-FS2		SEAD5-PX-SS-104-FS1		SEAD5-PX-SS-104-FS2		SEAD5-PX-SS-104-FS3	
Sampling Depth				6" - 12"		12" - 18"		0" - 6"		6" - 12"		0" - 6"		6" - 12"		6" - 12"		0" - 6"		6" - 12"		0" - 6"		6" - 12"		12" - 18"	
Sampling Date				10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005	
Matrix				Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Polyaromatic Hydrocarbons (ug/Kg - dry)																											
Naphthalene	13,000	190,000	J	2400		5800		320	U	70	J	92	J	280	U	280	U	310	U	58	J	120	J	65	J	270	U
2-Methylnaphthalene	36400	NA		780		1800		320	U	300	U	80	J	280	U	280	U	310	U	280	U	110	J	290	U	270	U
Acenaphthylene	41,000	NA		220	J	590		130	J	200	J	370		110	J	280	U	270	J	130	J	720	J	340		270	U
Acenaphthene	50,000	29,000,000		2800		5900		100	J	180	J	280	J	88	J	280	U	89	J	120	J	290	J	110	J	270	U
Flourene	50,000	26,000,000		3000		5100		110	J	200	J	390		90	J	280	U	180		140	J	360		130	J	270	U
Phenanthrene	50,000	NA		20000		44000		1300		2000		5700		700		130	J	1800		1300		3100		900		93	J
Anthracene	50,000	100,000,000		5800		9900		360		590		1400		220	J	280	U	480		310		1200		450		270	U
Flouranthene	50,000	22,000,000		22000		52000		2700		4100		8600		1200		260	J	3200		2400	J	4900		1800		130	J
Pyrene	50,000	29000000		19000		43000		2300		3700		7100		1000		230	J	2800		2100	J	5000		2100		120	J
Benz(a)anthracene	224	2100		11000		26000		1400		2500		4100		640		150	J	1600		1200		2700		1300		77	J
Chrysene	400	210,000		9400		21000		1300		2000		3600		580		140	J	1700		1300		2500		1100		67	J
Benzo(b)fluoranthene	1,100	2,100		13000		30000		1900		2800		4900		750		220	J	2200		1700		3800		1800		91	J
Benzo(k)fluoranthene	1,100	21,000		3600		12000		600		1100		1400		270	J	74	J	770		630	U	1100		500		270	U
Benzo(a)pyrene	61	210		9900		24000		1300		2200		3400		600		140	J	1600		1200		3000		1400		74	J
Dibenzo(a,h)anthracene	14	210		1700		4900		220	J	400		610		120	J	280	U	310		230	J	490		260	J	270	U
Indeo(1,2,3-cd)pyrene	3,200	2,100		5200		13000		750		1200		1900		360		98	J	910		720		1800		820		270	U
Benzo(g,h,i)perylene	50,000	NA		5400		14000		800		1200		1900		360		100	J	950		810		2100		940		270	U
[2]Bezo(a)pyrene TEQ	10,000	NA		14650		36130		1944		3281		5150		903.5		468.94		2405.7		1811.3		4356		2068		391.17	
ICP Metals (mg/Kg - dry)																											
Arsenic	8.24	1.6		8.87		13.1		9.31		10.2		9.26		8.6		9.76		8.25		8.44		7.02	J	8.33		12.1	
Barium	300	67,000		96.4		236		104		118		94.2		85.6		80		107		68		73.6		81.8		67.4	
Cadmium	2.3	450	U	0.0826	J	2.35	J	0.0393	J	0.0786	J	0.749	U	0.711	U	0.706	U	0.0505	J	0.7	U	0.729	J	0.715	U	0.181	J
Chromium	29	450		22.2		28.7		21.9		23.7		21.7		21.8		20.3		22.5		20.5		19.6		20.9		15.8	
Copper	29.6	41,000		22.3		20.4		23.9		22.5		24.5		20		20.6		25		22.2		23.7		26.9		20.6	
Lead	400	800		33.3		79.2		52.2		42.5		47.3		32.2		29.7		63.1		72.5		61.6		35.5		16.8	
Selenium	2	5,100		17.5	J	1.4	U	38.3		31.4		4.2	J	36.3	J	26.4		38		8.76	J	18.1	U	9.03	J	1.4	U
Silver	0.763	5,100	U	2.02	U	0.669	J	2.31	U	2.06	U	2.1	U	1.99	U	1.98	U	2.1		0.355	J	2.11	U	2	U	0.803	J
Zinc	108.9	100,000		82.9		140		105		101		93.1		102		84.8		111		102		96.3		90.3		68.3	
Mercury (mg/Kg - dry)																											
Mercury	0.13	310		0.0377		0.0579		0.0846		0.0527		0.0745		0.0346		0.0167		0.106		0.0802		0.0295		0.136		0.0593	

Table A-8
Seneca Army Depot Activity
Analytical Summary of SEAD 5 Downgradient Delineation Samples - July and October 2005

Analyte	Recommended Soil Cleanup Objective (NY TAGM) [1]	EPA Region 9 Preliminary Remediation Goals (PRGs) (Industrial Soil) *	SEAD5-PX-SS-105-FS1		SEAD5-PX-SS-105-FS2		SEAD5-PX-SS-106-FS1		SEAD5-PX-SS-106-FS2		SEAD5-PX-SS-107-FS1		SEAD5-PX-SS-107-FS2		SEAD5-PX-SS-108-FS1		SEAD5-PX-SS-108-FS2		SEAD5-PX-SS-108-FS3		Avg Result	Max Result	No. Exceedances (vs. NY TAGM)	No. Exceedances (vs. Region 9 PRGs)
Sampling Depth			0" - 6"		6" - 12"		0" - 6"		6" - 12"		0" - 6"		6" - 12"		0" - 6"		6" - 12"		12" - 18"					
Sampling Date			10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/12/2005		10/13/2005		10/13/2005		10/12/2005					
Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil					
Polyaromatic Hydrocarbons (ug/Kg - dry)																								
Naphthalene	13,000	190,000	320	U	290	U	300	U	300	U	56000		950		300	U	290	U	99	J	1029.0595	56000	1	0
2-Methylnaphthalene	36400	NA	320	U	290	U	300	U	300	U	28000		380		300	U	290	U	75	J	625.22619	28000	0	0
Acenaphthylene	41,000	NA	320	U	290	U	300	U	300	U	9500		430		65	J	290	U	360		498.44048	9500	0	0
Acenaphthene	50,000	29,000,000	320	U	290	U	300	U	300	U	110000		1300		110	J	290	U	390		1747.4881	110000	1	0
Flourene	50,000	26,000,000	320	U	290	U	300	U	300	U	140000		1400		96	J	290	U	480		2596.8571	140000	1	0
Phenanthrene	50,000	NA	440		200	J	370		350		888000		12000		1200		290		5800		14571.774	888000	2	0
Anthracene	50,000	100,000,000	130	J	65		110	J	97	J	290000		3300		320		83	J	1300		5214.1548	290000	1	0
Flouranthene	50,000	22,000,000	820		460		760		530		890000		16000		2100		600		9200		16262.905	890000	3	0
Pyrene	50,000	29000000	730		420		680		470		740000		15000		1800		510		7800		13587.286	740000	1	0
Benz(a)anthracene	224	2100	450		250	J	430		290	J	400000		8800		1000		310		4200		7652.631	400000	73	24
Chrysene	400	210,000	460		240	J	410		250	J	350000		7300		950		300		4100		6748.0119	350000	55	1
Benzo(b)fluoranthene	1,100	2,100	660		380		510		370		400000		11000		1400		420		5400		8005.2262	400000	48	33
Benzo(k)fluoranthene	1,100	21,000	200	J	110	J	260	J	97		130000		2800		470		150		2300		2884.5	130000	18	2
Benzo(a)pyrene	61	210	460		250	J	400		250	J	310000		7700		970		320		4100		6129.0952	310000	84	73
Dibenzo(a,h)anthracene	14	210	71	J	290	U	75	J	300	U	66000		1100		190	J	62	J	840		1448.6786	66000	84	66
Indeo(1,2,3-cd)pyrene	3,200	2,100	270	J	160	J	240	J	150	J	140000		4200		580		200		2500		3200.2857	140000	9	14
Benzo(g,h,i)perylene	50,000	NA	310	J	160	J	270	J	160	J	130000		4200		620		190		2600		3075.131	130000	1	0
[2]Bezo(a)pyrene TEQ	10,000	NA	675.6		622.5		599.7		634.47		474800		11301		1472.2		479.5		6214		9559.9132	474800	9	0
ICP Metals (mg/Kg - dry)																								
Arsenic	8.24	1.6	7.91		7.28		8.23		8.92		9.58		6.9		10.3		8.6		11.1		8.6054762	13.1	52	84
Barium	300	67,000	90.2		86.2		73.5		81.1		63.9		71.5		68		65.7		97.9		87.636905	236	0	0
Cadmium	2.3	450	0.116	J	0.708	U	0.732	U	0.728	U	0.661	U	0.114	J	0.107	J	0.0324	J	0.321	J	0.4276024	2.35	1	0
Chromium	29	450	17.9		21		17.2		19.1		20.3		17.9		19.1		21.3		17		19.924643	44.6	1	0
Copper	29.6	41,000	25.2		22.1		22.4		22.2		25.3		27.2		26.5		28.9		26.4		25.145238	60.8	15	0
Lead	400	800	46.7		37.7		43.7		39.7		39.6		28.3		60		47.5		94		57.57381	997	1	1
Selenium	2	5,100	31.6		20.1		34.6		17.5	U	5.64	J	16.1	U	14		11.9	J	1.5	U	19.927143	44	78	0
Silver	0.763	5,100	2.19	U	1.98	U	2.05	U	2.04	U	1.85	U	0.318	J	1.1		0.847	J	0.659	J	1.5171071	2.61	69	0
Zinc	108.9	100,000	93.8		86.8		76.4		75.9		75.7		79.7		74.8		71.6		75.7		88.394048	140	12	0
Mercury (mg/Kg - dry)																								
Mercury	0.13	310	0.0822		0.0501		0.0632		0.104		0.0214		0.0198		0.224		0.224		0.0879		0.1216548	0.59	25	0

APPENDIX B

SUPPLEMENTAL HEALTH AND SAFETY INFORMATION

1.0 SUPPLEMENTAL HEALTH AND SAFETY PLAN

Information provided in this document is intended only for supplemental purposes and is not intended to be an all inclusive Health and Safety Plan (HSP). Refer to the Accident Prevention Plan and Generic Site Wide Health and Safety Plan for Seneca Army Depot Activity" (Parsons, 2005) for SEAD-5.

2.0 Background Information

Contractor

Parsons Infrastructure & Technology Group Inc. (Parsons)
150 Federal Street, 4th Floor
Boston, Massachusetts 02110-1713
(617) 946-9400 telephone
(617) 946-9777 facsimile

Contract Number

Contract No. W912DY-08-D-0003, Task Order No. 0006

Objective of Remedial Action

The primary objective of the Remedial Action Operations Plan (RAOP) for SEAD-5 is to inter surficial and near-surface soils beneath an engineered cover so to minimize the likelihood of incidental contact with these soils that contain residual levels of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) at concentrations that pose potential risks to future commercial and industrial users and occupants of the land. In addition, as part of the remedial action land use controls (LUC) will be implemented to:

- Prohibit use of land at SEAD-5 for residential housing, elementary and secondary schools, childcare centers, and playgrounds.
- Prohibit access to, or use of, the groundwater until groundwater cleanup standards are achieved; and,
- Prohibit unauthorized excavation or other activities at SEAD-5 that could compromise the integrity of the engineered cover.

Brief Description of Work to be Performed, and Location

The remedial activities for SEAD-5 addressed in the RAOP include the following:

- Relocate residual stockpiled soil associated with removal actions completed at SEAD-59 and SEAD-71 to SEAD-5 and spread and grade it out over the areas where elevated concentrations of cPAHs remain in the shallow site soils.
- Place colored demarcation fabric over the initial cover material to delineate the extent of the base layer of soil cover placed over the SEAD-5 contaminated soil.

- Place a minimum of 12-inches of clean backfill out over the interred soil, the base layer of stockpiled soil cover, and the demarcation fabric.
- Grade the final cover material to promote positive drainage away from the site.
- Submit a Completion Report documenting the work performed and completed subsequent to the completion of the remedial action.

3.0 Air Monitoring

Public health and safety will be ensured by monitoring within the work zone and creating an exclusion zone surrounding the construction area. The air monitoring for hazardous constituents and particulates will be conducted in accordance with the air monitoring program outlined in Section A8 of the Accident Prevention Plan and Generic Site Wide Health and Safety Plan for Seneca Army Depot Activity (Parsons 2005).

In addition, air monitoring will also be conducted in accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP). Although the CAMP also requires real-time measurements for total volatile organic compounds (VOCs), such monitoring is not applicable at SEAD-5 since VOCs are not contaminates of concern (COC) for the site

4.0 Accident and Incident Notification

Program/Project Managers measure and report accidents and incidents, injuries, near misses, and property damage as part of the ongoing process of enhancing project safety performance. Parsons' policy is that all incidents must be reported through the local supervisor and Project Manager to the GBU Safety Manager within four hours of the initial incident. See **Attachment A** for instructions how to use the Parsons Online Safety Reporting System. If internet access is not available, the Incident/Accident Report Form in **Attachment A** may be used. The GBU Safety Manager is responsible for notifying the Corporate Workers Compensation Analyst.

If an incident results in a lost workday case (LWDC) or worse, the Project Manager and immediate supervisor must call the GBU President within four hours. Any fatality, injury of a private citizen, property loss or damage in excess of $50,000, or catastrophes requires immediate notification of the GBU or Corporate Safety Manager. Parsons will also notify the Army of any lost workday or worse incident. Army guidance and requirements regarding accident reporting, and the ENG Form 3394 are included as **Attachment B**.

OSHA requires reporting any work site fatality or accidents involving the hospitalization of three or more employees to the nearest OSHA office within eight hours. Reporting to OSHA is coordinated through the GBU or Corporate Safety Manager.

In addition to the required reporting of incidents, Project Managers establish key safety metrics appropriate to the work. These metrics, which include both leading and lagging indicators, are typically measured each month and reported to all project staff as a quality improvement measure. Common performance metrics are shown in **Table 1**.

Table 1 Safety and Health Performance Metrics	
Category	Metrics
Accident Rates	Recordable Incident Frequency Rate Days Away from Work Incident Frequency Rate Severity Rate (numbers of days away from work)
Accident Costs	Total incurred workers compensation costs Loss ratios (W/C losses/premium)
Near Misses	Number of near misses reported and investigated
Training	START training participation Zero Incident Techniques training participation Parsons University monthly/quarterly participation Project-specific training participation
Inspections	Number and results (scored) of management inspections Audit results
Meetings	Participation in daily huddles or weekly toolbox meetings

4.1 Accident Investigations, Reports and Logs

Incident investigations are an important element of Parsons' safety program because they provide useful information to prevent similar incidents. Incident investigations identify root causes, system failures, unsafe acts and conditions, and noncompliance with or inadequacy of the PSP. All significant near miss, injury, illness, or major equipment or property damage incidents (including process interruptions) require an investigation.

The Project Manager and Safety Manager must conduct the on-site investigation immediately and prepare an incident investigation report. Additional participants may include the Project Controls Manager and the Project Human Resources Manager. The GBU Safety Manager or a designee completes the on-line safety reporting system incident investigation tab while Corporate Safety disseminates the results of the completed investigation throughout the Corporation as appropriate to implement lessons learned.

The purpose of an investigation is to identify all possible contributing root causes to prevent future incidents of a similar type. The investigation also determines factors that may affect Parsons' legal liability. Simple incidents may require only a brief investigation by the Project Manager or Safety Manager while more complex or significant incidents require a formal team investigation as described below. The investigation team must perform its job diligently and professionally.

The incident report must contain only facts, avoiding personal opinions, speculation, or conclusions. A paper copy of the report is maintained at the project site; electronic copies are submitted to the on-line safety reporting system as attachments to the investigation page.

5.0 Medical Support

At least one member of each field team will be trained in first aid and CPR. They, along with (or including) the Site Health and Safety Officer will be available to provide treatment as necessary.

Phone numbers for emergency personnel are posted at the jobsite. The nearest occupational clinic is Life Care Medical Associates in Seneca Falls, New York. The nearest hospital is Geneva Hospital. Driving directions to both facilities are included in **Attachment C**. Life threatening, medical emergencies, and after-hours at clinic will be sent to the hospital for treatment. Otherwise, a work related injury which is not a medical emergency; it is *preferable* that injured personnel go to the industrial clinic (e.g., Life Care Medical Associates).

Parsons Project Incident/Accident Report Form

PLEASE PRINT

Attach all supplemental documentation, including photos, diagrams, witness statements and field reports

PROJECT Information	Project Title		Location	
	Subcontractor			
	Address			
	City, State, Zip			
	Contact Name		Phone Number	

INCIDENT Type	☐ **Worker's Compensation** ☐ Emergency Response Notified (Police, Fire, Medic, etc.) ☐ First-Aid Only ☐ Recordable Injury	☐ **General Liability** ☐ Bodily Injury/Illness ☐ Real Property Damage ☐ Personal Property Damage ☐ Utility Property Damage	☐ **Builder's Risk** ☐ Equipment ☐ Supplies ☐ Machinery ☐ Work

Incident Location	Date of Loss		Time of Loss	
	Place (exact location)			

Incident Description	Detailed Description of Accident

Worker's Comp Or Personal Injury (circle one)	Injured Name			
	Address			
	City, State, Zip			
	Home Phone		Date of Birth	
	Nature of Injury			
	Medical Facility		Work Status	
	Treatment Received			

Property Damage Or Builder's Risk (circle one)	Owner's Name			
	Address			
	City, State, Zip			
	Home Phone		Work Phone	
	Damage Type		Estimated Cost	
	Utility Type		Marked or Unmarked	
	Description of Damage			

WITNESS Information	Name			
	Address			
	City, State, Zip			
	Home Phone		Work Phone	
	Where to contact		Time to contact	

Contractor Subcontractor Action	Describe actions taken

Signature _____ Employer _____
Print Name _____ Date _____
Phone No. _____ Fax Number _____

On-Line Safety Reporting System

Policy Requirements

- Initial incident reports for all incidents, including near misses, shall be reported within 4 hours.
- Detail incident reports are required within 24 hours.
- Reporting is done via on-line (PWeb) incident report form.
- Injuries with Days Away from Work - immediate supervisor and PM must teleconference with GBU President within 4 hours.
- Projects enter hours via on-line form by FIRST Friday of new period.

Reporting Incidents

Corporate policy requires that all employees report safety incidents to their supervisor immediately. Supervisors must report all incidents to the appropriate Project Manager (Department Manager if the incident is not related to a project), who must officially report the incident to the GBU within four hours. This official reporting is done via the PWeb, unless PWeb is unavailable, in which case the incident can be reported by email, fax or telephone.

"Incidents" include work related injuries, work related illness, accidents with property damage only and near misses. "Near misses" are any unplanned event that had the potential to (but did not) result in injury or property damage.

Incident reports should reflect the best available information at the time. Where exact information is not known (recordability, days away from work, etc.) the PM's best judgment should be used when completing the initial incident report. This information can be subsequently revised when the detail incident report is submitted.

When in doubt, submit an initial report or contact the GBU Safety Manager.

On-line Reporting System

The on-line reporting system can be found on the PI&T Safety Page on PWeb. To locate the system, follow these steps:

1. From the Corporate PWeb Homepage, select PI&T from the Org Units menu
2. Locate and select "Safety" from the list of pages in the right hand column
3. Select the "Incident Reporting Form" link

To create and submit a new incident report, select the orange "Add" button from the main page of the reporting system. To update and existing incident report or complete the Detail Incident page, locate and select the appropriate incident from the list.

Creating or Updating Incidents

The Initial Incident page of the report must be completed within four hours of the incident occurring. This page includes basic information needed for the first notification to our insurance

carriers. If possible, all of the fields should be completed in the initial report. A list is provided at the end of this document describing all fields contained on the initial incident page.

Incident Detail Reports

Within 24 hours of the incident occurring, the Incident Detail page of the on-line report must be completed. This page includes detailed information about the injured party, the nature and extent of injuries, medical treatment provided, corrective actions taken, and witness statements. In the event of property damage, this page also includes descriptive information on the property owner. Finally, the page includes a section to include electronic attachments. These might include photographs, signed witness statements, etc.

Monthly Reporting of Hours

Hours must be entered into the on-line reporting system no later than the first Friday of the new period. If an accurate accounting of hours is not available, estimated hours are submitted into the system. The estimated hours can be revised later in the month, or the following month, when accurate data is available.

From the "Hours" page, select the GBU and the period (month and year) that is being reported. The system only allows hours to be entered for the period selected. MTD and PTD figures are calculated totals based on the sum of all monthly entries. To enter or correct a prior period entry, simply select that month from the drop-down box and correct the figures for that month.

Be sure to select the correct month and year when entering hours.

Hours must be entered for each (as applicable) of six different labor categories. The categories are as follows:

- Contractor (Field/Craft)
- Contractor (Office/Admin)
- JV Partner (Field/Craft)
- JV Partner (Office/Admin)
- Parsons Employee (Field/Craft)
- Parsons Employee (Office/Admin)

Monthly Statistics Summary Reports

The on-line reporting system automatically calculates incident rates based on incidents and hours entered into the system. To view the statistics, select the "Reports" page from the on-line system. Select "Parsons Safety Statistics Summary", the appropriate GBU, and the appropriate period. (NOTE: The system does not yet provide reports at the Division and Sector level. That enhancement is pending.) Use the checkboxes to select the labor categories desired.

Contact Rick McAlpin or Jim Owen for Assistance

Initial Incident Report Fields

1. GBU – Select the GBU from the drop down box. Incidents are reported primarily by project, and the GBU should reflect the unit responsible for the project. This may be different from the GBU that employees the person injured.
2. Field Project Name, Office Location or Other – If the applicable project is listed in the "Field Project" list, select from that box. If not, and if the incident occurred in a Parsons corporate office, select the office from the drop box. Otherwise, type in the name of the responsible organizational unit in the "Other" field. The GBU must be selected BEFORE attempting to select a Project/Office. Do NOT select both a field project AND an Office Location (or Other). If the appropriate Project or Office name can not be found, manually enter it into the "Other" field.
3. Job and WBS Numbers – These fields should reflect the charge number responsible for the incident. In general, that will be the number that the employee was charging at the time of the incident. Projects are responsible for visitors, regardless of what charge number they use while visiting the job. For example, if the Division Manager is injured while visiting Project X, the project number is entered, not the division overhead account.
4. Near Miss – Check this box if the report is for a near miss only (no injury or property damage occurred).
5. Emergency Response Notified – Check this box if fire, police or ambulance was called as a result of the incident.
6. Three or More Employees Hospitalized – Check this box if three or more employees were injured as the result of a single incident. In this case, the GBU or Corporate Safety Manager must also be immediately notified by telephone.
7. Extent of Injury – Select the appropriate radio button. First aid cases are as defined by OSHA 1904 criteria. All other injuries are considered recordable.
8. Restricted Duty (# of days) – If the injured person was limited (by a physician) to less than normal work duration or duties, enter the number of days. Estimate the days if unknown, and correct the number later. NOTE: this is the number of CALENDAR days (not scheduled work days), and it does NOT include the day of the injury.
9. Days Away From Work (# of days) – If the injured person was ordered by a physician not to return to work, enter the number of days missed. Estimate the days if unknown, and correct the number later. NOTE: this is the number of CALENDAR days (not scheduled work days), and it does NOT include the day of the injury. Injuries with Days Away From Work require a phone call to the GBU President within 4 hours.
10. Fatality (Date of Death) – In the event of a work related fatality, enter the date of death here. NOTE: Fatalities require immediate phone notification of the Division Manager, GBU President, GBU Safety Manager, and Corporate Safety Manager.
11. Property Damage – Check the appropriate boxes if applicable.
12. Place – Describe the exact location that incident occurred. For example, "in the north stairwell of building 21, between the second and third floor."
13. Date – This field reflects the date the incident occurred, not necessarily the date it was reported. If the exact date is not known, an estimate should be used.
14. Time – This field reflects the time of day that the incident occurred. If the exact time is not known, an estimate should be used.
15. Incident Description – Provide a detailed description of the incident. This is a memo field and text will scroll down the window as it is entered. Use as much space as needed to accurately describe the incident and the resulting injuries.

16. Reported by – This field defaults to the employee login ID that was used to access PWeb. However, the field can be over-written if needed.
17. Name – First and last name of the injured party.
18. Status – Select the most appropriate category from the drop box (Employee - Field, Subcontractor - Field, Partner - Field, Employee - Office, Subcontractor - Office, Partner - Office or 3rd Party).
19. Trade/Function – Select the most appropriate category from the drop box.

(For Safety Staff only)	REPORT NO.	EROC CODE	**UNITED STATES ARMY CORPS OF ENGINEERS** **ACCIDENT INVESTIGATION REPORT** *(For Use of this Form See Help Menu and USACE Suppl to AR 385-40)*	**REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)**

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. Name *(Last, First, MI)*	b. AGE	c. SEX ☐ MALE ☐ FEMALE	d. SOCIAL SECURITY NUMBER	e. GRADE

f. JOB SERIES/TITLE

g. DUTY STATUS AT TIME OF ACCIDENT
☐ ON DUTY ☐ TDY ☐ OFF DUTY

h. EMPLOYMENT STATUS AT TIME OF ACCIDENT
☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER
☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL
☐ TEMPORARY ☐ STUDENT
☐ OTHER *(Specify)* _____

3. GENERAL INFORMATION

a. DATE OF ACCIDENT *(month/day/year)*	b. TIME OF ACCIDENT *(Military time)* hrs	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME (1) PRIME: (2) SUBCONTRACTOR:

e. CONTRACT NUMBER _____
☐ CIVIL WORKS ☐ MILITARY
☐ OTHER *(Specify)* _____

f. TYPE OF CONTRACT
☐ CONSTRUCTION ☐ SERVICE
☐ A/E ☐ DREDGE
☐ OTHER *(Specify)* _____

g. HAZARDOUS/TOXIC WASTE ACTIVITY
☐ SUPERFUND ☐ DERP
☐ IRP ☐ OTHER *(Specify)* _____

4. CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see help menu)*

a. CONSTRUCTION ACTIVITY _____ (CODE) #

b. TYPE OF CONSTRUCTION EQUIPMENT _____ (CODE) #

5. INJURY/ILLNESS INFORMATION *(Include name on line and corresponding code number in box for items e, f & g - see help menu)*

EVERITY OF ILLNESS/INJURY (CODE) #	B. ESTIMATED DAYS LOST	C. ESTIMATED DAYS HOSPITALIZED	D. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED
PRIMARY _____ (CODE) #
SECONDARY _____ (CODE) #

f. NATURE OF ILLNESS / INJURY _____ (CODE) #

g. TYPE AND SOURCE OF INJURY/ILLNESS
TYPE _____ (CODE) #
SOURCE _____ (CODE) #

6. PUBLIC FATALITY *(Fill in line and correspondence code number in box - see help menu)*

a. ACTIVITY AT TIME OF ACCIDENT _____ (CODE) #

b. PERSONAL FLOATATION DEVICE USED?
☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE
☐☐ PICKUP/VAN ☐☐ AUTOMOBILE
☐☐ TRUCK ☐☐ OTHER *(Specify)* _____

b. TYPE OF COLLISION
☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END
☐ BROADSIDE ☐ ROLL OVER ☐ BACKING
☐ OTHER *(Specify)* _____

c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
(1) FRONT SEAT			
(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	B. OWNERSHIP	C. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT *(Fill in line and correspondence code number in box from list - see help menu)*

a. TYPE OF VESSEL/FLOATING PLANT _____ (CODE) #

b. TYPE OF COLLISION/MISHAP _____ (CODE) #

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

See attached page.

11. CAUSAL FACTOR(S) *(Reed Instruction Before Completing)*

a. (Explain YES answers in item 13)	YES	NO
DESIGN: Was design of facility, workplace or equipment a factor?	☐	☐
NSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?	☐	☐
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?	☐	☐
OPERATING PROCEDURES: Were operating procedures a factor?	☐	☐
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	☐	☐
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?	☐	☐
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?	☐	☐

a. *(CONTINUED)*	YES	NO
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident?	☐	☐
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?	☐	☐
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?	☐	☐
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?	☐	☐
DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident	☐	☐

b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?

☐ YES *(If yes, attach a copy.)* ☐ NO

12. TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?	b. TYPE OF TRAINING.	c. DATE OF MOST RECENT FORMAL TRAINING.
☐ YES ☐ NO	☐ CLASSROOM ☐ ON JOB	(Month) (Day) (Year)

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES *(See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*

a. DIRECT CAUSE

See attached page.

b. INDIRECT CAUSE(S)

See attached page.

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).

DESCRIBE FULLY:

See attached page.

DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.

a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT CORPS _____ CONTRACTOR _____	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL

16. MANAGEMENT REVIEW *(1st)*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS

SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE	DATE

*U.S. GOVERNMENT PRINTING OFFICE: 1993-0-791-757

10. ACCIDENT DESCRIPTION *(Continuation)*

9. DIRECT CAUSE *(Continuation)*

13b.	INDIRECT CAUSES *(Continuation)*

14.	ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) *(Continuation)*

GENERAL. Complete a separate report for each person who was *injured, caused,* or *contributed* to the accident (excluding uninjured personnel and witnesses). Use of this form for reporting USACE employee first-aid type injuries not submitted to the Office of Workers' Compensation Programs (OWCP) shall be at the descretion of the FOA commander. Please type or print legibly. Appropriate items shall be marked with an "X" in box(es). If additional space is needed, provide the information on a separate sheet and attach to the completed form. Ensure that these instructions are forwarded with the completed report to the designated management reviewers indicated in sections 16. and 17.

INSTRUCTIONS FOR SECTION 1 — ACCIDENT CLASSIFICATION. *(Mark All Boxes That Are Applicable.)*

a. GOVERNMENT. Mark "CIVILIAN" box if accident involved government civilian employee; mark "MILITARY" box if accident involved U.S. military personnel.
   (1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in any government civilian employee injury, illness, or fatality that requires the submission of OWCP Forms CA-1 (injury), CA-2 (illness), or CA-6 (fatality) to OWCP; mark if accident resulted in military personnel lost-time or fatal injury or illness.
   (2) PROPERTY DAMAGE — Mark the appropriate box if accident resulted in any damage of $1000 or more to government property (including motor vehicles).
   (3) VEHICLE INVOLVED — Mark if accident involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.
   (4) DIVING ACTIVITY — Mark if the accident involved an in-house USACE diving activity.

b. CONTRACTOR.
   (1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in any contractor lost-time injury/illness or fatality.
   (2) PROPERTY DAMAGE — Mark the appropriate box if accident resulted in any damage of $1000 or more to contractor property (including motor vehicles).
   (3) VEHICLE INVOLVED — Mark if accident involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.
   (4) DIVING ACTIVITY — Mark if the accident involved a USACE Contractor diving activity.

c. PUBLIC.
   (1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in public fatality or permanent total disability. (The "OTHER" box will be marked when requested by the FOA to report an unusual non-fatal public accident that could result in claims against the government or as otherwise directed by the FOA Commander).
   (2) VOID SPACE — Make no entry.
   (3) VEHICLE INVOLVED — Mark if accident resulted in a fatality to a member of the public and involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" is marked.
   (4) VOID SPACE — Make no entry.

INSTRUCTIONS FOR SECTION 2 — PERSONAL DATA

a. NAME — (MANDATORY FOR GOVERNMENT ACCIDENTS. OPTIONAL AT THE DISCRETION OF THE FOA COMMANDER FOR CONTRACTOR AND PUBLIC ACCIDENTS). Enter last name, first name, middle initial of person involved.

b. AGE — Enter age.

c. SEX — Mark appropriate box.

d. SOCIAL SECURITY NUMBER — (FOR GOVERNMENT PERSONNEL ONLY) Enter the social security number (or other personal identification number if no social security number issued).

e. GRADE — (FOR GOVERNMENT PERSONNEL ONLY) Enter pay grade. Example: O-6; E-7; WG-8; WS-12; GS-11; etc.

f. JOB SERIES/TITLE — For *government civilian employees* enter the pay plan, full series number, and job title, e.g. GS-0810/Civil Engineer. For *military personnel* enter the primary military occupational specialty (PMOS), e.g., 15A30 or 11G50. For *contractor employees* enter the job title assigned to the injured person, e.g. carpenter, laborer, surveyor, etc.,

g. DUTY STATUS — Mark the appropriate box.
   (1) ON DUTY — Person was at duty station during duty hours or person was away from duty station during duty hours but on official business at time of the accident.
   (2) TDY - Person was on official business, away from the duty station and with travel orders at time of accident. Line-of-duty investigation required.
   (3) OFF DUTY - Person was not on official business at time of accident

h. EMPLOYMENT STATUS — (FOR GOVERNMENT PERSONNEL ONLY) Mark the most appropriate box. If "OTHER" is marked, specify the employment status of the person.

INSTRUCTION FOR SECTION 3 — GENERAL INFORMATION

a. DATE OF ACCIDENT — Enter the month, day, and year of accident.

b. TIME OF ACCIDENT — Enter the local time of accident in military time. Example: 1430 hrs (not 2:30 p.m.).

c. EXACT LOCATION OF ACCIDENT — Enter facts needed to locate the accident scene. (installation/project name, building number, street, direction and distance from closest landmark, etc.,).

d. CONTRACTOR NAME
   (1) PRIME — Enter the exact name (title of firm) of the prime contractor.
   (2) SUBCONTRACTOR — Enter the name of any subcontractor involved in the accident.

e. CONTRACT NUMBER — Mark the appropriate box to identify if contract is civil works, military, or other: if "OTHER" is marked, specify contract appropriation on line provided. Enter complete contract number of prime contract, e.g., DACW 09-85-C-0100.

f. TYPE OF CONTRACT — Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.

g. HAZARDOUS/TOXIC WASTE ACTIVITY (HTW) — Mark the box to identify the HTW activity being performed at the time of the accident. For Superfund, DERP, and Installation Restoration Program (IRP) HTW activities include accidents that occurred during inventory, predesign, design, and construction. For the purpose of accident reporting, DERP Formerly Used DoD Site (FUDS) activities and IRP activities will be treated separately. For Civil Works O&M HTW activities mark the "OTHER" box.

INSTRUCTIONS FOR SECTION 4 — CONSTRUCTION ACTIVITIES

a. CONSTRUCTION ACTIVITY — Select the *most appropriate* construction activity being performed at time of accident from the list below. Enter the activity name and place the corresponding code number identified in the box.

CONSTRUCTION ACTIVITY LIST

1. MOBILIZATION
2. SITE PREPARATION
3. EXCAVATION/TRENCHING
4. GRADING (EARTHWORK)
5. PIPING/UTILITIES
6. FOUNDATION
7. FORMING
8. CONCRETE PLACEMENT
9. STEEL ERECTION
10. ROOFING
11. FRAMING
12. MASONRY
13. CARPENTRY
14. ELECTRICAL
15. SCAFFOLDING/ACCESS
16. MECHANICAL
17. PAINTING
18. EQUIPMENT/MAINTENANCE
19. TUNNELING
20. WAREHOUSING/STORAGE
21. PAVING
22. FENCING
23. SIGNING
24. LANDSCAPING/IRRIGATION
25. INSULATION
26. DEMOLITION

b. TYPE OF CONSTRUCTION EQUIPMENT—Select the equipment involved in the accident from the list below. Enter the name and place the corresponding code number identified in the box. If equipment is not included below, use code 24, "OTHER", and write in specific type of equipment.

CONSTRUCTION EQUIPMENT

1. GRADER
2. DRAGLINE
3. CRANE (ON VESSEL/BARGE)
4. CRANE (TRACKED)
5. CRANE (RUBBER TIRE)
6. CRANE (VEHICLE MOUNTED)
7. CRANE (TOWER)
8. SHOVEL
9. SCRAPER
10. PUMP TRUCK (CONCRETE)
11. TRUCK (CONCRETE/TRANSIT MIXER)
12. DUMP TRUCK (HIGHWAY)
13. DUMP TRUCK (OFF HIGHWAY)
14. TRUCK (OTHER)
15. FORKLIFT
16. BACKHOE
17. FRONT-END LOADER
18. PILE DRIVER
19. TRACTOR (UTILITY)
20. MANLIFT
21. DOZER
22. DRILL RIG
23. COMPACTOR/VIBRATORY ROLLER
24. OTHER

INSTRUCTIONS FOR SECTION 5—INJURY/ILLNESS INFORMATION

a. SEVERITY OF INJURY / ILLNESS - Reference para 2-10 of USACE Suppl 1 to AR 385-40 and enter code and description from list below.

NOI NO INJURY
FAT FATALITY
PTL PERMANENT TOTAL DISABILITY
PPR PERMANENT PARTIAL DISABILITY
LWD LOST WORKDAY CASE INVOLVING DAYS AWAY FROM WORK
NLW RECORDABLE CASE WITHOUT LOST WORKDAYS
RFA RECORDABLE FIRST AID CASE
NRI NON-RECORDABLE INJURY

b. ESTIMATED DAYS LOST—Enter the estimated number of workdays the person will lose from work.

c. ESTIMATED DAYS HOSPITALIZED—Enter the estimated number of workdays the person will be hospitalized.

d. ESTIMATED DAYS RESTRICTED DUTY—Enter the estimated number of workdays the person, as a result of the accident, will not be able to perform all of their regular duties.

e. BODY PART AFFECTED—Select the most appropriate primary and when applicable, secondary body part affected from the list below. Enter body part name on line and place the corresponding code letters identifying that body part in the box.

GENERAL BODY AREA	CODE	BODY PART NAME
ARM/WRIST	AB	ARM AND WRIST
	AS	ARM OR WRIST
TRUNK, EXTERNAL MUSCULATURE	B1	SINGLE BREAST
	B2	BOTH BREASTS
	B3	SINGLE TESTICLE
	B4	BOTH TESTICLES
	BA	ABDOMEN
	BC	CHEST
	BL	LOWER BACK
	BP	PENIS
	BS	SIDE
	BU	UPPER BACK
	BW	WAIST
	BZ	TRUNK OTHER
HEAD, INTERNAL	C1	SINGLE EAR INTERNAL
	C2	BOTH EARS INTERNAL
	C3	SINGLE EYE INTERNAL
	C4	BOTH EYES INTERNAL
	CB	BRAIN
	CC	CRANIAL BONES
	CD	TEETH
	CJ	JAW
	CL	THROAT, LARYNX
	CM	MOUTH
	CN	NOSE
	CR	THROAT, OTHER
	CT	TONGUE
	CZ	HEAD OTHER INTERNAL
ELBOW	EB	BOTH ELBOWS
	ES	SINGLE ELBOW
FINGER	F1	FIRST FINGER
	F2	BOTH FIRST FINGERS
	F3	SECOND FINGER
	F4	BOTH SECOND FINGERS
	F5	THIRD FINGER
	F6	BOTH THIRD FINGERS
	F7	FOURTH FINGER
	F8	BOTH FOURTH FINGERS
TOE	G1	GREAT TOE
	G2	BOTH GREAT TOES
	G3	TOE OTHER
	G4	TOES OTHER
HEAD, EXTERNAL	H1	EYE EXTERNAL
	H2	BOTH EYES EXTERNAL
	H3	EAR EXTERNAL
	H4	BOTH EARS EXTERNAL
	HC	CHIN
	HF	FACE
	HK	NECK/THROAT
	HM	MOUTH/LIPS
	HN	NOSE
	HS	SCALP
KNEE	KB	BOTH KNEES
	KS	KNEE
LEG, HIP, ANKLE, BUTTOCK	LB	BOTH LEGS/HIPS/ ANKLES/BUTTOCKS
	LS	SINGLE LEG/HIP ANKLE/BUTTOCK
HAND	MB	BOTH HANDS
	MS	SINGLE HAND
FOOT	PB	BOTH FEET
	PS	SINGLE FOOT
TRUNK, BONES	R1	SINGLE COLLAR BONE
	R2	BOTH COLLAR BONES
	R3	SHOULDER BLADE
	R4	BOTH SHOULDER BLADES
	RB	RIB
	RS	STERNUM (BREAST BONE)
	RV	VERTEBRAE (SPINE; DISC)
	RZ	TRUNK BONES OTHER
SHOULDER	SB	BOTH SHOULDERS
	SS	SINGLE SHOULDER
THUMB	TB	BOTH THUMBS
	TS	SINGLE THUMB
TRUNK, INTERNAL ORGANS	V1	LUNG, SINGLE
	V2	LUNGS, BOTH
	V3	KIDNEY, SINGLE
	V4	KIDNEYS, BOTH
	VH	HEART
	VL	LIVER
	VR	REPRODUCTIVE ORGANS
	VS	STOMACH
	VV	INTESTINES
	VZ	TRUNK, INTERNAL; OTHER

f. NATURE OF INJURY/ILLNESS - Select the most appropriate nature of injury / illness from the list below. This nature of injury / illness shall correspond to the primary body part selected in 5e, above. Enter the nature of injury / illness name on the line and place the corresponding CODE letters in the box provided.

* The injury or condition selected below must be caused by a specific incident or event which occurred during a single work day or shift.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
*TRAUMATIC INJURY OR DISABILITY	TA	AMPUTATION
	TB	BACK STRAIN
	TC	CONTUSION; BRUISE; ABRASION
	TD	DISLOCATION
	TF	FRACTURE
	TH	HERNIA
	TK	CONCUSSION
	TL	LACERATION, CUT
	TP	PUNCTURE
	TS	STRAIN, MULTIPLE
	TU	BURN, SCALD, SUNBURN
	TI	TRAUMATIC SKIN DISEASES/ CONDITIONS INCLUDING DERMATITIS
	TR	TRAUMATIC RESPIRATORY DISEASE
	TQ	TRAUMATIC FOOD POISONING
	TW	TRAUMATIC TUBERCULOSIS
	TX	TRAUMATIC VIROLOGICAL/ INFECTIVE/PARASITIC DISEASE
	T1	TRAUMATIC CEREBRAL VASCULAR CONDITION/STROKE
	T2	TRAUMATIC HEARING LOSS
	T3	TRAUMATIC HEART CONDITION
	T4	TRAUMATIC MENTAL DISORDER; STRESS; NERVOUS CONDITION
	T8	TRAUMATIC INJURY -- OTHER (EXCEPT DISEASE, ILLNESS)

**A nontraumatic physiological harm or loss of capacity produced by systemic infection; continued or repeated stress or strain; exposure to toxins, poisons, fumes, etc.; or other continued and repeated exposures to conditions of the work environment over a long period of time. For practical purposes, an occupational illness/disease or disability is any reported condition which doses not meet the definition of traumatic injury or disability as described above.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
**NON-TRAUMATIC ILLNESS/DISEASE OR DISABILITY		
RESPIRATORY DISEASE	RA	ASBESTOSIS
	RB	BRONCHITIS
	RE	EMPHYSEMA
	RP	PNEUMOCONIOSIS
	RS	SILICOSIS
	R9	RESPIRATORY DISEASE, OTHER
VIROLOGICAL, INFECTIVE & PARASITIC DISEASES	VB	BRUCELLOSIS
	VC	COCCIDIOMYCOSIS
	VF	FOOD POISONING
	VH	HEPATITIS
	VM	MALARIA
	VS	STAPHYLOCOCCUS
	VT	TUBERCULOSIS
	V9	VIROLOGICAL/INFECTIVE/ PARASITIC--OTHER
DISABILITY, OCCUPATIONAL	DA	ARTHRITIS, BURSITIS
	DB	BACK STRAIN, BACK SPRAIN
	DC	CEREBRAL VASCULAR CONDITION; STROKE
	DD	ENDEMIC DISEASE (OTHER THAN CODE TYPES R&S)
	DE	EFFECT OF ENVIRONMENTAL CONDITION
	DH	HEARING LOSS
	DK	HEART CONDITION
	DM	MENTAL DISORDER, EMOTIONAL STRESS NERVOUS CONDITION
	DR	RADIATION
	DS	STRAIN, MULTIPLE
	DU	ULCER
	DV	OTHER VASCULAR CONDITIONS
	D9	DISABILITY, OTHER
SKIN DISEASE OR CONDITION	SB	BIOLOGICAL
	SC	CHEMICAL
	S9	DERMATITIS, UNCLASSIFIED

g. TYPE AND SOURCE OF INJURY/ILLNESS (CAUSE) - Type and Source Codes are used to describe what caused the incident. The Type Code stands for an ACTION and the Source Code for an OBJECT or SUBSTANCE. Together, they form a brief description of how the incident occurred. Where there are two different sources, code the initiating source of the incident (see example 1, below). Examples:

(1) An employee tripped on carpet and struck his head on a desk.
TYPE: 210 (fell on same level) SOURCE: 0110 (walking/working surface)

NOTE: This example would NOT be coded 120 (struck against) and 0140 (furniture).

(2) A Park Ranger contracted dermatitis from contact with poison ivy/ oak.
TYPE: 510 (contact) SOURCE: 0920 (plant)

(3) A lock and dam mechanic punctured his finger with a metal sliver while grinding a turbine blade.
TYPE: 410 (punctured by) SOURCE: 0830 (metal)

(4) An employee was driving a government vehicle when it was struck by another vehicle..
TYPE: 800 (traveling in) SOURCE: 0421 (government-owned vehicle, as driver)

NOTE: The Type Code 800, "Traveling In" is different from the other type codes in that its function is not to identify factors contributing to the injury or fatality, but rather to collect data on the type of vehicle the employee was operating or traveling in at the time of the incident.

Select the most appropriate TYPE and SOURCE identifier from the list below and enter the name on the line and the corresponding code in the appropriate box.

CODE	TYPE OF INJURY NAME
	STRUCK
0110	STRUCK BY
0111	STRUCK BY FALLING OBJECT
0120	STRUCK AGAINST
	FELL, SLIPPED, TRIPPED
0210	FELL ON SAME LEVEL
0220	FELL ON DIFFERENT LEVEL
0230	SLIPPED, TRIPPED (NO FALL)
	CAUGHT
0310	CAUGHT ON
0320	CAUGHT IN
0330	CAUGHT BETWEEN
	PUNCTURED, LACERATED
0410	PUNCTURED BY
0420	CUT BY
0430	STUNG BY
0440	BITTEN BY
	CONTACTED
0510	CONTACTED WITH (INJURED PERSON MOVING)
0520	CONTACTED BY (OBJECT WAS MOVING)
	EXERTED
0610	LIFTED, STRAINED BY (SINGLE ACTION)
0620	STRESSED BY (REPEATED ACTION)
	EXPOSED
0710	INHALED
0720	INGESTED
0730	ABSORBED
0740	EXPOSED TO
0800	TRAVELING IN

CODE	SOURCE OF INJURY NAME
0100	BUILDING OR WORKING AREA
0110	WALKING/WORKING SURFACE (FLOOR, STREET, SIDEWALKS, ETC)
0120	STAIRS, STEPS
0130	LADDER
0140	FURNITURE, FURNISHINGS, OFFICE EQUIPMENT
0150	BOILER, PRESSURE VESSEL
0160	EQUIPMENT LAYOUT (ERGONOMIC)
0170	WINDOWS, DOORS
0180	ELECTRICITY

CODE	SOURCE OF INJURY NAME
0200	ENVIRONMENTAL CONDITION
0210	TEMPERATURE EXTREME (INDOOR)
0220	WEATHER (ICE, RAIN, HEAT, ETC.)
0230	FIRE, FLAME, SMOKE (NOT TOBACCO)
0240	NOISE
0250	RADIATION
0260	LIGHT
0270	VENTILATION
0271	TOBACCO SMOKE
0280	STRESS (EMOTIONAL)
0290	CONFINED SPACE
0300	MACHINE OR TOOL
0310	HAND TOOL (POWERED: SAW, GRINDER, ETC.)
0320	HAND TOOL (NONPOWERED)
0330	MECHANICAL POWER TRANSMISSION APPARATUS
0340	GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK)
0350	VIDEO DISPLAY TERMINAL
0360	PUMP, COMPRESSOR, AIR PRESSURE TOOL
0370	HEATING EQUIPMENT
0380	WELDING EQUIPMENT
0400	VEHICLE
0411	AS DRIVER OF PRIVATELY OWNED/RENTAL VEHICLE
0412	AS PASSENGER OF PRIVATELY OWNED/RENTAL VEHICLE
0421	DRIVER OF GOVERNMENT VEHICLE
0422	PASSENGER OF GOVERNMENT VEHICLE
0430	COMMON CARRIER (AIRLINE, BUS, ETC.)
0440	AIRCRAFT (NOT COMMERCIAL)
0450	BOAT, SHIP, BARGE
0500	MATERIAL HANDLING EQUIPMENT
0510	EARTHMOVER (TRACTOR, BACKHOE, ETC.)
0520	CONVEYOR (FOR MATERIAL AND EQUIPMENT)
0530	ELEVATOR, ESCALATOR, PERSONNEL HOIST
0540	HOIST, SLING CHAIN, JACK
0550	CRANE
0551	FORKLIFT
0560	HANDTRUCK, DOLLY
0600	DUST, VAPOR, ETC.
0610	DUST (SILICA, COAL, ETC.)
0620	FIBERS
0621	ASBESTOS
0630	GASES
0631	CARBON MONOXIDE
0640	MIST, STEAM, VAPOR, FUME
0641	WELDING FUMES
0650	PARTICLES (UNIDENTIFIED)
0700	CHEMICAL, PLASTIC, ETC.
0711	DRY CHEMICAL—CORROSIVE
0712	DRY CHEMICAL—TOXIC
0713	DRY CHEMICAL—EXPLOSIVE
0714	DRY CHEMICAL—FLAMMABLE
0721	LIQUID CHEMICAL—CORROSIVE
0722	LIQUID CHEMICAL—TOXIC
0723	LIQUID CHEMICAL—EXPLOSIVE
0724	LIQUID CHEMICAL—FLAMMABLE
0730	PLASTIC
0740	WATER
0750	MEDICINE
0800	INANIMATE OBJECT
0810	BOX, BARREL, ETC.
0820	PAPER
0830	METAL ITEM, MINERAL
0831	NEEDLE
0840	GLASS
0850	SCRAP, TRASH
0860	WOOD
0870	FOOD
0880	CLOTHING, APPAREL, SHOES
0900	ANIMATE OBJECT
0911	DOG
0912	OTHER ANIMAL
0920	PLANT
0930	INSECT
0940	HUMAN (VIOLENCE)
0950	HUMAN (COMMUNICABLE DISEASE)
0960	BACTERIA, VIRUS (NOT HUMAN CONTACT)

CODE	SOURCE OF INJURY NAME
1000	PERSONAL PROTECTIVE EQUIPMENT
1010	PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES
1020	RESPIRATOR, MASK
1021	DIVING EQUIPMENT
1030	SAFETY BELT, HARNESS
1040	PARACHUTE

INSTRUCTIONS FOR SECTION 6 — PUBLIC FATALITY

a. ACTIVITY AT TIME OF ACCIDENT—Select the activity being performed at the time of the accident from the list below. Enter the activity name on the line and the corresponding number in the box. If the activity performed is not identified on the list, select from the *most* appropriate primary activity area (water related, non-water related or other activity), the code number for "Other", and write in the activity being performed at the time of the accident.

WATER RELATED RECREATION

1. Sailing
2. Boating—powered
3. Boating—unpowered
4. Water skiing
5. Fishing from boat
6. Fishing from bank dock or pier
7. Fishing while wading
8. Swimming/supervised area
9. Swimming/designated area
10. Swimming/other area
11. Underwater activities (skin diving, scuba, etc.)
12. Wading
13. Attempted rescue
14. Hunting from boat
15. Other

NON-WATER RELATED RECREATION

16. Hiking and walking
17. Climbing (general)
18. Camping/picnicking authorized area
19. Camping/picnicking unauthorized area
20. Guided tours
21. Hunting
22. Playground equipment
23. Sports/summer (baseball, football, etc.)
24. Sports/winter (skiing, sledding, snowmobiling etc.)
25. Cycling (bicycle, motorcycle, scooter)
26. Gliding
27. Parachuting
28. Other non-water related

OTHER ACTIVITIES

29. Unlawful acts (fights, riots, vandalism, etc.)
30. Food preparation/serving
31. Food consumption
32. Housekeeping
33. Sleeping
34. Pedestrian struck by vehicle
35. Pedestrian other acts
36. Suicide
37. "Other" activities

b. PERSONAL FLOTATION DEVICE USED—If fatality was water-related was the victim wearing a person flotation device? Mark the appropriate box.

INSTRUCTIONS FOR SECTION 7—MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE—Mark appropriate box for each vehicle involved. If more than one vehicle of the same type is involved, mark both halves of the appropriate box. USACE vehicle(s) involved shall be marked in left half of appropriate box.

b. TYPE OF COLLISION—Mark appropriate box.

c. SEAT BELT—Mark appropriate box.

INSTRUCTIONS FOR SECTION 8—PROPERTY/ MATERIAL INVOLVED

a. NAME OF ITEM—Describe all property involved in accident. Property/material involved means material which is damaged or whose use or misuse contributed to the accident. Include the name, type, model; also include the National Stock Number (NSN) whenever applicable.

b. OWNERSHIP—Enter ownership for each item listed. (Enter one of the following: *USACE; OTHER GOVERNMENT; CONTRACTOR: PRIVATE)*

c. $ AMOUNT OF DAMAGE—Enter the total estimated dollar amount of damage (parts and labor), if any.

INSTRUCTIONS FOR SECTION 9 — VESSEL/ FLOATING PLANT ACCIDENT

a. TYPE OF VESSEL/FLOATING PLANT — Select the most appropriate vessel/floating plant from list below. Enter name and place corresponding number in box. If item is not listed below, enter item number for "OTHER" and write in specific type of vessel/ floating plant.

VESSEL/FLOATING PLANTS

1. ROW BOAT
2. SAIL BOAT
3. MOTOR BOAT
4. BARGE
5. DREDGE/HOPPER
6. DREDGE/SIDE CASTING
7. DREDGE/DIPPER
8. DREDGE/CLAMSHELL, BUCKET
9. DREDGE/PIPE LINE
10. DREDGE/DUST PAN
11. TUG BOAT
12. OTHER

b. COLLISION/MISHAP — Select from the list below the object(s) that contributed to the accident or were damaged in the accident.

COLLISION/MISHAP

1. COLLISION W/OTHER VESSEL
2. UPPER GUIDE WALL
3. UPPER LOCK GATES
4. LOCK WALL
5. LOWER LOCK GATES
6. LOWER GUIDE WALL
7. HAULAGE UNIT
8. BREAKING TOW
9. TOW BREAKING UP
10. SWEPT DOWN ON DAM
11. BUOY/DOLPHIN/CELL
12. WHARF OR DOCK
13. OTHER

INSTRUCTIONS FOR SECTION 10 — ACCIDENT DESCRIPTION

DESCRIBE ACCIDENT — Fully describe the accident. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and equipment are clearly specified. Continue on blank sheets if necessary and attach to this report.

INSTRUCTIONS FOR SECTION 11 — CAUSAL FACTORS

a. Review thoroughly. Answer each question by marking the appropriate block. If any answer is yes, explain in item 13 below. Consider, as a minimum, the following:

(1) DESIGN — Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?

(2) INSPECTION/MAINTENANCE — Did inadequately or improperly maintained equipment, tools, workplace, etc. create or worsen any hazards that contributed to the accident? Would better equipment, facillty, work site or work activity inspections have helped avoid the accident?

(3) PERSON'S PHYSICAL CONDITION — Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was over exertion a factor?

(4) OPERATING PROCEDURES — Did a lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?

(5) JOB PRACTICES — Were any of the provisions of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?

(6) HUMAN FACTORS — Was the person under undue stress (either internal or external to the job)? Did the task tend toward overloading the capabilities of the person; i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach, strength, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?

(7) ENVIRONMENTAL FACTORS — Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, heat, sun, temperature changes, wind, tides, floods, currents, dust, mud, glare, pressure changes, lightning, etc., play a part in the accident?

(8) CHEMICAL AND PHYSICAL AGENT FACTORS — Did exposure to chemical agents (either single shift exposure or long-term exposure) such as dusts, fibers (asbestos, etc.), silica, gases (carbon monoxide, chlorine, etc.,), mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by-products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation (UV radiation created during welding, etc.) contribute to the accident/incident?

(9) OFFICE FACTORS — Did the fact that the accident occurred in an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?

(10) SUPPORT FACTORS — Was the person using an improper tool for the job? Was inadequate time available or utilized to safely accomplish the task? Were less than adequate personnel resources (in terms of employee skills, number of workers, and adequate supervision) available to get the job done properly? Was funding available, utilized, and adequate to provide proper tools, equipment, personnel, site preparation, etc?

(11) PERSONAL PROTECTIVE EQUIPMENT — Did the person fail to use appropriate personal protective equipment (gloves, eye protection, hard-toed shoes, respirator, etc.) for the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard(s)? Did lack of or inadequate maintenance of protective gear contribute to the accident?

(12) DRUGS/ALCOHOL — Is there any reason to believe the person's mental or physical capabilities, judgement, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".

b. WRITTEN JOB/ACTIVITY HAZARD ANALYSIS — Was a written Job/Activity Hazard Analysis completed for the task being performed at the time of the accident? Mark the appropriate box. *If one was performed, attach a copy of the analysis to the report.*

INSTRUCTIONS FOR SECTION 12 — TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? — For the purpose of this section "trained" means the person has been provided the necessary information (either formal and/or on-the-job (OJT) training) to competently perform the activity/task in a safe and healthful manner.

b. TYPE OF TRAINING — Mark the appropriate box that best indicates the type of training; (classroom or on-the-job) that the injured person received before the accident happened.

c. DATE OF MOST RECENT TRAINING — Enter the month, day, and year of the last *formal* training completed that covered the activity-task being performed at the time of the accident.

INSTRUCTIONS FOR SECTION 13—CAUSES

a. DIRECT CAUSES—The direct cause is that single factor which most directly lead to the accident. See examples below.

b. INDIRECT CAUSES—Indirect causes are those factors which contributed to but did not directly initiate the occurrence of the accident.

Examples for section 13:

a. Employee was dismantling scaffold and fell 12 feet from unguarded opening.
Direct cause: failure to provide fall protection at elevation.
Indirect causes: failure to enforce USACE safety requirements; improper training/motivation of employee (possibility that employee was not knowledgeable of USACE fall protection requirements or was lax in his attitude towards safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

b. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by USACE vehicle. (note USACE vehicle was in proper/safe working condition).
Direct cause: failure of USACE driver to maintain control of and stop USACE vehicle within safe distance.
Indirect cause: Failure of employee to pay attention to driving (defensive driving).

INSTRUCTIONS FOR SECTION 14—ACTION TO ELIMINATE CAUSE(S)

DESCRIPTION—Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/illnesses. Continue on blank sheets of paper if necessary to fully explain and attach to the completed report form.

INSTRUCTIONS FOR SECTION 15—DATES FOR ACTION

a. BEGIN DATE—Enter the date when the corrective action(s) identified in Section 14 will begin.

b. COMPLETE DATE—Enter the date when the corrective action(s) identified in Section 14 will be completed.

c. TITLE AND SIGNATURE—Enter the title and signature of supervisor completing the accident report. For a GOVERNMENT employee accident/illness the immediate supervisor will complete and sign the report. For PUBLIC accidents the USACE Project Manager/Area Engineer responsible for the USACE property where the accident happened shall complete and sign the report. For CONTRACTOR accidents the Contractor's project manager shall complete and sign the report and provide to the USACE supervisor responsible for oversight of that contractor activity. This USACE Supervisor shall also sign the report. Upon entering the information required in 15.d, 15.e and 15.f below, the responsible USACE supervisor shall forward the report for management review as indicated in Section 16.

d. DATE SIGNED—Enter the month, day, and year that the report was signed by the responsible supervisor.

e. ORGANIZATION NAME—For GOVERNMENT employee accidents enter the USACE organization name (Division, Branch, Section, etc.) of the injured employee. For PUBLIC accidents enter the USACE organization name for the person identified in block 15.c. For CONTRACTOR accidents enter the USACE organization name for the USACE office responsible for providing contract administration oversight.

f. OFFICE SYMBOL—Enter the latest complete USACE Office Symbol for the USACE organization identified in block 15.e.

INSTRUCTIONS FOR SECTION 16—MANAGEMENT REVIEW (1st)

1ST REVIEW—Each USACE FOA shall determine who will provide 1st management review. The responsible USACE supervisor in section 15.c shall forward the completed report to the USACE office designated as the 1st Reviewer by the FOA. Upon receipt, the Chief of the Office shall review the completed report, mark the appropriate box, provide substantive comments, sign, date, and forward to the FOA Staff Chief (2nd review) for review and comment.

INSTRUCTIONS FOR SECTION 17—MANAGEMENT REVIEW (2nd)

2ND REVIEW—The FOA Staff Chief (i.e., FOA Chief of Construction, Operations, Engineering, Planning, etc.) shall mark the appropriate box, review the completed report, provide substantive comments, sign, date, and return to the FOA Safety and Occupational Health Office.

INSTRUCTIONS FOR SECTION 18—SAFETY AND OCCUPATIONAL HEALTH REVIEW

3RD REVIEW—The FOA Safety and Occupational Health Office shall review the completed report, mark the appropriate box, ensure that any inadequacies, discrepancies, etc, are rectified by the responsible supervisor and management reviewers, provide substantive comments, sign, date and forward to the FOA Commander for review, comment, and signature.

INSTRUCTION FOR SECTION 19—COMMAND APPROVAL

4TH REVIEW—The FOA Commander shall (to include the person designated Acting Commander in his absence) review the completed report, comment if required, sign, date, and forward the report to the FOA Safety and Occupational Health Office. Signature authority shall not be delegated.

CEHNC-SO (385-10f) 5 April 2004

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Accident Reporting Requirements

1. References:

a. AR 385-40, Accident Reporting, 1 November 1994

b. U.S. Army Corps of Engineer (USACE) Draft Supplement 1 to AR 385-40, 5 October 2000

c. USASC Message, CSSC-Z, 081810Z Jun 01, subject: Clarification of Army Accident Classes

d. CEHNCR 385-1-1, Safety and Occupational Health Program Management, 19 June 1997

e. EM 385-1-1, U.S. Army Corps of Engineers Safety Manual, 03 November 2003

2. Accident Definitions:

a. Class A - Fatality or permanent total disability (Government Civilian, Military Personnel, and/or Contractor), or > $1,000,000 property damage*.

b. Class B - Permanent partial disability or inpatient hospitalization of 3 or more persons (Government Civilian, Military Personnel, and/or Contractor), $200,000 ≤ $1,000,000 property damage*.

c. Class C - Lost Workday (Contractor) or Lost Time (Government Civilian and Military Personnel), $20,000 ≤ $200,000 property damage*.

d. Class D - $2000 ≤ $20,000 property damage*.

*Property damage examples - rental cars, leased items/equipment, GSA property, Huntsville Center (HNC) property, installation property, land owner property.

3. All accidents meeting the definitions above, both contactor and government civilian, are to be reported immediately. Government civilian accidents are to be reported to the first line supervisor; for contractor accidents, either the project manager (PM), contracting officer (KO), contracting officer representative (COR) and/or resident engineer (RE) herein referred to as the "Government Designated Authority (GDA)", who by position is responsible for overseeing, managing, directing, and/or administering the project/activity, operation, material

or person(s) involved at the time of an accident. The supervisor or GDA upon learning of an accident must promptly contact the CEHNC Safety Office and provide a brief summary of the events surrounding the accident. The Safety Office will notify the Command Group.

4. In addition to the accidents described in paragraph 2, the following conditions must also be reported per the guidance outlined in paragraph 3.

a. Army civilian or contractor personnel injured while on duty or on TDY status. Exception: Contractor employee injuries, occupational illnesses, and property damage accidents that occur away from, and involve activities unrelated to, a Corps project/activity for which the contractor is working, are not required to be reported.

b. Accidents or mishaps incident to a Corps project/activity that could cause embarrassment to USACE.

c. Serious near misses.

d. Injuries to CEHNC military personnel, on or off-duty.

e. Medical expenses incurred by government civilians regardless of whether or not the injury meets one of the accident definitions above.

5. For government civilian accidents the supervisor is responsible for investigating the accident. For contractor accidents occurring incident to a CEHNC project/activity, the contractor is responsible for performing the accident investigation in accordance with the contractor's accepted Accident Prevention Plan (APP). The investigation is the supervisor's or contractor's documented internal review, analysis and account of the accident, based on factual information gathered by a thorough and conscientious examination of all causal factors. Its purpose is PREVENTION. Therefore, it is essential for the supervisor or contractor to take positive measures and any necessary corrective actions to prevent future occurrences. At the conclusion of the investigation, the supervisor or contractor must submit a completed original ENG Form 3394, with its instructions to the CEHNC Safety Office for review and processing within 5 working days following the accident. A copy of the ENG Form 3394 can be found at:

http://www.hnd.usace.army.mil/engrdir/organization/systems-eng/Safety/safety2.htm

This form must be routed through the appropriate Director's office for review and signature prior to submitting to the Safety Office.

6. On the original ENG Form 3394, if block 11b is checked "Yes," the job/activity hazard analysis for the task/activity being performed at the time of the accident must be submitted as an attachment. If the block is checked "No," and the accident is on a project/activity for which EM 385-1-1, Corps Safety Manual is applicable, an activity hazard analysis must be developed and submitted to the CEHNC Safety Office for review and acceptance prior to resuming the specific work activity being performed at the time of the accident. The CEHNC Safety Office will assess the adequacy of the investigation as described in the ENG Form 3394 along with all submitted analyses to determine whether the information provided is acceptable. If the investigation report is found acceptable, the Safety Office will notify the supervisor or GDA that the specific work activity may resume.

7. For government civilian claims, all Class A through C accidents require the submission of a Department of Labor (DOL) Form CA-1 (injury), CA-2 (illness/disease/stress) or CA-6 (fatality) in addition to the ENG Form 3394. Please note that a CA-1 or CA-2 is a mandatory submission if medical expenses are incurred. The employee is responsible for completing and submitting the appropriate form to their immediate supervisor for processing. The supervisor is responsible for reviewing, signing and delivering the form to the CEHNC Safety Office for processing. The CA-1 and CA-2 forms are time sensitive and must be submitted within 15 working days from the date of the accident. A timely submission will ensure the forms reach the Office of Workers' Compensation Program (OWCP) administrator as required and expedites the judicious payment of expenses incurred. In the unlikely event a fatality should occur, please call the Safety Office immediately.

8. If assistance is needed in reporting or investigating accidents, please contact the undersigned at 256-895-1583 or Greg Bayuga, 256-895-1596. Completed sample forms are available in the Safety Office.

/s/
CHARLES R. (RAY) WAITS, JR.
Chief, Safety and Occupational
Health Office

DISTRIBUTION:

A & B (Branch Level)
CEHNC-SO (Williams, Bayuga, Plyler, Taylor, Griffin, Sawyers)

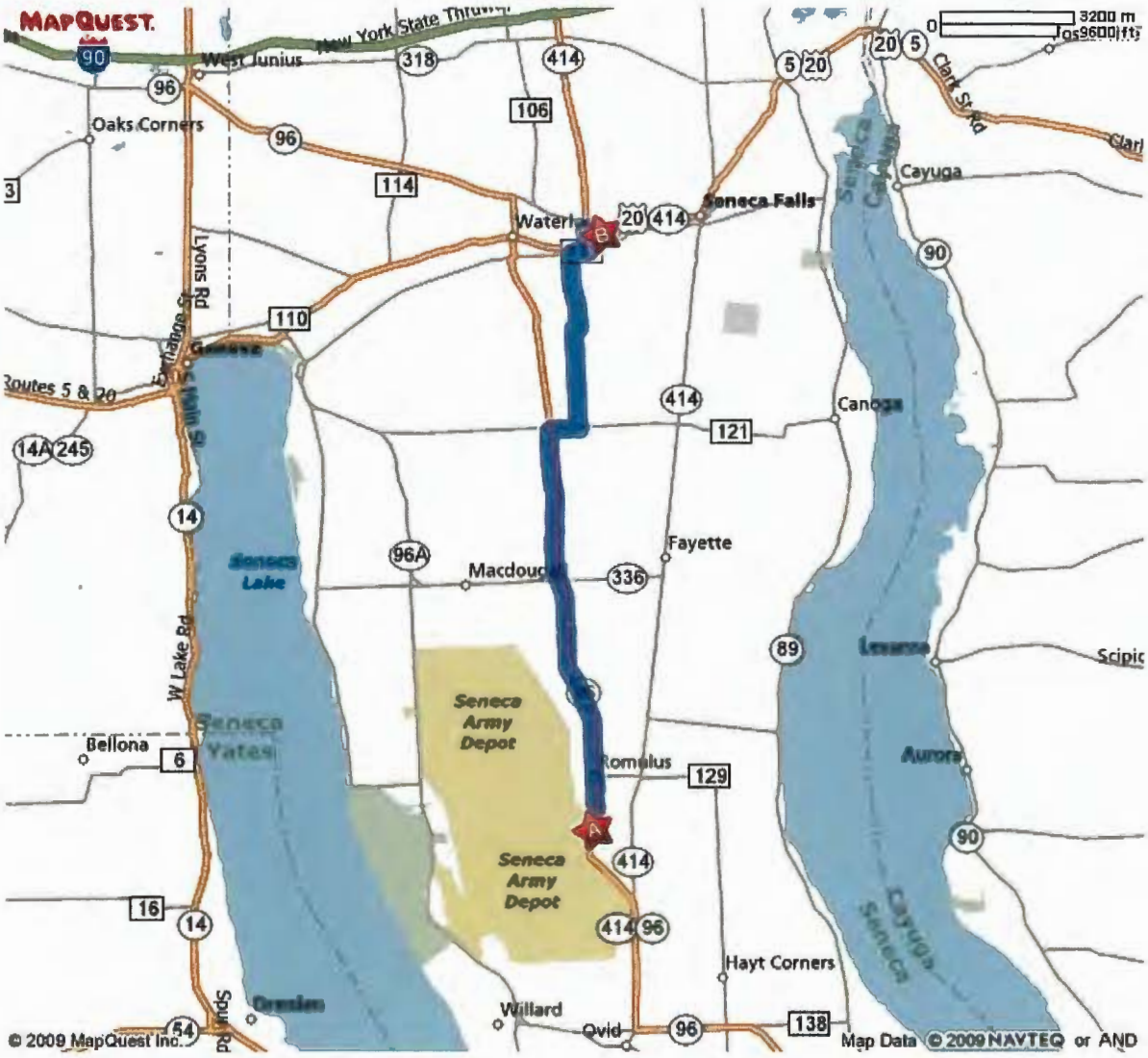
Route to Life Care Medical Associates

Clinic Address:	1991 Balsley Road, Seneca Falls, NY 13148
Telephone Number:	315-539-5229
Hours:	Mon- Fri, 8 am – 5 pm expect Thur 9 am – 5 pm
Distance to Clinic:	Approximately 13 miles

Directions to Clinic from the east side of the Depot (See Attached Map)

1. Exit Main Gate and Turn **LEFT** onto **NORTH NY STATE ROUTE-96** (Go 7.9 miles)
2. Turn **RIGHT** onto **YELLOW TAVERN RD/CR-121**. (Go 0.5 miles)
3. Turn **LEFT** onto **YOST RD**. (Go 2.0 miles)
4. Turn **RIGHT** onto **COUNTY HOUSE RD/CR-118**. (Go 0.1 miles)
5. Turn **LEFT** onto **BAUER RD**. (Go 1.5 miles)
6. Turn **RIGHT** onto **CR-117**. (Go 0.3 miles)
7. Turn **LEFT** onto **WATER FALLS BRIDGE**. (Go 0.2 miles)
8. **WATER FALLS BRIDGE** becomes **NY-414/MOUND RD**. (Go 0.3 miles)
9. Turn **RIGHT** onto **BALSEY RD**. (Go 0.3 miles)
10. End at 1991 Balsley Rd Seneca Falls, NY 13148-9714

TOTAL ESTIMATED TIME: 22 minutes | DISTANCE: 13.01 miles



Route to Geneva General Hospital

Hospital Address:	196 North Street, Geneva, NY 14456
Telephone Number:	1-315-787-4000
Distance to Hospital:	Approximately 17 miles

Directions to Geneva General Hospital from the east side of the Depot (See Attached Map)

1. Exit Main Gate and Turn **LEFT** onto **NORTH NY STATE ROUTE-96** (Go 7.9 miles
2. Turn **LEFT** onto **NY-336/CR-126**. (Go 2.7 miles)
3. Turn **RIGHT** onto **NY-96A N**. (Go 6.1 miles)
4. Turn **LEFT** onto **US-20 W/NY-5 W**. (Go 2.1 miles)
5. Turn **RIGHT** onto **E CASTLE ST**. (Go 0.3 miles)
6. Turn **RIGHT** onto **N MAIN ST**. (Go 0.6 miles)
7. Turn **RIGHT** onto **NORTH ST**. (Go 0.1 miles)
8. End at 196 North St Geneva, NY 14456-1651

TOTAL ESTIMATED TIME: 22 minutes | DISTANCE: 16.66 miles

TABLE C

Emergency Telephone Numbers

CONTACT	NAME	PHONE
State Police, Fire, Ambulance		911
Program Health and Safety Officer	Tim Mustard	1-303-764-8810
Seneca Program Manager	Todd Heino	1-617-449-1405 (office) 1-339-206-7413 (cell)
Site Health & Safety Coordinator	Ben McAllister	1-607-869-1309 (Seneca office) 1-207-409-6151 (cell)
Parsons Site Manager	Tom Andrews	1-716-998-7473 (cell) 1-716-633-7074 (Buffalo office)
Primary Client Contact	Steve Absolom	1-607-869-1309
Alternate Client Contact	Randy Battaglia	1-607-869-1523
State Spill Number		1-585-226-2466
Fire Department	Romulus	1-607-869-9611
Police Department	Interlaken	1-607-532-4466
National Response Center		1-800-424-8802
Poison Control Center		1-800-962-1253
Occupational Physician	Dr. Walker	1-800-874-4676
Life Care Medical Associates		1-315-539-9229
Geneva General Hospital		1-315-787-4000
Regional USEPA Emergency Response		1-732-548-8730
Parsons 24-Hour Emergency #		1-800-883-7300
Parsons Boston H&S		1-617-449-1574
Parsons Medial Director Assistant	Donna Miller	1-661-904-0978
PWEB Incident Reporting System	https://pwebtools.parsons.com/safety/	