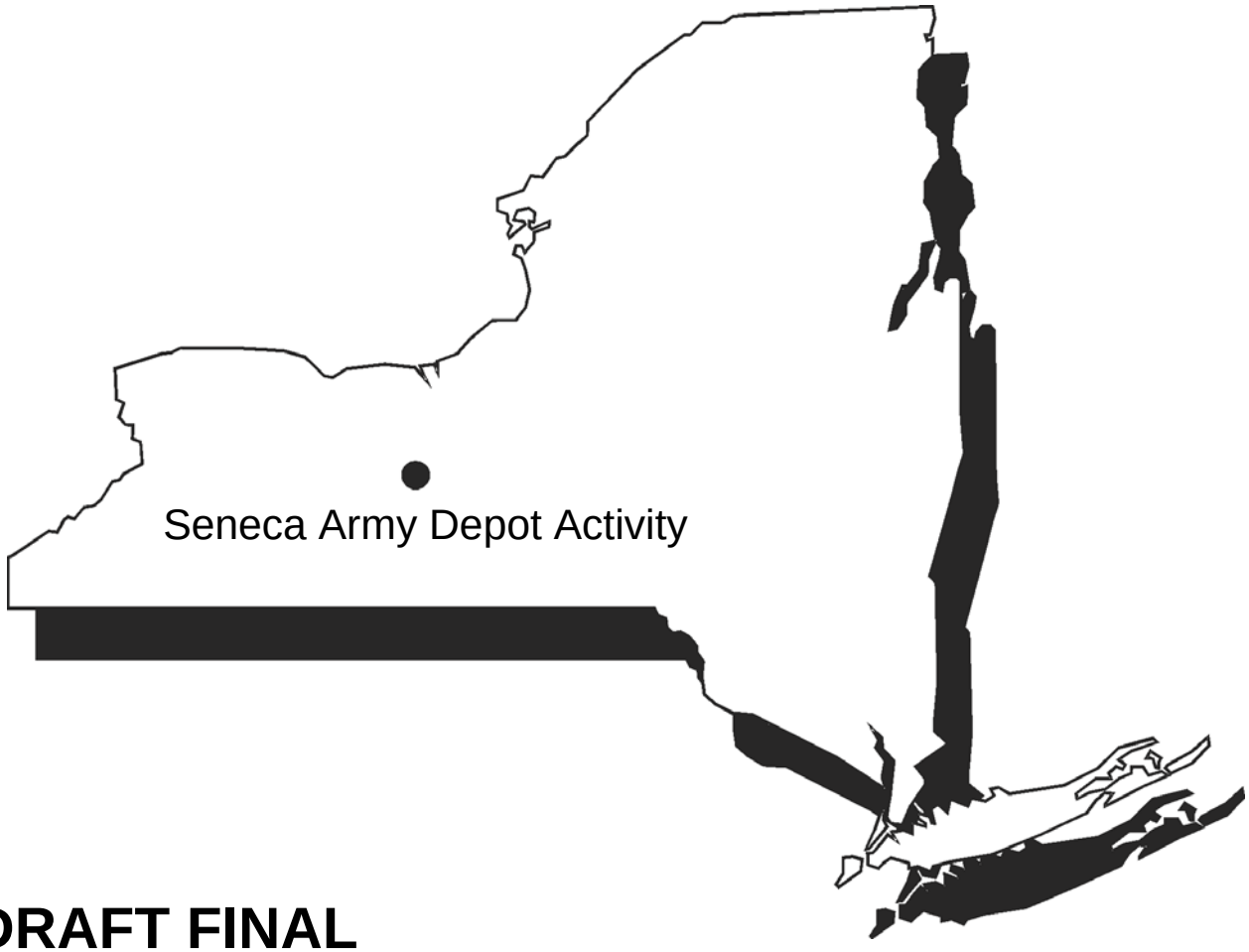
US Army, Engineering & Support Center
Huntsville, AL

Seneca Army Depot Activity
Romulus, NY



DRAFT FINAL
PROPOSED PLAN
FOR THE FILL AREA WEST OF BUILDING 135 (SEAD-59)
AND THE ALLEGED PAINT DISPOSAL AREA (SEAD-71)
SENECA ARMY DEPOT ACTIVITY

EPA Site ID# NY0213820830
NY Site ID# 8-50-006
CONTRACT NO. DACA87-02-D-0005
DELIVERY ORDER NO. 0013

PARSONS
JUNE 2007

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Proposed Plan – Draft Final

THE FILL AREA WEST OF BUILDING 135 (SEAD-59) AND THE ALLEGED PAINT DISPOSAL AREA (SEAD-71)
SENECA ARMY DEPOT ACTIVITY (SEDA)
ROMULUS, NEW YORK

June 2007

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PURPOSE OF THIS DOCUMENT

This Proposed Plan describes the remedial alternative selected for two areas of concern (AOCs), SEAD-59 (the Fill Area West of Building 135) and SEAD-71 (the Alleged Paint Disposal Area) 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 (EPA) in consultation with the New York State Department of Environmental Conservation (NYSDEC). The Army and the EPA are issuing this Proposed Plan as part of their public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Action (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). The nature and extent of the contamination at the AOCs are described in the April 2006 Phase II Remedial Investigation (RI) Report. The Army, EPA, and NYSDEC encourage the public to review this document to gain a more comprehensive understanding of the AOCs and the Superfund activities that have been completed.

This Proposed Plan is being provided as a supplement to the RI Report to inform the public of the Army's, EPA's, and NYSDEC's preferred remedy for the AOCs and to solicit public comments pertinent to the selected remedies. The preferred remedy for both AOCs is to formally impose and implement Land Use Controls (LUCs) that prohibit the use of the AOCs for residential activities. Under a separate agreement among the Army, the EPA, and the NYSDEC, there is an overarching restriction that prohibits access to and use of groundwater in the PID Area. The groundwater restriction will be applied to the AOCs but is not a required CERCLA remedy.

The remedy described in this Proposed Plan is the preferred remedy for both AOCs. 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 both AOCs will be made after the Army and the EPA have taken all public comments into consideration. The Army and the EPA are soliciting comments because the Army, EPA, and NYSDEC may select a remedy other than the preferred remedy for either or both of the AOCs.

MARK YOUR CALENDAR

[Date] – [Date]:

Public comment period related to this Proposed Plan.

[Date] at 7:00 P.M.: Public meeting at the Seneca County Office Building, Village of Waterloo, New York

COMMUNITY ROLE IN SELECTION PROCESS

The Army, EPA, 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, the RI Report and this Proposed Plan have been made available to the public for a public comment period which begins on Date and concludes on Date.

A public meeting will be held during the public comment period at the Seneca County Office Building on Date at 7:00 p.m. to present the conclusions of the RI, to elaborate further on the reasons for selecting the preferred remedy, and to receive public comments.

Comments received at the public meeting, as well as written comments, 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 primary goal of this action is to minimize any potential future health and environmental impacts posed by SEAD-59 and SEAD-71 prior to transfer or lease of the land to other private or public parties for beneficial reuse.

AOC BACKGROUND

SEDA and AOC Descriptions

The SEDA previously occupied approximately 10,600 acres of land located in the Towns of Varick and Romulus in Seneca County, New York. The former military facility was owned by the U.S. Government and operated by the Army between 1941 and approximately 2000, when SEDA's military mission ceased. The SEDA's historic military mission included receipt, storage, distribution, maintenance, and demilitarization of conventional ammunition, explosives, and special weapons.

SEAD-59 and SEAD-71 are located in the east-central portion of the former SEDA. Both AOCs are within the Planned Industrial / Office Development (PID) Area (Figure 1).

SEAD-59: Fill Area West of Building 135

SEAD-59 (Fill Area West of Building 135) is approximately 4 acres in size and encompasses an area located along both sides of an unnamed east-west dirt road that provides access to Building 311 and terminates at Building 311. The entire western border of SEAD-59 is defined by a north-south trending drainage ditch. An east-west oriented drainage swale that parallels the SEDA railroad tracks forms the northern boundary of SEAD-59. Drainage ditches are also located on each side of the dirt access road to Building 311.

SEAD-59 was used for the disposal of construction debris and oily sludge. SEDA personnel have indicated that a large quantity of miscellaneous "roads and grounds" waste may have been buried at the AOC. It is not known whether or not any disposal occurred or when any disposal took place.

SEAD-71: the Alleged Paint Disposal Area

SEAD-71 (the Alleged Paint Disposal Area) is wedge shaped and is located west of 4th Avenue near Buildings 114 and 127. The entire AOC is approximately 2 acres in size and bounded on the north and south by railroad tracks serving Buildings 114 and 127. The topography is relatively flat with a gentle slope to the southwest.

The blunt end of the wedge-shaped AOC (i.e., eastern side) is surrounded by a chain-link fence and is hereafter referred to as the Fenced Area. The Fenced Area is situated between Buildings 114 and 127 and is bisected by a single east-west railroad track. The Fenced Area is generally paved or covered with crushed stone. Pieces of asphalt and concrete can be observed on the ground surface. Additional east-west trending railroad tracks are located between the southern edge of Buildings 114 and the northern bound of the Fenced Area and between the northern edge of Building 127 and the southern bound of the Fenced Area. The sharp side of the wedge-shaped AOC (i.e., western side) is a grassy area that is interrupted by a gravel roadway that enters from the north, turns westerly, and then exits the AOC to the south. The storage areas north and east of SEAD-71 contain numerous white transformers, large spools of cable, and other assorted equipment.

Rumors suggest that paints and/or solvents were disposed at SEAD-71 in burial pits. It is not known what other activities may have occurred at the AOC. No dates of disposal are available nor is there any information on the number of suspected disposal pits that may have been used.

SEDA History

The U.S. Government purchased land for the Seneca Army Depot in the townships of Varick and Romulus, New York 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 EPA proposed the SEDA for inclusion on the National Priorities List (NPL). The EPA'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, EPA, 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.* Once the 72 SWMUs were listed, the Army recommended that they be identified as either areas requiring No Action or as AOCs, where action or additional information was needed. When the *SWMU Classification Report* was issued, SEAD-59 and SEAD-71 were classified as Moderately Low Priority and Low Priority AOCs, respectively.

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. The planned future use for SEAD-59 and SEAD-71 is industrial/office development. Since 1995, approximately 8,000 acres of the former Depot has been released to the SCIDA. An additional 250 acres of land at the Depot has been transferred to the U.S. Coast Guard for continued operation of a LORAN Station.

Previous Investigations and Activities at AOCs

Prior investigations and interim remedial actions at SEAD-59 and SEAD-71 have consistently been conducted concurrently as separate components of larger contracts. Work performed at both AOCs includes the Expanded Site Inspections (ESIs) in 1994, Phase I RIs in 1997, Time Critical Removal Actions (TCRAs) conducted in 2002, and Phase II RIs completed in 2006.

The ESIs performed in 1994 included geophysical investigations, soil investigations (including soil boring and test pitting), and groundwater monitoring well installation and sampling. The Phase I RI conducted at SEAD-59 in 1997 included a soil gas survey, a geophysical survey, a test pitting program, a soil boring investigation, and groundwater monitoring well installation; the Phase I RI conducted at SEAD-71 included a ground penetrating radar survey, a surface soil investigation, and a test pitting program. The TCRAs performed in 2002 included excavation and staging of impacted soils, sampling and analysis of excavated areas and stockpiled excavated soils, disposal of approximately 3,805 tons of contaminated soil at an approved off-site landfill, installation of groundwater monitoring wells, and backfilling and grading of open excavations with acceptable soil from the stockpiles. For both AOCs, the Phase II RIs included validating and evaluating the soil data generated from the 2002 TCRAs, conducting groundwater monitoring, and performing risk assessments to characterize potential residual risks to human health and the environment.

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

- Expanded Site Inspection Seven Low Priority AOCs SEADs 60, 62, 63, 64 (A, B, C, and D), 67, 70, and 71;
- 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;
- Revised Final Phase I Remedial Investigation (RI) Report;
- Final Draft Removal Report, SEAD-59 and 71 Time Critical Removal Action; and

- Draft Final Phase II Remedial Investigation Report.

AOC HYDROLOGY/HYDROGEOLOGY

AOC Hydrology

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 sides of the Depot, and lower along the northern and western sides. 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 and an unnamed creek flows away from the southeast corner of the Depot towards the east.

SEAD-59 generally slopes to the west; therefore, surface water flow is to the west and is captured by the north-south trending drainage swale located in the western portion of the AOC and by the drainage ditch which parallels the south side of the access road. Based on topographic relief at SEAD-71, surface water flow is to the southwest toward the SEDA railroad tracks. The Fenced Area is covered with asphalt, which provides an impermeable surface resulting in an increased amount of surface water runoff from the AOC.

AOC Hydrogeology

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.

Based on the drilling program conducted at SEAD-59 and SEAD-71, fill material, till, weathered dark gray shale, and competent gray-black shale are the four major geologic units present at SEAD-59; till, calcareous weathered shale, and competent shale are the three major types of geologic materials present at SEAD-71. The geologic cross-sections suggest that a groundwater divide exists approximately half way between the two Finger Lakes. SEDA is located on the western slope of this divide and therefore regional groundwater flow is expected to be primarily westward towards Seneca Lake.

The groundwater flow direction in the overburden aquifer at SEAD-59 and SEAD-71 is towards the west-southwest. The distribution of groundwater in the overburden aquifer was characterized by saturated soil in the lower till strata and the weathered shale.

RESULTS OF THE REMEDIAL INVESTIGATION

All post-TCRA soil data (i.e., all data collected during the ESIs, Phase I RIs, TCRAs, and Phase II RIs that were associated with soils remaining at the AOCs) were evaluated and are presented in this Proposed Plan. These data represent the current SEAD-59/71 conditions.

Groundwater data collected during the 1994 ESIs were deemed non-representative of the current AOC conditions. The 2004 groundwater samples were collected after the TCRA and were deemed representative of the current AOC conditions. The 2004 groundwater sampling results are summarized and discussed in this section.

SEAD-59: Fill Area West of Building 135

Soil Gas Survey

A total of 241 soil gas points were sampled and analyzed for total volatile organic compounds (VOCs). The soil gas results are shown in Figure 2. The highest soil gas hits were within the boundaries of the fill area. Several smaller areas with soil gas total VOC concentrations at or above 10 parts per million (ppm) were detected to the west and south of the fill area.

The soil gas survey performed at SEAD-59 was intended to be used as a preliminary screening tool to identify potential focus points for subsequent soil VOC characterization. Soils located in areas shown to contain elevated VOC content by the soil gas survey data were subsequently sampled and analyzed. Although the soil gas survey results indicated potential VOC contamination at SEAD-59, the soil samples collected adjacent to the

high soil gas hits (i.e., with total VOC concentrations > 10 ppm) did not confirm that VOCs were present in the soil at SEAD-59. Further, all soil associated with soil gas results > 20 ppm and most soil associated with soil gas results > 10 ppm was removed during the TCRA. As discussed below in the Soil Investigations Section, all post-TCRA soil VOC concentrations at SEAD-59 were consistent with the NYSDEC soil cleanup objectives presented under the Part 375 regulations for industrial and commercial use scenarios. Therefore, soil vapor intrusion is not considered a significant exposure pathway at SEAD-59.

Soil Investigations

A total of 185 surface soil (0-2 ft bgs.) samples represent the current SEAD-59 surface soil conditions. A total of 14 subsurface soil (2-15 ft bgs.) samples represent the SEAD-59 subsurface soil conditions and 53 soil samples represent the excavated soil that is currently remaining at SEAD-59. Soils characterized by other samples collected during the past investigations have been removed and disposed off-site; thus, data associated with these samples are not included in this discussion.

The Army compared the pertinent soil data to several types of federal and state cleanup criteria during its assessment and evaluation of contaminants within soil at SEAD-59 and SEAD-71. The criteria used are considered "To Be Considered" (TBC) advisories or guidance values, as the Army's ultimate remedial action will be driven by risk-based determinations and the intended future use of the lands. The values used by the Army for soil include: Soil Cleanup Objectives for Restricted Commercial and Industrial Uses presented under the New York Code of Rules and Regulations (6NYCRR) Subpart 375-6.8(b) and EPA Region IX Preliminary Remediation Goals (PRGs) for industrial soils.

The appropriate upper confidence limit concentrations of the arithmetic means (hereafter referred to as UCLs; as recommended by the EPA ProUCL program) found in SEAD-59 surface soil, subsurface soil, and remaining soil from excavation for compounds with TBC exceedances are summarized in Tables 1, 2, and 3 respectively.

Table 1
Comparison of SEAD-59 Surface Soil Concentrations with Soil Criteria

Compound [1]	SEAD-59 Surface Soil Concentration [2] (mg/kg)	NYSDEC Commercial Restricted (mg/kg)	NYSDEC Industrial Restricted (mg/kg)	EPA Region IX Industrial Soil PRGs (mg/kg)
Benzo(a)anthracene	1.37	5.6	11	2.11
Benzo(a)pyrene	1.45	1	1.1	0.21
Benzo(b)fluoranthene	1.25	5.6	11	2.11
Benzo(k)fluoranthene	1.14	56	110	21.1
Chrysene	1.4	56	110	0.21
Dibenz(ah)anthracene	0.35	0.56	1.1	2.11
Indeno(1,2,3-cd)pyrene	0.88	5.6	11	2.11
Aluminum	11309	NA	NA	10000
Antimony	13.9	NA	NA	409
Arsenic	5.74	16	16	1.6
Copper	32.1	270	10000	40877
Manganese	532	NA	NA	19458

1. Only compounds with sample concentrations exceeding one or more criteria are listed. Aluminum and manganese are included as they contribute to the elevated risks. All cPAHs are listed although not all have exceedances.

2. EPA ProUCL Recommended UCL Concentration.

Key: mg/Kg = milligrams per kilogram; NA = Not Available

Table 2
Comparison of SEAD-59 Subsurface Soil Concentrations with Soil Criteria

Compound [1]	SEAD-59 Subsurface Soil Concentration [2] (mg/kg)	NYSDEC Commercial Restricted (mg/kg)	NYSDEC Industrial Restricted (mg/kg)	EPA Region IX Industrial Soil PRGs (mg/kg)
Benzo(a)anthracene	**4.2**	5.6	11	2.11
Benzo(a)pyrene	**4.6**	1	1.1	0.21
Benzo(b)fluoranthene	2.26	5.6	11	2.11
Benzo(k)fluoranthene	**4.9**	56	110	21.1
Chrysene	2.34	56	110	0.21
Dibenz(ah)anthracene	**0.084**	0.56	1.1	2.11
Indeno(1,2,3-cd)pyrene	**1.5**	5.6	11	2.11
Aluminum	10406	NA	NA	100000
Arsenic	4.78	16	16	1.6
Manganese	522	NA	NA	19458

1. Only compounds with sample concentrations exceeding one or more criteria are listed. Bold values are the maximum detected values when the UCL values exceed the maximum detected values. Aluminum and manganese are included as they contribute to the elevated risks. All cPAHs are listed although not all have exceedances.

2. EPA ProUCL Recommended UCL Concentration.

Key: mg/kg = milligrams per kilogram; NA = Not Available

Table 3
Comparison of Concentrations in Remaining Soil from Excavation with Soil Criteria

Compound [1]	SEAD-59 Remaining Soil from Excavation Concentration [2] (mg/kg)	NYSDEC Commercial Restricted (mg/kg)	NYSDEC Industrial Restricted (mg/kg)	EPA Region IX Industrial Soil PRGs (mg/kg)
Benzo(a)anthracene	6.83	5.6	11	2.11
Benzo(a)pyrene	7.92	1	1.1	0.21
Benzo(b)fluoranthene	5.08	5.6	11	2.11
Benzo(k)fluoranthene	6.69	56	110	21.1
Chrysene	6.83	56	110	0.21
Dibenz(ah)anthracene	1.24	0.56	1.1	2.11
Indeno(1,2,3-cd)pyrene	3.48	5.6	11	2.11
Arsenic	4.9	16	16	1.6
Lead	195	1000	3900	800

1. Only compounds with sample concentrations exceeding one or more criteria are listed. All cPAHs are listed although not all have exceedances.

2. EPA ProUCL Recommended UCL Concentration.
Key: mg/kg = milligrams per kilogram.

In general, polycyclic aromatic hydrocarbons (PAHs), and specifically, carcinogenic PAHs (cPAHs) had the most frequent excursions above the TBCs in surface soil, subsurface soil, and remaining soil from excavation. Remaining soil from excavation had the highest cPAH concentrations.

The Army computed the benzo(a)pyrene toxicity equivalent (BTE) concentrations of seven cPAHs in accordance with guidance provided by the NYSDEC for each sample. The BTE was used as a screening tool to evaluate potential impacts of carcinogenic PAHs in soil. The average BTE concentrations were 1.36 mg/kg, 1.44 mg/kg, and 8.1 mg/kg in SEAD-59 surface soil, subsurface soil, and the remaining soil from the excavation, respectively, as compared to the guidance value for residential use scenario of 10 mg/kg.

Groundwater Investigation

SEAD-59 groundwater samples were collected from seven monitoring wells during the two 2004 sampling events. The maximum concentrations were compared to federal and state criteria including New York State Class GA Groundwater Standards, federal Maximum Contaminant Levels (MCLs), federal Secondary Drinking Water Standards (SEC), and EPA Region IX PRGs for Tap Water. There is a separate municipal water distribution system within the PID Area so groundwater is not used for drinking water purposes. The SEAD-59 groundwater sample results are presented in Table 4.

Table 4
Comparison of Groundwater Concentrations at SEAD-59 with Groundwater Criteria

Compound [1]	Maximum SEAD-59 Groundwater Concentration (µg/L)	NYSDEC GA Groundwater Standard (µg/L)	Federal MCL or Secondary Drinking Water Standard (µg/L)	SEDA Maximum Background (µg/L)
Aluminum	3250	NA	50	42400
Antimony	8.6	3	6	52.7
Iron	3680	300	300	69400
Iron + Manganese	3994	500	NA	70520
Manganese	314	300	50	1120
Sodium	304000	20000	NA	59400

1. Only compounds with exceedances of one or more criteria are listed.
Key: µg/L = micrograms per liter; NA = Not Available.

Antimony, iron, manganese, and sodium concentrations were detected above their respective NYSDEC GA Standards in SEAD-59 groundwater and aluminum and manganese concentrations were above the values presented in the EPA Secondary Drinking Water Regulations. However, with the exception of sodium, the maximum concentrations for these metals detected in SEAD-59 groundwater were below the maximum SEDA background concentrations.

Based upon the data, the Army has concluded that groundwater at SEAD-59 has not been impacted by historical activities at the AOC.

SEAD-71, the Alleged Paint Disposal Area

Soil Investigations

A total of 69 surface soil (0-2 ft bgs.) samples are available to represent the SEAD-71 surface soil conditions. Eight subsurface soil (2-15 ft bgs.) samples are available to represent residual conditions in SEAD-71 subsurface soil. The UCLs in SEAD-71 surface soil and subsurface soil are summarized in Tables 5 and 6 respectively for compounds with TBC exceedances.

Table 5
Comparison of Surface Soil Concentrations at SEAD-71 with Soil Criteria

Compound [1]	SEAD-71 Surface Soil Concentration [2] (mg/kg)	NYSDEC Commercial Restricted (mg/kg)	NYSDEC Industrial Restricted (mg/kg)	EPA Region IX Industrial Soil PRGs (mg/kg)
Benzo(a)anthracene	42.6	5.6	11	2.11
Benzo(a)pyrene	34.8	1	1.1	0.21
Benzo(b)fluoranthene	9.9	5.6	11	2.11
Benzo(k)fluoranthene	25.3	56	110	21.1
Chrysene	41.6	56	110	0.21
Dibenz(ah)anthracene	5.5	0.56	1.1	2.11
Indeno(1,2,3-cd)pyrene	12.9	5.6	11	2.11
Aluminum	12513	NA	NA	10000
Arsenic	6.3	16	16	1.6
Cadmium	1.9	9.3	60	451
Lead	506	1000	3900	800
Manganese	584	NA	NA	16458

1. Only compounds with sample concentrations exceeding one or more criteria are listed. Aluminum and manganese are included as they contribute to the elevated risks. All cPAHs are listed although not all have exceedances.

2. EPA ProUCL Recommended UCL Concentration.

Key: mg/kg = milligrams per kilogram; NA = Not Available.

Carcinogenic PAHs had the most frequent excursions above the TBCs in surface soil. The maximum cPAH concentrations were detected in surface soil located within the Fenced Area. The Fenced Area is located between Buildings 114 and 127 and was previously used as an equipment storage area. The Fenced Area is paved in some locations and covered with crushed stone in other locations. Elevated PAH concentrations detected in surface soil within the Fenced Area were likely caused by hard fill that was used to construct the area. At the time of construction, the Army typically utilized hard fill consisting of oiled crushed stone to form a sturdy base for areas subjected to heavy vehicular traffic and storage operations. The oil was used to help in the compaction of the crushed stone and aided in dust suppression. The presence of asphalt is noted in the boring log of MW71-1 and field notes recorded while surface soil samples were collected within the Fenced Area. The crushed asphalt materials in the hard fill and the oil used in the construction of the storage area were likely the cause of the consistently elevated PAH concentrations throughout the Fenced Area.

Table 6
Comparison of Subsurface Soil Concentrations at SEAD-71 with Soil Criteria

Compound [1]	SEAD-71 Subsurface Soil Concentration [2] (mg/kg)	NYSDEC Commercial Restricted (mg/kg)	NYSDEC Industrial Restricted (mg/kg)	EPA Region IX Industrial Soil PRGs (mg/kg)
Benzo(a)anthracene	**37**	5.6	11	2.11
Benzo(a)pyrene	**22**	1	1.1	0.21
Benzo(b)fluoranthene	**26**	5.6	11	2.11
Benzo(k)fluoranthene	11	56	110	21.1
Chrysene	**36**	56	110	2.11
Dibenz(ah)anthracene	7	0.56	1.1	0.21
Indeno(1,2,3-cd)pyrene	6.8	5.6	11	2.11
Aluminum	12861	NA	NA	10000
Arsenic	5.2	16	16	1.6
Manganese	590	NA	NA	19458

1. Only compounds with sample concentrations exceeding one or more criteria are listed. Bold values are the maximum detected values when the UCL values exceed the maximum detected values. Aluminum and manganese are included as they contribute to the elevated risks. All cPAHs are listed although not all have exceedances.

2. EPA ProUCL Recommended UCL Concentration.

Key: mg/kg = milligrams per kilogram; NA = Not Available

Elevated PAH levels in the Fenced Area appeared to be confined to the surface soils. The cPAH concentrations at 1 foot bgs. from TP71-2 were generally one order of magnitude lower than the concentrations in samples collected 0.2 feet bgs. within the Fenced Area. The cPAH concentrations from subsurface soil at TP71-2 were approximately two orders of magnitude lower than the concentrations in samples collected 0.2 feet bgs.

The maximum lead concentration 3,470 mg/kg was detected at SS71-16 within the Fenced Area. The elevated lead concentration at SS71-16 was the only concentration detected above the EPA (1996) screening level for industrial scenario (1250 mg/kg) at SEAD-59/71. The next highest concentration within the Fenced Area at SEAD-71 was 572 mg/kg at SS71-19. The average lead concentration within the Fenced Area was 350 mg/kg, which was lower than the EPA (1998) recommended 400 mg/kg screening level for lead in soil at residential properties. Further, the maximum lead concentration was below the Soil Cleanup Objectives for Restricted Industrial Use presented under the New York Code of Rules and Regulations (6NYCRR) Subpart 375-6.8(b) (i.e., 3,900

mg/kg). Therefore, lead is not considered a contaminant of concern (COC) in SEAD-71 soil.

Groundwater Investigation

SEAD-71 groundwater samples were collected from four monitoring wells during the two 2004 sampling events. The maximum concentrations detected in SEAD-71 groundwater and the comparison with the criteria are presented in Table 7.

Table 7
Comparison of Groundwater Concentrations at SEAD-71 with Groundwater Criteria

Compound[1]	Maximum Groundwater Concentration (µg/L)	NYSDEC GA Groundwater Standard (µg/L)	Federal MCL or Secondary Drinking Water Standard (µg/L)	SEDA Maximum Background (µg/L)
4-Nitroaniline	8.7	5 *	NA	NA
Aluminum	12200	NA	50	42400
Antimony	6.52	3	6	52.7
Iron	4470	300	300	69400
Iron+Manganese	4547	500	NA	70520
Manganese	2680	300	50	1120
Sodium	62200	20000	NA	59400

1. Only compounds with exceedances of one or more criteria are listed.
Key: µg/L = micrograms per liter; NA = Not Available.

Antimony, iron, manganese, and sodium concentrations were detected in SEAD-71 groundwater above their respective NYSDEC GA Standards and aluminum and manganese concentrations were above the values presented in the EPA Secondary Drinking Water Regulations.

Iron and manganese in SEAD-71 groundwater are the primary contaminants of potential concern (COPCs) contributing to the elevated non-cancer risks for the human receptors. However, the iron and manganese concentrations in SEAD-71 groundwater were generally comparable with the SEDA background. Therefore, iron and manganese in SEAD-71 groundwater are not identified as COCs. Further, there is a separate municipal water distribution system within the PID Area so groundwater is not used for drinking water purposes.

AOC RISKS

Baseline risk assessments (BRAs) were conducted for SEAD-59 and SEAD-71 using data representative of the current AOC conditions to estimate potential human health and ecological risks.

The human health estimates summarized is this section are based on current reasonable maximum exposure scenarios and were developed by taking into account various conservative estimates about the frequency and duration of an individual's exposure to the COPCs, as well as the toxicity of these contaminants. Soil and groundwater at SEAD-59 and SEAD-71 do not pose unacceptable risks to the industrial receptors with the groundwater use restriction in place.

The screening-level ecological risk assessment (SLERA) concludes that soil at SEAD-59 and SEAD-71, and SEAD-59 remaining soil from the excavation is not expected to significantly impact ecological receptors.

Additional details, findings, and conclusions of the human health and ecological risk assessments are presented below.

Human Health Risk Assessment

SEAD-59 and SEAD-71 are currently vacant properties. The AOCs are located in the Planned Industrial/Office Development parcel. As described in the signed Final Record of Decision for Sites requiring Institutional Controls in the Planned Industrial/Office Development or Warehousing Areas, the Army has imposed the following restrictions within the PID Area:

- Prohibit the development and use of property for residential housing, elementary and secondary schools, childcare facilities and playgrounds.
- Prohibit access or use of groundwater until the NYSDEC (2004) Ambient Water Quality Standards (AWQS) for Class GA Groundwater are met.

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. An 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.

The identified LUCs were previously established for three other AOCs (i.e., SEADs-27, 64A, and 66) that are located in proximity to SEAD-59/71. At the time of the Army's, EPA's, and NYSDEC's final determination for the other three SEADs, all parties agreed that the identified LUCs should be imposed on all land within the PID Area at the former Depot due to the anticipated future use of the land and the similarity of its known past uses by the Army and predecessors.

Based on the current and foreseeable future land use of SEAD-59/71, three human receptors were identified for the BRA (i.e., current and future construction worker, future industrial worker, and current trespasser/future visitor). Exposure pathways evaluated included inhalation of ambient dusts caused by soil resuspension, ingestion of soil, intake of groundwater, dermal contact with soil, and dermal contact with groundwater, the latter of which was only evaluated for construction workers.

Table 8 summarizes risks calculated for exposures to (1) SEAD-59 soil and groundwater, (2) SEAD-59 remaining soil from the excavation and SEAD-59 groundwater, and (3) SEAD-71 soil and groundwater.

Table 8
Summary of Risk Results

Exposure Point	Receptor	Hazard Index	Cancer Risk
SEAD-59 Soil and Groundwater	Industrial Worker	1E+00	2E-05
	Construction Worker	9E+00	2E-06
	Adolescent Trespasser	1E-01	5E-07
Remaining Soil from Excavation and SEAD-59 Groundwater	Industrial Worker	1E+00	6E-05
	Construction Worker	2E+00	6E-06
	Adolescent Trespasser	1E-01	1E-06
SEAD-71 Soil and Groundwater	Industrial Worker	3E+00	2E-04
	Construction Worker	3E+00	1E-05
	Child Trespasser	1E+00	1E-05
SEAD-71 Soil Outside Fenced Area and Groundwater	Industrial Worker	3E+00	4E-05
	Construction Worker	1E+01	4E-06
	Adolescent Trespasser	5E-01	8E-07

With the exception of risk associated with SEAD-71 soil and groundwater exposure, all risks from the uncertainty analysis (Section 6.8 of the Phase II RI Report) are presented.

The cancer risks for all receptors with exposures to SEAD-59 soil and groundwater are below the EPA's upper limit of $1x10^{-4}$. The total non-cancer hazard index for the adolescent trespasser is below the EPA target limit of 1. The non-cancer hazard indices for the industrial worker and construction worker are 1 and 9, respectively. For the industrial worker, the risk associated with SEAD-59 groundwater intake contributes 72% to the total non-cancer risk. For the construction worker, the risks associated with inhalation of dust in ambient air and groundwater intake contribute 84% and 9%, respectively, to the total non-cancer risk.

Antimony, iron, and manganese are the primary COPCs in groundwater contributing to the elevated non-cancer risks to the industrial worker and the construction worker. However, the concentrations observed in SEAD-59 groundwater for these metals were consistent with the Seneca groundwater background levels (as shown in Table 9). Therefore, the elevated risks associated with groundwater exposure are caused by site background and are not related to any AOC release.

Table 9
Comparison of Metal Concentrations in SEAD-59 Groundwater with SEDA Background

Compound	SEAD-59 Groundwater Concentration (mg/L)		Seneca Background (mg/L)	
	Maximum	Average	Maximum	Average
Antimony	0.0086	0.0056	0.05270	0.0082
Iron	3.68	0.60	69.4	4.490
Manganese	0.314	0.126	1.12	0.224

Key: mg/L = milligrams per liter.

Aluminum and manganese in SEAD-59 soil are the only COPCs contributing to the non-cancer risk associated with inhalation of dust in ambient air. Aluminum and manganese concentrations in SEAD-59 soil are consistent with the Seneca soil background levels. Therefore, the elevated risks associated with inhalation of dust at SEAD-59 in ambient air are caused by site background and are not related to any AOC release. A comparison of the SEAD-59 aluminum (Al) and manganese (Mn) concentrations with background is illustrated in Table 10.

Table 10
Comparison of Aluminum and Manganese Concentrations in SEAD-59 Soil with SEDA Background

Compound	SEAD-59 Surface and Subsurface Soil Concentration (mg/kg)			Seneca Background (mg/kg)		
	Max	Ave	95% UCL [1]	Max	Ave	95% UCL [1]
Al	18,300	10,895	11,184	20,500	13,206	14,315
Mn	1,290	503	527	2,380	609	701

1. 95% UCL of normal distribution.
Key: mg/kg = milligrams per kilogram; Al = Aluminum; Mn = Manganese; Max = Maximum; Ave = Average

For exposure to SEAD-59 remaining soil from the excavation and SEAD-59 groundwater, the cancer risks for all receptors are below the EPA upper limit of $1x10^{-4}$. The total non-cancer hazard index for the adolescent trespasser is below the EPA target limit of 1. The non-cancer hazard indices for the industrial worker and construction worker are 1 and 2, respectively. For the industrial worker and construction worker, the risks associated with groundwater intake contribute 73% and 56%, respectively to the total non-cancer risks. As previously discussed, the elevated risks associated with groundwater exposure are caused by site background and are not related to any AOC release. Therefore, SEAD-59

remaining soil from the excavation is not expected to cause unacceptable risks to potential industrial workers or construction workers.

For exposure to SEAD-71 soil and groundwater, the non-cancer hazard indices for the industrial worker, construction worker, and child trespasser are at or above 1. The cancer risk is slightly above the EPA upper limit of $1x10^{-4}$ for the industrial worker. The risks associated with soil ingestion and soil dermal contact contribute 90% to the total cancer risk for the industrial worker. PAHs in SEAD-71 soil are the primary COPCs contributing to the cancer risks associated with SEAD-71 soil exposure. Elevated PAH concentrations were detected in the Fenced Area located between Building 114 and Building 127. However, the elevated PAH concentrations are not associated with any release at SEAD-71. To further evaluate risks associated with CERCLA release at SEAD-71, a risk assessment was conducted for exposure to SEAD-71 soil outside the Fenced Area and SEAD-71 groundwater.

For exposure to SEAD-71 soil and groundwater outside the Fenced Area, the cancer risks for all receptors are below the EPA upper limit of $1x10^{-4}$. The total non-cancer hazard index for the adolescent trespasser is below the EPA target limit of 1. The non-cancer hazard indices for the industrial worker and construction worker are 3 and 10, respectively. For the industrial worker, the risk associated with groundwater intake contributes 91% to the total non-cancer risk. For the construction worker, the risks associated with inhalation of dust in ambient air, groundwater intake, and dermal contact to groundwater contribute 84%, 25%, and 4%, respectively, to the total non-cancer risk.

Aluminum, antimony, arsenic, chromium, iron, manganese, and thallium are the primary COPCs in groundwater contributing to the elevated non-cancer risks to the industrial worker and the construction worker. However, the concentrations observed in SEAD-71 groundwater for these metals were consistent with the Seneca groundwater background levels. As shown in Table 11, the maximum detected concentrations and average concentrations for all the referenced metals were below the background levels with the exception of manganese. The maximum manganese hit was detected in MW71-2, upgradient of the source area in SEAD-71. MW71-2 was dry most of the time during the groundwater sampling events. Therefore, the manganese concentration detected in MW71-2 might be overstated due to limited water volume and potentially elevated turbidity. In addition, the manganese concentrations detected in a monitoring well downgradient and within the suspected source areas at SEAD-71 (i.e., MW71-4) ranged from nondetect (reporting limit = 0.296 µg/L) to 0.0081 µg/L, below the average concentration of the SEDA background data set. In summary, the metal concentrations in SEAD-71 groundwater were consistent with SEDA background. Therefore, the elevated risks associated with groundwater exposure are caused by site background and are not related to any AOC release.

Table 11
Comparison of Metal Concentrations in SEAD-71 Groundwater with SEDA Background

Compound	SEAD-71 Groundwater Concentration (mg/L)		Seneca Background (mg/L)	
	Maximum	Average	Maximum	Average
Aluminum	12.2	2.1	42.4	2.730
Antimony	0.00652	0.00506	0.0527	0.0082
Arsenic	ND	ND	0.010	0.0017
Chromium	0.00458	0.00182	0.0047	0.0694
Iron	4.47	0.80	69.4	4.490
Manganese	2.68	0.47	1.12	0.224
Thallium	ND	ND	0.0047	0.0015

Key: mg/L = milligrams per liter; ND = Not Detected.

Aluminum, manganese, and naphthalene in SEAD-71 soil outside the Fenced Area are the only COPCs contributing to the non-cancer risks associated with inhalation of dust in ambient air and contribution from naphthalene is negligible (i.e., < 0.001%). As shown in Table 12, aluminum and manganese in SEAD-71 soil outside the Fenced Area are consistent with the Seneca background levels.

Table 12
Comparison of Aluminum and Manganese Concentrations in SEAD-71 Soil Outside Fenced Area with SEDA Background

Compound	SEAD-71 Surface and Subsurface Soil Concentration (mg/kg)			Seneca Background (mg/kg)		
	Max	Ave	95% UCL [1]	Max	Ave	95% UCL [1]
Al	15,900	11,493	11,997	20,500	13,206	14,315
Mn	1,330	570	605	2,380	609	701

1. 95% UCL of normal distribution.

Key: mg/kg = milligrams per kilogram; Al = Aluminum; Mn = Manganese; Max = Maximum; Ave = Average

Ecological Risk Assessment

Ecological communities identified on the SEDA include successional old field areas, successional shrub areas, and successional hardwoods areas. The NYSDEC Natural Heritage Program Biological and Conservation Data System identifies no known occurrences of federal- or state-designated threatened or endangered plant or animal species within a 2-mile radius of the SEDA. No species of special concern are documented within the Depot property. No rare or endangered species have been observed during the site assessment. Animals that have been identified at the Depot during various ecological surveys include beaver, eastern coyote, deer, red and gray fox, eastern cottontail rabbit, muskrat, raccoon, gray squirrel, striped skunk, and the woodchuck. Bird species that have been identified include the bluejay, black-capped chickadee, American crow, mourning dove, northern flicker, ruffed grouse, ring-billed gull, red-tailed hawk, northern junco, American kestrel, white breasted nuthatch, ring-necked pheasant, American robin, eastern starling, turkey vulture, and pileated woodpecker.

As part of the Phase II RI, the SLERA was performed by using No Observable Adverse Effect Level (NOAEL) toxicity values, the maximum detected COPC concentrations, and default exposure assumptions for the reasonable maximum exposure to calculate screening level HQs. Due to the conservative nature of these assumptions, additional evaluation was conducted to refine the contaminants of concern. The refinement of COCs streamlined the overall BRA process to determine if further evaluation was warranted. Alternative Lowest Observed Adverse Effect Level (LOAEL) toxicity values and mean exposures based on mean concentrations were considered for determining potential contaminants of concern. Based on the results of the further refinement of COCs, no COCs were identified for SEAD-59 soil, SEAD-59 remaining soil from the excavation, or SEAD-71 soil for ecological receptors. Soil at SEAD-59 and SEAD-71, and SEAD-59 remaining soil from excavation are not expected to significantly impact ecological receptors in the areas.

Summary of Human Health and Ecological Risks

In summary, contaminants associated with releases at SEAD-59 and SEAD-71 do not pose unacceptable risks to the industrial receptors with the groundwater use restriction in place.

Soil at SEAD-59 and SEAD-71, and SEAD-59 remaining soil from the excavation do not significantly impact ecological receptors in the areas.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA § 121(b)(1), 42 U.S.C. § 9621(b)(1) mandates that remedial actions must be protective of human health and the environment, cost effective, comply with ARARs, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. The goal of NYSDEC's remedial program at Inactive hazardous Waste Sites is "to restore that site to pre-disposal conditions, to the extent feasible."

Alternatives

Alternative 1: No Action

The Superfund program requires that the "no action" alternative be considered and serve as the baseline by which other alternatives evaluated are compared. The no action remedial alternative for soil does not include the design or implementation of any physical remedial measures to address types of contamination identified at the AOCs. The "no action" alternative (Alternative 1) is identical for work that might be considered for either SEAD-59 or SEAD-71.

Application of this alternative would result in contamination at levels that could cause potential risks to human health

and the environment, under certain land use scenarios, remaining in the soils at both AOCs. As such, CERCLA requires that the AOCs be reviewed at least once every five years to assess changes in conditions found at the AOCs. If justified by the periodic reviews, subsequent remedial actions may be implemented to remove, treat, or contain the contaminated soils.

A municipal potable water distribution system, which derives its raw water from a non-groundwater source, is present within the PID Area. The presence of this supply of water system eliminates any reason to consider use of groundwater for domestic purposes. A poor yielding supply and quality of groundwater does exist beneath SEAD-59 and SEAD-71, and it is known to contain metal concentrations in excess of New York GA Standards for groundwater quality. However, the concentrations detected in SEAD-59/71 groundwater were consistent with the background water quality found to exist at the Depot. Given these facts, the Army has opted to include these AOCs in a groundwater access and use restriction on all groundwater that is located in the PID Area under a separate agreement. In addition, the Army will impose LUCs on the entire PID Area to prohibit the development and use of property for residential housing, elementary and secondary schools, childcare facilities and playgrounds.

All alternatives discussed in this PRAP are based on the requirement of the Army to apply LUCs on all property within the PID Area.

SEAD-59, Alternative 1 Costs

Capital Cost	$0
Annual OM&M Cost (soil)	$3,000
Annual OM&M Cost (groundwater)	$3,000
Present Worth Cost	$74,460
Construction time	0 Month

SEAD-71, Alternative 1 Costs

Capital Cost	$0
Annual OM&M Cost (soil)	$3,000
Annual OM&M Cost (groundwater)	$3,000
Present Worth Cost	$74,460
Construction time	0 Month

Alternative 2: Excavation of Contaminated Soil to Achieve Unrestricted Use Cleanup Objectives, Off-Site Treatment/Disposal and Soil Backfill

SEAD-59, the Fill Area West of Building 135

This alternative involves the excavation of soil containing substances at levels in excess of the NYSDEC's Unrestricted Use Soil Cleanup Objective levels. A summary listing of contaminants identified in current surface and subsurface soils at SEAD-59 at concentrations in excess of NYSDEC's Unrestricted Use Soil Cleanup Objectives is provided in Table 13.

Table 13
Summary of NYSDEC Unrestricted Use Soil Cleanup Objective Exceedances – SEAD-59 Surface and Subsurface Soil

Compound [1]	SEAD-59 Soil Concentration [2] (mg/kg)	NYSDEC 's Unrestricted Use Value (mg/kg)	Number of Concentrations Above Criteria	Is SEAD-59 Concentration [2] Above Criteria (Y/N)?
Acetone	0.04	0.05	12	N
Methyl ethyl ketone	0.01	0.12	1	N
Benzo(a)anthracene	1.35	1	48	Y
Benzo(a)pyrene	1.43	1	48	Y
Benzo(b)fluoranthene	1.25	1	47	Y
Benzo(k)fluoranthene	1.15	0.8	48	Y
Chrysene	1.38	1	50	Y
Dibenz(a,h)anthracene	0.40	0.33	37	Y
Indeno(123-cd)pyrene	0.87	0.5	51	Y
4,4-DDD	0.05	0.0033	54	Y
4,4-DDE	0.12	0.0033	72	Y
4,4-DDT	0.17	0.0033	65	Y
Endrin	0.016	0.014	1	Y
Arsenic	5.64	13	2	N
Cadmium	0.55	2.5	1	N
Chromium	17.8	30	2	N
Copper	31.3	50	6	N
Lead	35.0	63	15	N
Mercury	0.12	0.18	15	N
Nickel	27.6	30	39	N
Silver	1.01	2	19	N
Zinc	84.6	109	21	N

1. Only compounds with NYSDEC Unrestricted Use Soil Cleanup Objective Exceedances are presented.
2. EPA ProUCL Recommended UCL Concentration.
Key: mg/kg = milligrams per kilogram.

A summary listing of contaminants identified in remaining soil from the excavation at SEAD-59 at concentrations in excess of NYSDEC's Unrestricted Use Soil Cleanup Objectives is provided in Table 14.

Table 14
Summary of NYSDEC Unrestricted Use Soil Cleanup Objective Exceedances – SEAD-59 Remaining Soil from Excavation

Compound [1]	SEAD-59 Remaining Soil from Excavation Concentration [2] (mg/kg)	NYSDEC 's Unrestricted Use Value (mg/kg)	Number of Concentrations Above Criteria	Is SEAD-59 Concentration [2] Above Criteria (Y/N)?
Acetone	0.02	0.05	1	N
Benzo(a)anthracene	6.83	1	47	Y
Benzo(a)pyrene	7.92	1	47	Y
Benzo(b)fluoranthene	5.08	1	46	Y
Benzo(k)fluoranthene	6.69	0.8	48	Y
Chrysene	6.83	1	47	Y
Dibenz(a,h)anthracene	1.24	0.33	44	Y
Indeno(123-cd)pyrene	3.48	0.5	49	Y
4,4-DDD	0.081	0.0033	33	Y
4,4-DDE	0.083	0.0033	32	Y
4,4-DDT	0.117	0.0033	37	Y
Chromium	20.6	30	2	N
Copper	32.3	50	1	N
Lead	195	63	12	Y
Nickel	30.4	30	20	Y
Silver	0.99	2	2	N
Zinc	96	109	7	N

1. Only compounds with NYSDEC Unrestricted Use Soil Cleanup Objective Exceedances are presented.
2. EPA ProUCL Recommended UCL Concentration.
Key: mg/kg = milligrams per kilogram.

Carcinogenic PAHs and four pesticides (4,4'-DDT, 4,4'-DDE, 4,4'-DDD, and endrin) were found with the UCLs exceeding the corresponding NYSDEC Unrestricted Use Soil Cleanup Objectives in the SEAD-59 surface and subsurface soil. Elevated cPAH concentrations (e.g., maximum benzo(a)pyrene concentration of 8.05 mg/kg and UCL of benzo(a)pyrene concentration of 2.70 mg/kg) were detected in the windrow samples, which were collected from excavated stockpile soil during the TCRA and were later backfilled at SEAD-59. As the exact location of backfill for soil associated with each windrow sample is not known, all the previous backfill areas may need to be excavated to meet the NYSDEC Unrestricted Use Soil Cleanup Objectives. Further, soil at several test pit locations and 2002 TCRA confirmatory sample locations would also need to be excavated to achieve the Unrestricted Use Cleanup Objectives. Based on these dimensions, the estimated volume of contaminated soil requiring excavation at SEAD-59 is approximately 16,400 cubic yards (cy).

Carcinogenic PAHs, three pesticides (4,4'-DDT, 4,4'-DDE, and 4,4'-DDD), and two metals (lead and nickel) were found with the UCLs exceeding the corresponding NYSDEC Unrestricted Use Soil Cleanup Objectives in the SEAD-59 remaining soil from the excavation. The Army anticipates that all the remaining soil from the excavation (i.e., 5,428 cy) would be required to be disposed off-site to achieve the Unrestricted Use Soil Cleanup Objectives.

All excavated soil and the remaining soil from the excavation would be characterized and transported for disposal at off-site landfills. Water generated from the storm events that flows into excavation areas would be captured and treated on-site, as necessary. It would be discharged to the Seneca County Wastewater Treatment Facility in conformance with their requirements.

Once the excavation was completed and its extent confirmed by the collection and analysis of confirmatory samples, the area of the excavation would need to be backfilled, compacted, and graded.

Once this action was completed, the land excavated would be appropriate for unrestricted use and unlimited exposures.

SEAD-59 Alternative 2 Costs

Capital Cost	$2,100,000
Annual OM&M Cost (soil)	$3,000
Annual OM&M Cost (groundwater)	$3,000
Present-Worth Costs:	$2,174,460
Construction time	6 Months
Completion Time	12 Months

SEAD-71, the Alleged Paint Disposal Area

Alternative 2 for soil at SEAD-71 is essentially identical to that which is discussed above for SEAD-59. This alternative involves the excavation of soil containing contaminants at levels in excess of the NYSDEC's Unrestricted Use Soil Cleanup Objectives. A summary listing of the contaminants found in surface and subsurface soils at SEAD-71 where measured concentrations exceed NYSDEC's Unrestricted Use Soil Cleanup Objectives is provided in Table 15.

Carcinogenic PAHs, four pesticides (4,4'-DDT, 4,4'-DDE, 4,4'-DDD, and endrin), and four metals (lead, mercury, nickel, and zinc) were found with the UCLs exceeding the

corresponding NYSDEC Unrestricted Use Soil Cleanup Objectives in the SEAD-71 surface and subsurface soil. Elevated cPAH concentrations (e.g., maximum benzo(a)pyrene concentration of 1.5 mg/kg and UCL of benzo(a)pyrene concentration of 1.19 mg/kg) were detected in the windrow samples, which were collected from excavated stockpile soil during the TCRA and were later backfilled at SEAD-71. As the exact location of backfill for soil associated with each windrow sample is not known, all the previous backfill areas may need to be excavated to meet the NYSDEC Unrestricted Use Soil Cleanup Objectives.

Table 15
Summary of NYSDEC Unrestricted Use Soil Cleanup Objective Exceedances – SEAD-71 Surface and Subsurface Soil

Compound [1]	SEAD-71 Surface and Subsurface Soil Concentration [2] (mg/kg)	NYSDEC 's Unrestricted Use Value (mg/kg)	Number of Concentrations Above Criteria	Is SEAD-71 Concentration [2] Above Criteria (Y/N)?
Acetone	0.02	0.05	2	N
Acenaphthene	6.95	20	3	N
Benzo(a)anthracene	39.1	1	24	Y
Benzo(a)pyrene	31.7	1	24	Y
Benzo(b)fluoranthene	11.1	1	25	Y
Benzo(k)fluoranthene	32.3	0.8	21	Y
Chrysene	38.2	1	24	Y
Dibenz(a,h)anthracene	5.15	0.33	17	Y
Fluoranthene	99.1	100	5	N
Fluorene	9.15	30	3	N
Indeno(123-cd)pyrene	11.8	0.5	26	Y
Naphthalene	6.24	12	2	N
Phenanthrene	78.1	100	3	N
Pyrene	74.2	100	4	N
4,4-DDD	0.036	0.0033	15	Y
4,4-DDE	0.131	0.0033	30	Y
4,4-DDT	0.259	0.0033	37	Y
Endrin	0.023	0.014	7	Y
Aroclor-1260	0.079	0.1	2	N
Arsenic	6.19	13	1	N
Cadmium	1.70	2.5	4	N
Chromium	20.5	30	5	N
Copper	43.9	50	10	N
Lead	458	63	25	Y
Mercury	0.28	0.18	7	Y
Nickel	30.7	30	16	Y
Silver	0.81	2	1	N
Zinc	472	109	17	Y

1. Compounds with NYSDEC Unrestricted Use Soil Cleanup Objective Exceedances are presented.

2. EPA ProUCL Recommended UCL Concentration.

Further, three surface areas would be excavated to a depth of one foot to achieve the NYSDEC Unrestricted Use Soil Cleanup Objectives: the Fenced Area (28,000 ft^2) and two areas to the west of the Fenced area – one to the north of the unnamed dirt road (1,500 ft^2) and the other encompassing the dirt road (17,500 ft^2). Soil associated with two test pit locations within these areas (TP71-1 and TP71-2) would be excavated to a deeper depth (4ft and 3.5 ft, respectively) to achieve the NYSDEC Unrestricted Use Soil Cleanup Objectives.

Based on these dimensions, the estimated volume of contaminated soil requiring excavation at SEAD-71 is approximately 2,400 cy.

Silt fencing would be erected around the excavation areas to minimize storm water run-on and runoff and to limit the transport of soil via erosion. Episodic storm water run on flows into excavation areas would be captured, tested, treated as necessary, and then discharged to the Seneca County Wastewater Authority system. All excavated soil would be characterized and transported for disposal at off-site landfills.

The area of the excavation would need to be backfilled with clean fill, the fill would be compacted, and the AOC would be regraded. As a result of this action, the land excavated would be appropriate for unrestricted use and unlimited exposures.

SEAD-71, Alternative 2 Costs

Capital Cost	$240,000
Annual OM&M Cost (soil)	$3,000
Annual OM&M Cost (groundwater)	$3,000
Present-Worth Costs:	$314,460
Construction time	3 Months
Completion Time	12 Months

Alternative 3: Land Use Control Alternative

SEAD-59, the Fill Area West of Building 135

The Army conducted human health and ecological risk assessments based on sampling results for SEAD-59 soil, remaining soil from the excavation, and groundwater at SEAD-59, in accordance with Superfund guidance. There is no significant risk identified for potential ecological

receptors at SEAD-59. The results of the human health risk assessment indicate that SEAD-59 is suitable for the continued use as an industrial area and remaining soil from the excavation is suitable for use as fill material at SEAD-59.

Under this alternative, institutional controls would be implemented in the form of land use restrictions that prohibit use of property for residential housing, elementary and secondary schools, childcare facilities and playgrounds and that prohibit access and the use of groundwater.

It is estimated that this alternative would take approximately one month to implement. This alternative would allow contaminants to remain at the AOC above NYSDEC Unrestricted Soil Cleanup Objectives. Therefore, CERCLA requires that the AOC be reviewed at least once every five years. If justified by the review, further remedial actions may be implemented to remove or treat the identified wastes.

SEAD-59, Alternative 3 Costs

Capital Cost	$0
Annual OM&M Cost (soil)	$3,000
Annual OM&M Cost (groundwater)	$3,000
Present Worth Cost	$74,460
Construction time	1 Month
Completion Time	1 Month

SEAD-71, the Alleged Paint Disposal Area

The Army conducted human health and ecological risk assessments for SEAD-71. There is no significant risk identified for potential ecological receptors at SEAD-71. The results of the human health risk assessment indicate that there is no significant non-cancer risk to human health under the industrial use scenario. The cancer risk is slightly elevated at $2x10^{-4}$ for the industrial worker and the elevated risk is associated with cPAH concentrations in the Fenced Area. The elevated PAH concentrations are not associated with any CERCLA release at SEAD-71. Cancer risks are within the limits for all industrial receptors with exposure to soil outside the Fenced Area at SEAD-71.

Under this alternative, institutional controls would be implemented in the form of land use restrictions that prohibit use of property for residential housing, elementary and secondary schools, childcare facilities and playgrounds and that prohibit access and the use of groundwater.

Furthermore, since this alternative would allow contaminants to remain at the AOC above levels for unrestricted use and unlimited exposures, CERCLA requires that the AOC be reviewed at least once every five years. If justified by the review, further remedial actions may be implemented to remove or treat the identified wastes.

SEAD-71, Alternative 3 Costs

Capital Cost	$0
Annual OM&M Cost (soil)	$3,000
Annual OM&M Cost (groundwater)	$3,000
Present Worth Cost	$74,460
Construction time	1 Month
Completion Time	1 Month

COMPARATIVE ANALYSIS OF ALTERNATIVES

The evaluation criteria are described below.

- Overall protection of human health and the environment assesses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls. Compliance with ARARs addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- Long-Term effectiveness and permanence refers to the ability of a remedy to maintain reliable protections of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

- Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.

- Short-Term effectiveness address the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- Cost includes the estimated capital and OM&M costs and net present-worth costs.

- State acceptance indicates if, based on its review of the RI and Proposed Plan, the state concurs with the preferred remedy.

- Community acceptance will be assessed in the ROD and refers to the public's general response to the alternatives described in the Proposed Plan.

A comparative analysis of these alternatives based upon the evaluation criteria noted above is presented below. Since the remedial alternatives considered for both AOCs are identical, the following discussion applies to both AOCs.

Overall Protectiveness of Human Health and the Environment.

Alternatives 1 and 3 would be protective of human health under the planned future use scenario (i.e., industrial/office development). Under Alternative 1, there will be an overarching restriction that prohibits residential use and access to and use of groundwater in the PID Area. Under Alternative 3, LUCs will be posed at the AOCs to prohibit use of property for residential housing, elementary and secondary schools, childcare facilities and playgrounds and to prohibit access to or use of groundwater until the NYSDEC AWQS for Class GA Groundwater are met. Neither Alternative 1, nor Alternative 3 addresses NYSDEC's remedial program goal of restoring the site to pre-disposal conditions. Alternative 2 is protective of human health and the environment as its objective is to remove all soil that contains contaminants in excess of soil cleanup objectives for unrestricted use scenario.

Compliance with ARARs

There are currently no promulgated federal standards for hazardous substance levels in soils, and risked-based decisions are used to determine if cleanup is warranted or necessary. NYSDEC recently issued and enacted into state law cleanup objectives for five categories of future land use (i.e., unrestricted, residential, restricted-residential, commercial, and industrial) at waste sites located within its bounds and these are considered to be "relevant and appropriate" criteria to consider.

Alternatives 1 and 3 comply with NYSDEC's Soil Cleanup Objectives for industrial use scenario. LUCs will be implemented for Alternatives 1 and 3 to prohibit the residential use and the access to and use of groundwater. Alternative 2 complies with NYSDEC's Soil Cleanup Objectives for unrestricted use scenario.

The New York State Department of Health (NYSDOH) has promulgated groundwater standards, which are applicable to SEAD-59/71 groundwater. In addition, the drinking water standards issued by EPA are considered relevant and appropriate for the SEAD-59/71 groundwater. Several metals have been identified exceeding the EPA and NYSDOH criteria in the groundwater at SEAD-59 and SEAD-71. However, the levels of metals identified are generally consistent with the Depot's background groundwater quality. Given the fact that the groundwater concentrations for the metals with criteria exceedances are consistent with SEDA background, and the Army's and EPA's prior decision to impose an area wide access and use restriction on groundwater in the PID Area, the current proposed remedy does not consider any form of groundwater treatment.

Long-Term Effectiveness and Permanence

Alternative 1 would involve no action and, therefore, would not be effective in eliminating the potential exposure to contaminants in soil and groundwater. Under this

alternative, there will be an overarching restriction that prohibits residential use and access to and use of groundwater in the PID Area. Under Alternative 3, LUCs will be posed at the AOCs to prohibit use of property for residential housing, elementary and secondary schools, childcare facilities and playgrounds and to prohibit access to or use of groundwater until the NYSDEC AWQS for Class GA Groundwater are met. Alternative 2 would be the most effective alternative in the long term by removing contaminated soils that exceed unrestricted use human health protection values. Alternative 2 would provide permanent remediation by removing the contaminated soils to an off-site disposal facility.

Reduction in Toxicity, Mobility, or Volume Through Treatment

Alternatives 1 and 3 would provide no reduction in the toxicity, mobility or volume of hazardous substances found in soil at either AOC. Under Alternative 2, soils containing hazardous substances in excess of the state's Unrestricted Use Cleanup Objectives would be excavated and transported off-site for disposal. This would reduce the toxicity and mobility of hazardous substances left at the AOCs. If contaminated soil needed to be stabilized prior to off-site disposal, the volume of the material disposed at the off-site facility would increase; but the toxicity and mobility would be reduced.

Short-Term Effectiveness

Alternatives 1 and 3 would not pose any additional short-term hazards to workers at the AOCs or the community as construction is not included in either of these remedies. Alternative 2 could pose some additional short-term hazards to neighboring site workers and the community through dermal contact, ingestion, or inhalation of contaminants during the excavation, loading, transporting, and unloading operations that are needed to complete the construction efforts. Further, noise from the heavy equipment used for excavation, loading, and hauling could also impact nearby employees of neighboring industries and companies, and local residents. In addition, interim and post remediation sampling activities would pose potential risks to field workers. Potential risks to nearby employees of local companies and nearby residents could be controlled by developing and implementing sound engineering controls, health and safety procedures, monitoring practices.

Since soil will be transported off-site under Alternative 2, there will be an increase in traffic on the roads within and surrounding the Depot and the receiving landfills. This could translate into an increased likelihood of vehicular accidents, and potential releases of soil and debris containing hazardous constituents at other locations along the driving routes. Alternative 2 also involves varying amounts of soil disturbance that could affect the surface water hydrology in the areas being excavated.

Alternative 2's disturbance of soil across larger surfaces at both AOCs also increases the likelihood of soil erosion and transport, both via surface water flow and as fugitive dusts. Therefore, appropriate silt and dust containment measures will need to be implemented and monitored during the excavation, loading, and hauling activities.

Implementability

Alternative 1, the no action alternative, would be the easiest alternative to implement, since there are no actions to undertake.

Alternative 3 will be slightly more difficult to implement than Alternative 1 because it requires the implementation, maintenance, oversight, and annual reporting of the continuing effectiveness of land use controls and the preparation, submittal, and approval of a land use control implementation plan.

Alternative 2 will be more difficult to implement than Alternative 3. Nonetheless, technologies for the excavation, stabilization (as necessary), characterization, transport, and disposal of excavated soil under Alternative 2 are mature and readily available.

Cost

The present worth cost associated with all alternatives is calculated using a discount rate of seven percent (7%) and a 30-year time interval. The estimated capital, operation, maintenance, and monitoring, and the present-worth costs are presented in Table 16.

Alternatives 1 and 3 are the least costly alternative at $74,460 for each AOC. Alternative 2 is the most expensive remedial action alternative with respective costs of $2,174,460 for SEAD-59 and $314,460 for SEAD-71.

Table 16
Summary of Remedial Action Alternative Cost

Alternative	Capital Cost	Annual OM&M Costs	Total Present-Worth Costs
SEAD-59, the Fill Area West of Building 135			
1	$0	$6000	$74,460
2	$2,100,000	$3,000	$2,174,460
3	$0	$6,000	$74,460
SEAD-71, the Alleged Paint Disposal Area			
1	$0	$6000	$74,460
2	$240,000	$3,000	$314,460
3	$0	$6,000	$74,460

State Acceptance

NYSDEC concurs with the preferred remedial alternative.

Community Acceptance

Community acceptance of the preferred alternative for SEAD-59 and SEAD-71 will be assessed in the ROD following review of the public comments received on the Proposed Plan.

PROPOSED REMEDY

The risk assessment results indicate that conditions identified at the two AOCs are not expected to pose unacceptable risks for the future anticipated use, which is identified as industrial/office development, with the groundwater use restriction in place. Potential risks may be present at the AOCs to more sensitive populations (e.g., residents), but such risks have not been assessed. On this basis, the Army recommends that LUCs that prohibit the use of and access to groundwater and prohibit the future use of SEAD-59 and SEAD-71 for residential purposes (e.g., housing, schools, child care facilities, and playgrounds) be formally imposed at the two AOCs. The identified LUCs were previously established for three other AOCs (i.e., SEADs-27, 64A, and 66) that are located in proximity to SEAD-59/71. At the time of the Army's, EPA's, and NYSDEC's final determination for the other threes SEADs, all parties agreed that the identified LUCs should be imposed on all land within the PID Area at the former Depot due to the anticipated future use of the land and the similarity of its known past uses by the Army and predecessors. These LUCs may be lifted on a location-by-location basis in the future, with the consent and approval by the Army, the EPA, and the NYSDEC, if a future owner/user/occupant provides additional data that indicate that the selected location is suitable for unlimited exposure and unrestricted use.

The selected remedy for the AOCs, at a minimum, should eliminate or mitigate all significant threats to the public health or the environment presented by the hazardous substances or hazardous waste present at the AOCs. The Army believes that its proposal of LUCs at SEAD-59 and SEAD-71, along with the supportive information and data presented and summarized in this Proposed Plan, satisfy this condition.

In summary, the Army will apply the land use restrictions described in the Final Record of Decision for Sites Requiring Institutional Controls in the Planned Industrial/Office Development or Warehousing Areas (signed on September 28, 2004 by the EPA) to SEAD-59 and SEAD-71. With the LUCs in place, the AOCs do not pose a significant threat to human health or the environment.

INSTITUTIONAL

INSTITUTIONAL
TRAINING

CONSERVATION

RESIDENTIAL
RESORT

N

GREEN ENERGY

DEVELOPMENT
RESERVE
(Large Users)

PLANNED
INDUSTRIAL/
OFFICE
DEVELOPMENT

SEAD-71

SEAD-59

HOUSING

WAREHOUSE

UTILITY

AIRFIELD SPECIAL
EVENTS, INSTITUTIONAL,
AND TRAINING

TRAINING AREA

PRISON

FED TO FED
TRANSFER

LEGEND

SEAD Boundary

5000 0 5000 10000 Feet

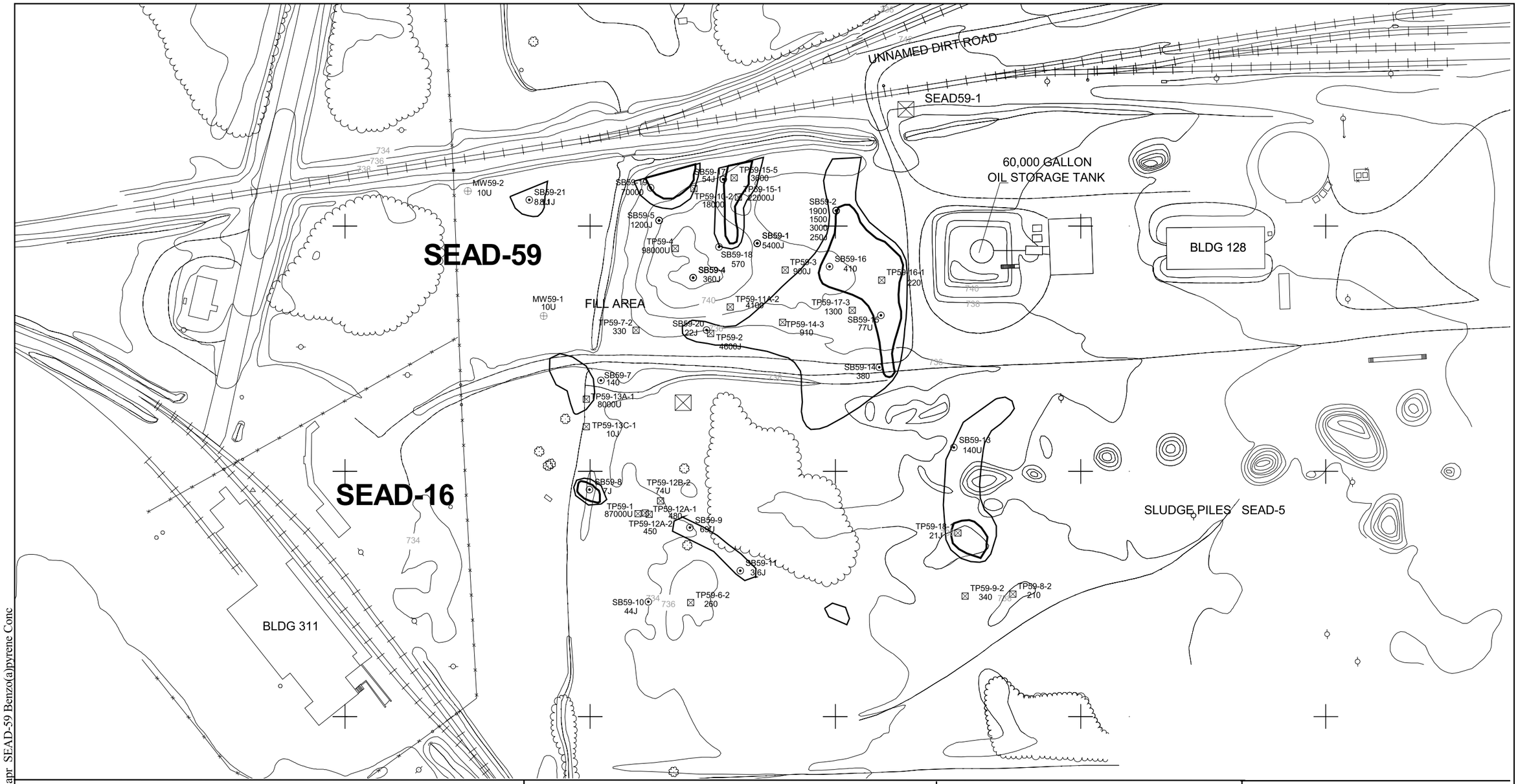
PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-59 AND SEAD-71
PROPOSED PLAN

FIGURE 1
FUTURE LAND USE

June 2007 | JOB NUMBER: 743519-08000

O:\Seneca\Sead 5971\sead5971.apr\Figure 1-11 Future Land Use



Base Map Features

ESI Test Pit Locations with
Loc Id and Benzo[a]pyrene conc (ug/Kg)

Monitoring Well Location with
Loc Id and Benzo[a]pyrene conc (ug/Kg)

Soil Boring Location with
Loc Id and Benzo[a]pyrene conc (ug/Kg)

Soil Gas

20 ppm or greater

10 ppm - 20 ppm

100 0 100 Feet

N

PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-59 AND SEAD-71
PROPOSED PLAN

FIGURE 2
SEAD-59 PHASE I RI
SOIL GAS RESULTS

JUNE 2007 | 743519-08000

o:\seneca\sead63\sead5971\copy sead59.apr SEAD-59 Benzo(a)pyrene Conc

SEAD-59

Legend:

- Base Map Feature
- Test Pit
- Test Pit Location
- Monitoring Well Location (installed during ESI)
- Monitoring Well Location (installed during TCRA)
- Soil Boring/Soil Sample Location
- Time-Critical Removal Action Confirmatory Sample Location
- TCRA Excavation Limit
- Contour

NOTE:
1. Historical investigative sample locations and confirmatory sample locations excavated during the 2002 Time-Critical Removal Action are not shown in the figure.

Feet
60 30 0 60

PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-59 AND SEAD-71
PROPOSED PLAN

FIGURE 3
SEAD-59
CONFIRMATORY AND HISTORICAL SAMPLE LOCATIONS

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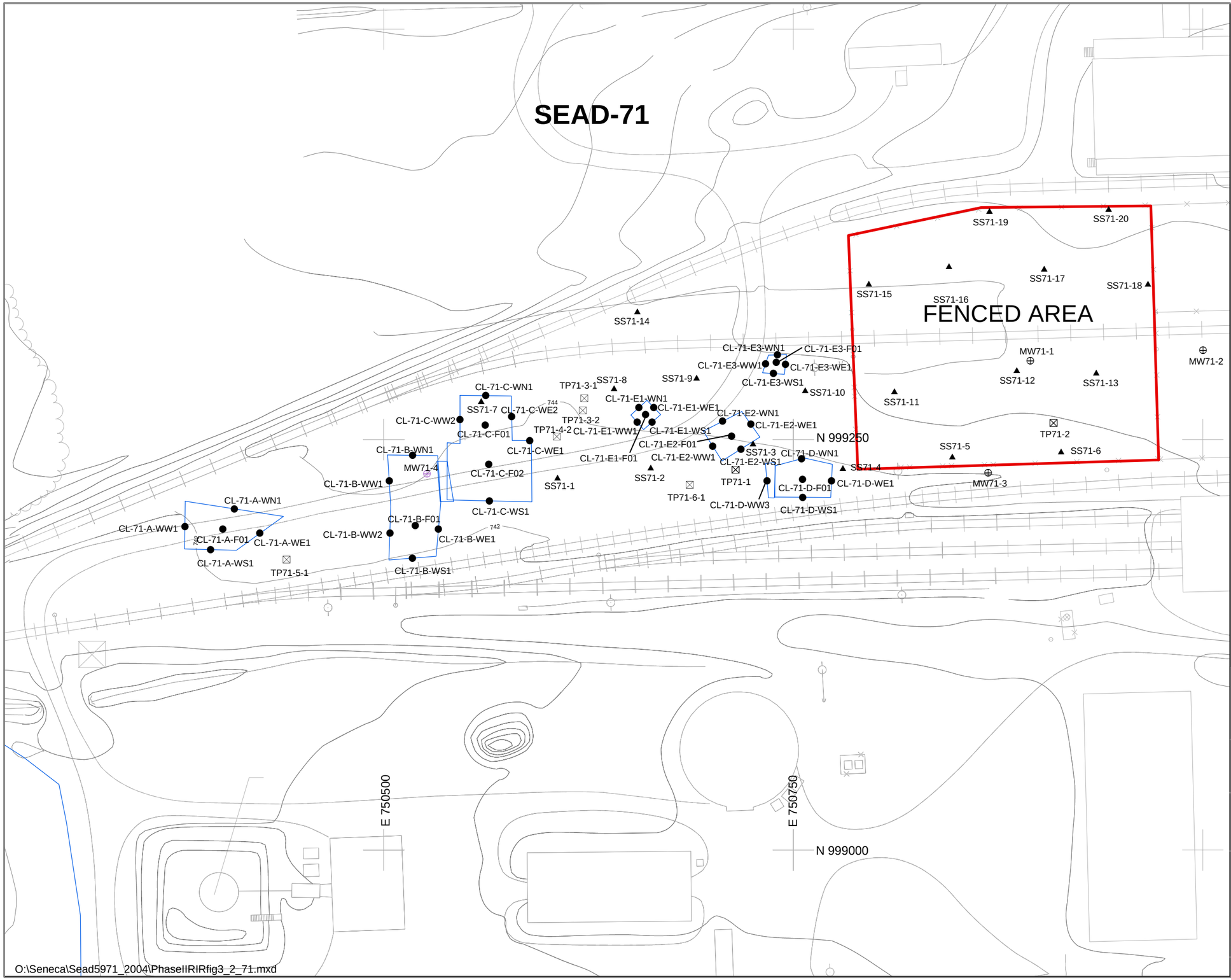

N

Legend:

- Base Map Feature
- Test Pit Location
- Monitoring Well Location (installed during ESI)
- Monitoring Well Location (installed during TCRA)
- Soil Boring/Soil Sample Location
- Time-Critical Removal Action Confirmatory Sample Location
- TCRA Excavation Limit
- Contour
- Fenced Area

NOTE:
1. Historical investigative sample locations and confirmatory sample locations excavated during the 2002 Time-Critical Removal Action are not shown in the figure.

60 30 0 60 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-59 AND SEAD-71
PROPOSED PLAN

FIGURE 4

SEAD-71
CONFIRMATORY AND HISTORICAL SAMPLE LOCATIONS

June 2007 | 743519-08000