US Army Corps of Engineers

Air Force Center for Engineering and the Environment

Seneca Army Depot Activity
Romulus, New York

PROPOSED PLAN

FOR THE OLD CONSTRUCTION DEBRIS LANDFILL (SEAD-11) SENECA ARMY DEPOT ACTIVITY

AFCEE CONTRACT NO. FA8903-04-D-8675
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PARSONS
MARCH 2009

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Proposed Plan

THE OLD CONSTRUCTION DEBRIS LANDFILL (SEAD-11)
SENECA ARMY DEPOT ACTIVITY (SEDA)
ROMULUS, NEW YORK

March 2009

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PURPOSE OF THIS DOCUMENT

This Proposed Plan describes the remedial alternative proposed for the area of concern (AOC) SEAD-11 (the Old Construction Debris Landfill) at the Seneca Army Depot Activity (SEDA or Depot) Superfund Site. This Proposed Plan was developed by the U.S. Army (Army) and the U.S. Environmental Protection Agency (USEPA) in consultation with the New York State Department of Environmental Conservation (NYSDEC). The Army and the USEPA are issuing this Proposed Plan as part of their public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Sections 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

An interim removal action (IRA) was conducted at SEAD-11 between October 2006 and January 2007. Data documenting the nature of contaminants found at SEAD-11 subsequent to the completion of the IRA are presented in the *Final Construction Completion Report for the Old Construction Debris Landfill (SEAD-11)* (Parsons[1], 2008). Information defining the historic nature and extent of contamination previously found at SEAD-11 are presented in the *Expanded Site Inspection, Three Moderate Priority SWMUs, SEAD 11, 13 and 57* (Parsons, 1995), the *Final Decision Document for a Non-Time Critical Removal Action at SEAD-11* (Parsons, 2003), and the *Final Action Memorandum for a Removal Action at SWMU SEAD-11* (Parsons, 2004). The Army, USEPA, and NYSDEC encourage the public to review these documents to develop a more comprehensive understanding of the AOC and the CERCLA activities that have been completed.

This Proposed Plan has been prepared to inform the public of the Army's, USEPA's, and NYSDEC's preferred remedy for the AOC and to solicit public comments pertinent to the proposed remedy. The preferred remedy for the AOC is No Further Action (NFA).

The remedy described in this Proposed Plan is the preferred remedy for the AOC. Changes to the preferred remedy, or a change from the preferred remedy to another remedy, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedy for the AOC will be made after the Army and the USEPA have taken all public comments into consideration. The Army and the USEPA are soliciting comments because the Army and the USEPA, in consultation with the NYSDEC, may select a remedy other than the preferred remedy for the AOC discussed in this Proposed Plan.

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1 **PARSONS** (Parsons) is the business logo for the Parsons Corporation, headquartered in Pasadena, California. Over the years, Parsons has performed work at the Seneca Army Depot under the Parsons Corporation business entities named, C.T. Main, Inc.; Parsons Main Inc; Engineering-Science, Inc; Parsons Engineering Science, Inc.; and Parsons Infrastructure & Technology Group, Inc. All of this work is referenced within this document using the Parsons logo.

COMMUNITY ROLE IN SELECTION PROCESS

The Army, USEPA, and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, documents contained in the Administrative Record for SEAD-11 have been made available to the public during a public comment period which begins on (Date 1) and concludes on (Date 2). Key documents included within the Administrative Record for SEAD-11 include:

> **MARK YOUR CALENDAR**
>
> **Date 1 – Date 2:**
>
> Public comment period related to this Proposed Plan.
>
> **Date 3** at 7:00PM: Public meeting at the Seneca County Office Building, Village of Waterloo, New York

- *Expanded Site Inspection (ESI) Report for Three Moderately High Priority SWMUs* (Parsons, 1995).
- *Decision Document for a Non-Time Critical Removal Action at SEAD-11, Final* (Parsons, 2003);
- *Action Memorandum for Removal Action at SWMU SEAD-11, Revised Final* (Parsons, 2004);
- *Interim Removal Action Work Plan, Old Construction Debris Landfill (SEAD-11)* (Parsons, 2006),
- *Construction Completion Report (CCR) for the Old Construction Debris Landfill* (Parsons, 2008a), and this
- *Superfund Proposed Plan, SEAD-11, the former Old Construction Debris Landfill (Parsons, 2008b)*

A public meeting will be held during the public comment period at the Seneca County Office Building on (Date 3) to present the conclusions of the CCR, to elaborate further on the reasons for selecting the preferred remedy, and to receive public comments.

Written comments received at the public meeting or during the public comment period will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document that formalizes the selection of the remedy.

Written comments on the Proposed Plan should be addressed to:

Mr. Stephen M. Absolom
BRAC Environmental Coordinator
Seneca Army Depot Activity
Building 123, P.O. Box 9
5786 State Route 96
Romulus, NY 14541-0009

SCOPE AND ROLE OF ACTION

The Army's goal for SEAD-11 is to ensure that the property is protective of human health and the environment, and is suitable for release and reuse at a level that is consistent with its intended foreseeable future use [i.e., Training]. If information or evidence exists to indicate that hazardous substances may be present at any location slated for transfer, the Army is obligated to conduct investigations needed to verify the presence/absence of hazardous substances, and assess the potential risks that may exist due to the presence of these hazardous substances. These investigations and assessments are conducted under the oversight of, and subject to the review and approval of the USEPA and the NYSDEC. The findings, results, and the conclusions of the investigations and assessments, and the subsequent land use decisions that are made based on the Army's investigations and assessments are also made available to the public for review and comment.

If the results and conclusions of the investigations and assessments of property at the SEDA indicate that unacceptable risks to human health or the environment exist due to the continuing presence of hazardous substances, the Army is obligated to propose, design, implement, monitor, inspect, and report on the remedial actions used to eliminate, mitigate or control the threat. The remedial actions are also subject to review and approval by all parties.

A human health risk assessment performed in accordance with Superfund guidance indicates that potential carcinogenic risks to current or future commercial/industrial (industrial or construction workers or adolescent trespasser) or residential (adult or child) receptors are within USEPA's acceptable range of 1×10^{-6} to 1×10^{-4}. Although the risk assessment does suggest that potential non-carcinogenic hazards are present for future construction workers and adult and child residents, further analysis of the conditions indicates that the potential hazards are overstated, due to uncertainties associated with the risk analysis procedure, or that the elevated indices are from chemicals that are present at background levels. Detailed discussion of risk assessment results is presented in **Section 7** of this ROD.

Based on all of this foregoing information, No Further Action (NFA) is needed at SEAD-11, the Old Construction Debris Landfill, and this property is suitable for transfer to other or private parties for reuse and reoccupation.

SITE and AOC BACKGROUND

SEDA Description

SEDA is a 10,587-acre, former military facility located in Seneca County in the towns of Romulus and Varick, New York, all of which was owned by the United States Government and operated by the Department of the Army between 1941 and 2000. The Army's military mission ceased in 2000, and since that time, portions of the former Depot have been transferred to outside public and private parties for reuse.

Prior to the Army's occupation of the Depot, this land was used for farming, agricultural, and residential purposes. The SEDA's historic military mission included receipt, storage, distribution, maintenance, and demilitarization of general supplies, conventional ammunition, explosives, and special weapons.

The SEDA is located in an uplands area, which forms a divide separating two of the New York Finger Lakes; Cayuga Lake on the east and Seneca Lake on the west. Ground surface elevations are generally higher along the eastern and southern borders of the Depot, and lower along the northern and western borders.

The primary direction of surface water flow throughout the SEDA is to the west, towards Seneca Lake. Isolated portions of the Depot drain to the northeast (Seneca-Cayuga Canal) and east (Cayuga Lake). Primary surface water flow conduits to Seneca Lake are Reeder, Kendaia, Indian, and Silver Creeks, while Kendig Creek flows to the northeast (Seneca – Cayuga Canal) and an unnamed creek flows away from the southeast corner of the Depot towards the east and Cayuga Lake.

Regionally, four distinct hydrologic units have been identified within Seneca County. These include two distinct shale formations, a series of limestone units, and unconsolidated beds of Pleistocene glacial drift. The geologic material that comprises the overburden is generally Pleistocene till.

Groundwater monitoring results from varying locations within the SEDA indicate that the shallow aquifer's thickness appears to be influenced by the hydrologic cycle and many monitoring wells dry up completely during certain periods of the year. The effect on the water table elevations is likely a seasonal phenomenon. The over-burden aquifer is thickest during the spring recharge months and thinnest during the summer and early fall. During late fall and early winter, the saturated thickness increases.

AOC Description

SEAD-11 is the former Old Construction Debris Landfill, which is retained by the Army pending the completion and close out of its environmental obligations. SEAD-11 is located in the southwestern portion of the former Depot, as shown in **Figure 1**. The landfill reportedly operated in the 1940s and is currently vacant property. Prior to the interim removal action (IRA), which was conducted between October 2006 and January 2007, the AOC was characterized as a terraced area of elevated topography that was located on the generally vacant, downwardly sloping terrain that predominated this portion of the Depot. The regional topography surrounding SEAD-11 slopes from higher ground on the east to lower elevations on the west. The Old Construction Debris Landfill measured approximately 4 acres in size.

SEAD-11 is bound to the east by SEDA railroad tracks; beyond these tracks is an upward sloping field covered with grass and low brush. The southern perimeter of the former landfill is vegetated with deciduous trees; the area further south of the AOC is covered with dense low brush. West of the AOC is an open, grass-covered field that ends at West Patrol Road and the perimeter security fence that constitutes the SEDA boundary. Indian Creek is located approximately 1,000 feet west of the former landfill. As shown in **Figure 2**, the AOC is bounded to the north by Indian Creek Road, beyond which is an open grass field which gives way to trees and low brush several hundred feet from the road.

Seismic profiles made for SEAD-11 prior to the IRA detected 4 to 17 feet of till overlying bedrock. The till material included layers of loose, unsaturated till, compact unsaturated till, and saturated till. The bedrock surface slopes downwards to the west following the slope of the surface topography. Groundwater flow at SEAD-11 in the till / weathered shale aquifer is generally to the west. The distribution of groundwater in the till portion of the aquifer is characterized by moist soil with coarse-grained lenses of water-saturated soil. Some more saturated zones were noted at the base of the upper, less dense till suggesting that in some locations, the water may be perched on the upper surface of the dense till. Recharge of groundwater to the wells during sampling events was generally poor.

Prior to the IRA, the surface of the AOC was generally vegetated with brush, grasses, and weeds. There was prior evidence of debris on the surface of the former landfill, intermixed with the vegetation. Since the IRA, a grass and weed covering has been re-established over the top of AOC. There are no developed portions within SEAD-11.

Prior to the IRA, the surface of the landfill sloped to the northwest, back towards the intersection of Indian Creek Road and the railroad tracks. A historic plan, showing SEAD-11's topography before the IRA, is presented in **Figure 3**. Given the slope of the landfill cover prior to the IRA, surface water flow over the former landfill probably was captured in the east-west trending swale that was located between the landfill surface and the southern edge of Indian Creek Road. Flow captured in the swale subsequently drained towards the west and Indian Creek.

A thicker fill layer was indicated in the southern and western portions of the landfill and resulted in steeper scarps on its southern and southwestern sides. The more gently sloping hills on the north and northwestern sides suggested a thinner layer of fill. The landfill had an average thickness of 4 feet. Assorted construction debris included metal, scrap wood, and several empty 55-gallon drums were observed on the southern and southwestern edges of the former landfill before the IRA. Upon completion of the IRA, the filled area overlying the native land was removed, and the associated waste and cover fill were transported off-site for disposal at a State licensed landfill.

After the IRA, the area of the former landfill generally slopes to the west and is less steep than before. Surface water flowing over the site is now likely to flow towards the west, and some may pool and infiltrate into the ground in a localized low spot that is located near the southeastern corner of the former landfill. No mapped wetlands are present within SEAD-11.

SEDA History

The U.S. Government purchased land for the Seneca Army Depot from approximately 150 families in June 1941. The Depot began its primary mission of receipt, maintenance, and supply of ammunition in 1943. After the end of World War II, the Depot's mission shifted from supply to storage, maintenance, and disposal of ammunition.

On July 14, 1989, the USEPA proposed the SEDA for inclusion on the National Priorities List (NPL). The USEPA's recommendation was approved and finalized on August 30, 1990, when the SEDA was listed in Group 14 of the Federal Facilities portion of the NPL.

Once listed on the NPL, the Army, USEPA, and NYSDEC identified 57 solid waste management units (SWMUs) where data or information suggested, or evidence existed to support, that hazardous substances or hazardous wastes had been handled and where releases to the environment may have occurred. Each of these SWMUs was identified in the *Federal Facilities Agreement under CERCLA Section 120; Docket Number: II-CERCLA-FFA-00202* (FFA) signed by the three parties in 1993. The number of SWMUs was subsequently expanded to include 72 AOCs once the Army completed the required *SWMU Classification Report* (Parsons, 1995). Once the 72 SWMUs were listed, they were divided into two groups, one for no action sites, and the other for sites where action or additional information was needed. Sites requiring action were further grouped to prioritize planned investigations and actions.

In 1995, the SEDA was designated for closure under the Department of Defense's (DoD's) Base Realignment and Closure (BRAC) process. Once SEDA was added to the 1995 BRAC list, the Army's primary objective expanded from performing remedial investigations and completing necessary remedial actions to include the release of non-affected portions of the Depot to the surrounding community for their reuse for other, non-military purposes. The designated future use of land within the SEDA was first defined and approved by the Seneca County Local Redevelopment Authority in 1996. In 2005, the Seneca County Industrial Development Agency (SCIDA) revised the planned future use of property within the former Depot. SEAD-11 is located in the Training parcel (**Figure 1**), which equates to a commercial-type future use. Since 1995, approximately 8,000 acres of the former Depot have been released to the SCIDA. An additional 250 acres of land at the Depot have been transferred to the U.S. Coast Guard for continued operation of a LORAN Station.

Previous Investigations and Activities at SEAD-11

The discussion of previous investigations and activities at SEAD-11 is presented chronologically. Investigations performed include:

- ESI (1993 – 1994)
- Additional sampling program (2000 – 2001)
- Interim Removal Action (2006 – 2008)

The previous work is described in detail in the following reports:

- *Expanded Site Inspection (ESI) Report for Three Moderately High Priority SWMUs* (Parsons, 1995)
- *Decision Document for a Non-Time Critical Removal Action at SEAD-11, Final* (Parsons, 2003)

- *Action Memorandum for Removal Action at SWMU SEAD-11, Revised Final* (Parsons, 2004)
- *Interim Removal Action Work Plan, Old Construction Debris Landfill (SEAD-11)* (Parsons, 2006)
- *Construction Completion Report (CCR) for the Old Construction Debris Landfill* (Parsons, 2008)

The ESI included geophysical investigations, a soil gas survey, and sampling and analysis of surface and subsurface soil and groundwater. The geophysical investigations were comprised of seismic refraction, electromagnetic, and ground penetrating radar surveys. One soil boring was drilled at an upgradient location and three soil samples were collected from the soil boring. Four test pits were excavated to the base of the landfill debris and three samples were obtained from each test pit. Four monitoring wells were installed and one groundwater sample was collected from each well. Soil and groundwater samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), explosives, herbicides, and Target Analyte List (TAL) metals.

Additional investigations and sampling were conducted in 2000 to investigate the geophysical anomalies detected during the ESI. Ten test pits were excavated and three additional monitoring wells were installed, and subsequently sampled twice during November 2000 and February 2001. Soil samples were analyzed for VOCs and metals and groundwater samples were analyzed for TCL VOCs, SVOCs, pesticides/PCBs, explosives, and TAL metals.

Based on the ESI and 2000-2001 sampling programs, the Army determined that the disposed materials placed at the landfill, comprised principally of construction debris, represented a potential risk to human health and the environment due to the presence of certain hazardous substances (e.g., VOCs, carcinogenic polycyclic aromatic hydrocarbons [cPAHs], and metals) which were found in the collected soil and groundwater samples. Based on this determination, the Army prepared and submitted an Action Memorandum and Decision Document that recommended that a removal action be conducted to remove the construction debris and landfill from SEDA.

The IRA was conducted between October 2006 and January 2007 to remove the landfilled materials and associated contaminated soils to eliminate potential source materials that might have posed potential threats to human health and the environment. A total of 32,900 cubic yards (cy) / 42,188 tons of material (i.e., construction debris and fill) was excavated from SEAD-11 all of these materials were hauled off-site and disposed at Ontario County Landfill. Confirmatory samples were collected from 95 excavation floor and 41 excavation perimeter locations and these were analyzed for VOC, cPAH, and metal analytes. The resulting data were compared to cleanup goals (CUGs) documented in the remedial action work plan (RAWP), and results of this comparison served as the basis for deciding that the IRA was completed.

The CUGs established for VOCs were New York's soil cleanup objective (SCO) levels documented in its Technical and Administrative Guidance Memorandum (TAGM) #4046 *Determination of Soil Cleanup Objectives and Cleanup Levels* (NYSDEC, 1993). All final confirmatory results met the VOC cleanup goals. The project-specific CUG established for cPAHs [i.e., benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene] was a NYS guidance value of 10 parts per million (ppm) benzo(a)pyrene toxicity equivalents (BTE). All final confirmatory sample results representative of soil remaining on-site met the 10 ppm BTE value for cPAHs. The maximum BTE value detected was 8.1 ppm and the average BTE concentration was 0.70 ppm.

The proposed metals cleanup goals in the Final Work Plan were the USEPA Region IX's Preliminary Remediation Goals (PRGs) for Residential Soil or Seneca site-wide background concentrations. All metal concentrations, exclusive of those measured for arsenic, were lower than their reference PRG values. All of the concentrations of arsenic measured were above its PRG reference value, but all arsenic concentrations measured were consistent with background levels.

Groundwater samples were collected from seven monitoring wells between February 20 and February 22, 2007 to assess groundwater quality at the AOC subsequent to the completion of the IRA. All groundwater samples were analyzed for TCL VOCs and TAL metals.

The Army prepared and submitted a CCR to provide record documentation of the IRA construction activities and to provide documentation that all landfill material and soil exceeding cleanup goals were removed. The Completion Report concluded that no further action was required at SEAD-11.

SEAD-11 CHARACTERIZATION RESULTS

Post-IRA confirmatory soil data (i.e., all data associated with soils currently remaining at the AOC) were evaluated and are summarized below in this Proposed Plan. These data represent the current SEAD-11 conditions.

SEAD-11 groundwater monitoring results (post IRA) for VOCs and metals obtained from samples collected between February 20 - 22, 2007 were used to represent the current groundwater conditions for the SEAD-11 characterization and risk assessment. SVOCs, explosives, pesticides, PCBs, and herbicides were not analyzed during the post-IRA sampling event as they had not been found above regulatory limits in sampling events conducted prior to the IRA. However, to ensure that all hazardous substances identified at the site were considered in the risk assessment as required under EPA RAGS guidance, the results from the 2000 – 2001 additional sampling program are included for the SEAD-11 characterization and risk assessment.

Soil Investigations

Confirmatory soil sample results collected during the IRA were compared to site-specific cleanup goals that were established and approved in the SEAD-11 Action Memorandum and Decision Document and in the SEAD-11 IRA Work Plan. Data presented in the Construction Completion Report indicates that the SEAD-11 IRA met the cleanup goals defined in the Action Memorandum and the IRA Work Plan, and thus the work demonstrates the attainment of the State's goal to return the site to pre-disposal conditions.

New York enacted new remedial guidance and soil cleanup objectives (SCOs) for inactive hazardous waste sites in December of 2006, which is roughly coincident with the completion of IRA at SEAD-11. Chemical concentrations below these guidance values are normally found not to pose concerns to human health and the environment. Further, demonstration that soil concentrations remaining at a site are lower than the New York's unrestricted use SCOs is now deemed to represent achievement of pre-disposal conditions. However, provisions are defined under New York's General Remediation Action Program that permit alternative methods to be used (e.g., risk assessments) to demonstrate that necessary actions are completed.

TABLE 1
Summary of Post IRA Soil Confirmation Results versus NYS Unrestricted Use SCOs

	95% UCL Concentration (mg/Kg)	Maximum Concentration (mg/Kg)	NYS Unrestricted Use SCO (mg/kg)	Number of Samples that Exceed SCO	95% UCL Exceeds SCO (Y/N)
Acetone	0.067	0.067	0.05	1	Y
Benzo(a)anthracene	0.73	4.8	1.0	11	N
Benzo(a)pyrene	0.505	4.5	1.0	11	N
Benzo(b)fluoranthene	1.09	7.4	1.0	17	Y
Benzo(k)fluoranthene	0.192	2.1	0.8	4	N
Chrysene	0.551	5.5	1.0	12	N
Dibenz(ah)anthracene	0.165	0.85	0.33	7	N
Indeno(123-cd)pyrene	0.338	2.8	0.5	15	N
Arsenic	5.8	19.5	13	1	N
Chromium	17.4	44.5	30	2	N
Copper	24.9	131	50	3	N
Lead	54.3	400	63	8	N
Mercury	0.05	0.327	0.18	2	N
Nickel	24.6	38.6	30	6	N
Silver	0.49	2.2	2	1	N
Zinc	114.4	591	109	20	Y

Similarly, since the completion of the IRA, the EPA has switched from using the Region IX Preliminary Remediation Goals (PRGs) as a benchmark against which hazardous substance levels are compared to using Regional Screening Levels (RSLs). Discussions presented and summarized in the remainder of this Proposed Plan compare hazardous substance concentrations found at the site at the time of the completion of the IRA to the EPA's and the NYSDEC's current comparative values.

A summary of the comparison of SEAD-11 soil data to the NYSDEC's unrestricted use SCOs is presented in presented in **Table 1**, while the equivalent comparison to the EPA's RSLs is presented in **Table 2**. The risk assessment for site data is summarized further below and demonstrates that the estimated potential risks to future residential receptors are within the EPA's accepted range of 1 x 10^{-6} to 1 x 10^{-4}.

The referenced summary tables identify the maximum concentration found for the listed contaminant in any soil sample collected at the AOC, the appropriate (e.g., 95%) upper confidence limit concentration of the arithmetic mean (hereafter referred to as UCLs)[2] as recommended by the USEPA ProUCL program (Version 4), the number of samples that contained concentrations that exceeded the listed guidance value, and evaluates whether the AOC-wide concentration of a contaminant is likely to be above the identified guidance level.

TABLE 2
Summary of Post IRA Soil Confirmation Results versus USEPA Regional Residential Soil Screening Levels

	95% UCL Concentration (mg/Kg)	Maximum Concentration (mg/Kg)	USEPA Regional Soil Screening Level Residential (mg/kg)	Number of Samples that Exceed Regional Screening Levels	95% UCL Exceeds Regional Screening Levels (Y/N)
Benzo(a)anthracene	0.73	4.8	0.15	33	Y
Benzo(a)pyrene	0.506	4.5	0.015	54	Y
Benzo(b)fluoranthene	1.09	7.4	0.15	36	Y
Benzo(k)fluoranthene	0.912	2.1	1.5	2	N
Dibenz(ah)anthracene	0.164	0.85	0.015	34	Y
Indeno(123-cd)pyrene	0.338	2.8	0.15	27	Y
Arsenic	5.8	19.5	0.39	114	Y

One VOC (acetone), all seven cPAHs [i.e., benzo(a)anthracene, benzo(a)pyrene, benzo(b) fluoranthene, benzo(k)fluoranthene, chrysene, dibenz (ah)anthracene, and indeno(123-cd)pyrene], and eight metals (i.e., arsenic, chromium, copper, lead, mercury, nickel, silver, and zinc) were detected in one or more individual samples at concentrations above the NYS Unrestricted Use SCOs. However, the 95% UCLs for only three contaminants [i.e., acetone, benzo(b)fluoranthene, and zinc] were found at levels that surpassed the State's guidance levels. The elevated 95% UCL reported for acetone is equivalent to its maximum concentration, and is an anomaly of the statistical evaluation performed because acetone was only detected twice in the 106 samples that were characterized.

Five cPAHs [i.e., benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(ah)anthracene, and indeno (123-cd)pyrene] and arsenic were found at concentrations that surpassed the USEPA Regional Screening Levels.

Groundwater Investigation

Groundwater results were compared to NYSDEC Ambient Water Quality Criteria (AWQS) Class GA standards, Federal Maximum Contaminant Levels (MCLs), as well as the USEPA Regional Screening Levels for Tap Water. Due to the limited number of groundwater samples collected, the maximum value detected was compared directly to the guidance values. A summary of the groundwater data is presented in **Table 3**.

The maximum concentration detected for two VOCs (tetrachloroethene and trichloroethene) were at levels below their respective NYS GA Groundwater Standards, but at levels above their respective USEPA Regional screening levels for tap

[2] A statistical value computed for a specific set of data that represents the upper value, based on a ninety five percent confidence, of the data sets true mean (average). There is a five percent chance or less that the average from all samples from the data set will be higher than this value.

water. Further, while several SVOCs, and one pesticide compound, were detected in SEAD-11 groundwater, none were detected at concentrations above either of their comparative groundwater guidance (i.e., GA standards, tap water screening levels) levels. Finally, manganese (1 time) and iron (3 times) were the only metals that were detected in groundwater samples at levels in excess of their respective NYS GA groundwater standards, but neither of these metals were detected in groundwater at a level in excess of USEPA Regional screening levels.

The maximum concentration detected for two VOCs (tetrachloroethene and trichloroethene) were at levels below their respective NYS GA Groundwater Standards, but at levels above their respective USEPA Regional screening levels for tap water. Further, while several SVOCs, and one pesticide compound, were detected in SEAD-11 groundwater, none were detected at concentrations above either of their comparative groundwater guidance (i.e., GA standards, tap water screening levels) levels. Finally, manganese (1 time) and iron (3 times) were the only metals that were detected in groundwater samples at levels in excess of their respective NYS GA groundwater standards, but neither of these metals were detected in groundwater at a level in excess of USEPA Regional screening levels.

TABLE 3

Comparison of SEAD-11 Groundwater Detects to Groundwater Criteria

Hazardous Substance	Units	Maximum Groundwater Concentration	Federal Maximum Contaminant Level (MCL)	NYSDEC GA Groundwater Standard	USEPA Regional Screening Level for Tap Water
VOC					
Tetrachloroethene	µg/L	2.05	5	5	0.11
Trichloroethene	µg/L	3.1	5	5	1.7
Metal					
Iron	µg/L	727	NA	300	26,000
Manganese	µg/L	341	NA	300	880

NA = none available.

Based on the comparison of SEAD-11 soil and groundwater data to guidance and screening values, a risk assessment was performed in accordance with Superfund guidance to assess whether there are potential risks at the AOC due to the level of contaminants identified.

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure (RME) scenarios.

Hazard identification: In this step, the COPCs at the site in various media (i.e., soil and groundwater) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: in this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil. Factors relating to the exposure assessment include, but are not limited to, the concentrations that people might be exposed to and the potential frequency and duration of exposure. Using these factors, a reasonable maximum exposure scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health effects, such as changes in the normal functions of organs within the body (e.g., changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health-effects.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Risks are characterized based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the exposure assessment. Current superfund guidelines for acceptable exposures are an individual lifetime excess cancer risk in the range of 10^{-6} to 10^{-4} (corresponding to a one-in-a-million to a one-in-ten-thousand excess cancer risk) with 10^{-6} being the point of departure. For non-cancer health effects, a "hazard index" (HI) is calculated. A HI represents the sum of the individual exposure levels compared to their corresponding reference doses. The key concept for a non-cancer HI is that a "threshold level" (measured as an HI of less than 1) exists below which non-cancer health effects are not expected to occur.

AOC RISKS

A human health risk assessment was performed to estimate potential human health risks that remain at the AOC after the IRA. Results of the IRA confirmatory soil sampling, and the groundwater sampling performed in 2000 – 2001 (for SVOCs, pesticides/PCBs, herbicides and explosives) and post-IRA groundwater monitoring (for VOCs and metals) were used as the basis of the risk assessment.

The risk assessment was conducted in accordance with the USEPA's *Risk Assessment Guidance for Superfund* (RAGS) and the supplemental guidance and updates to the RAGS. The human health risk estimates summarized in this section are based on reasonable maximum exposure (RME) scenarios. Risk assessment assumptions, findings, and conclusions are presented in detail in the SEAD-11 Post Remediation Risk Assessment Memorandum (Parsons, 2007) and are summarized below.

SEAD-11 is currently vacant property. The designated future use of the land in the AOC is Training, based on SCIDA's (2005) future land use plan. Training is defined in the Master Plan report for the SEDA as homeland security training, as well as training for first responders. Under the Training scenario, potential current and future threats to three human receptors were estimated: current and future construction worker, future industrial worker, and current adolescent trespasser/future visitor (ages 11-16 yrs). In addition, potential threats to a future resident were also estimated to evaluate the Unrestricted Use scenario.

Exposure pathways evaluated for soil exposure by human receptors included inhalation of ambient dusts caused by soil resuspension, ingestion of soil, and dermal contact with soil. In addition, groundwater exposure pathways assessed included: intake of groundwater, inhalation of groundwater (for future residents only), and dermal contact with groundwater (for construction workers and residential receptors only).

Table 4 summarizes potential risks calculated for exposures to SEAD-11 soil and groundwater.

Table 4
Calculation of Total Noncarcinogenic and Carcinogenic Risk - SEAD-11
Reasonable Maximum Exposure (RME)

RECEPTOR / Exposure Pathway	Hazard Index	Cancer Risk
INDUSTRIAL WORKER		
Inhalation of Dust in Ambient Air	2.E-01	1.E-07
Ingestion of Soil	2.E-01	6.E-06
Intake of Groundwater	2.E-01	8.E-06
Dermal Contact to Soil	1.E-02	4.E-06
Dermal Contact to Groundwater	NA	NA
TOTAL RECEPTOR RISK (Nc & Car)	**6.E-01**	**2.E-05**
CONSTRUCTION WORKER		
Inhalation of Dust in Ambient Air	3.E+00	8.E-08
Ingestion of Soil	5.E-01	9.E-07
Intake of Groundwater	2.E-01	3.E-07
Dermal Contact to Soil	2.E-02	2.E-07
Dermal Contact to Groundwater	2.E-03	1.E-08
TOTAL RECEPTOR RISK (Nc & Car)	**4.E+00**	**1.E-06**
ADOLESCENT TRESPASSER		
Inhalation of Dust in Ambient Air	1.E-03	1.E-10
Ingestion of Soil	1.E-02	1.E-07
Intake of Groundwater	4.E-02	3.E-07
Dermal Contact to Soil	7.E-04	3.E-08
Dermal Contact to Groundwater	NA	NA
TOTAL RECEPTOR RISK (Nc & Car)	**5.E-02**	**4.E-07**
RESIDENT (ADULT)		
Inhalation of Dust in Ambient Air	2.E-01	1.E-07
Inhalation of Groundwater	2.E-04	3.E-10
Ingestion of Soil	2.E-01	9.E-06
Intake of Groundwater	7.E-01	2.E-05
Dermal Contact to Soil	1.E-02	3.E-06
Dermal Contact to Groundwater	9.E-02	1.E-05
TOTAL RECEPTOR RISK (Nc & Car)	**1.E+00**	**4.E-05**
RESIDENT (CHILD)		
Inhalation of Dust in Ambient Air	4.E-01	6.E-08
Inhalation of Groundwater	1.E-03	5.E-10
Ingestion of Soil	2.E+00	2.E-05
Intake of Groundwater	2.E+00	2.E-05
Dermal Contact to Soil	8.E-02	5.E-06
Dermal Contact to Groundwater	2.E-01	5.E-06
TOTAL RECEPTOR RISK (Nc & Car)	**5.E+00**	**5.E-05**
RESIDENT (TOTAL)		
Inhalation of Dust in Ambient Air		2.E-07
Inhalation of Groundwater		8.E-10
Ingestion of Soil		3.E-05
Intake Groundwater		4.E-05
Dermal Contact to Soil		8.E-06
Dermal Contact to Groundwater		2.E-05
TOTAL RECEPTOR CANCER RISK		**9.E-05**

NA = Not Applicable
Nc = Non-carcinogenic
Car = Carcinogenic

Risk Characterization Results for Receptors Under Training Scenario

The potential cancer risks and non-cancer hazard indices for the industrial worker and the adolescent trespasser are within the USEPA limits. The cancer risk for the construction worker is within the USEPA limit ($1x10^{-6}$ vs. $1x10^{-4}$), but the non-cancer hazard index for the construction worker is above the USEPA limit of 1. The following discussion explains why the elevated non-cancer hazard index is not a concern.

Dust inhalation, soil ingestion, and groundwater intake contribute approximately 80%, 14%, and 6%, respectively, to the construction worker's total non-cancer hazard index. The largest components of the construction worker's HI are hazards that are associated with inhalation of dusts, followed by the construction worker's ingestion of soil. Almost all (>99.9%) of the non-cancer hazard index via inhalation of ambient air dust is caused by the presence of aluminum (~15%) and manganese (~85%) in the post-IRA on-site soils. **Table 5** compares SEAD-11 on-site, post-IRA aluminum and manganese soil concentrations to the State's unrestricted use SCOs and the EPA's RSLs for residential soil, and shows that neither the aluminum nor the manganese are present at concentrations that are above levels that are believed to pose risk to residential receptors.

Further, the construction worker's HI derived for manganese is predicated on exposure to manganese dioxide, which is but one of the many forms in which manganese may be present in the soil. The inhalation reference dose (RfC) associated with manganese dioxide is 4,000 times lower than the American Conference of Governmental and Industrial Hygienist's (ACGIH's) threshold limit value[3] for manganese exposure in the workplace, and thus the HI resulting from the use of manganese dioxide's RfC is considered to represent a maximum or ceiling level for the HI that might exist at SEAD-11.

TABLE 5
Comparison of SEAD-11 Metal Concentrations in Soil with Upgradient Concentrations

COPC	Post IRA SEAD-11 Soil Concentration (mg/Kg)			NYSDEC unrestricted use SCO (mg/Kg)	EPA Regional Screening Levels (mg/Kg)
	Max.	Ave	95% UCL [1]		
Aluminum	17,500	10,769	11,132	NA	77,000
Iron	51,100	22,456	23,305	NA	55,000
Manganese	1,540	583	623	1600	1,800
Vanadium	31.6	19.25	19.9	NA	390

Notes:
1. 95% UCL based on normal distribution.
2. The maximum detected concentration from SB11-3.
3. The maximum detected concentration from SB4-1.
4. NA – Not Available; Max – maximum; Ave - average.

Similarly, the presence of aluminum, iron, manganese, and vanadium in the SEAD-11 post-IRA on-site soils contribute to the majority of the construction worker's non-cancer hazard index via soil ingestion, but again in each case, the levels found are below the levels that the State and the EPA consider to be acceptable for residential exposures. .

If aluminum, iron, manganese, and vanadium in SEAD-11 soil were not considered as COPCs for the risk assessment, the non-cancer hazard index for the construction worker is below the USEPA limit of 1. Therefore, soils left on-site at SEAD-11 do not pose an undue level of risk to the likely future receptors (industrial worker, construction worker, and adolescent trespasser).

Risk Characterization Results for Residential Receptors

The potential cancer risks for the adult resident and the child resident at SEAD-11 are $4x10^{-5}$ and $5x10^{-5}$, respectively, both below the USEPA's limit for cancer risk (i.e., $1x10^{-4}$). The total life-time cancer risk for the resident (sum of cancer risk for the adult resident and the child resident) is $9x10^{-5}$, within the USEPA acceptable cancer risk range.

[3] The concentration of a substance to which most workers can be exposed without adverse effects.

The non-cancer hazard indices for the adult resident and child resident are 1 and 5, respectively, at or above the USEPA threshold of 1. Groundwater intake is the predominant exposure pathway that contributes to the non-cancer hazard indices for the adult resident (55%) and the child resident (47%), respectively. Manganese and Trichloroethene (TCE) in groundwater are the largest contributors (i.e., HQ ≥0.1) to the total HI computed for the adult resident.

The elevated HI computed for manganese is associated with the maximum concentration detected at the AOC, and the only sample that was found to contain manganese at a level that exceeded the State's GA groundwater standard. As is shown in **Table 6,** the measured concentration of manganese in the groundwater is below the USEPA's Regional Screening Level for Tap Water. Manganese is frequently identified as a contaminant in the groundwater at all AOCs at the Depot, and is associated with the interaction of the shallow groundwater with the soils that are indigenous to the area.

Therefore, manganese is not considered to be a COC in SEAD-11 groundwater.

TABLE 6
Comparison of Manganese Concentration in SEAD-11 Groundwater with Upgradient Conditions

SEAD-11 Groundwater (Post-IRA samples) (μg/L)	NYSDEC GA Standard (μg/L)	EPA Region IX RSL for Tapwater (μg/L)
Maximum: 341 μg/L Average: 101.3 μg/L	300 μg/L	880 μg/L

TCE in groundwater is also a significant component of the adult and child resident's overall elevated HI. The elevated HI results even though the maximum measured concentration for TCE is below the State's GA standard and the USEPA's maximum contaminant limit (MCL) for drinking water.

For the child resident, potential affects of soil ingestion results in an elevated HI component of 2. The predominant risk contributors for this exposure pathway include aluminum, arsenic, iron, manganese, and vanadium, all with associated HQs greater than 0.1. As shown above in **Table 5** and as was previously discussed for the construction worker, the aluminum, iron, manganese, and vanadium concentrations in SEAD-11 soil are below State and Federal guidance values that are considered acceptable for unrestricted use and residential soil, and are generally consistent with regional background levels; therefore, none of these metals were identified as COCs in SEAD-11 soil.

Potential effects associated with TCE in groundwater also result in a non-cancer hazard index equal to the USEPA limit of 1 for the child resident. As is explained above for the adult resident, the level of TCE found in the groundwater at SEAD-11 is below State and Federal guidance values.

Basis for Action

The results of the post-IRA confirmatory sampling at SEAD-11 indicate that there are individual soil samples that contain elevated concentrations of one or more of the identified contaminants that are above State or Federal guidance values. However, site-wide data evaluations, based on the 95% UCL of the dataset, indicate that few of these soil contaminants are present within the AOC at levels that exceed State or Federal guidance values. Post-IRA groundwater sampling results indicate that there are only two contaminants (iron and manganese) identified in groundwater that exceed NYS GA groundwater standards in one or more of the post-IRA sampling results. No groundwater contaminants were found at concentrations in excess of Federal MCLs. Two VOCs were found in post-IRA groundwater samples at levels that exceed the USEPA Regional screening levels for Tap Water, however neither of the VOCs are found at levels that exceed State groundwater or Federal drinking water standards. A human health risk assessment performed in accordance with Superfund guidance indicates that potential carcinogenic risks to current or future commercial/industrial (industrial or construction workers or adolescent trespasser) or residential (adult or child) receptors are within USEPA's preferred range of 1×10^{-4} to 1×10^{-6}. Although the risk assessment does suggest that potential non-carcinogenic hazards are present for future construction workers, and adult and child residents, further analysis of the conditions indicate that the potential hazards are overstated, due to uncertainties associated with the risk analysis procedure, or that the elevated indices are result from chemicals that are present in the environment beyond SEAD-11 at comparable levels, and thus are indicative of background levels.

Based on all of this foregoing information, the Army and the USEPA the risk assessment results, it is the Army's and EPA's position that NFA is needed at SEAD-11.

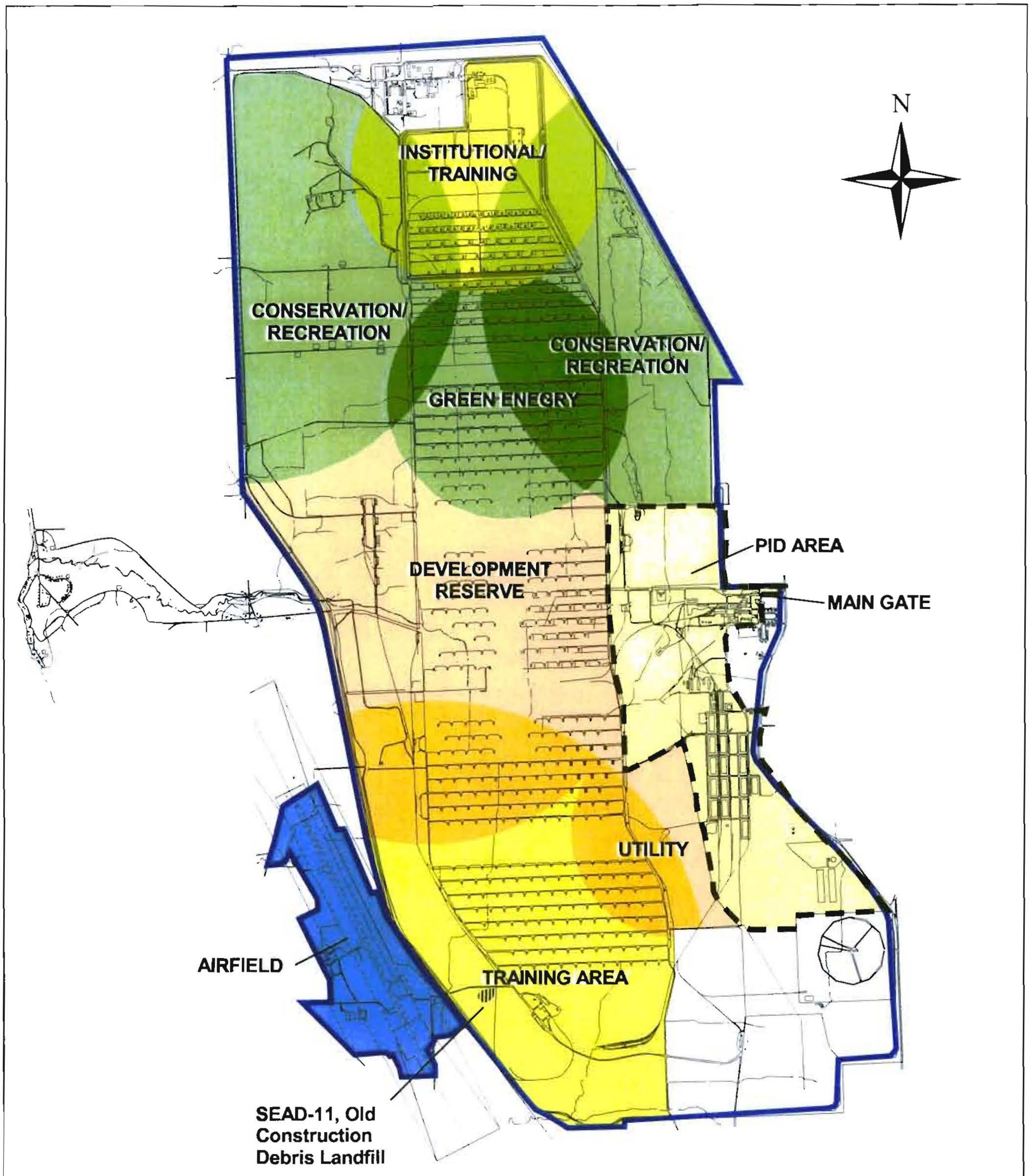
PROPOSED REMEDY

The selected remedy for any site should, at a minimum, eliminate or mitigate all significant threats to the public health or the environment presented by the hazardous substances or waste present at the site.

At SEAD-11, the Army has excavated a total of 32,900 cy of material from the landfill to reduce potential risks to the public health and the environment. The remaining soil has been sampled and results demonstrate that the current SEAD-11 conditions are consistent with the cleanup goals. Groundwater sampling conducted after the IRA indicates that groundwater has not been negatively impacted by the landfill materials. The soil and groundwater at SEAD-11 do not pose significant risks to potential human receptors. Therefore, no further action is required for SEAD-11 for either soil or groundwater.

Based on the data presented within this Proposed Plan, the Army and USEPA recommend that no further action (NFA) is needed to address environmental issues at SEAD-11, the former Old Construction Debris Landfill.

FIGURES



PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-11 Proposed Plan

Figure 1
Location of SEAD-11

April 2008

Seneca Army Deport Boundary

2000 0 2000 4000 Feet

O:\Seneca\Depot Survey\SEAD-11 PRAP .apr

LEGEND:

- RAILROAD TRACKS
- PROPERTY LINE
- ROAD
- POST EXCAVATION CONTOUR ELEVATION (650)
- TREELINE
- FENCE
- UTILITY POLE
- SURVEY MONUMENT
- EXTENT OF EXCAVATION
- DECIDUOUS TREE
- MW11-5 MONITORING WELL

NOTES:

1. ALL DISTURBED AREAS WERE SEEDED AND STABILIZED WITH STRAW MULCH TO PREVENT EROSION.

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT
PROPOSED PLAN
SEAD-11

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	734543-01000

FIGURE 2
SEAD-11
FINAL GRADING PLAN

SCALE	DATE	REV
1" = 100'	April 2008	-

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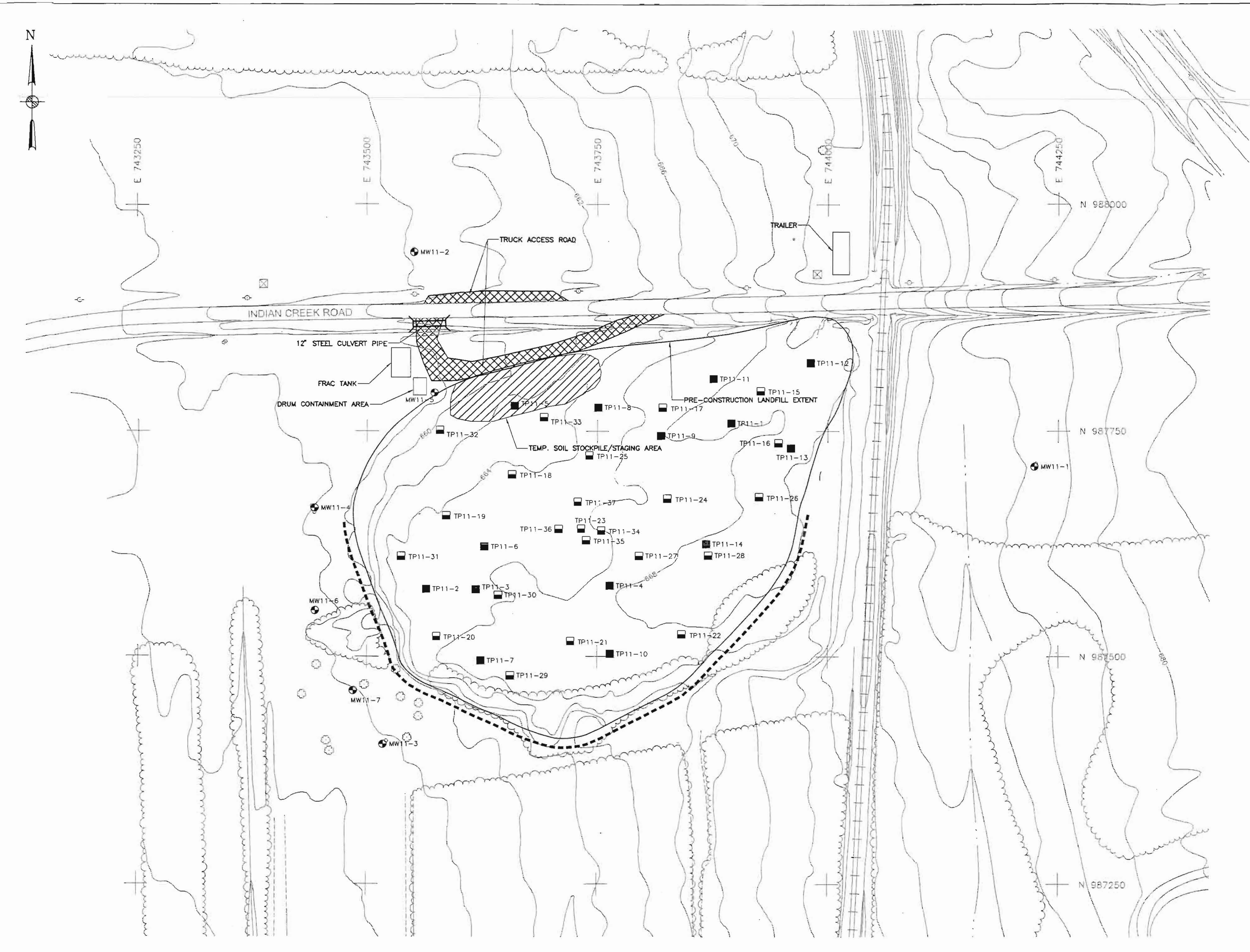

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LEGEND:

- RAILROAD TRACKS
- PROPERTY LINE
- ROAD
- 650 CONTOUR ELEVATION
- TREELINE
- FENCE
- UTILITY POLE
- SURVEY MONUMENT
- APPROXIMATE LANDFILL EXTENT
- EROSION CONTROLS
- DECIDUOUS TREE
- MW11-6 MONITORING WELL
- TP11-12 ESI TEST PIT
- TP11-16 DISPOSAL CHARACTERIZATION TEST PIT
- 12" STEEL CULVERT PIPE

50 0 50 100
(feet)

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT
PROPOSED PLAN
SEAD-11

DEPT	Dwg. No
ENVIRONMENTAL ENGINEERING	734543-01000

FIGURE 3
SEAD-11
PRE-CONSTRUCTION SITE PLAN

SCALE	DATE	REV
1" = 100'	April 2008	-