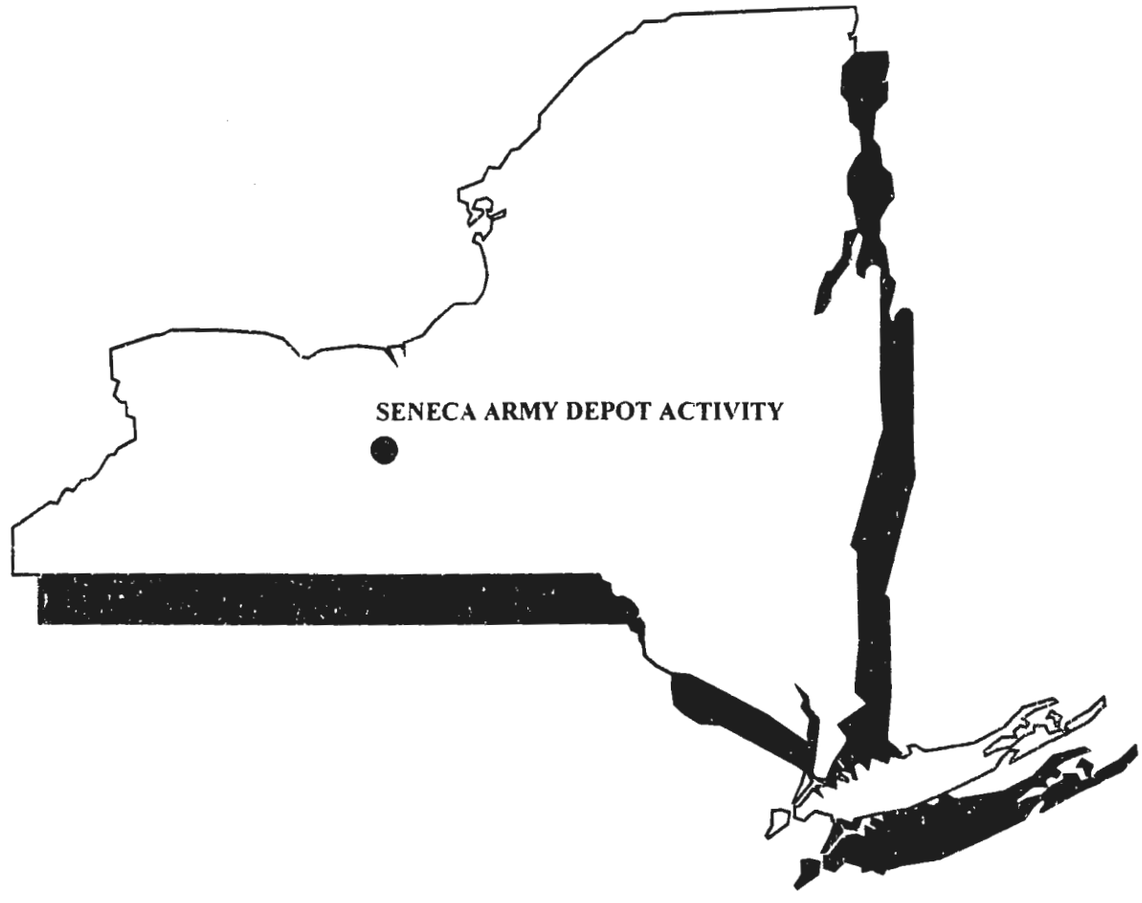
U.S. ARMY ENGINEER DIVISION
HUNTSVILLE, ALABAMA

01502



FINAL

ACTION MEMORANDUM FOR REMOVAL ACTIONS AT SWMUs SEAD-59 AND SEAD-71 SENECA ARMY DEPOT ACTIVITY

CONTRACT NO. DACA87-95-D-0031
DELIVERY ORDER 17

Revised JUNE 2002

FINAL
ACTION MEMORANDUM
FOR
TIME – CRITICAL REMOVAL ACTIONS AT
SEAD-59 and SEAD-71
SENECA ARMY DEPOT ACTIVITY

Prepared for:

Seneca Army Depot Activity
Romulus, New York

and

US Army Corp of Engineers
Huntsville Center

Prepared by:

PARSONS
30 Dan Road
Canton, Massachusetts 02021

Contract No. DACA87-95-D-0031
Delivery Order 17
734516

Revised - June 2002

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

LIST OF ACRONYMS

AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
AWQC	Ambient Water Quality Criteria
B	Boring
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
CY	Cubic yards
DOD	Department of Defense
DOT	Department of Transportation
EE/CA	Engineering Evaluation/Cost Analysis
EM	Electromagnetic
EPA	Environmental Protection Agency
ES	Engineering-Science, Inc.
ESI	Expanded Site Inspection
ft	Feet
ft/sec	Feet per second
FPPA	Farmland Protection Policy
FS	Feasibility Study
GC	Gas chromatograph
GPR	Ground penetrating radar
IAG	Interagency Agreement
IRP	Installation Restoration Program
m	meter
MCACES	Micro Computer Aided Cost Engineering System
MCL	Maximum Contaminant Level

LIST OF ACRONYMS

mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MSL	Mean sea level
MW	Monitoring Well
NAVA	North American Vertical Datum
NBS	National Bureau of Standards
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOAA	National Oceanic Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operations and maintenance
OSHA	Occupational Safety and Health Administration
OV	Specific Ovid Quadrangle
OVM	Organic Vapor Meter
PAH	Polynuclear aromatic hydrocarbons
PCB	Polychlorinated biphenyl
PID	Photoionization detector
PM	Particulate matter
ppm	parts per million
ppmv	Part Per Million Per Volume
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SB	Soil Boring
SCG	Standards, Criteria, and Guidelines
SEAD	Seneca Army Depot (*archaic*)
SEDA	Seneca Army Depot

LIST OF ACRONYMS

Sec	Seconds
SOP	Standard Operating Procedures
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TAGM	New York State Technical And Administrative Guidance Memorandum
TBC	To Be Considered
TP	Test Pit
TPH	Total Petroleum Hydrocarbons
TRACES	Tri-Service Automated Cost Engineering System
ug/g	Micrograms per gram
ug/kg	Micrograms per kilogram
UCL	Upper Confidence Limit
USACE	United States Army Corps of Engineers
USAEHA	United States Army Environmental Hygiene Agency
USATHAMA	United States Army Toxic and Hazardous Materials Agency
USCS	Unified Soil Classification System
USGS	U.S. Geologic Survey
VOA	Volatile organic analyte
VOC	Volatile Organic Compound

REFERENCES

NYSDEC (New York State Department of Environmental Conservation), 1993a. Division of Water Technical and Operations Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values. October 1993.

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

Parsons, April 1995. Expanded Site Inspections of Seven Low Priority Solid Waste Management Units, May 1995.

Parsons, December 1995. Expanded Site Inspections of Eight Moderately Low Priority Solid Waste Management Units, December 1995.

Parsons, February 1997. Project Scoping Plan for Performing a CERCLA Remedial Investigation/Feasibility Study at SEAD-59 and 71, February 1997.

Parsons, July 1998. Draft Phase I Remedial Investigation at SEAD-59 and SEAD-71, Seneca Army Depot Activity, July 1998.

US EPA, 2000. Drinking Water Standards and Health Advisories, EPA 822-B-00-001, USEPA, Washington, DC.

US EPA Region II, US Department of the Army, and the New York State Department of Environmental Conservation, Federal Facility Agreement Under CERCLA Section 120, Docket Number: II-CERCLA-FFA-00202, in the matter of Seneca Army Depot, Romulus, New York, January 1993.

1 PURPOSE

This Action Memorandum has been prepared for the Fill Area West of Building 135 (SEAD-59) and the Alleged Paint Disposal Area (SEAD-71) at the Seneca Army Depot Activity (SEDA) by Parsons Engineering Science, Inc. (Parsons) in support of the proposed time-critical removal action at SEADs59 and 71. Parsons has been retained by the United States Army Corps of Engineers (USACE), Huntsville Division as part of their remedial response activities under the Comprehensive Environmental Responsibility, Compensation, and Liability Act (CERCLA) to perform these activities.

The purpose of this Action Memorandum is to describe the need for, and the decision process leading to, the proposed time-critical removal action at SEADs 59 and 71. The primary objective of the removal action is to eliminate or significantly reduce the potential for human or environmental exposure to contamination through uncontrolled releases of benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH), polyaromatic hydrocarbons (PAHs), and metals in debris and contaminated soils. A Decision Document was prepared to develop the removal action for the sites. The Decision Document is included as Appendix A.

This work is based primarily upon the data collected during the Expanded Site Inspection (ESI) and Remedial Investigation (RI) conducted at SEADs 59 and 71 and is supported by the following documents: *Draft Phase I Remedial Investigation (RI) at SEAD-59 and SEAD-71* (Parsons, July 1998) and the *Project Scoping Plan for Performing a CERCLA Remedial Investigation / Feasibility Study (RI/FS) at SEAD-59 and 71* (Parsons, February 1997) which is based on the findings in the *Expanded Site Inspection Report for Seven Low Priority AOCs - SEADs 60, 62, 63, 64 (A, B, C, and D), 67, 70, and 71* (Parsons, April 1995) and the *Expanded Site Inspection Report for Eight Moderately Low Priority AOCs – SEADs 5, 9, 12 (A and B), 43, 56, 69, 44 (A and B), 50, 58, and 59* (Parsons, December 1995). Activities conducted as part of the ESI and RI included: (1) seismic, electromagnetic, and ground penetrating radar (GPR) surveys, as well as test pits, to determine groundwater flow direction and the exact location of the miscellaneous burial pits; (2) soil borings to gather stratigraphic information; (3) soil samples from borings and test pits for analytical testing; (4) soil gas surveys; (5) construction and sampling of overburden groundwater monitoring wells; and (6) groundwater sampling for analytical testing.

The time-critical removal action, which will be completed as a result of this Action Memorandum, is intended to remove the source of potential risks to human health, the environment, and groundwater quality. The data collected from verification sampling conducted during the removal will be used in completing the RI/FS process. If, following an evaluation of risk, unacceptable risk remains, additional remedial actions may be considered.

1.1 STATUTORY AUTHORITY

Authority for responding to releases or threats of releases from a hazardous waste site is addressed in Section 104 of CERCLA, as amended. The U.S. Army (Army) has been delegated the response authority for Army sites, whether or not the sites are on the U.S. Environmental Protection Agency's (EPA's) National Priorities List. Under CERCLA Section 104(b), the Army is authorized to investigate, survey, test, or gather other data required to identify the existence, extent, and nature of contaminants, including the extent of danger to human health or welfare and the environment. In addition, the Army is authorized to undertake planning, engineering, and other studies or investigations appropriate to directing response actions that prevent, limit, or mitigate the risk to human health or welfare and the environment.

1.2 SITE CONTACTS

The Project Managers for this removal action are:

Seneca Army Depot

Mr. Steven Absolom
Environmental Coordinator, DEH
Seneca Army Depot Activity
Romulus, New York 14541-5001

Parsons Engineering Science, Inc.

Mr. Todd Heino, P.E.
Project Manager
Parsons Engineering Science, Inc.
30 Dan Road
Canton, Massachusetts 02021-2809

EPA, Region 2

Mr. Julio Vazquez
Project Manager
U.S. Environmental Protection Agency (EPA), Region 2
Emergency & Remedial Response Division
290 Broadway, 18th Floor, E-3
New York, NY 10007-1866

New York Department of Environmental Conservation

Ms. Alicia Thorne
New York State Department of Environmental Conservation (NYSDEC)
Division of Hazardous Waste Remediation
Bureau of Eastern Remedial Action
11th floor, 625 Broadway
Albany, NY 12233-7015

2 SITE CONDITIONS AND BACKGROUND

2.1 BASE DESCRIPTION AND HISTORY

This section provides a brief overview of SEDA and the conditions at the Fill Area West of Building 135 (SEAD-59) and the Alleged Paint Disposal Area (SEAD-71). The sites were evaluated in 1994 as part of an Army effort to determine the conditions at several solid waste management units (SWMUs) that were considered to potentially pose a threat to human health and the environment. A more detailed discussion can be found in the Draft Final *Project Scoping Plan for Performing a CERCLA Remedial Investigation / Feasibility Study (RI/FS) at the Fill Area West of Building 135 (SEAD-59), and the Alleged Paint Disposal Area (SEAD-71)*, February 1997, as well as the *Expanded Site Inspection - Seven Low Priority AOCs SEADs 60, 62, 63, 64 (A,B,C, and D), 67, 70, and 71*, April 1995, and *Expanded Site Inspection - Eight Moderately Low Priority AOCs SEADs 5, 9, 12 (A and B), 43, 56, 69, 44 (A and B), 50, 58, and 59*, December 1995, and *Draft Phase I Remedial Investigation (RI) at the Fill Area West of Building 135 (SEAD-59), and the Alleged Paint Disposal Area (SEAD-71)*, July 1998.

The Seneca Army Depot (Depot) is situated on the western flank of a topographic high between Cayuga and Seneca Lakes in the Finger Lakes region of central New York (**Figure 2-1**). The SEDA was constructed in 1941 and has been owned by the United States Government and operated by the Department of the Army since this time. The Depot generally consists of an elongated central area for storage of ammunitions and weaponry in Quonset-style buildings, an operations and administration area in the eastern portion, and an army barracks area at the north end of the Depot. The Depot was expanded to encompass a 1,524-meter airstrip, formerly the Sampson Air Force Base.

The primary historic mission of the SEDA was management of munitions. SEDA was used for the following purposes: (1) receiving, storing, and distributing ammunition and explosives; (2) providing receipt, storage, and distribution of items that support special weapons; and, (3) performing depot-level maintenance, demilitarization, and surveillance on conventional ammunition and special weapons. The Depot formerly employed approximately 1,000 civilian and military personnel.

The Depot's mission changed in early 1995 when the Department of Defense (DOD) recommended closure of the SEDA under the Base Realignment and Closure (BRAC) process. Congress approved this recommendation on September 28, 1995 and the Depot's mission closure date was set as September 30, 1999. Termination of the military presence at the Depot was in July 2000.

SEAD-59 (i.e., the Fill Area West of Building 135) is located in the east-central portion of SEDA. The site encompasses an area situated along both sides of an unnamed dirt road, which is the access road to Building 311 and runs perpendicular to the south side of Administration Avenue terminating

at Building 311 (**Figures 2-2 and 2-3**). SEAD-59 is comprised of two areas, one area located north of the access road to Building 311 and one area located to the south of the road. Each area is characterized by different topography: the area to south of the road is relatively flat and slopes gently to the west, while the area to the north of the road contains a fill area that exhibits approximately 10 feet of relief.

The entire western border of the site is defined by a north-south trending drainage ditch. A drainage swale that flows east-to-west and parallels the railroad tracks forms the northern boundary of SEAD-59. At the northwestern corner of the site, the drainage swale turns to the north and flows under the railroad tracks. Drainage ditches are also located on each side of the access road to Building 311 and flow from east-to-west into the drainage ditch located in the western portion of the site.

SEAD-59 was used for the disposal of construction debris and oily sludges. SEDA personnel have indicated that there may be a large quantity of miscellaneous "roads and grounds" waste buried at the site. It is not known when the disposal took place.

SEAD-71 (i.e., the Alleged Paint Disposal Area) is located in the east-central portion of SEDA. The site is located approximately 200 feet west of 4th Avenue near Buildings 127 and 114 (**Figures 2-2 and 2-4**). The entire site is approximately 350 feet by 100 feet and bounded on the north and south by railroad tracks serving Buildings 114 and 127. A chain-link fence borders the east side of the site. The topography is relatively flat with a gentle slope to the southwest.

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

2.2 SITE-SPECIFIC GEOLOGY

2.2.1 SEAD-59

Based on the results of the drilling program conducted for the ESI at SEAD-59, fill material, till, weathered dark gray shale, and competent gray-black shale are the four major geologic units present on-site. At most of the boring locations, very little topsoil was present. Several of the borings were drilled on a gravel surface, and no topsoil was encountered at these locations.

Fill material was encountered in the borings located within the fill area north of the access road. The fill was characterized as being lithologically similar to the underlying till: it was characterized as silt containing minor components of sand and shale fragments, but was noted as being different from the

till in color, which tended to be gray brown or tan, and due to the presence of gravel, asphalt, wood and other organic material. The fill was found to extend to a depth of 10.5 feet in select places.

The till was characterized as light brown in color and composed of silt, very fine sand, and clay, with minor components of gray-black shale fragments. Larger shale fragments (rip-up clasts) were observed at some locations at the top of the weathered shale. The thickness of the till ranged from 3.1 to 8.6 feet.

The weathered shale that forms the transition between till and competent shale was encountered at five of the nine boring locations. Competent gray-black shale was observed at two spots at 8.0 and 10.5 feet below grade, respectively. At the remaining boring locations, bedrock was inferred from the point of auger or spoon refusal at depths ranging from 9.5 to 20.5 feet below grade.

2.2.2 SEAD-71

Based on the results of the subsurface exploration conducted for the ESI at SEAD-71, till, calcareous weathered shale, and competent shale are the three major types of geologic materials present on-site. The till in the storage area was characterized as olive gray clay with little silt, very fine sand, and shale fragments (up to 1 inch in diameter) and ranged in thickness from 4.7 and 7.8 feet. In the southern section of the storage area, the till consisted of light brown silt with little clay and trace amounts of shale fragments (up to 1 inch in diameter). Large shale fragments (rip-up clasts) were observed at or near the till/weathered shale contact at all soil boring locations. In the western half of the site, the till consisted of olive gray silt and was found to be approximately 4 feet thick.

The weathered shale that forms the transition between the till and competent shale was encountered at all soil boring and test pit locations. The depth of the weathered shale ranged from 4.7 to 8.3 feet below ground surface. Competent, calcareous gray shale was encountered at depths between 5.2 and 9.4 feet below ground surface.

2.3 SITE-SPECIFIC HYDROLOGY AND HYDROGEOLOGY

2.3.1 SEAD-59

Surface water flow from precipitation events is controlled by the local topography. The area to the south of the access road slopes gently to the west. Surface water flow in this area is to the west and it is most likely captured by the north-south trending drainage swale located in the western portion of the site and by the drainage ditch which parallels the south side of the access road.

In the area north of the access road, a hill composed of fill material has approximately 10 feet of vertical relief. To the west, the hill slopes steeply to the north-south trending drainage swale, which flows north and eventually flows under the railroad tracks north of the site. To the north, the hill slopes to a sustained drainage ditch that is approximately two feet deep. This ditch originates east of the site near Building 128 and flows west, paralleling the railroad tracks and the northern boundary of SEAD-59. At the northwestern corner of the site, the drainage swale turns to the north and passes under the railroad tracks. To the east, the hill slopes downward to a graded gravel surface used for storage of large equipment. Surface water from this area also drains into the northern drainage swale, flowing along the northern boundary of the site, as described above. To the south, the hill slopes to the access road that runs through the site. Surface water from this southern portion of the hill drains into the drainage ditch that parallels the access road on the north side. Water captured by this drainage ditch flows west and intersects the north flowing drainage ditch in the western portion of SEAD-59.

Based on the data collected during the ESI, the groundwater flow direction is primarily southwest across SEAD-59.

2.3.2 SEAD-71

Surface water flow from precipitation events is controlled by the local topography, although there is little topographic relief on the site. There are no sustained surface water bodies on-site. In the fenced storage area located in the eastern half of the site, the area is covered with asphalt, which provides an impermeable surface resulting in an increased amount of surface water runoff from the site. Based on topographic relief, surface water flow is to the southwest towards the SEDA railroad tracks (to the south), which are topographically lower than the site.

Based on the data collected during the ESI, the groundwater flow direction in the till/weathered shale aquifer on the site is to the west-southwest.

2.4 LAND USE

The SEDA is situated between Seneca Lake and Cayuga Lake and encompasses portions of Romulus and Varick Townships. Land use in this region of New York is largely agricultural, with some forestry and public land (school, recreational and state parks). The most recent land use report is that issued by Cornell University (Cornell 1967). This report classifies land uses and environments of this region in further detail. Agricultural land use is categorized as inactive and active use. Inactive agricultural land consists of land committed to eventual forest regeneration, land waiting to be developed, or land presently under construction. Active agricultural land surrounding SEDA consists largely of cropland and cropland pasture.

Forest land adjacent to SEDA is primarily under regeneration with sporadic occurrence of mature forestry. Public and semi-public land use surrounding and within the vicinity of SEDA includes Sampson State Park, Willard Psychiatric Center, and Central School (at the Town of Romulus). Sampson State Park entails approximately 1,853 acres of land and includes a boat ramp on Seneca Lake. Historically, Varick and Romulus Townships within Seneca County developed as an agricultural center supporting a rural population. However, increased population occurred in 1941 due to the opening of SEDA. Population has progressed since then largely due to the increased emphasis on promoting tourism and recreation in this area.

The 10,587-acre SEDA facility was constructed in 1941 and has been owned by the United States Government and operated by the Department of the Army (DOA) since that date. From its inception in 1941 until 1995, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items, including munitions and equipment. The Depot's mission changed in early 1995 when the Department of Defense (DOD) recommended closure of the SEDA under its Base Realignment and Closure (BRAC) process. This recommendation was approved by Congress on September 28, 1995 and the Depot was scheduled for closure by July 2001.

In accordance with the requirements of the BRAC process, the Seneca County Board of Supervisors established the Seneca Army Depot Local Redevelopment Authority (LRA) in October 1995. The primary responsibility assigned to the LRA was to plan and oversee the redevelopment of the Depot. The Reuse Plan and Implementation Strategy for Seneca Army Depot was adopted by the LRA and approved by the Seneca County Board of Supervisors on October 22, 1996. Under this plan and subsequent amendment, areas within the Depot were classified as to their most likely future use. These areas included: housing, institutional, industrial, an area for the existing navigational LORAN transmitter, recreational/conservation and an area designated for a future prison. The LRA has established that the area including SEAD-59 and SEAD-71 will be used for Planned Industrial Development. At the time when the SEDA facility is relinquished by the Army, the Army will ensure that both sites can be used for the intended purpose.

2.5 CONTAMINATION ASSESSMENT

Geophysical surveys and test pits were performed during the ESI and RI to identify burial sites at SEAD-59 and -71. Soil (surface, subsurface), soil gas, and groundwater were collected and analyzed as part of the investigations (**Appendix A of the Decision Document**). The results are presented in the *Draft Phase I Remedial Investigation (RI) SEAD-59 and SEAD-71* (Parsons, July 1998), *the ESI Report for Seven Low Priority AOCs - SEADs 60, 62, 63, 64 (A, B, C, and D), 67, 70, and 71* (Parsons, April 1995) and the *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 (Parsons, December 1995). The following sections summarize the nature and extent of contamination identified at these sites.

2.5.1 Soil Gas Survey

2.5.1.1 SEAD-59

A total of 241 soil gas points were sampled and analyzed during the Phase I RI investigation at SEAD-59. This sampling effort revealed one large area and four smaller areas of elevated total volatile organic compounds (VOCs), as shown in **Figure 2-6**. The larger area of elevated soil gas encompasses most of SEAD-59, extending from north of the unnamed dirt road to the west of the 60,000 gallon oil storage tank, including the mounded fill area. The highest soil gas concentrations measured were within the boundaries of the fill area. Maximum total VOC concentrations of greater than 10 parts per million by volume (ppmv) were observed at three separate locations within the fill area. The four smaller areas of elevated soil gas concentrations were detected in an area southeast of the fill area, an area directly southwest of the fill area, another area south of the fill area, and an additional area northwest of the fill area.

2.5.1.2 SEAD-71

A soil gas survey was not performed at SEAD-71.

2.5.2 Geophysics

2.5.2.1 SEAD-59

Four seismic refraction profiles were performed, during the ESI, on 4 lines positioned along each boundary line of SEAD-59. The seismic refraction profiles detected 5 to 10 feet of unconsolidated overburden (1,050 to 1,730 ft/sec) overlying bedrock (10,500 to 15,500 ft/sec). Saturated overburden was not detected by the seismic survey due to limited thickness of the saturated overburden. The elevations of the bedrock surface indicated that the bedrock sloped to the west, generally following the surface topography. Based upon the results of the seismic survey, the groundwater flow direction was also expected to be to the west, following the slope of the bedrock surface.

Electromagnetic (EM-31, EM-61) surveys were performed during the ESI and the Phase I RI at SEAD-59 to delineate the limits of the landfill and to identify locations where metallic objects were buried. The ESI EM-31 survey detected eight anomalies of unknown origin, though no clearly defined boundaries of the large fill area in the northeastern portion of the EM grid could be determined based

upon the geophysical results. The electromagnetic (EM-61) survey performed for the Phase I RI at SEAD-59 detected 39 localized anomalies which could not be attributed to surface features and are presumed to be associated with unknown buried sources.

Ground penetrating radar (GPR) data were acquired during the ESI at SEAD-59. A small disposal pit was detected in the southeastern portion of the area investigated. Twelve of the 17 suspected buried metallic object locations revealed by the GPR survey were situated within the suspected disposal area in the northeastern quadrant of SEAD-59. Ten of the GPR anomaly locations were either situated over a localized EM anomaly or within 15 feet of a localized EM anomaly.

GPR data were also acquired during the Phase I RI at SEAD-59 over each distinct EM-61 anomaly to provide better characterization of the suspected metallic sources. Test pit locations were selected based on GPR data indicating the strongest presence of disposal pits or debris.

2.5.2.2 SEAD-71

Four seismic refraction profiles were performed as part of the geophysical investigations conducted for the ESI on four lines positioned along each boundary line of the storage area in the eastern half of SEAD-71. The seismic refraction profiles detected 6 to 9 feet of unconsolidated overburden (1,125 to 1,500 ft/sec) overlying bedrock (12,800 to 16,200 ft/sec). Saturated overburden was not detected by the seismic survey due to limited thickness of the saturated overburden. The elevations of the bedrock surface indicated that the bedrock slopes to the west, generally following the surface topography. Based on the results of the seismic survey, the groundwater flow direction is also expected to be to the west, following the slope of the bedrock surface.

An EM-31 survey was performed during the ESI at SEAD-71 in the western half of the site to help locate the burial pits. Interferences from many cultural effects (e.g., chain link fence, railroad tracks, etc.) along the perimeter of the surveyed area complicated the interpretation of the data. A review of the EM-31 data from SEAD-71 revealed one area, in the south-central portion of the grid, where both the apparent conductivity and the in-phase response decreased noticeably. One other area of increased apparent ground conductivity measurements was detected along the west-central portion of the grid, however, an associated in-phase response was not observed.

GPR data was acquired during the ESI at SEAD-71. The data from these surveys revealed an underground utility line or conduit running northwest-southeast across the northeastern corner of the storage compound. One area of anomalous subsurface reflections, typical of reflections from metallic objects, was detected in the south-central portion of the storage compound. The GPR survey conducted in the area west of the storage compound revealed five localized anomalies and three zones with multiple anomalies. The source of these EM-31 and the GPR anomalies was

identified during test pit excavations as construction debris composed of chain link fencing, sheet metal, asphalt, and a crushed, yellow, twenty-gallon drum. Weathered shale, encountered at a depth of 5.5 feet, limited any further advancement of the excavation. There were no readings above background levels (0 ppmv of organic vapors and 10-15 micro rems per hour of radiation) during the excavations.

GPR data were also acquired during the Phase I RI at SEAD-71. Test pit locations were selected based on GPR data indicating the strongest presence of disposal pits or debris.

2.5.3 Test Pitting Program

2.5.3.1 SEAD-59

Twenty-four (24) test pits were excavated at SEAD-59 to investigate the nature of the geophysical and soil gas anomalies and to collect chemical data to identify the presence of constituents of concern. The excavated debris consisted of concrete, asphalt, metal, wood, chain link fencing, 55-gallon drums, and paint cans. Areas of petroleum-hydrocarbon and paint-stained soils were also detected.

2.5.3.2 SEAD-71

Six test pits were excavated at SEAD-71 to characterize the source of the geophysical anomalies. One test pit revealed oil-stained soils. The excavated debris consisted of construction debris composed of chain link fencing, sheet metal, asphalt, stone slabs, bricks and piping. A crushed, yellow, twenty-gallon drum and railroad ties were also found.

2.5.4 Summary of Affected Media

2.5.4.1 SEAD-59

The ESI and Phase I RI conducted at SEAD-59 identified several areas which have been impacted by releases of volatile organic compounds, semivolatile organic compounds, total petroleum hydrocarbons, and to a lesser extent, heavy metals.

Soil Data

Sampling conducted in SEAD-59 indicates impacts to soils from volatile organic compounds, semivolatile organic compounds, total petroleum hydrocarbons, and to a lesser extent, metals exist (See data in Appendix A of the Decision Document). Twenty-four (24) soil samples were collected

from soil borings and test pits as part of the ESI for SEAD-59. One hundred and five (105) samples were collected during the Phase I RI for field screening and 34 of those samples were sent to the laboratory for confirmatory analysis.

Six VOCs, acetone, methylene chloride, methyl ethyl ketone, methyl chloride, carbon disulfide, and trichloroethene, were detected in soil samples at concentrations that were below New York State Department of Environmental Conservation's (NYSDEC's) recommended soil cleanup objective levels (defined in NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) #4046 – Determination of Soil Cleanup Objective and Cleanup Levels, January 1994).

In the fill area, polyaromatic hydrocarbon (PAH) compounds were found in surface soil and subsurface soil samples at concentrations exceeding the TAGM criteria. Total petroleum hydrocarbons were detected in the majority of the soil samples collected from the fill area. In the area directly southwest of the fill area, there is both physical and chemical evidence of the presence of hydrocarbons. In the area south of the fill area, several paint cans containing paint were found. BTEX constituents were detected in the sample from this location at concentrations exceeding the associated TAGM criteria. **Figure 2-7** presents the distribution of benzo[a]pyrene, chosen as an indicator chemical for PAHs.

Endrin aldehyde was detected in 11 of the 55 soil samples in which it was analyzed for, at a maximum concentration of 15 ug/Kg. There is no NYSDEC recommended cleanup value for this compound.

Twenty-two (22) metals were detected in soil samples collected from SEAD-59. Fifteen (15) metals were detected in one or more samples at concentrations that exceeded their associated NYSDEC cleanup criteria values. Exceedances were reported in all but 11 of the soil samples collected. A variety of the metals were found at concentrations just slightly above their cleanup criteria values, and approximately half of these exceedances appear to reflect natural variations in site soils. The exceptions to this are the metals antimony, calcium, lead, mercury, silver, sodium, and zinc which were reported at concentrations that are at least two times their recommended cleanup criteria levels.

Groundwater Data

One round of groundwater sampling was conducted at SEAD-59 during the ESI field program in 1994. The sampling procedure used at that time was not the EPA Region II low-flow groundwater sampling method and therefore the results may not be representative of the groundwater at the site due to turbidity in the groundwater samples.

The results of the groundwater analyses (**Table A-2** in Appendix A of the Decision Document) indicate that the groundwater at SEAD-59 has been moderately impacted by total petroleum hydrocarbons and, to a lesser extent, by metals and semivolatile organic compounds. Total petroleum hydrocarbons were detected at low concentrations in both of the downgradient groundwater samples, but it was not detected in the upgradient groundwater sample. Aluminum was detected in all three wells at concentrations above its EPA secondary MCL of 50 ug/L; the highest concentration measured for aluminum in groundwater was found in the upgradient well. Iron and sodium were also detected at concentrations above their associated groundwater criteria in all three wells, and again the highest concentrations measured for these compounds were found in the upgradient well. Thallium was found in the upgradient and one downgradient groundwater sample at concentrations above its federal MCL. Manganese was found in one downgradient sample at a concentration above NYSDEC's GA groundwater criteria. One SVOC, phenol, was reported at estimated concentrations above its groundwater criteria level.

The results of the ESI and RI have identified significant releases of BTEX and PAH compounds in the materials comprising the fill area and disposal pits at SEAD-59. It is important to note that trace quantities of total petroleum hydrocarbons detected in the fill materials are presumably being leached into the groundwater beneath the site. Therefore, the data suggest that affected media at SEAD-59 may have the potential to impact the modeled receptors.

2.5.4.2 SEAD-71

Soil and groundwater were sampled as part of the ESI conducted at SEAD-71 in 1994. Soils were also sampled as part of the Phase I RI conducted in 1998. Sampling and analyses were based upon historical usage of the area for the disposal of paint and solvents. The results of these investigations were detailed in the ESI and Phase I RI reports (Parsons, April 1995, July 1998). To evaluate whether each media (soil and groundwater) is being impacted, the chemical analysis data were compared to available New York State and Federal standards, guidelines, and criteria. Only those state standards, guidelines or criteria that are more stringent than federal requirements were used as a basis of comparison.

Soil Data

Eight soil samples were collected from two test pits excavated during the ESI at SEAD-71, and each of these samples was sent to a laboratory for chemical analysis. Twenty-one (21) surface soil samples were obtained for chemical analysis as part of the Phase I RI for SEAD-71. Nine soil samples were collected from four test pits and screened for BTEX compounds using immunoassay field screening tests and five of these soil samples were sent to the laboratory for confirmatory chemical analysis.

The Phase I RI confirmed the findings of the ESI conducted at SEAD-71. No burial pit for paint and solvents was uncovered during either investigation, although the investigations did indicate the soils at SEAD-71 have been impacted by the waste materials which have been disposed in at least one disposal pit on site. At three test pit locations, PAHs were present at concentrations exceeding the criteria specified in the NYSDEC's TAGM #4046. Heavy metals concentrations above their associated NYSDEC criteria values were also present in these three test pits. There is clear evidence that surface soils at SEAD-71 have been impacted by waste materials disposed in the area. Both PAHs and heavy metals were detected above their associated NYSDEC criteria levels in every surface soil sample collected during the Phase I RI. **Figure 2-8** presents the benzo[a]pyrene concentrations detected at SEAD-71. Benzo[a]pyrene was selected as the indicator chemical for PAHs.

Groundwater Data

One round of groundwater sampling was conducted at SEAD-71 during the ESI field program in 1994. The sampling procedure used at that time was not the EPA Region II low-flow groundwater sampling method and therefore the results may not be representative of the groundwater at the site due to turbidity in the groundwater samples.

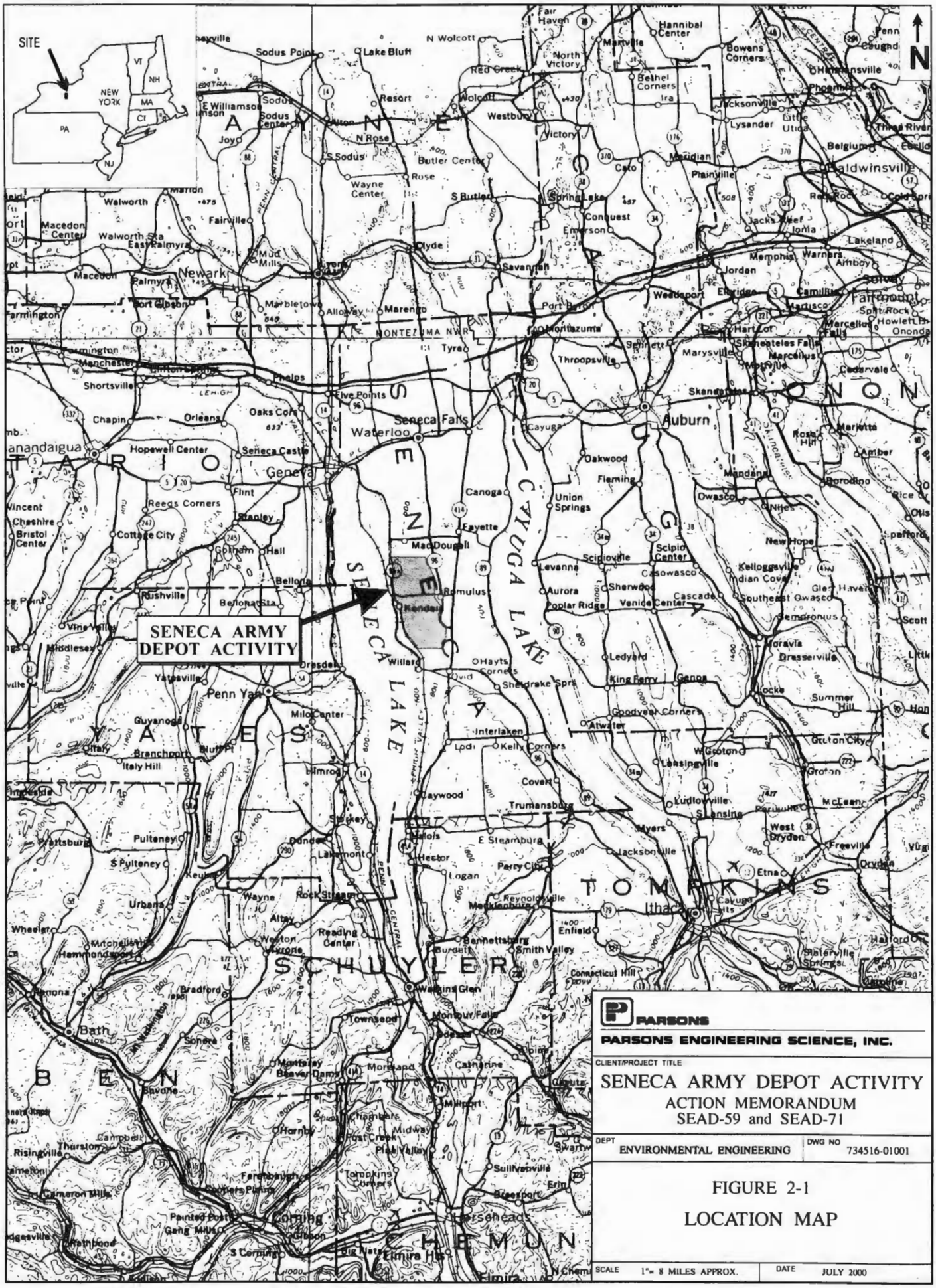
One Groundwater at SEAD-71 has not been significantly impacted. Metals were the only constituents detected, with 20 being found in the samples collected. Out of the 20 metals found, five (i.e., aluminum, iron, lead, manganese, and thallium) were detected at concentrations above the lowest associated state or federal criteria (**Appendix A of the Decision Document**).

2.6 STATE AND LOCAL ACTIONS TO DATE

There have been no state- or local-related actions completed to date at either SEAD-59 or -71. However, state and local authorities have been active in reviewing the ESI work plans and reports, and have provided oversight for the field work.

2.7 POTENTIAL FOR CONTINUED STATE/LOCAL RESPONSE

The removal action proposed in this Action Memorandum will be conducted by the Army. State authorities will continue to be given the opportunity to review and comment on site documents.



PARSONS

PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

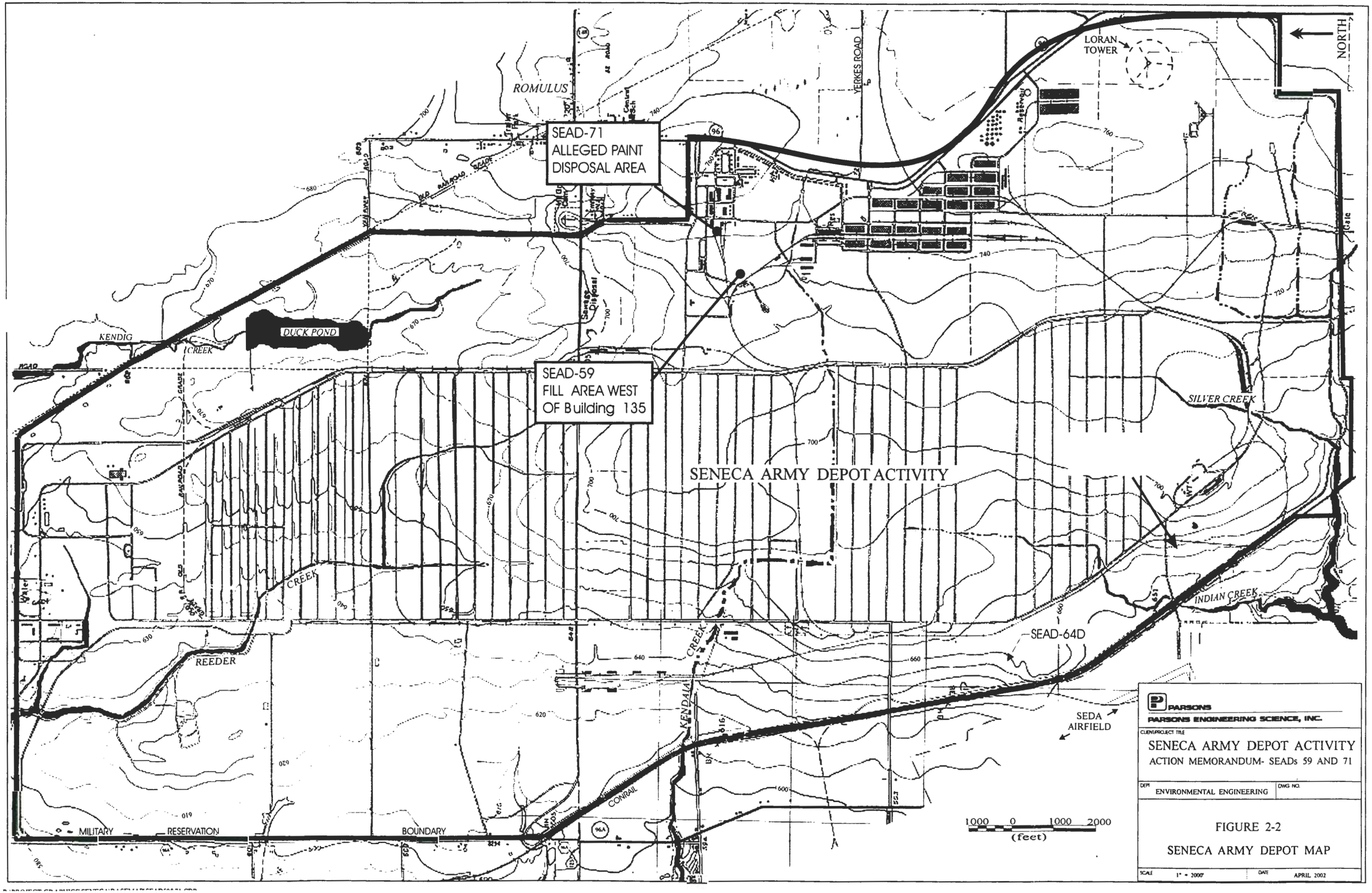
ACTION MEMORANDUM
SEAD-59 and SEAD-71

DEPT	DWG NO
ENVIRONMENTAL ENGINEERING	734516-01001

FIGURE 2-1
LOCATION MAP

SCALE	DATE
1"= 8 MILES APPROX.	JULY 2000

R:\PROJECTS-GRAPHICS\SENECA\LOCMAP.CDR(CVM)



PARSONS
PARSONS ENGINEERING SCIENCE, INC.

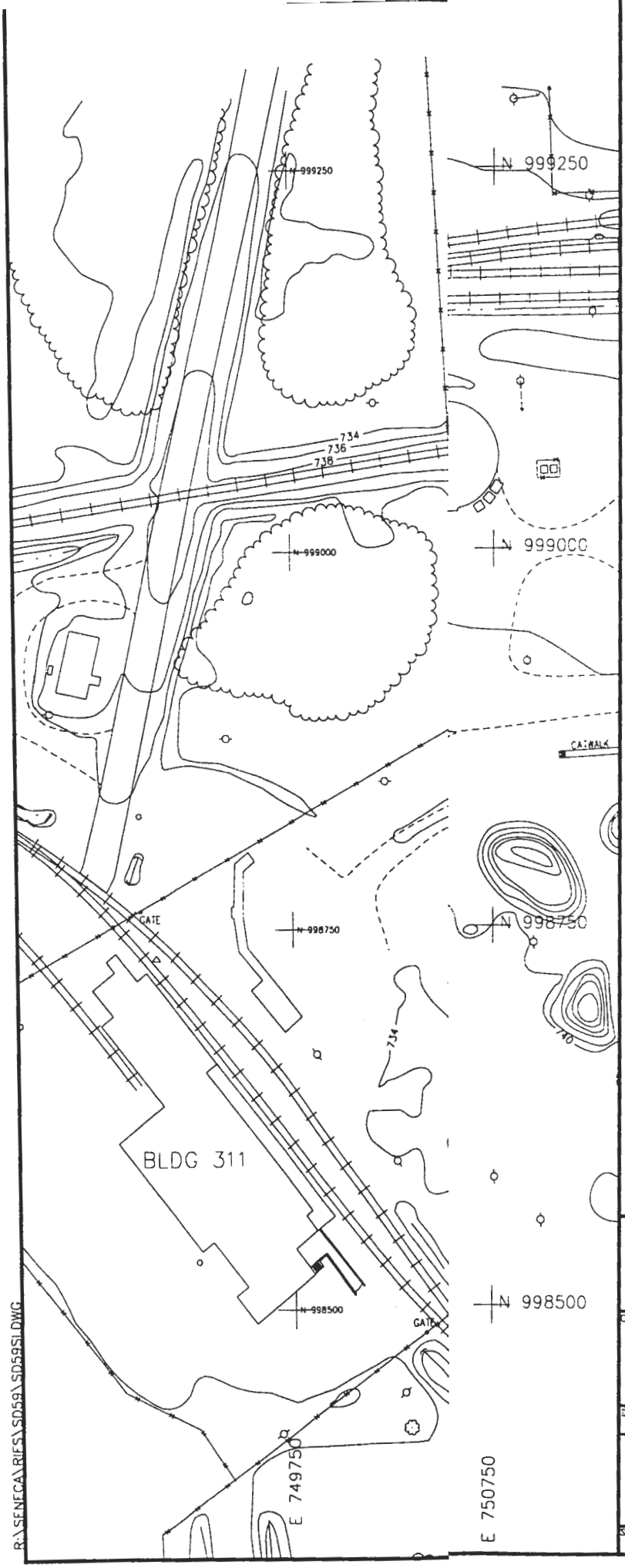
CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
ACTION MEMORANDUM- SEADs 59 AND 71

DEPT ENVIRONMENTAL ENGINEERING | DWG NO.

FIGURE 2-2

SENECA ARMY DEPOT MAP

SCALE 1" = 2000' | DATE APRIL 2002



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENTS
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- CORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- SURVEY MONUMENT
- OVERHEAD UTILITY POLE
- MAILBOX/RR SIGNAL
- APPROXIMATE EXTENT OF AOC

50 0 50 100
(feet)

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

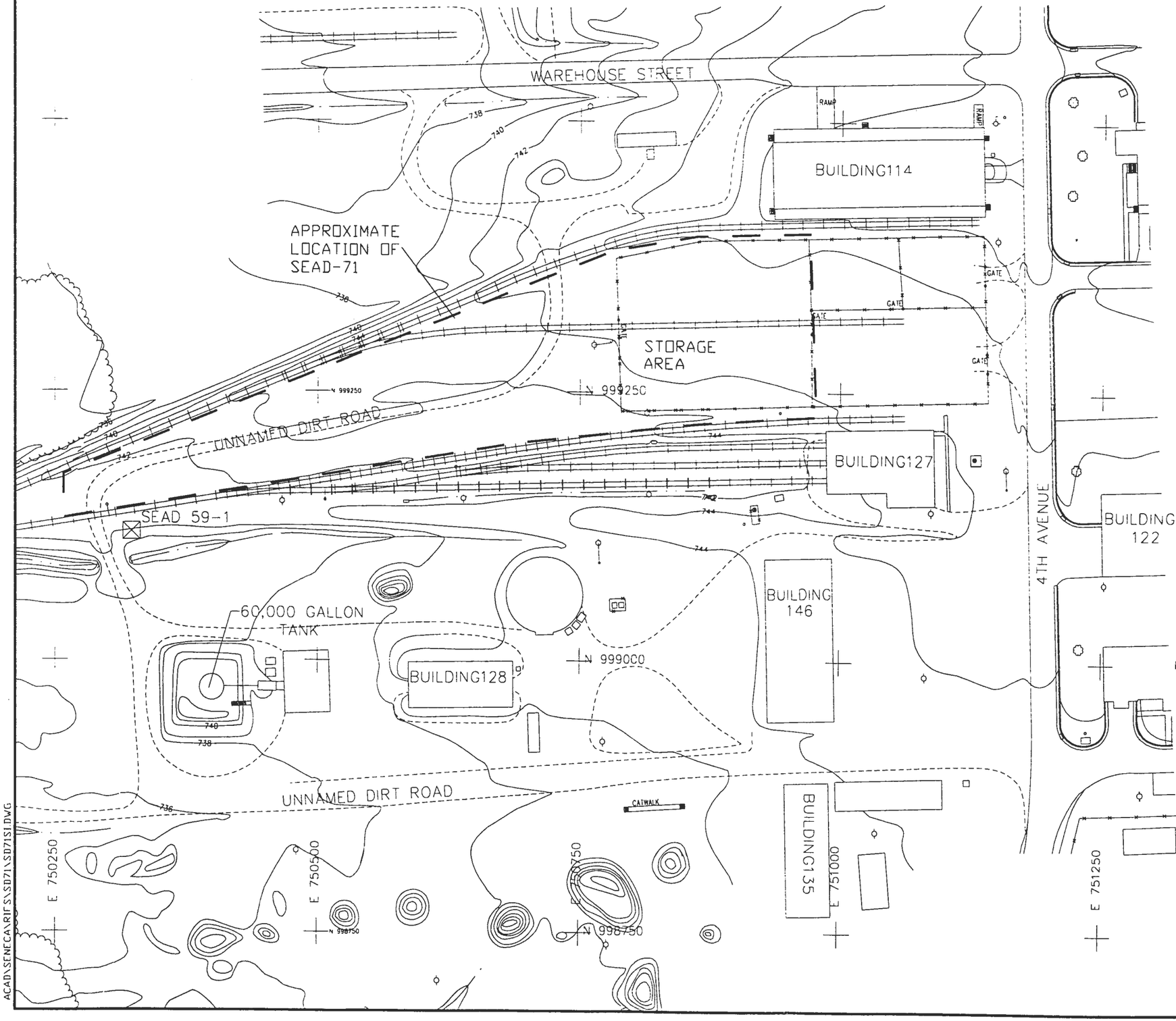
ACTION MEMORANDUM
SEAD-59 AND SEAD-71

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	734616-01001

FIGURE 2-3
SEAD-59
SITE PLAN

SCALE	DATE	REV
1" = 100'	JULY 1999	A

R:\SENECA\RIFS\SD59\SD59SI.DWG



N

LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENTS
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- CORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- OVERHEAD UTILITY POLE
- MAILBOX/RR SIGNAL
- APPROXIMATE EXTENT OF AOC

50 0 50 100
(Feet)

ACAD\SENECA\RIFS\SD71\SD71S1.DWG

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

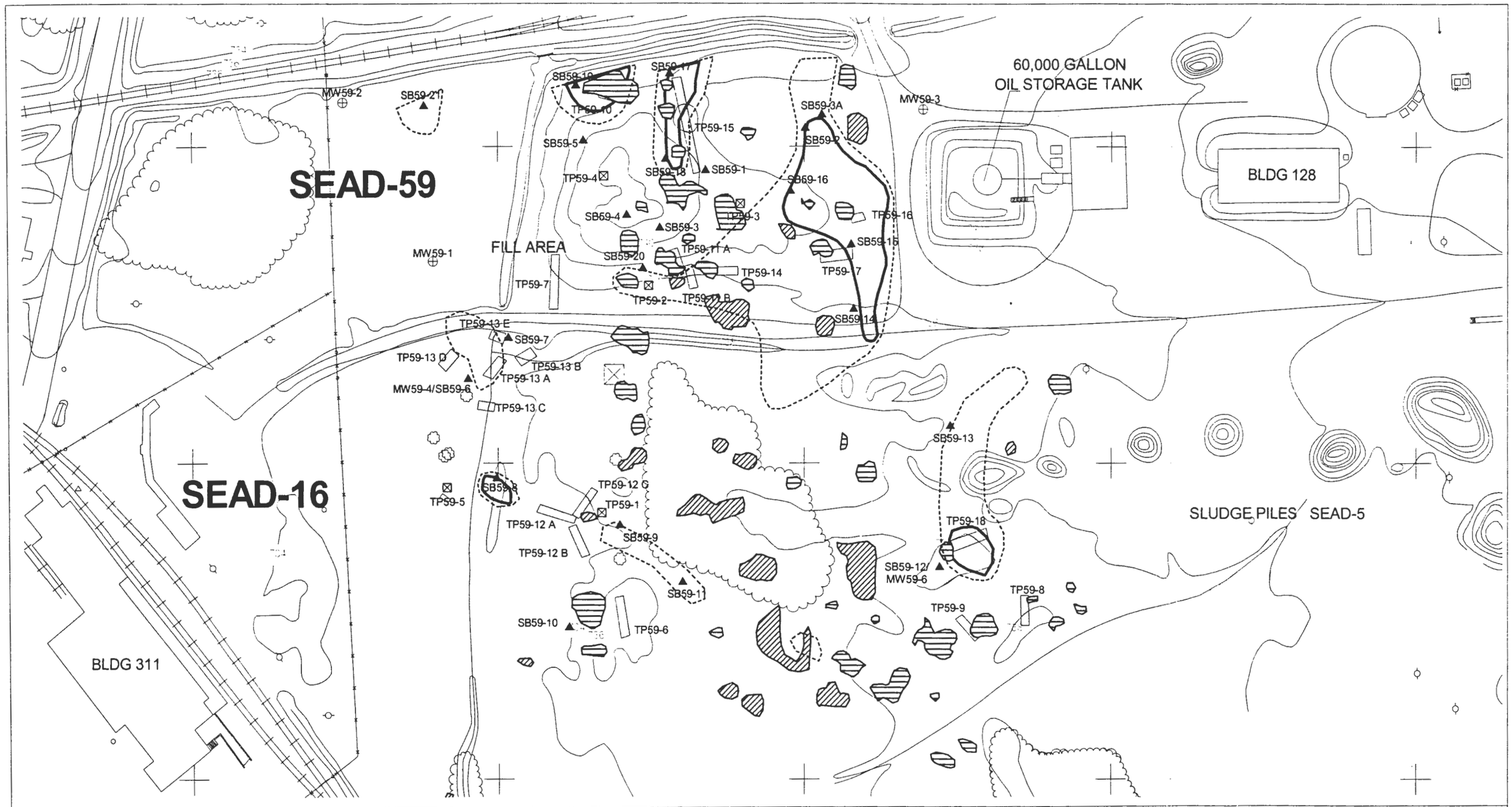
CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
ACTION MEMORANDUM
SEAD-59 AND SEAD-71

DEPT.	Dwg. No.
ENVIRONMENTAL ENGINEERING	734516-01001

FIGURE 2-4
SEAD-71
SITE PLAN

SCALE	DATE	REV
1" = 100'	JULY 1999	A



Base Map Features

Phase I RI Test Pit Locations

ESI Test Pit Locations

Monitoring Well Location

Soil Boring Location

Suspected Source of Geophysical Anomalies

Known Surface Debris

Unknown

Soil Gas

20 ppm or greater

10 ppm - 20 ppm

50 0 50 100 Feet

N

PARSONS

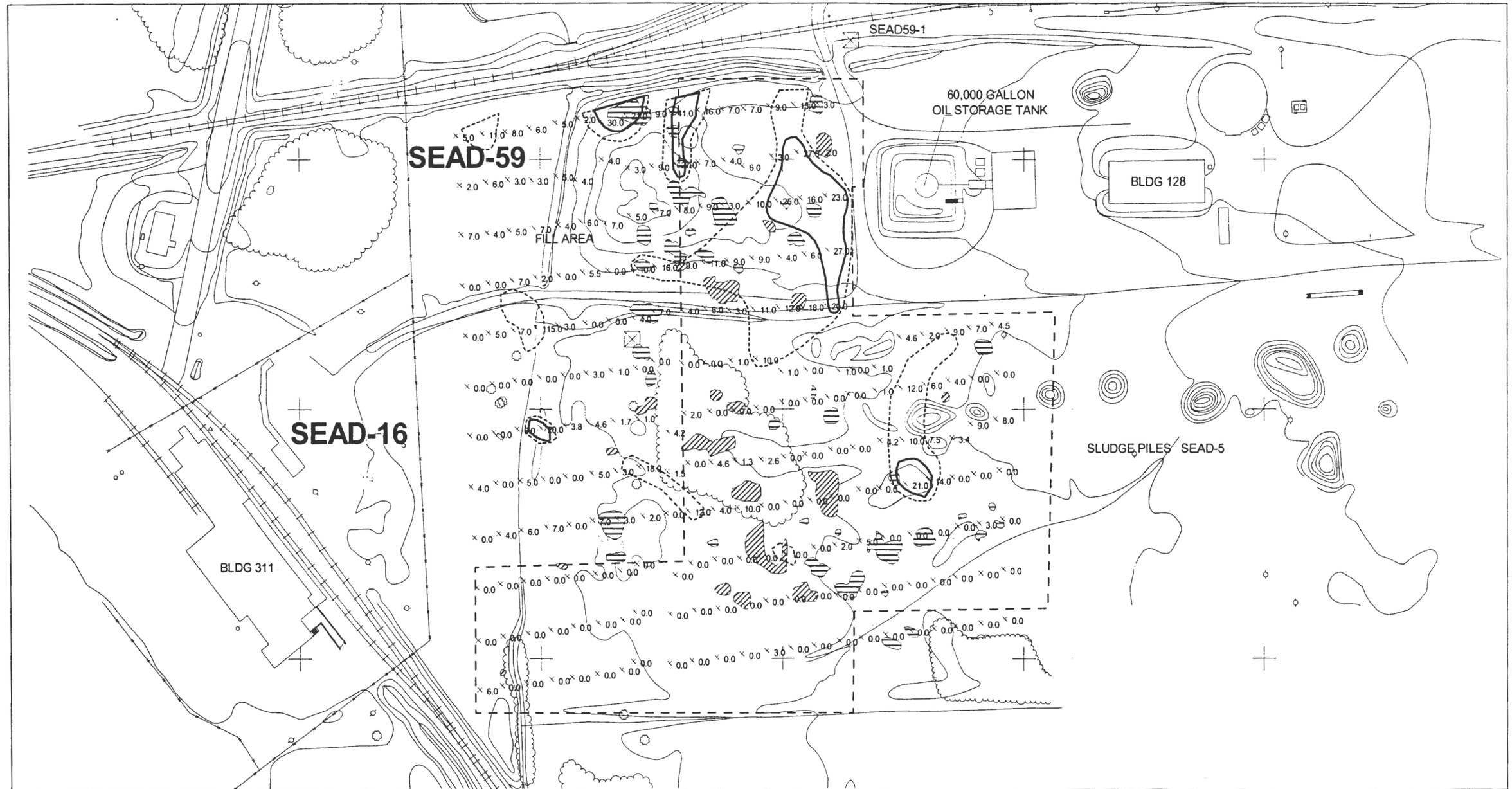
PARSONS ENGINEERING SCIENCE, INC.

ACTION MEMORANDUM - SEADs 59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-5
SEAD-59 Phase I Remediation Investigation
Sample Locations

JOB NUMBER	DATE	SHEET No. 1 OF 1
734516-01001	MARCH 2002	

o:\seneca\sead5971\sead59.apr



Base Map Features

Suspected Source of Geophysical Anomalies

- Known Surface Debris
- Unknown
- Extent of Geophysical Survey

Soil Gas

- 20 ppm or greater
- 10 ppm - 20 ppm

90 0 90 180 Feet

N

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

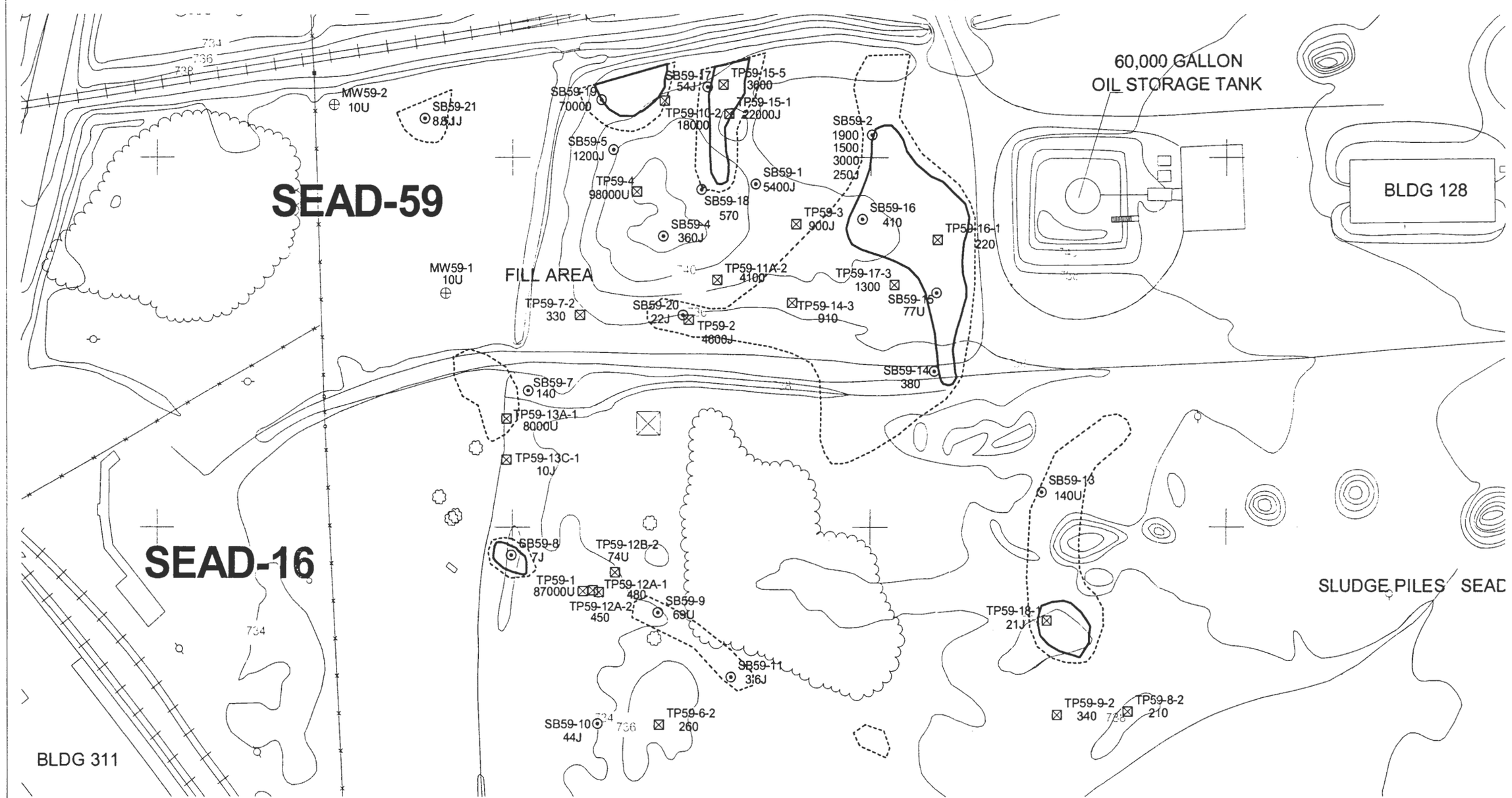
SENECA ARMY DEPOT ACTIVITY

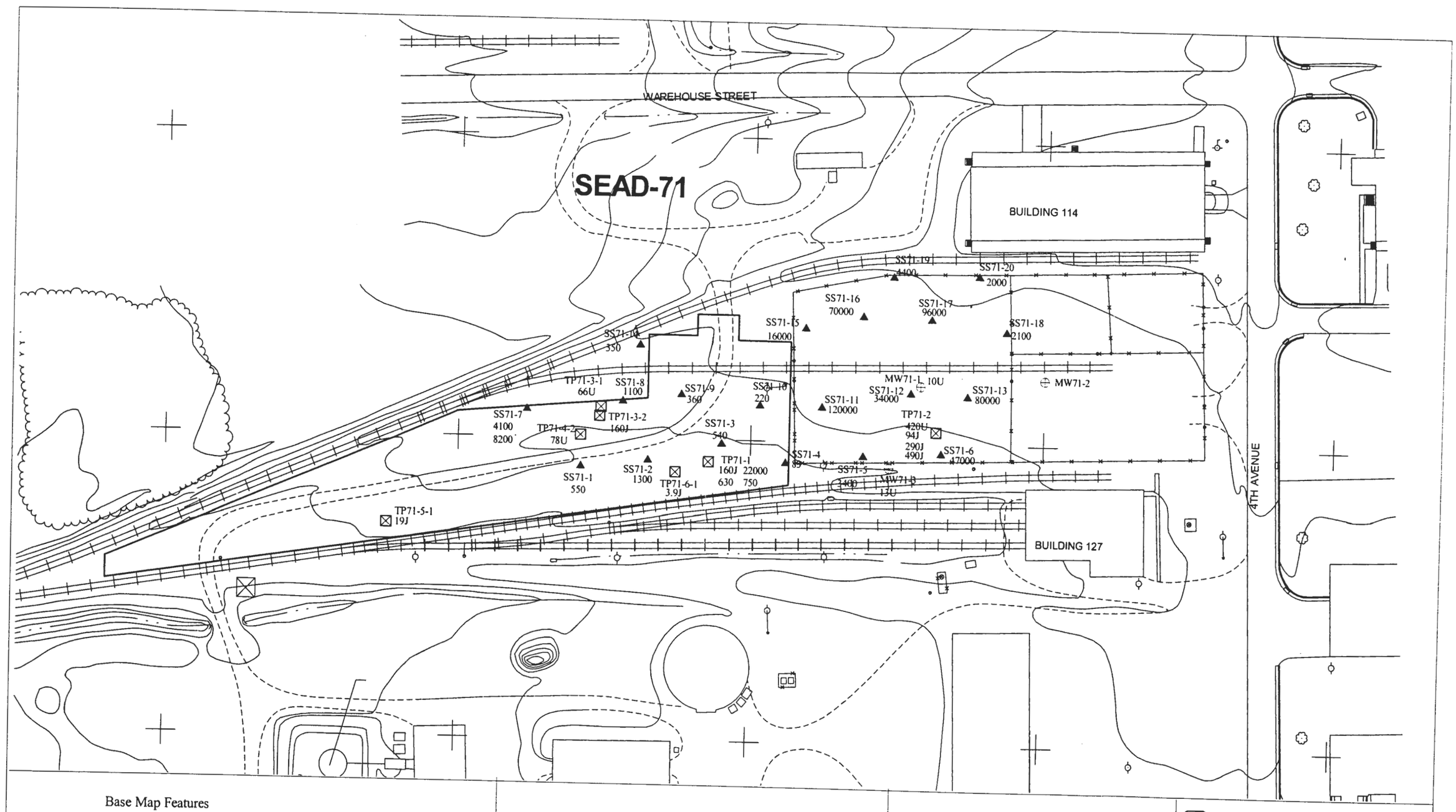
ACTION MEMORANDUM - SEADs 59 AND 71

FIGURE 2-6
SEAD-59 Phase I Remediation Investigation
Results of Soil Gas Survey and Geophysical Investigation

JOB NUMBER	DATE	SHEET
734516-01001	MARCH 2002	No. 1 OF 1

o:\seneca\sead5971\sead59.apr


60,000 GALLON
OIL STORAGE TANK
BLDG 128
SEAD-59
SEAD-16
FILL AREA
MW59-2
10U
SB59-21
85J
MW59-1
10U
SB59-19
70000
SB59-17
54J
TP59-15-5
3000
TP59-15-1
22000J
TP59-10-2
18000
SB59-2
1900
1500
3000
250J
SB59-5
1200J
SB59-1
5400J
TP59-4
98000U
SB59-18
570
TP59-3
900J
SB59-16
410
TP59-16-1
220
SB59-4
360J
TP59-11A-2
4100
TP59-17-3
1300
SB59-15
77U
TP59-7-2
330
SB59-20
22J
TP59-2
4600J
TP59-14-3
910
SB59-14
380
SB59-7
140
TP59-13A-1
8000U
TP59-13C-1
10J
SB59-13
140U
SB59-8
7J
TP59-12B-2
74U
TP59-1
87000U
TP59-12A-1
480
TP59-12A-2
450
SB59-9
69U
TP59-18-1
21J
SLUDGE PILES SEAD
SB59-11
316J
TP59-9-2
340
TP59-8-2
210
SB59-10
44J
TP59-6-2
260
734
736
738
BLDG 311
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
50 0 50 100 150 Feet
N
PARSONS
PARSONS ENGINEERING SCIENCE, INC.
SENECA ARMY DEPOT ACTIVITY
ACTION MEMORANDUM- SEADs 59 and 71
FIGURE 2-7
SEAD-59 Phase I Remedial Investigation
TOTAL BENZO[A]PYRENE CONCENTRATIONS
IN SOIL
JOB NUMBER
734516-01001
DATE
FEBRUARY 2002
SHEET No. 1 OF 1
o:\seneca\sead5971\sead59.apr



o:\seneca\sead5971\sead59.apr

PARSONS
PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

ACTION MEMORANDUM-SEADs 59 and 71

FIGURE 2-8

BENZO(A)PYRENE CONCENTRATIONS IN SOIL AT SEAD-71

JOB NUMBER	DATE	SHEET No. 1 OF 1
734516-01001	FEBRUARY 2002	

3 THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The removal action program discussed in this Action Memorandum is proposed to address the potential threats discussed below.

3.1 THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

A time-critical removal action at both SEAD-59 and SEAD-71 is proposed because of the increased potential for exposure of workers and other re-users now present at the Depot. The presence of drums and other containers and the uncertainty of their contents is also justification for a removal action at both sites.

Since the historic military mission of the Depot has been terminated, the Depot has officially been closed by the Department of the Defense (DoD) and the US Army. This time-critical removal action would eliminate contaminants that have been identified in the soil that represent a potential threat to the environment and neighboring populations. In accordance with provisions of the DoD's Base Realignment and Closure (BRAC) process, the land and the facilities of the former Depot have been surveyed and evaluated, and prospective beneficial uses of the facility have been identified. Portions of the Depot are now being released to the public and private sectors for reuse under the BRAC process. As portions of the former Depot are released for other beneficial uses, increased access is afforded to all portions of the former Depot. This may result in an increased potential for exposure of populations to any residual chemicals that are present at former SWMUs remaining at the Depot pending clean-up. Therefore, the goal of the proposed time-critical removal action at SEAD-59 and SEAD-71 is to remove debris and visually contaminated soil. This removal action would remove or at least lessen the magnitude of the potential threat that it represents to surrounding populations and the environment.

The results of the test pitting investigation have confirmed the presence of 55-gallon drums, paint cans, and other containers at SEADs 59 and 71. The presence of such buried objects is of concern since the nature of the contents is unknown. The uncertainty of the contents of the buried items that may remain in the disposal area and at geophysical anomalies and the contamination in soils and groundwater are considered justification for performing a removal action at both sites. While removal of drums and paint cans is the focus of the planned removal action, the potential for contamination to be present in the soil that surrounds these items will also be addressed by this action.

3.2 STATUTORY AUTHORITY

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) states that a removal action may be conducted at a site when there is a potential threat to public health, public welfare, or the environment. An appropriate removal action is undertaken to abate, minimize, stabilize, mitigate, or

eliminate the release or the threat of release at a site. Section 300.415(b)(2) of the NCP outlines factors to be considered when determining the appropriateness of a removal action, such as high levels of hazardous substances, pollutants, or contaminants in soils, largely at or near the surface, that may migrate; or the threat of fire or explosion.

Once it is determined that a removal action is appropriate, the removal is designated an emergency, time-critical, or non-time-critical removal. Emergencies are those situations in which response actions must begin within hours or days after the completion of the site evaluation. Time-critical removals are those in which, based on a site evaluation, it is determined that less than six (6) months remains before response actions must begin. Non-time-critical removals are those in which it is determined that more than six (6) months may pass before response actions must begin. Since the removal action should be conducted in less than six (6) months, this removal action is considered a voluntary, time-critical removal action.

4 ENDANGERMENT DETERMINATION

Actual or threatened releases of pollutants and contaminants from this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an endangerment to public health, welfare, or the environment.

5 PROPOSED ACTION AND ESTIMATED COSTS

5.1 PROPOSED ACTION

5.1.1 Proposed Action Description

The proposed remedial action at SEAD-59 and SEAD-71 is to excavate debris and visually impacted soils, and to transport and dispose of the excavated material at an off-site, state-approved landfill. Once the work plans have been approved, site preparation and mobilization will begin. The contractor will bring all the necessary equipment to the site, arrange for all required utilities, and obtain all necessary permits. If necessary, pads will be constructed for the equipment, and run on and run off controls will be constructed.

SEAD-59

SEAD-59 consists of two areas that are located north and south of an access road that bisects the site from east to west. The area north of the road is a fill area and the area south of the road was used as a staging area for heavy equipment and construction materials.

As part of the removal action at SEAD-59, approximately 23,085 cubic yards (cy) of soil will be excavated (**Figure 5-1**). The fill area (Area 1) will be excavated. Geophysical anomalies located south of the road will be excavated. Drums, paint cans, and construction debris will be screened out and disposed off-site. The excavation limits will be determined based on the visual extent of contamination. Excavation will continue until all debris and visually impacted soils have been removed. Cleanup verification sampling of soil in the fill area will be collected from the bottom and sides of the excavations based on a 50 feet by 50 feet grid. For small excavations measuring less than 2,500 square feet, such as Areas 2, 3, and 4 at SEAD-59, five samples will be collected (one from the base and one from each sidewall) at each excavation site. Additional details of the proposed confirmational sampling and analysis plan are provided in **Appendix F** of this Action Memorandum/Decision Document.

Following excavation, soils will be placed in 150cy piles for testing to ensure that they comply with the cleanup goals established for the site. One confirmatory sample will be collected per 150 cy pile. Soils with concentration of VOCs, SVOCs, pesticides, and metals exceeding the cleanup goals will be disposed at an offsite facility. These soils will also be analyzed for the characteristic of toxicity via the Toxicity Characteristic Leaching Procedure (TCLP) (every 150 cy) which is required for landfill disposal. Soils excavated from SEAD-59 are not expected to exceed TCLP limits and will be disposed at an off-site, Subtitle D, solid waste industrial landfill once TCLP results are obtained and verified. Based on the soil data obtained from SEAD-59, it was assumed that 65% of the excavated soil will contain concentrations of compounds above the associated cleanup goals and will require off-site disposal. There is a possibility that some soils from SEAD-59 will also exceed the TCLP limits. These soils will be treated off site. Once treatment of necessary soils has occurred, these

contaminated soils will be transported to an off-site, Subtitle D, solid waste industrial landfill for disposal.

Prior to backfilling, the Army will provide the results of the confirmatory sampling analyses to the NYSDEC and EPA for prior written approval of the excavated material as backfill. Excavated soil that is not found to contain concentrations of contaminants in excess of NYSDEC TAGM 4046 criteria will be used as backfill. The sites will be regraded. A two-foot thick vegetative cover will be placed over the former fill area. It is assumed that provisions of the New York Code of Rules and Regulations (NYCRR) Part 360 will no longer apply because the fill area is being removed. The remaining areas will be covered with crushed stone.

The excavations at SEAD-59 will be dewatered and the water will be collected and placed in holding tanks. Any groundwater collected will be treated and disposed in accordance with applicable state and federal regulations. During the excavation process, the sides of the excavation may be sloped to the levels required by OSHA. Shoring or bracing may also be used.

A contingency plan will be added to the Removal Action Work Plan in case additional debris, or debris that does not fit the description of materials excavated to date is found and excavated. The contingency plan will also provide procedures to be followed if drums, similar to those encountered in the test pits conducted during the Phase I RI, are encountered.

SEAD-71

At SEAD-71, geophysical anomalies and soils with concentrations of contaminants exceeding the soil cleanup goals for the site will be excavated (**Figure 5-2**). Paint cans and debris will be screened out and disposed off site. The excavation limits will be determined based on the visual extent of contamination. Excavation will continue until all debris and visually impacted soils have been removed. Cleanup verification sampling of soil will be collected from the bottom and sides of the excavations based on a 50 feet by 50 feet grid. For small excavations measuring less than 2,500 square feet, five samples will be collected (1 from the base and one from each sidewall) at each excavation site. Additional details of the proposed confirmational sampling and analysis plan are provided in **Appendix F** of this Action Memorandum/Decision Document.

Following excavation, soils will be placed in 150 cy piles for testing to ensure that they comply with the cleanup goals developed for the site. One confirmatory sample will be collected from each 150 cy pile of excavated soil. Soils with concentration of VOCs, SVOCs, and metals exceeding the cleanup goals will be disposed at an offsite facility. These soils will also be analyzed for the characteristic of toxicity via the Toxicity Characteristic Leaching Procedure (TCLP) (every 150 cy) which is required for landfill disposal. About 3% (26 cy) of SEAD-71 soils are expected to exceed TCLP limits due to elevated levels of lead. There is a possibility that more than 3% of the soil may exceed the TCLP limits. These soils will be treated off site. Once treatment of necessary soils has

occurred, these contaminated soils will be transported to an off-site, Subtitle D, solid waste industrial landfill for disposal.

Prior to backfilling, the Army will provide the results of the confirmatory sampling analyses to the NYSDEC and EPA for prior written approval of the excavated material as backfill. Excavated soil that is not found to contain concentrations of contaminants in excess of NYSDEC TAGM 4046 criteria will be used as backfill. The area will be covered with crushed stone.

5.1.2 Contribution to Remedial Performance

The purpose of this action is to remove the source of volatile organic, semivolatile organic, pesticide, and metal compound contamination at the sites and thereby reduce the potential for further contamination of soils and groundwater. This work is intended to remove the source of potential risks to human health, the environment, and groundwater quality.

5.1.3 Description of Alternative Technologies

Because the impetus for the removal action at these sites is the presence of debris, and due to the uncertain nature of this debris, only one alternative, excavation and disposal, rather than any sort of in-situ treatment of these items is logical. For this reason, no alternative technologies were evaluated as part of this evaluation.

5.1.4 Engineering Evaluation/Cost Analysis

Because this removal action is considered time-critical, only one alternative, excavation and disposal, rather than any sort of in-situ treatment of these materials was considered. A Decision Document, which contains a brief summary of the site history, the results of previous investigations, and cost analysis, was prepared and is included as **Appendix A** of this report.

5.1.5 Off-Site Disposal Policy

It is anticipated that soil generated during the removal action at both sites may be classified as hazardous waste. These soils will be treated off site. Once treatment of necessary soils has occurred, these contaminated soils would be transported to an off-site, Subtitle D, solid waste industrial landfill for disposal. All non-hazardous waste (construction debris, soils) will be disposed in an approved non-hazardous waste landfill (if necessary).

5.1.6 Post-Removal Site Control Activities

There will be no post-removal site control activities.

5.1.7 QA/QC Plan

The remedial contractor will be required to develop a Quality Assurance/Quality Control (QA/QC) Plan that will be submitted for approval. This plan will address both detailed and broad QA/QC issues. Detailed requirements include sampling and analytical protocols. The broader aspects will address the procedures necessary to ensure that the excavation, sizing, stabilization procedures, and stabilization procedures are conducted for accordance with the specifications.

Additional QA/QC will be provided by a 3rd party oversite contractor. The oversight contractor will be responsible for monitoring the removal action activities, including taking confirmation soil samples. The QA/QC Plan will be provided as part of the Removal Action Work Plan.

5.2 ARARS STANDARDS, CRITERIA AND GUIDELINES (SCGS)

Pursuant to Section 300.415(i) of the NCP, the removal action for the site "shall, to the extent practicable considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal environmental or state environmental or facility siting laws." Applicable or relevant and appropriate requirements (ARARs) are used to identify removal action objectives, formulate removal action alternatives, govern the implementation and operation of a selected removal action, and evaluate the appropriate extent of site cleanup.

In Title 40 Code of Federal Regulations (CFR) Part 300.5, EPA defines applicable requirements as those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. Relevant and appropriate requirements are defined as those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.

Any standard, requirement, criterion, or limitation under any federal environmental or state environmental or facility siting law may be either applicable or relevant and appropriate to a specific action. The only state laws that may become ARARs are those promulgated such that they are legally enforceable and generally applicable and equivalent to or more stringent than federal laws. A determination of applicability is made for the requirements as a whole, whereas a determination of relevance and appropriateness may be made for only specific portions of a requirement. An action must

comply with relevant and appropriate requirements to the same extent as an applicable requirement with regard to substantive conditions, but need not comply with the administrative conditions of the requirement.

Three categories of ARARs have been analyzed: chemical-specific, location-specific, and action-specific. Chemical-specific ARARs address certain chemicals or a class of chemicals and relate to the level of contamination allowed for a specific pollutant in various environmental media (water, soil, air). Location-specific ARARs are based on the specific setting and nature of the site. Action-specific ARARs relate to specific actions proposed for implementation at a site.

5.2.1 Chemical-Specific ARARs

Chemical-specific ARARs are usually health or risk-based standards limiting the concentration of a chemical found in or discharged to the environment. They govern the extent of site remediation by providing actual cleanup levels, or the basis for calculating such levels for specific media. These requirements may apply to air emissions during the removal action. A number of federal and state regulations may be used for this site. These include the following:

Federal:

- Resource Conservation and Recovery Act (RCRA), Groundwater Protection Standards and Maximum Concentration Limits (40 CFR 264, Subpart F)
- Clean Water Act, Water Quality Criteria (Section 304) (May 1, 1987 - Gold Book)
- Safe Drinking Water Act, Maximum Contaminant Levels (MCLs) (40 CFR 141.11-.16)

New York State:

- New York State Codes, Rules and Regulations (NYCRR) Title 6, Chapter X
- New York Groundwater Quality Standards (6 NYCRR 703)
- New York Safe Drinking Water Act, Maximum Contaminant Levels (MCLs) (10 NYCRR 5)
- New York Surface Water Quality Standards (6 NYCRR 702)
- New York State Raw Water Quality Standards (10 NYCRR 170.4)
- New York RCRA Groundwater Protection Standards (6 NYCRR 373-2.6 (e))
- New York State Department of Environmental Conservation, Division of Water, Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values, November 15, 1990
- New York State Department of Environment Conservation, Division of Fish and Wildlife, Division of Marine Resources, Technical Guidance for Screening Contaminated Sediments, July 1994
- Surface Water and Groundwater Classifications and Standards (6 NYCRR 700-705)
- Declaration of Policy, Article 1 Environmental Conservation Law (ECL)

- General Functions, Powers, Duties and Jurisdiction, Article 3 Environmental Conservation Law, Department of Environmental Conservation
- ECL, Protection of Water, Article 15, Title 5
- Use and Protection of Waters, (6 NYCRR, Part 608)

Water Quality

There are a number of water quality standards which are potential ARARs for this removal action.

- 40 CFR Part 131 (applicable): Water Quality Standards. This part implements Section 101 of the Clean Water Act (CWA), which specifies the national goals of eliminating the discharge of pollutants, prohibiting the discharge of toxic pollutants in toxic amounts, and implementing programs for control of non-point sources.
- 40 CFR Part 131.12 (applicable): Antidegradation Policy. Establishes standards to prevent a body of water which has an existing high standard from degrading to a lower standard.
- 40 CFR Part 141 (applicable): National Primary Drinking Water Regulations. This part establishes primary drinking water regulators pursuant to Section 1412 of the Public Health Service Act as amended by the Safe Drinking Water Act.
- 40 CFR Part 141.11 (applicable): Maximum Inorganic Chemical Contaminant Levels. This section establishes maximum contaminant levels (MCLs) for inorganic chemicals.
- 40 CFR Part 141.12 (applicable): Maximum Organic Chemical Contaminant Levels. This section establishes MCLs for organic chemicals.
- 40 CFR Part 264 Subpart F (relevant and appropriate): Releases from Solid Waste Management Units. Standards for protection of groundwater are established under this citation.
- 40 CFR Part 403 (applicable): Pretreatment Standards for the Discharge of Treated Site Water to a Publicly Owned Treatment Works (POTW). This part establishes pretreatment standards for the discharge of wastewater to POTWs.
- 6 NYCRR Chapter X (relevant and appropriate): This chapter establishes the requirements of the State Pollutant Discharge Elimination System.
- 6 NYCRR subparts 701 and 702 (applicable): These subparts establish surface water standards for protection of drinking water and aquatic life.
- 6 NYCRR subpart 703 (applicable): This subpart establishes groundwater standards specified to protect groundwater for drinking water purposes.
- 6 NYCRR subpart 375 (relevant and appropriate): This subpart contains the New York State rules for inactive hazardous waste disposal sites.
- 6 NYCRR subpart 373-2.6 and 373-2.11 (applicable): This regulation requires groundwater monitoring for releases from solid waste management units.
- 6 NYCRR subpart 373-2 (relevant and appropriate): This regulation establishes postclosure care and groundwater monitoring requirements.

- 10 NYCRR Part 5 (relevant and appropriate): This regulation establishes criteria for drinking water supplies. Specifically, NYSDOH has established MCLs for water.
- NYSDEC TOGS 1.1.1 (relevant and appropriate): This document compiles water quality standards and guidance values for use in NYSDEC programs.

Soil Quality

- 40 CFR Part 268 (relevant and appropriate): Land Disposal Restrictions. Restricts the disposal of listed and characteristic hazardous waste that contains hazardous constituents exceeding designated levels. Applies when the waste is "placed" on the land.
- 40 CFR subpart S parts 264.552 and 264.533 (relevant and applicable): Corrective Action for Solid Waste Management Action for Solid Waste Management Units. Allows for the consolidation of wastes, or the replacement of remediated wastes in land-based units without invoking the RCRA land-disposal requirement of 40 CFR 268.
- 6 NYCRR subpart 375 (relevant and appropriate): This subpart contains the New York State rules for inactive hazardous waste disposal sites. Specifically, cleanup levels for hazardous constituents in soil have been proposed by the State of New York through Technical and Administrative Guidance Manuals (TAGMs). The NYSDEC TAGM manual for cleanup levels for soils is #HWR-92-4046 and has been used as guidance for this remedial action. The final management of these materials will be the focus of the ultimate Record of Decision (ROD) and are not the focus of this action. TAGM 4046 is a "To Be Considered" guideline.

  Site Cleanup Goals (SCG) for semivolatile organic compounds, pesticides, PCBs, and metals have been determined as the maximum concentration to be protective of human health from ingestion of soils under the Industrial Use Scenario.

5.2.2 Location-Specific ARARs

Location-specific ARARs govern natural site features such as wetlands, floodplains, and sensitive ecosystems, and manmade features such as landfills, disposal areas, and places of historic or archaeological significance. These ARARs generally restrict the concentration of hazardous substances or the conduct of activities based solely on the particular characteristics or location of the site. Federal and State regulations which may apply to this removal action include the following:

Federal:

- Executive Orders on Floodplain Management and Wetlands Protection (CERCLA Floodplain and Wetlands Assessments) #11988 and 11990
- National Historic Preservation Act (16 USC 470) Section 106 *et seq.* (36 CFR 800) (Requires Federal agencies to identify all affected properties on or eligible for the National

Register of Historic Places and consult with the State Historic Preservation Office and Advisory Council on Historic Presentation)

- RCRA Location Requirements for 100-year Floodplains (40 CFR 264.18(b)).
- Clean Water Act, Section 404, and Rivers and Harbor Act, Section 10, Requirements for Dredge and Fill Activities (40 CFR 230)
- Wetlands Construction and Management Procedures (40 CFR 6, Appendix A).
- USDA/SCS - Farmland Protection Policy (7CFR 658)
- USDA Secretary's memorandum No. 1827, Supplement 1, Statement of Prime Farmland, and Forest Land - June 21, 1976.
- EPA Statement of Policy to Protect Environmentally Significant Agricultural Lands - September 8, 1978.
- Farmland Protection Policy Act of 1981 (FPPA)(7 USC 4201 et se q).
- Endangered Species Act (16 USC 1531).
- Fish and Wildlife Coordination Act (16 USC 661)
- Wilderness Act (16 USC 1131).

New York State:

- New York State Freshwater Wetlands Law (ECL Article 24, 71 in Title 23).
- New York State Freshwater Wetlands Permit Requirements and Classification (6 NYCRR 663 and 664).
- New York State Floodplain Management Act and Regulations (ECL Article 36 and 6 NYCRR 500).
- Endangered and Threatened Species of Fish and Wildlife Requirements (6 NYCRR 182).
- New York State Flood Hazard Area Construction Standards.

Endangered Species

- 40 CFR Part 257.3-2 (relevant and appropriate): Facilities or practices shall not cause or contribute to the taking of any endangered or threatened species.

Location Standards

- 40 CFR Part 264.18 (relevant and appropriate): Location Standards for Hazardous Waste Facilities. The general requirements for locating a hazardous treatment, storage, or disposal facility are found in this section. They include provisions for seismic considerations and floodplains.
- 40 CFR Part 241.202 (applicable): Site selection shall be consistent with public health and welfare. It shall also be consistent with land-use plans and air and water quality standards.

Antiquities

- 16 USC Part 469a-1 (applicable): The Archaeological and Historic Preservation Act require that action be taken to recover and preserve artifacts.
- 36 CFR Part 800 (relevant and appropriate): Action must be taken to preserve historic properties. Actions must be planned to minimize harm to national historic landmarks.

5.2.3 Action-Specific ARARs

Action-specific ARARs are usually technology- or activity-based- limitations that control actions at hazardous waste sites. Action-specific ARARs generally set performance or design standards, controls, or restrictions on particular types of activities. To develop technically feasible alternatives, applicable performance or design standards must be considered during the development of all removal alternatives. Action-specific ARARs are applicable to this site. The action-specific ARARs to be used will be determined by the Army based upon the technology chosen. Federal and State regulations which may apply include the following:

Federal:

- RCRA Subtitle C Hazardous Waste Treatment Facility Design and Operating Standards for Treatment and Disposal systems, (i.e., landfill, incinerators, tanks, containers, etc.) (40 CFR 264 and 265); Minimum Technology Requirements.
- RCRA, Subtitle C, Closure and Post-Closure Standards (40 CFR 264, Subpart G).
- RCRA Groundwater Monitoring and Protection Standards (40 CFR, Subpart F).
- RCRA Generator Requirements for Manifesting Waste for Offsite Disposal (40 CFR 262).
- RCRA Transporter Requirements for Off-Site Disposal (40 CFR 263).
- RCRA, Subtitle D, Non-Hazardous Waste Management Standards (40 CFR 257).
- Safe Drinking Water Act, Underground Injection Control Requirements (40 CFR 144 and 146).
- RCRA Land Disposal Restrictions (40 CFR 268) (On and off-site disposal of excavated soil).
- Clean Water Act, - NPDES Permitting Requirements for Discharge of Treatment System Effluent (40 CFR 122-125).
- Effluent Guidelines for Organic Chemicals, Plastics and Resins (Discharge Limits) (40 CFR 414).
- Clean Water Act Discharge to Publically - Owned Treatment Works (POTW) (40 CFR 403).
- DOT Rules for Hazardous Materials Transport (49 CFR 107, 171.1-171.500).
- Occupational Safety and Health Standards for Hazardous Responses and General Construction Activities (29 CFR 1904, 1910, 1926).
- SARA (42 USC 9601)
- OSHA (29 CFR 1910.120)
- Clean Air Act (40 CFR 50.61)

New York State:

- New York State Pollution Discharge Elimination System (SPDES) Requirements (Standards for Stormwater Runoff, Surfacewater, and Groundwater discharges (6 NYCRR 750-757).
- New York State RCRA Standards for the Design and Operation of Hazardous Waste Treatment Facilities (i.e., landfills, incinerators, tanks, containers, etc.); Minimum Technology Requirements (6 NYCRR 370-373).
- New York State RCRA Closure and Post-Closure Standards (Clean Closure and Waste-in-Place Closures) (6 NYCRR 372).
- New York State Solid Waste Management Requirements and Siting Restrictions (6 NYCRR 360-361), and revisions/enhancements effective October 9, 1993.
- New York State RCRA Generator and Transporter Requirements for Manifesting Waste for Off-Site Disposal (6 NYCRR 364 and 372).

Solid Waste Management

- 40 part CFR 241.100 (relevant and appropriate): Guidelines for the Land Disposal of Solid Wastes. These regulations are geared specifically toward sanitary landfills; however, they are applicable to all forms of land disposal and land-based treatment.
- 40 CFR Part 241.204 (applicable): Water Quality. The location, design, construction, and operation of land disposal facilities shall protect water quality.
- 40 CFR Part 241.205 (applicable): The design, construction, and operation of land disposal facilities shall conform to air quality and source control standards.
- 40 CFR Part 257.1 (relevant and appropriate): This part establishes the scope and purpose of criteria for use in assessing the possibility of adverse effects on health or the environment from solid waste disposal operations.
- 40 CFR Part 257.3 (relevant and appropriate): This part establishes criteria to assess the impact of disposal operations, including such considerations as floodplains, endangered species, air, surface water, groundwater, and land used for food-chain crops.
- 40 CFR Part 243.202 (relevant and appropriate): This part specifies the requirements for transporting solid waste, including provisions to prevent spillage.

Hazardous Waste Management

- 40 CFR 262.11 (applicable): This regulation requires a person who generates a solid waste to determine if that waste is a hazardous waste.
- 40 CFR Part 263.30 and 263.31 (relevant and appropriate): These regulations set forth the standards and requirements for action in the event of a release during transport.
- 40 CFR Part 264 (relevant and appropriate): This part establishes hazardous waste management facility standards and requirements. The onsite disposal areas used for stockpiling, mixing, and extended bioremediation of wastes must meet the substantive

requirements of 40 CFR subparts B (general facility standards), E (manifest system, record keeping, and reporting), F (releases from solid waste management units), G (closure and postclosure), L (waste piles), M (land treatment), and N (landfills). These regulations are applicable for hazardous wastes and are also relevant and appropriate for certain wastes which are not hazardous wastes.

- 40 CFR Part 270 subpart C (relevant and appropriate): This regulation establishes permit conditions, including monitoring, recordkeeping requirements, operation and maintenance requirements, sampling, and monitoring requirements. Although no permit is required for activities conducted entirely on site, the substantive requirements of these provisions are relevant and appropriate.
- 40 CFR Part 270 subpart B (relevant and appropriate): This part defines the required contents of a hazardous waste management permit application. The substantive requirements of these provisions are relevant and appropriate.

Occupational Health and Safety Administration

- 29 CFR Part 1910.95 (applicable): Occupational Noise. No worker shall be exposed to noise levels in excess of the levels specified in this regulation.
- 29 CFR Part 1910.1000 (applicable): Occupational Air Contaminants. The purpose of this rule is to establish maximum threshold limit values for air contaminants to which it is believed nearly all workers may be repeatedly exposed day after day without adverse health effects. No worker shall be exposed to air contaminant levels in excess of the threshold limit values listed in the regulation.
- 29 CFR Part 1910.1200 (applicable): This part requires that each employer compile and maintain a workplace chemical list which contains the chemical name of each hazardous chemical in the workplace, cross-referenced to generally used common names. This list must indicate the work area in which each such hazardous chemical is stored or used. Employees must be provided with information and training regarding the hazardous chemicals.
- 29 CFR Part 120 (applicable): This part applies to employers and employees engaged in sites that have been designated for cleanup, and other work related to RCRA and CERCLA. The regulation establishes proceedings for site characterization and control, and requirements for employee training and medical monitoring.

Transportation of Hazardous Waste

- 49 CFR Part 171 (applicable): General information, regulations, and definitions. This regulation prescribes the requirements of the DOT governing the transportation of hazardous material.
- 40 CFR Part 172 (applicable): Hazardous materials table, special provisions, Hazardous Materials Communications, Emergency Response Information, and Training requirements. This regulation lists and classifies those materials which the DOT has designated to be

hazardous materials for the purpose of transportation and prescribes the requirements for shipping papers, package marking, labeling and transport vehicle placarding applicable to the shipment and transportation of those hazardous materials.

- 49 CFR Part 177 (applicable): Carriage by Public Highway. This regulation prescribes requirements that are applicable to the acceptance and transportation of hazardous materials by private, common, or contract carriers by motor vehicle.
- 6 NYCRR Chapter 364 (applicable): New York Waste Transport Permit Regulation. This regulation governs the collection, transport, and delivery of regulated waste originating on terminating within the state of New York.
- EPA/DOT Guidance Manual on hazardous waste transportation (TBC).

5.3 CLEAN-UP GOALS

5.3.1 Clean-Up Goals for Soil

The goal of the removal action is to comply with NYSDEC's Technical and Administrative Guidance Memorandum #4046 – *Determination of Soil Cleanup Objectives and Cleanup Levels* (January 24, 1994). Verification sampling will be conducted after the excavation of debris and soils. The soil samples will be analyzed for VOCs, SVOCs, pesticides, and metals and the results compared to the soil cleanup goals presented in Tables 1, 2, 3, and 4 of TAGM 4046.

5.3.2 Discharge Criteria for Groundwater

Discharge criteria for constituents in groundwater will be adopted based on values as reported in the Division of Water Technical and Operational Guidance Series (TOGS 1.1.1 and 1.1.2) for Ambient Water Quality Standards And Guidance Values And Groundwater Effluent Limitations. This document includes the groundwater standards (6 NYCRR 703.5) and regulatory effluent limitations (6 NYCRR 703.6).

5.4 PROJECT SCHEDULE

The total duration for the removal action after regulatory approval is 3 months. Public notice for time-critical removal is required within 60 days of the action start date.

5.5 ESTIMATED COSTS

The estimated total project cost of $4.0 million is based upon a preliminary estimate developed by Parsons using the TRACES/MCACES for Windows v1.2 software (**Table 5.5-1**).

Table 5.1-1
Cost Estimate for Excavation and Off-site Disposal
Action Memorandum - SEADs-59 and 71
Seneca Army Depot Activity

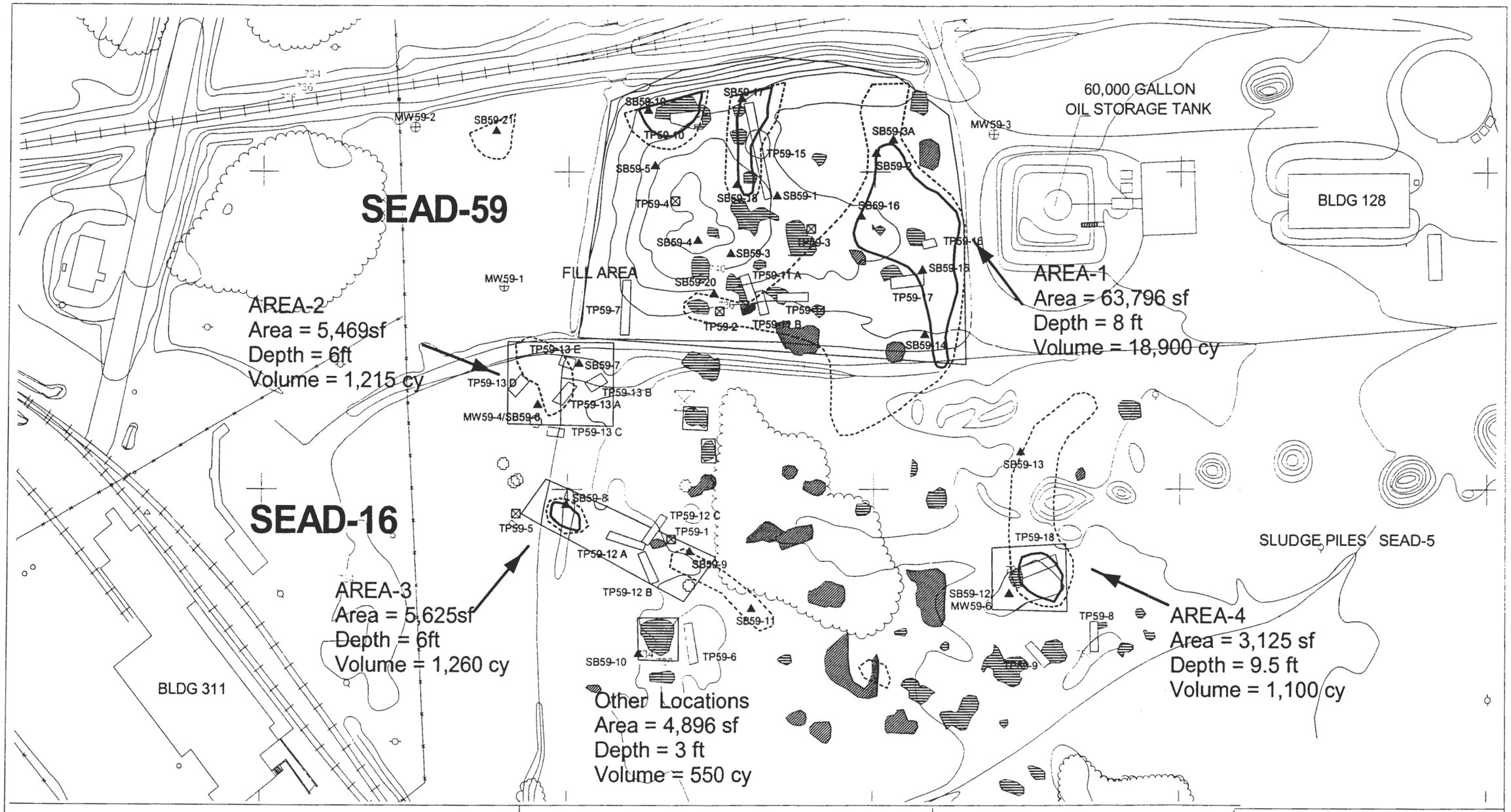
SEAD-59	Recommended Removal Action Excavation/Off-site Disposal
Cost to Prime	$2,609,953
Cost to Owner	$3,603,130
Annual O&M Costs	$2,000
Annual Post Remediation Monitoring Costs	$0
Present Worth O&M and Monitoring Costs (5 years)	$8,904
Total Evaluated Price	$3,612,034

SEAD-71	Recommended Removal Action Excavation/Off-site Disposal
Cost to Prime	$340,960
Cost to Owner	$456,170
Annual O&M Costs	$2,000
Annual Post Remediation Monitoring Costs	$0
Present Worth O&M and Monitoring Costs (5 years)	$8,904
Total Evaluated Price	$465,074

SEADs-59 and 71	Recommended Removal Action Excavation/Off-site Disposal
Cost to Prime	$2,950,913
Cost to Owner	$4,059,300
Annual O&M Costs	$4,000
Annual Post Remediation Monitoring Costs	$0
Present Worth O&M and Monitoring Costs (5 years)	$17,807
Total Evaluated Price	$4,077,107

NOTES:

1. Cost to Prime (Contractor) is the sum of the direct costs plus any sales tax, subcontractor markups, and adjust pricing that have been applied in the project.
2. Cost to Owner is the sum of the Cost to Prime plus prime contractor Indirect Cost. Also known as the bid amount or construction contract cost.
3. Annual Costs are costs that will occur yearly due to activities such as maintenance or monitoring.
4. Post Remediation Monitoring consists of semi-annual groundwater monitoring.
5. Present Worth Cost is based on a 4% interest rate over the number of years specified above.
6. Total Evaluated Price is the sum of the Project Cost and Present Worth Cost.



Note: Areas described as "others" in the text are the Unknown Surface Debris Areas

o:\seneca\sead59271\sead59.apr

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

ACTION MEMORANDIUM-SEADs-59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 5-1

SOIL AREAS TO BE REMEDIATED

JOB NUMBER	DATE	SHEET No.
734516-01001	FEBRUARY 2002	1 OF 1

6 EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If this removal action is delayed or not taken, several changes in site conditions would occur:

- Some lateral and vertical migration of the contaminants can be expected. The migration could occur through several mechanisms, including transport of water-soluble constituents through infiltration or runoff.
- The contamination in the soil is likely to migrate slowly over time. Contaminants that are near or at the water table may be transported via leaching and groundwater flow.

7 OUTSTANDING POLICY ISSUES

This section is not applicable to this removal action since the lead agency for this site is the Army, and not the EPA, NYSDEC, or New York State Department of Health (NYSDOH).

8 ENFORCEMENT

This section is not applicable to this removal action since the lead agency, the Army is the Principle Responsible Party for this site, and is taking responsibility for the removal action.

9 RECOMMENDATION

The time-critical removal action recommended for SEADs 59 and 71 is excavation of the debris and visually impacted soils, off-site disposal, and backfilling of soils found not to pose a continuing risk to human health or groundwater quality. The excavation limits will be determined based on the visual extent of contamination. Excavation will continue until all debris and visually impacted soils have been removed. Cleanup verification sampling of the soil will be conducted after the excavation of debris and soils. The soil samples will be analyzed and the results compared to the soil cleanup goals presented in Tables 1, 2, 3, and 4 of NYSDEC's TAGM 4046. The soil data will also be used to complete the RI/FS process and in the evaluation of risk at the sites.

This Action Memorandum represents the selected removal action for SEAD-59 and SEAD-71 at the Seneca Army Depot Activity located in Romulus, New York. This proposal was developed in accordance with CERCLA as amended, and consistent with the NCP. This decision is based on the administrative record for the site.

FINAL
DECISION DOCUMENT
TIME - CRITICAL REMOVAL ACTIONS AT
SEAD-59 and SEAD-71
SENECA ARMY DEPOT ACTIVITY

Prepared for:

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

and

US Army Corp of Engineers
Huntsville Center

Prepared by:

PARSONS
30 Dan Road
Canton, Massachusetts 02021

Contract No. DACA87-95-D-0031
Delivery Order 17
734516

Revised - June 2002

TABLE OF CONTENTS

Title **Page**

TABLES

FIGURES

APPENDICES

LIST OF ACRONYMS

AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
AWQC	Ambient Water Quality Criteria
B	Boring
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
CY	Cubic yards
DOD	Department of Defense
DOT	Department of Transportation
EE/CA	Engineering Evaluation/Cost Analysis
EM	Electromagnetic
EPA	Environmental Protection Agency
ES	Engineering-Science, Inc.
ESI	Expanded Site Inspection
ft	Feet
ft/sec	Feet per second
FPPA	Farmland Protection Policy
FS	Feasibility Study
GC	Gas chromatograph
GPR	Ground penetrating radar
IAG	Interagency Agreement
IRP	Installation Restoration Program
m	meter
MCACES	Micro Computer Aided Cost Engineering System
MCL	Maximum Contaminant Level

LIST OF ACRONYMS

mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MSL	Mean sea level
MW	Monitoring Well
NAVA	North American Vertical Datum
NBS	National Bureau of Standards
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOAA	National Oceanic Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operations and maintenance
OSHA	Occupational Safety and Health Administration
OV	Specific Ovid Quadrangle
OVM	Organic Vapor Meter
PAH	Polynuclear aromatic hydrocarbons
PCB	Polychlorinated biphenyl
PID	Photoionization detector
PM	Particulate matter
ppm	parts per million
ppmv	Part Per Million Per Volume
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SB	Soil Boring
SCG	Standards, Criteria, and Guidelines
SEAD	Seneca Army Depot (*archaic*)
SEDA	Seneca Army Depot

LIST OF ACRONYMS

Sec	Seconds
SOP	Standard Operating Procedures
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TAGM	New York State Technical And Administrative Guidance Memorandum
TBC	To Be Considered
TP	Test Pit
TPH	Total Petroleum Hydrocarbons
TRACES	Tri-Service Automated Cost Engineering System
ug/g	Micrograms per gram
ug/kg	Micrograms per kilogram
UCL	Upper Confidence Limit
USACE	United States Army Corps of Engineers
USAEHA	United States Army Environmental Hygiene Agency
USATHAMA	United States Army Toxic and Hazardous Materials Agency
USCS	Unified Soil Classification System
USGS	U.S. Geologic Survey
VOA	Volatile organic analyte
VOC	Volatile Organic Compound

1 INTRODUCTION

1.1 EXECUTIVE SUMMARY

An Expanded Site Inspection (ESI) and Phase I Remedial Investigation (RI) have been performed at SEAD-59, the Fill Area West of Building 135, and at SEAD-71, the Alleged Paint Disposal Area, at the Seneca Army Depot Activity (SEDA) in Romulus, NY. This Decision Document presents the proposed plan for conducting a time-critical removal action at SEADs-59 and 71 to eliminate debris and visually contaminated soil that represent a potential threat to the environment and neighboring populations. This removal action is considered time-critical because of the increased potential for exposure of workers and other re-users now present at the Depot. The presence of drums and other containers and the uncertainty of their contents is also justification for a removal action at both sites.

Since the historic military mission of the Depot has been terminated, the Depot has officially been closed by the Department of the Defense (DoD) and the US Army. In accordance with provisions of the DoD's Base Realignment and Closure (BRAC) process, the land and the facilities of the former Depot have been surveyed and evaluated, and prospective beneficial uses of the facility have been identified. Portions of the Depot are now being released to the public and private sectors for reuse under the BRAC process. As portions of the former Depot are released for other beneficial uses, increased access is afforded to all portions of the former Depot, resulting in an increased potential for exposure to any residual chemicals that are present at former solid waste management units (SWMUs) remaining at the depot pending clean-up. Therefore, the goal of the proposed time-critical removal action at SEADs-59 and 71 is to remove debris located at geophysical anomalies and visually stained soil in order to remove or at least lessen the magnitude of the potential threat that it represents to surrounding populations and the environment.

The test pitting investigations at SEADs-59 and 71 have confirmed the presence of 55-gallon drums and other containers at both sites. The presence of such buried objects is of concern since the nature of the contents is unknown. The uncertainty of the contents of the buried items that may remain in the disposal area and at geophysical anomalies and the contamination in soils and groundwater are considered justification for performing removal actions at SEADs-59 and 71. While removal of drums, paint cans, and other containers is the focus of the planned removal actions for both sites, the potential for contamination to be present in the soils and groundwater that surround these items will also be addressed by this action.

This Decision Document presents the selected removal action that was developed in accordance with the Federal Facility Agreement and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Contingency Plan (NCP). Based upon the

results of these investigations, it is recommended that the soil and debris at both sites be selectively removed, contained, and disposed at an off-site, permitted waste landfill. Groundwater will be pumped out of the excavation area and treated as part of the removal action. This removal action is intended to remove the source of potential risks to human health, the environment, and groundwater quality.

For SEAD-59, it is recommended that 23,085 cubic yards of soil and debris be removed from the fill area and from selected areas located south of the access road. For SEAD-71, it is recommended that 861 cubic yards of debris and soils be removed from the site. The excavation limits will be determined based on the visual extent of contamination. Excavation will continue until all debris and visually impacted soils have been removed. Cleanup verification sampling of soil will be conducted at a frequency of one sample every 2500 square feet. The excavated materials exceeding the soil cleanup goals will be transported to, and disposed at an off-site, state-approved facility. The excavations will be refilled with only those soils that pose no risk to human health or groundwater quality. The soil samples from the verification sampling will be analyzed and the results will be compared to the soil cleanup goals presented in Tables 1, 2, 3, and 4 of New York State Department of Environmental Conservation's (NYSDEC's) Technical and Administrative Guidance Memorandum (TAGM) #4046. The resulting soil data will also be used to complete the RI/FS process and in subsequent evaluations of risk remaining at the sites.

1.2 OBJECTIVE OF THIS DOCUMENT

Since its inception in 1941, the mission of the SEDA has been the management of various military items, including munitions. Management of these items required areas and facilities for storage, quality assurance testing, range testing, munitions washout, deactivation furnaces and other support areas such as ordnance detonation. In addition, administrative and plant operational facilities were established in support of the Depot mission. Waste management was integrated with the SEDA management mission.

Management of waste materials produced from these operations has been in accordance with the requirements of the Resource Conservation Recovery Act (RCRA). In partial response to its obligations under RCRA, the Depot identified 72 Solid Waste Management Units (SWMUs) that were located at the Depot. In 1990, the Depot was included in the federal section of the National Priority List (NPL). As a federal facility listed on the NPL, provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA - 42 USC § 9620e) required that the US Army (Army) investigate the sites known to exist at the Depot and complete all necessary remedial investigations and actions at the facility. In accordance with this stipulation, the US Army, the US Environmental Protection Agency (EPA), and the NYSDEC negotiated and finalized a Federal Facility Agreement (FFA) or Inter-Agency Agreement (IAG) that outlines the administrative process and the procedures that will be followed to comply with CERCLA.

The US Army identified all of the SWMUs at the Depot as those sites that would potentially need to be investigated and provided this list to EPA and NYSDEC. Following the initial identification of sites, the Army ranked each site for investigation based upon that site's projected risk. The goal of the initial categorization of SWMUs was to prioritize the pending investigations and remedial actions so that those sites with the greatest risk would be addressed first. The assigned rankings divided the 72 identified SWMUs into 5 groups (i.e., No Further Action, High Priority, Moderate Priority, Moderately Low Priority, and Low Priority SWMUs). Subsequent to the Army's proposal of the priority rankings, all parties met to review and discuss the available information for the identified SWMUs, and to finalize priority-ranking assignments. The consensus of all parties was to mount necessary investigations and possible actions at those SWMUs that are considered as "Areas of concern" (AOC) and identify the SWMUs for which no investigations would be required ("No Action" SWMUs).

In 1995, the SEDA was designated for closure under the DoD's BRAC process. With SEDA's inclusion on the BRAC list, the Army's emphasis expanded from expediting necessary investigations and remedial actions at the High and Moderately High Priority sites. It was changed to include the release and reuse of non-affected portions of the Depot to the surrounding community for non-military (i.e., industrial, municipal and residential) purposes. Thus, BRAC has required the Army to finalize decisions and actions for SWMUs, regardless of ranking, so that these sites may be released for non-military use.

Parsons Engineering Science, Inc. (Parsons) has been retained by the U.S. Army Corps of Engineers (USACOE) to conduct Expanded Site Inspections (ESI) at SWMUs that have been designated as AOC within the SEDA. The work has been performed according to the requirements of the NYSDEC, the EPA, Region II, and the IAG.

This document focuses on two of the SWMUs, the Fill Area West of Building 135 (SEAD-59) and the Alleged Paint Disposal Area (SEAD-71). SEAD-59 was classified as Moderately Low Priority and SEAD-71 was classified as Low Priority. SEADs-59 and 71 were evaluated in this document in order to present the selected time-critical removal action that was developed in accordance with the FFA, CERCLA as amended by the Superfund Amendment and Reauthorization Act of 1986 (SARA), and the NCP. The data used for the evaluation were obtained through sampling performed during an Expanded Site Inspection (ESI) and a Phase I Remedial Investigation (RI). Based upon the results of the ESI and Phase I RI, it is recommended that the soils and debris at both sites be selectively removed, contained, and disposed at an off-site, permitted waste landfill. This removal action is intended to remove the source of potential risks to human health, the environment, and groundwater quality.

The NCP states that a removal action may be conducted at a site when there is a potential threat to public health, public welfare, or the environment. An appropriate removal action is undertaken to abate, minimize, stabilize, mitigate, or eliminate the release or the threat of release at a site. Section 300.415(b)(2) of the NCP outlines factors to be considered when determining the appropriateness of a removal action, such as high levels of hazardous substances, pollutants, or contaminants in soils, largely at or near the surface, that may migrate; or the threat of fire or explosion.

Once it is determined that a removal action is appropriate, the removal is designated an emergency, time-critical, or non-time-critical removal. Emergency actions are those situations in which response actions must begin within hours or days after the completion of the site evaluation. Time-critical removals are those in which, based on a site evaluation, it is determined that less than 6 months remains before response actions must begin. Non-time-critical removals are those in which it is determined that more than 6 months may pass before response actions must begin. Since less than 6 months remains before this removal action begins, this removal action is considered a time-critical removal action.

This removal action is considered time-critical because the historic military mission of the Depot has been terminated and the Depot has officially been closed by the DoD and the Army. In accordance with provisions of the DoD's BRAC process, the land and the facilities of the former Depot have been surveyed and evaluated, and prospective beneficial uses of the facility have been identified. Portions of the Depot are now being released to the public and private sectors for reuse under the BRAC process. As portions of the former Depot are released for other beneficial uses, increased access is afforded to all portions of the former depot, resulting in an increased potential for exposure to any residual chemicals that are present at former SWMUs remaining at the Depot pending clean-up. Furthermore, although a security fence surrounds the former Depot, there are no longer 24-hour security guards at the site. Access to the sites is now unrestricted. Therefore, the goal of the proposed time-critical removal action at SEADs-59 and 71 is to remove debris and visually stained soil in order to remove or at least lessen the magnitude of the potential threat that it represents to surrounding populations and the environment.

The goal of this document with respect to SEADs-59 and 71 is to:

1. Assemble and summarize all currently known information about the sites;
2. Compare the available data and information with applicable guidance levels and standards;
3. Provide a recommendation and a justification to substantiate the proposed time-critical removal for the sites.

Additional information clarifying and substantiating recommendations pertinent to SEADs-59 and 71 is provided in the following sections of this Report.

The goal of the removal action is to comply with NYSDEC's Technical and Administrative Guidance Memorandum #4046 – *Determination of Soil Cleanup Objectives and Cleanup Levels* (January 24, 1994) (TAGM 4046). Verification sampling will be conducted to demonstrate the acceptability of the surrounding soil quality after the excavation of debris and soils. The soil samples will be analyzed and the results compared to the soil cleanup goals presented in Tables 1, 2, 3, and 4 of TAGM 4046.

1.3 HISTORIC OVERVIEW

The SEDA lies between Cayuga and Seneca Lakes in New York's Finger Lakes Region, near the communities of Romulus and Varick, NY (**Figure 1-1**). SEDA encompasses approximately 10,600 acres of land and contains more than 900 buildings that provide more than 4.4 million square feet of space, including approximately 1.3 million square feet of storage space. SEDA was originally developed and opened in 1941. The Depot has been subject to closure and its operation ceased in September 2000. The mission of the facility throughout its history has included receipt, storage, distribution, maintenance, and demilitarization of conventional ammunition, explosives and special weapons.

Activities conducted at SEDA used chemical materials, and generated wastes that contain hazardous materials. The generation, storage, treatment, shipment, and disposal of hazardous wastes were regulated under RCRA [42 USC §§ 6901 – 6991, as amended by the Hazardous and Solid Waste Amendments of 1984, Public Law 98-616]. Activities conducted at SEDA were approved for Part A, interim status in 1980. SEDA submitted a federal Part B permit application for activities and operations in 1986, and a NYSDEC Part 373 permit application for hazardous waste management facilities in 1991.

Since 1978, the potential environmental impacts of operations and activities conducted at SEDA have been subject to review by the Army, the NYSDEC, and the EPA. Initially, environmental investigations were conducted under the DoD's Installation Restoration Program (IRP) but subsequently these programs were performed under CERCLA [42 U.S.C. §§ 9601 – 9675, as amended by the Superfund Amendments and Reauthorization Act of 1986, Public Law 99 – 499] and RCRA. As a result of these investigations, evidence of hazardous chemical and radioactive constituents and compounds used, stored, and demilitarized at the Depot was found in samples of groundwater, soil, sediment and surface water collected and characterized. On July 14, 1989, the EPA proposed SEDA for inclusion on the NPL based on a hazard ranking score of 37.3. Supporting its recommendation for

listing, the EPA stated "the Army identified a number of potentially contaminated areas, including an unlined 13-acre landfill in the west-central portion of the depot, where solid waste and incinerator ash were disposed of intermittently for 30 years during 1941-79; two incinerator pits adjacent to the landfill, where refuse was burned at least once a week during 1941-74; a 90-acre open burning/detonation area in the northwest portion of the depot, where explosives and related wastes have been burned and detonated during the past 30 years; and the APE-1236 Deactivation Furnace in the east-central portion of the depot, where small arms are destroyed." The US EPA's recommendation was approved on August 30, 1990, and SEDA was listed in Group 14 on the Federal Section of the NPL.

1.4 BASE REALIGNMENT AND CLOSURE (BRAC)

The major portion of SEDA was approved for the 1995 BRAC list in October of 1995. The mission closure date for the facility was scheduled for September 30, 1999, with an installation closure date of September 30, 2000. A small enclave at SEDA has remained open after 2000, and is being used to store hazardous materials and ores.

Woodward-Clyde Federal Services (Woodward-Clyde) was retained to prepare an Environmental Baseline Survey (EBS) for SEDA. Under this process, Woodward-Clyde was charged with the initial classification of discrete areas of the Depot into one of seven standard environmental conditions of property area types consistent with the Community Environmental Response Facilitation Act (CERFA – Public Law 102-426), which amends Section 120 of CERCLA. The results of Woodward-Clyde's effort were documented in the U.S. Army Base Realignment and Closure 95 Program Report that was issued on October 30, 1996. This report served as part of the basis for subsequent decisions made regarding land use.

In accordance with the requirements of the BRAC process, the Seneca County Board of Supervisors established, in October 1995, the Seneca Army Depot Local Redevelopment Authority (LRA). The primary responsibility assigned to the LRA is to plan and oversee the redevelopment of the Depot. The Reuse Plan and Implementation Strategy for Seneca Army Depot was adopted by the LRA and approved by the Seneca County Board of Supervisors on October 22, 1996. Under this plan and subsequent amendment, areas within the Depot were classified according to their most likely future use. These areas currently include:

- housing;
- institutional;
- industrial;
- warehousing;
- conservation/recreational land;

- an area designated for a future prison;
- an area for an airfield, special events, institutional, and training; and
- an area to be transferred from one federal entity to another (i.e., an area for the existing navigational LORAN transmitter).

The currently recommended future land use for SEADs-59 and 71 is Planned Industrial Development.

1.5 SOLID WASTE MANAGEMENT UNIT CLASSIFICATION

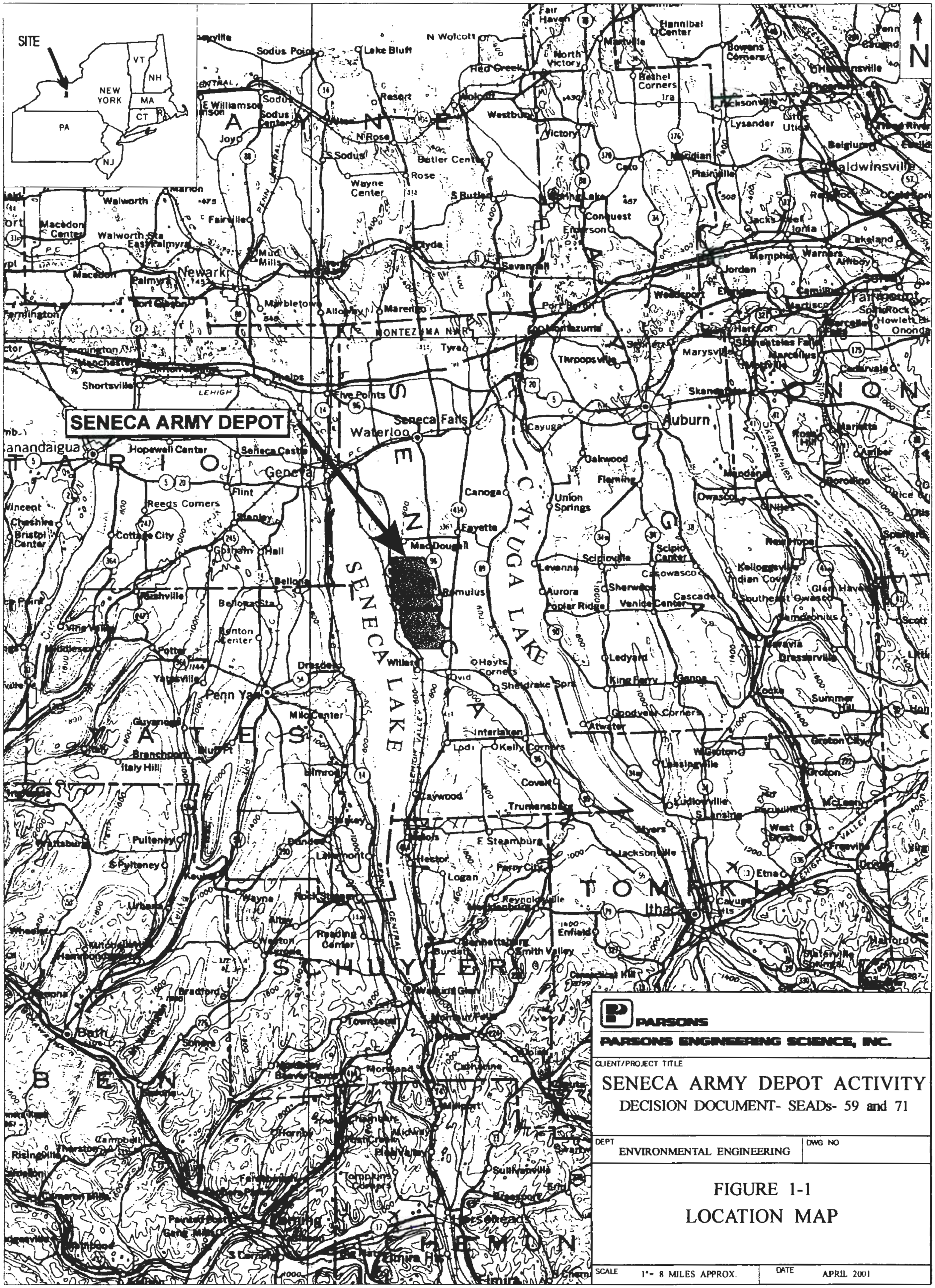
As mandated by the EPA Region II and by NYSDEC, the USACOE commissioned the "Solid Waste Management Unit Classification Report" at SEDA (ERCE 1991). This report was finalized by Parsons on June 10, 1994. The goals of this work was to evaluate the effects of past solid waste management practices at identified SWMUs and to classify each SWMU as an area where "No Action is Required" or as an "Area of Concern" where additional investigations and studies were required. Areas of Concern include both (a) SWMUs where releases of hazardous substances may have occurred and (b) locations where there has been a threat of a release into the environment of a hazardous substance or constituent (including radionuclides). AOCs included former spill areas, landfills, surface impoundments, waste piles, land treatment units, transfer stations, wastewater treatment units, incinerators, container storage areas, scrap yards, cesspools and tanks with associated piping that are known to have caused a release into the environment or whose integrity has not been verified.

Sixty-nine (69) SWMUs and AOCs were originally identified in the ERCE SWMU Classification Report. Following the completion of the ERCE report, three additional SWMUs were added by the Army, bringing the total number of SWMUs listed at SEDA to 72.

A recommended classification for all SWMUs was presented in the final SWMU Classification Report (Parsons, 1994). At this time, the Army identified 24 of the original SWMUs as sites that required "no further action" based on existing information. Furthermore, 13 other SWMUs were designated as High Priority sites; 3 were designated as Moderate Priority sites; 11 were designated as Moderately Low Priority sites; and 21 were designated as Low Priority sites.

The Army identified additional sites, unknown at the time of the SWMU Classification Report, as part of the Environmental Baseline Survey conducted in 1998. These sites have not received a SWMU classification.

In response to the BRAC closure process, the Army has refocused its efforts and is investigating and evaluating sites that are located within parcels that have the greatest reuse potential under the BRAC future land use designation. This effort encourages the reuse of the facility through land transfer or lease prior to the end of the military mission at the Depot. The Army will still continue to close sites after the military mission is complete.



PARSONS

PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT- SEADs- 59 and 71

DEPT	DWG NO
ENVIRONMENTAL ENGINEERING	

FIGURE 1-1

LOCATION MAP

SCALE	DATE
1"= 8 MILES APPROX.	APRIL 2001

2 SITE CHARACTERIZATION

2.1 BASE DESCRIPTION AND HISTORY

This section provides a brief overview of SEDA and the conditions at the Fill Area West of Building 135 (SEAD-59) and the Alleged Paint Disposal Area (SEAD-71). The sites were evaluated in 1994 as part of an Army effort to determine the conditions at several SWMUs that were considered to potentially pose a threat to human health and the environment. A more detailed discussion can be found in the Draft Final *Project Scoping Plan for Performing a CERCLA Remedial Investigation / Feasibility Study (RI/FS) at the Fill Area West of Building 135 (SEAD-59), and the Alleged Paint Disposal Area (SEAD-71)*, (Parsons, February 1997), as well as the *Expanded Site Inspection - Seven Low Priority AOCs SEADs 60, 62, 63, 64 (A,B,C, and D), 67, 70, and 71*, (Parsons, April 1995), and *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*, (Parsons, December 1995), and *Draft Phase I Remedial Investigation (RI) at the Fill Area West of Building 135 (SEAD-59), and the Alleged Paint Disposal Area (SEAD-71)*, (Parsons, July 1998).

SEAD-59 (Fill Area West of Building 135) is located in the east-central portion of SEDA (**Figure 2-1**). The site encompasses an area along both sides of an unnamed dirt road which provides access to Building 311 and runs perpendicular to the south side of Administration Avenue terminating at Building 311 (**Figure 2-2**). SEAD-59 is comprised of two pieces, one area located north of the access road to Building 311 and one area located to the south of the road. Each area is characterized by different topography with the area to the south of the road being relatively flat and sloping gently to the west, while the area to the north of the road contains a fill area with approximately 10 feet of relief.

The entire western border of the site is defined by a north-south trending drainage ditch. A drainage swale that is oriented east-to-west and parallels the railroad tracks that form the northern boundary of SEAD-59. At the northwestern corner of the site, the drainage swale turns to the north and passes under the railroad tracks. Drainage ditches are also located on each side of the access road to Building 311 and these are sloped from east-to-west and promote flow into the drainage ditch in the western portion of the site.

SEAD-59 was used for the disposal of construction debris and oily sludges. SEDA personnel have indicated that there may be a large quantity of miscellaneous "roads and grounds" waste buried at the site. It is not known when the disposal took place.

SEAD-71 (Alleged Paint Disposal Area) is located in the east-central portion of SEDA (**Figure 2-1**). The site is located approximately 200 feet west of 4th Avenue near Buildings 114 and 127 (**Figure 2-3**). The entire site is approximately 350 feet by 100 feet and bounded on the north and south by railroad tracks serving Buildings 114 and 127. A chain-link fence borders the east side of the site.

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

2.2 GEOLOGIC / HYDROGEOLOGICAL SETTING

Regional Geology

The Finger Lakes uplands area is underlain by a broad north-to-south trending series of rock terraces mantled by glacial till. As part of the Appalachian Plateau, the region is underlain by a tectonically undisturbed sequence of Paleozoic rocks consisting of shales, sandstones, conglomerates, limestones and dolostones. **Figure 2-4** shows the regional geology of Seneca County. In the vicinity of SEDA, Devonian age (385 million years ago) rocks of the Hamilton Group are monoclinally folded and dip gently to the south. No evidence of faulting or folding is present. The Hamilton Group is a sequence of limestones, calcareous shales, siltstones, and sandstones.

These rocks were deposited in a shallow inland sea at the north end of the Appalachian Basin (Gray, 1991). Terrigenous sediments from topographic highs associated with the Arcadian landmass of western New England, eastern New York and Pennsylvania were transported to the west across a marine shelf (Gray, 1991). These sediments were deposited in a northeast-southwest trending trough whose central axis was near what are now the Finger Lakes (Gray, 1991).

The Hamilton Group, 600 to 1,500 feet thick, is divided into four formations. They are, from oldest to youngest, the Marcellus, Skaneateles, Ludlowville, and Moscow formations. The western portion of SEDA is generally located in the Ludlowville Formation while the eastern portion is located in the younger Moscow Formation. The Ludlowville and Moscow formations are characterized by gray, calcareous shales and mudstones and thin limestones with numerous zones of abundant invertebrate fossils that form geographically widespread encrinites, coral-rich layers, and complex shell beds. The Ludlowville Formation is known to contain brachiopods, bivalves, trilobites, corals and bryozoans (Gray, 1991). In contrast, the lower two formations (Skaneateles and Marcellus) consist largely of black and dark gray sparsely fossiliferous shales (Brett et al., 1991). Locally, the shale is soft, gray, and fissile. **Figure 2-5** displays the stratigraphic section of Paleozoic rocks of Central New York. The shale is extensively jointed and weathered at the contact with overlying tills. Joint spacings are 1 inch to 4 feet in surface exposures. Prominent joint directions are N 60° E, N 30° W, and N 20° E, with the

joints being primarily vertical. Corings performed on the upper 5 to 8 feet of the bedrock revealed low Rock Quality Designations (RQD's), i.e., less than 5 percent with almost 100 percent recovery (Metcalf & Eddy, 1989), suggesting a high degree of weathering.

Pleistocene age (Wisconsin event, 20,000 years ago) glacial till deposits overlies the shales. **Figure 2-6**, the physiography of Seneca County, presents an overview of the subsurface sediments present in the area. The site is shown on as lying on the western edge of a large glacial till plain between Seneca Lake and Cayuga Lake. The till matrix, the result of glaciation, varies locally but generally consists of horizons of unsorted silt, clay, sand, and gravel. The soils at the site contain varying amounts of inorganic clays, inorganic silts, and silty sands. In the central and eastern portions of SEDA, the till is thin and bedrock is exposed or within 3 feet of the surface. The thickness of the glacial till deposits at SEDA generally ranges from 1 to 15 feet.

Darien silt-loam soils, 0 to 18 inches thick, have developed over Wisconsin age glacial tills. These soils are developed on glacial till where they overlie the shale. In general, the topographic relief associated with these soils is from 3 to 8 percent. **Figure 2-7** presents the U.S. Department of Agriculture (USDA) General Soil map for Seneca County.

Regional background elemental concentrations for soils from the Finger Lakes area of New York State are not available. However, elemental concentrations for soils from the eastern United States and in particular, New York State are available. **Table 2.2-1** cites data on the eastern United States from a United States Geological Survey (USGS) professional paper (Shacklette and Boerngen, 1984) and data on the New York State soils from a NYSDEC report.

Regional Hydrology/Hydrogeology

Regionally, four distinct hydrologic units have been identified within Seneca County (Mozola, 1951). These include two distinct shale formations, a series of limestone units, and unconsolidated beds of Pleistocene glacial drift. Overall, the groundwater in the county is very hard, and therefore, the quality is minimally acceptable for use as potable water.

Approximately 95 percent of the wells in the county are used for domestic or farm supply and the average daily withdrawal is approximately 500 gallons, an average rate of 0.35 gallons per minute (gpm). About five percent of the wells in the county are used for commercial, industrial, or municipal purposes. Seneca Falls and Waterloo, the two largest communities in the county, are in the hydrogeologic region which is most favorable for the development of a groundwater supply. However, because the hardness of the groundwater is objectionable to the industrial and commercial establishments operating within the villages, both villages utilize surface water (Cayuga Lake and Seneca River, respectively) as their municipal supplies. The villages of Ovid and Interlaken, both of which are without substantial industrial establishments, utilize groundwater as their public water

supplies. Ovid obtains its supply from two shallow gravel-packed wells, and Interlaken is served by a developed seepage-spring area.

Regionally, the water table aquifer of the unconsolidated surficial glacial deposits of the region would be expected to flow in a direction consistent with the ground surface elevations. Geologic cross-sections from Seneca Lake and Cayuga Lake have been constructed by the State of New York, (Mozola, 1951, and Crain, 1974). This information suggests 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.

A substantial amount of information concerning the hydrogeology of the area has been compiled by the State of New York, (Mozola, 1951). No other recent state sponsored hydrogeological report is available for review. This report has been reviewed in order to better understand the hydrogeology of the area surrounding SEDA. The data indicates that within a four-mile radius of the site a number of wells exist from which geologic and hydrogeologic information has been obtained. This information includes: (1) the depth; (2) the yield; and (3) the geological strata through which the wells were drilled. Although the information was compiled in the 1950s, these data are useful in providing an understanding and characterization of the aquifers present within the area surrounding SEDA. A review of this information suggests that three geologic units have been used to produce water for both domestic and agricultural purposes. These units include: (1) a bedrock aquifer, which in this area is predominantly shale; (2) an overburden aquifer, which includes Pleistocene deposits (glacial till); and (3) a deep aquifer present within beds of limestone in the underlying shale. The occurrence of water derived from limestone is considered to be unusual for this area and is more commonplace to the north of SEDA. The limestone aquifer in this area is between 100 and 700 feet deep. As of 1957, twenty-five wells utilized water from the shale aquifer, six wells tapped the overburden aquifer, and one used the deep limestone as a source of water.

For the six wells that utilized groundwater extracted from the overburden, the average yield was approximately 7.5 gpm. The average depths of these wells were 36 feet. The geologic material which comprises this aquifer is generally Pleistocene till, with the exception of one well located northeast of the site. This well penetrates an outwash sand and gravel deposit. The yields from the five overburden wells ranged from 4 to 15 gpm. The well located in the outwash sand and gravel deposit, drilled to 60 feet, yielded only 5 gpm. A 20-foot hand dug well, located southeasterly of the outwash well, yielded 10 gpm.

The geologic information reviewed indicates that the upper portions of the shale formation would be expected to yield small, yet adequate, supplies of water, for domestic use. For mid-Devonian shales such as those of Hamilton group, the average yields, (which are less than 15 gpm), are consistent with

what would be expected for shales (LaSala, 1968). The deeper portions of the bedrock, (at depths greater than 235 feet) have provided yields up to 150 gpm. At these depths, the high well yields may be attributed to the effect of solution on the Onondaga limestone which is at the base of the Hamilton Group. Based on well yield data, the degree of solution is affected by the type and thickness of overlying material (Mozola, 1951). Solution effects on limestones (and on shales which contain gypsum) in the Erie-Niagara have been reported by LaSala (1968). This source of water is considered to comprise a separate source of groundwater for the area. Very few wells in the region adjacent to SEDA utilize the limestone as a source of water, which may be due to the drilling depths required to intercept this water.

Local Geology

The site geology is characterized by gray Devonian shale with a thin weathered zone where it contacts the overlying mantle of Pleistocene glacial till. This stratigraphy is consistent over the entire site. The predominant surficial geologic unit present at the site is dense glacial till. The till is distributed across the entire site and ranges in thickness from less than 2 feet to as much as 15 feet although it is generally only a few feet thick. The till is generally characterized by brown to gray-brown silt, clay and fine sand with few fine to coarse gravel-sized inclusions of weathered shale. Larger diameter weathered shale clasts (as large as 6-inches in diameter) are more prevalent in basal portions of the till and are probably ripped-up clasts removed by the active glacier.

The general Unified Soil Classification System (USCS) description of the till on-site is as follows: Clay-silt, brown; slightly plastic, small percentage of fine to medium sand, small percentage of fine to coarse gravel-sized gray shale clasts, dense and mostly dry in place, till, (ML). Grain size analyses performed by Metcalf & Eddy (1989) on glacial till samples collected during the installation of monitoring wells at SEDA show a wide distribution of grain sizes. The glacial tills have a high percentage of silt and clay with trace amounts of fine gravel. Another study, conducted at the same site by the United States Army Environmental Hygiene Agency (USAEHA) determined the porosities of 5 gray-brown silty clay (i.e., till) samples. These ranged from 34.0 percent to 44.2 percent with an average of 37.3 percent (USAEHA Hazardous Waste Study No. 37-26-0479-85).

Darian silt-loam soils, 0 to 18 inches thick, have developed over the till, however, in some locations, the agricultural soils have been eroded away and the till is exposed at the surface. The surficial soils are poorly drained and have a silt clay loam and clay subsoil. In general, the topographic relief associated with these soils is from 3 to 8%. A zone of gray weathered shale of variable thickness is present below the till in almost all locations drilled at SEDA. This zone is characterized by fissile shale with a large amount of brown interstitial silt and clay.

The bedrock underlying the site is composed of the Ludlowville Formation of the Devonian age, Hamilton Group. Merin (1992) also cites three prominent vertical joint directions of northeast, north-northwest, and east-northeast in outcrops of the Genesse Formation 30 miles southeast of SEDA near Ithaca, New York. Three predominant joint directions, N60°E, N30°W, and N20°E are present within this unit (Mozola, 1951). These joints are primarily vertical. The Hamilton Group is a gray-black, calcareous shale that is fissile and exhibits parting (or separation) along bedding planes.

Table C-1 in Appendix C presents the local background metal concentrations for soils in the SEDA area.

Local Hydrology/Hydrogeology

Surface drainage from SEDA flows to four creeks. In the southern portion of the depot, the surface drainage flows through ditches and streams into Indian and Silver Creeks. These creeks then flow into Seneca Lake just south of the SEDA airfield. The central part and administration area of SEDA drain into Kendaia Creek. Kendaia Creek discharges into Seneca Lake near the Lake Housing Area. The majority of the northwestern and north-central portion of SEDA drain into Reeder Creek. The northeastern portion of the Depot, which includes a marshy area called the Duck Ponds, drains into Kendig Creek and then flows north into the Cayuga-Seneca Canal and subsequently to Cayuga Lake.

Characterization of the local hydrogeology is based upon hydrogeological information obtained from previous site investigations. USATHAMA (1989) conducted single-well aquifer tests (slug tests) in the Ash Landfill area to estimate the hydraulic conductivity of the water-bearing materials underlying the site. The slug tests were performed on five shallow groundwater monitor wells (PT-11, PT-12, PT-15, PT-21 and PT-23) screened in the overburden and upper (weathered) portion of the bedrock. Slug test data were analyzed according to the method developed by Bouwer and Rice (1976). The hydraulic conductivity values generated from the slug test analysis were used in conjunction with an estimate of soil porosity and the calculated groundwater flow gradient to develop an estimate for the average groundwater flow rate at the Ash Landfill site. Excluding PT-21, which had an unusually low hydraulic conductivity value of 5.87×10^{-11} centimeters per second (cm/sec) (1.66×10^{-7} ft/day), the average hydraulic conductivity, as determined by the slug test analysis, was 2.06×10^{-4} cm/sec (0.587 ft/day). Typical tight clay soils have hydraulic conductivity values that range from 3.53×10^{-5} to 3.53×10^{-8} cm/sec (Davis, 1969).

The effective porosity of the aquifer at the Ash Landfill site was estimated by ICF to be 11 percent. The average linear velocity of groundwater flow, calculated by ICF using Darcy's law, between PT-17 and PT-18 is 2.2×10^{-7} ft/sec, 1.9×10^{-2} ft/day or, 6.9 feet per year (ft/yr) based on a hydraulic conductivity of 3.3×10^{-5} cm/sec (9.33×10^{-2} ft/day).

Data from the Ash Landfill site quarterly groundwater monitoring program and previous field investigations indicate that the saturated thickness of the till/weathered shale overburden aquifer is variable, generally ranging between 1 and 8.5 feet. However, the aquifer thickness appears to be influenced by the hydrologic cycle and some monitoring wells dry up completely during portions of the year. Based upon a review of two years of data, the variations of the water table elevations are likely a seasonal phenomenon. The overburden 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. This cycle of variations in the aquifer thickness appears to be consistent with what would be expected based upon an understanding of the hydrologic cycle. Although rainfall is fairly consistent at SEDA, averaging approximately 3 inches per month, evapotranspiration is a likely reason for the large fluctuations observed in the saturated thickness of the over-burden aquifer.

On-site hydraulic conductivity determinations were performed by M&E (1989) on monitoring wells MW-8 through MW-17 at the Open Burning Grounds. These wells are all screened within the glacial till unit. The data were analyzed according to a procedure described by Hvorslev (1951). The average hydraulic conductivity measured for the ten monitoring wells was 5.0×10^{-1} ft/day (1.8×10^{-4} cm/sec). The hydraulic conductivities ranged from 2.02×10^{-2} ft/day (7.06×10^{-6} cm/sec) to 1.47 ft/day (5.19×10^{-4} cm/sec). These hydraulic conductivity measurements were within an order of magnitude agreement with previous results reported by O'Brien and Gere (1984). O'Brien and Gere determined the average hydraulic conductivity of the till material to be approximately 2.8×10^{-1} ft/day (9.9×10^{-5}cm/sec). A comparison of the measured values with the typical range of hydraulic conductivities for glacial tills indicates that the glacial till at the site is at the more permeable end of typical glacial till values.

Soils samples were collected during the 1984 USAEHA Phase IV investigation of the Open Burning Grounds to characterize the permeability of the burning pad soils. Soil permeabilities were measured by recompacting the soil in a mold to 95% standard proctor density. The average permeability for 5 measurements was 1.01×10^{-3} ft/day (3.56×10^{-7} cm/sec). The typical range for glacial tills, described by Freeze and Cherry (1979), is between 3×10^{-1} ft/day (1×10^{-4} cm/sec) and 3×10^{-7} ft/day (1×10^{-10} cm/sec).

2.3 AREA METEOROLOGY

Table 2.3-1 summarizes climatological data for the SEDA area. The nearest source of climatological data is the Aurora Research Farm located approximately 10 miles east of the site which provided precipitation and temperature measurements. Meteorological data collected from 1965 to 1974 at Hancock International Airport in Syracuse, New York, were used in preparation of the wind rose. The airport is located approximately 60 miles northeast of SEDA, and is representative of wind patterns at SEDA. The wind rose is presented in **Figure 2-8**.

A cool climate exists at SEDA with temperatures ranging from an average of 23°F in January to 69°F in July. Marked temperature differences are found between daytime highs and nighttime lows during the summer and portions of the transitional seasons. Precipitation is well-distributed, averaging approximately 3 inches per month (**Figure 2-9**). This precipitation is derived principally from cyclonic storms which pass from the interior of the county through the St. Lawrence Valley. Seneca, Cayuga and Ontario Lakes provide a significant amount of the winter precipitation and moderate the local climate. The annual average snowfall is approximately 100 inches. Wind velocities are moderate, but during the winter months there are numerous days with sufficient winds to cause blowing and drifting snow. The most frequently occurring wind directions are westerly and west-southwesterly.

As **Table 2.3-1** shows, temperature tends to be highest from June through September. Precipitation and relative humidity tend to be rather high throughout the year. The months with the greatest amount of sunshine are June through September. Mixing heights tend to be lowest in the summer and during the morning hours. Wind speeds also tend to be lower during the morning, which suggests that dispersion will often be reduced at those times, particularly during the summer. No episode-days are expected to occur with low mixing heights (less than 500 m) and light wind speeds (less than or equal to 2 m/s).

Daily precipitation data measured at the Aurora Research Farm in Aurora, New York (approximately 10 miles east of the site) for the period (1957-1991) were obtained from the Northeast Regional Climate Center at Cornell University. The maximum 24-hour precipitation measured at this station during this period was 3.91 inches on September 26, 1975. The reported mean annual pan evaporation was 35 inches, and annual lake evaporation was a reported 28 inches. An independent value of 27 inches for mean annual evaporation from open water surfaces was estimated from an isopleth presented in *Water Atlas of the United States* (Water Information Center, 1973).

Information on the frequency of inversion episodes for a number of National Weather Service stations is summarized in *Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States* (George C. Holzworth, US EPA, 1972). The closest stations for which inversion information is available are in Albany, New York, and Buffalo, New York. The Buffalo station is nearer to SEDA but almost certainly exhibits influences from Lake Erie. These influences would not be expected to be as noticeable at SEDA.

SEDA is located in the Genesse-Finger Lakes Air Quality Control Region (AQCR). The AQCR is designated as non-attainment for ozone and attainment or unclassified for all other criteria pollutants. Data for the existing air quality in the area which surrounds the SEDA, cannot be obtained since the nearest state air quality stations are 40 to 50 miles away from the Depot, (Rochester of Monroe County or Syracuse of Onondaga County), and is not representative of the conditions at SEDA. A review of the data for Rochester, which is in the same AQCR as the SEDA, indicates that all monitored pollutants (sulfur dioxide, particulates, carbon monoxide, lead, and ozone) are below state and federal limits, with the exception of ozone. In 1987, the maximum ozone concentration observed in Rochester was 0.127 ppm; however, this value is not representative of the SEDA area which is a more rural environment.

2.4 LAND USE

The SEDA is situated between Seneca and Cayuga Lakes and encompasses portions of Romulus and Varick Townships. Land use in this region of New York is largely agricultural, with some forestry and public land (school, recreational and state parks). The most recent land use report is that issued by Cornell University (Cornell 1967). This report classifies land uses and environments of this region in further detail. Agricultural land use is categorized as inactive and active use. Inactive agricultural land consists of land committed to eventual forest regeneration, land waiting to be developed, or land presently under construction. Active agricultural land surrounding SEDA consists largely of cropland and cropland pasture.

Forest land adjacent to SEDA is primarily under regeneration with sporadic occurrence of mature forestry. Public and semi-public land use surrounding and within the vicinity of SEDA are Sampson State Park, Willard Psychiatric Center, and Central School (at the Town of Romulus). Sampson State Park entails approximately 1,853 acres of land and includes a boat ramp on Seneca Lake. Historically, Varick and Romulus Townships within Seneca County developed as agricultural centers supporting a rural population. However, increased population occurred in 1941 due to the opening of SEDA. Population has progressed since then largely due to the increased emphasis on promoting tourism and recreation in this area.

The total area of SEDA is 10,587 acres, of which 8,382 were once designated storage areas for ammunition, storage and warehouse, and open storage and warehouse. Land use at the Depot was previously by the facility mission, but is now subject to change based on the LRA's recommendations. The entire facility has restricted access and is surrounded by chain-link fencing topped with barbed wire. The Depot has a roadway network consisting of paved macadam, concrete, and gravel roads totaling approximately 141 miles.

The intended land use plan for SEAD-59 and 71 is represented in **Figure 2-10**. A property transfer by the Army, according to CERCLA, Sections 120 (h)(1),(2), and (3), requires that the prospective owner must be notified that hazardous substances were possibly stored on the parcel, including the quantity and type of the substances that were stored. Under CERCLA, the content of the deed must include a covenant warranting that all remedial actions necessary to protect human health and the environment with respect to any such hazardous substances remaining on the property have been taken before the date of the transfer. In addition, Section 30 of the IAG requires that the Army notify the EPA and NYSDEC at least 90 days prior to any transfer. The Army shall ensure that all response actions undertaken will not be impeded or impaired by the transfer of the property.

2.5 SITE-SPECIFIC GEOLOGY

2.5.1 SEAD-59

Determination of the site geology was based on the drilling program conducted for the ESI at SEAD-59. This program included 5 soil borings and 3 monitoring wells which were drilled to a maximum depth of 20 feet below ground surface. Based on the results of the drilling program, fill material, till, weathered dark gray shale, and competent gray-black shale are the four major geologic units present on-site. Very little topsoil was present at most of the boring locations. Several of the borings were drilled on a gravel surface, and no topsoil was encountered at these locations.

Fill material was encountered in the seven borings located within the fill area, north of the access road. The borings in which fill was not encountered were the two downgradient monitoring well locations, MW59-1 and MW59-2. The fill was lithologically similar to the till encountered in the area. It was characterized as silt with minor components of sand and shale fragments, but was different from the till in its color, which tended to be gray brown or tan, and by the presence of gravel, asphalt, wood and other organic material. The fill was found at depths of up to 10.5 feet.

The till was characterized as light brown in color and composed of silt, very fine sand, and clay, with minor components of gray-black shale fragments. Larger shale fragments (rip-up clasts) were observed at some locations at the top of the weathered shale. The thickness of the till ranged from 3.1 to 8.6 feet.

The weathered shale that forms the transition between till and competent shale was encountered at five of the nine boring locations. At boring locations MW59-3 and SB59-2, the contact between till and weathered shale was distinct. At the remaining three boring locations, the weathered shale interval was comprised of weathered shale interbedded with till. Competent gray-black shale was observed at MW59-3 and SB59-1 at 8.0 and 10.5 feet below grade, respectively. At the remainder of the boring locations (SB59-3A and SB59-5 excepted), bedrock was inferred from the point of auger or spoon refusal at depths ranging from 9.5 to 20.5 feet below grade.

2.5.2 SEAD-71

Determination of the site geology was based on the results of the subsurface exploration program conducted during the ESI at SEAD-71. This program included three soil borings, which were completed as monitoring wells, and two test pits. The soil borings were drilled to a maximum depth of 9.4 feet below ground surface and the test pits were excavated to a maximum depth of 5.7 feet.

Based on the results of the subsurface exploration program, till, calcareous weathered shale, and competent shale are the three major types of geologic materials present on-site. The till in the storage area was characterized as olive gray clay with little silt, very fine sand, and shale fragments (up to 1 inch in diameter) and ranged in thickness between 4.7 and 7.8 feet. In the southern section of the storage area, the till consisted of light brown silt with little clay and trace amounts of shale fragments (up to 1 inch in diameter). Large shale fragments (rip-up clasts) were observed at or near the till/weathered shale contact at all soil boring locations. In the western half of the site, the till consisted of olive gray silt and was found to be approximately 4 feet thick.

The weathered shale that forms the transition between the till and competent shale was encountered at all soil boring and test pit locations. The depth of the weathered shale ranged from 4.7 to 8.3 feet below ground surface. Competent, calcareous gray shale was encountered at depths between 5.2 and 9.4 feet below ground surface.

2.6 SITE-SPECIFIC HYDROLOGY AND HYDROGEOLOGY

2.6.1 SEAD-59

SEAD-59 is comprised of two areas, one area located north of the access road leading to Building 311, while the other is located to the south of the road. Each area is characterized by different topography: the area to south of the road is relatively flat and slopes gently to the west, while the area to the north of the road contains a fill area with approximately 10 feet of relief.

Surface water flow from precipitation events is controlled by the local topography. Surface water flow in the southern area is to the west following the local topographic slope, and this water is likely captured either by the north-south trending drainage swale that is located in the western portion of the site or by the drainage ditch which parallels the south side of the access road. This latter drainage ditch also captures runoff from SEAD-5, which is located adjacent to SEAD-59 and to the east.

In the area north of the access road, a hill composed of fill material has approximately 10 feet of vertical relief. To the west, the hill slopes steeply to the north-south trending drainage swale which turns north and eventually passes under the railroad tracks north of the site. To the north, the fill

material hill slopes towards a sustained drainage ditch approximately two feet deep. This drainage ditch originates east of the site near Building 128 and extends to the west paralleling the railroad tracks and the northern boundary of SEAD-59. At the northwestern corner of the site, the drainage swale passes to the north under the railroad tracks. To the east, the fill area hill slopes downward to a graded gravel surface used for storing large equipment. Surface water from this area also drains into the northern drainage swale, flowing along the northern boundary of the site, as described above. To the south, the fill area slopes to the access road that runs through the site. Surface water from the southern portion of the fill area drains into the drainage ditch that parallels the access road and runs along the north side. This drainage ditch drains to the west and intersects the north flowing drainage ditch in the western portion of SEAD-59.

As part of the ESI program, three monitoring wells were installed at SEAD-59 and three wells were installed at SEAD-5. SEAD-5 is located immediately adjacent to SEAD-59, just east of the area that is to the south of the access road. Based on the data collected during the ESI, the groundwater flow direction is primarily southwest across SEAD-59.

2.6.2 SEAD-71

Surface water flow from precipitation events is controlled by local topography, although there is little topographic relief on the site. There are no sustained surface water bodies on-site. In the fenced storage area located in the eastern half of the site, the area is covered with asphalt, which provides an impermeable surface resulting in an increased amount of surface water runoff from the site. Based on topographic relief, surface water flow is to the southwest towards the SEDA railroad tracks (to the south), which are topographically lower than the site.

As part of the ESI program, three monitoring wells were installed at SEAD-71. Based on the data collected during the ESI, the groundwater flow direction in the till/weathered shale aquifer on the site is to the west-southwest.

2.7 CONTAMINATION ASSESSMENT

Geophysical surveys and test pits were performed during the ESI and RI to identify burial sites at SEADs59 and 71. Soil (surface, subsurface), soil gas, and groundwater were collected and analyzed as part of the investigations (**Figures 2-11 and 2-12**). The results are presented in the *Draft Phase I Remedial Investigation (RI) SEAD-59 and SEAD-71* (Parsons, 1998), *the ESI Report for Seven Low Priority AOCs - SEADs 60, 62, 63, 64 (A, B, C, and D), 67, 70, and 71* (Parsons, 1995a) and the *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* (Parsons, December 1995). The following sections summarize the nature and extent of contamination identified at these sites.

2.7.1 Soil Gas Survey

2.7.1.1 SEAD-59

A total of 241 soil gas points were sampled and analyzed during the Phase I RI investigation at SEAD-59. This sampling effort revealed one large area and four smaller areas of elevated total volatile organic compounds (VOCs), as shown in **Figures 2-11 and 2-13**. The larger area of elevated soil gas encompasses most of SEAD-59, extending from north of the unnamed road to the west of the 60,000 gallon oil storage tank, including the mounded fill area. The highest soil gas concentrations measured were found within the boundaries of the fill area. Maximum total VOC concentrations of greater than 10 ppmv were observed at three separate locations within the fill area. The four smaller areas of elevated soil gas VOC concentrations were detected in an area southeast of the fill area, an area directly southwest of the fill area, another area south of the fill area, and an additional area northwest of the fill area.

2.7.1.2 SEAD-71

A soil gas survey was not performed at SEAD-71.

2.7.2 Geophysics: Seismic Survey

2.7.2.1 SEAD-59

Four seismic refraction profiles were performed during the ESI on 4 lines positioned along each boundary line of SEAD-59. The seismic refraction profiles detected 5 to 10 feet of unconsolidated overburden (1,050 to 1,730 ft/sec) overlying bedrock (10,500 to 15,500 ft/sec). Saturated overburden was not detected by the seismic survey due to limited thickness of the saturated overburden. The elevations of the bedrock surface indicated that the bedrock sloped to the west, generally following the surface topography. Based upon the results of the seismic survey, the groundwater flow direction was also expected to be to the west, following the slope of the bedrock surface.

2.7.2.2 SEAD-71

Four seismic refraction profiles were performed as part of the geophysical investigations for the ESI on four lines positioned along each boundary line of the storage area in the eastern half of SEAD-71. The seismic refraction profiles detected 6 to 9 feet of unconsolidated overburden (1,125 to 1,500 ft./sec.) overlying bedrock (12,800 to 16,200 ft./sec.). Saturated overburden was not detected by the seismic survey due to limited thickness of the saturated overburden. The elevations of the bedrock surface indicated that the bedrock slopes to the west, generally following the surface

topography. Based on the results of the seismic survey, the groundwater flow direction is also expected to be to the west, following the slope of the bedrock surface.

2.7.3 Geophysics: EM-31 Survey

2.7.3.1 SEAD-59

Electromagnetic (EM-31, EM-61) surveys were performed for the ESI and the Phase I RI at SEAD-59 to delineate the limits of the landfill and to identify locations where metallic objects were buried. Fill areas can generally be delineated since these areas contain metallic objects which can be easily detected using electromagnetic techniques. Areas within the fill where magnetic anomalies are prevalent also serve as a basis for performing test pit exploration, especially when these areas coincide with elevated soil gas anomalies.

Figure 2-14 shows the EM-31 quadrature response, which is proportional to the apparent ground conductivity that was collected during the ESI. Several apparent ground conductivity anomalies were observed in the northeastern portion of the EM grid which coincided with areas used for site access and equipment storage. A large area of elevated ground conductivity, also located in the northeastern portion of the EM grid, could be attributed to an increase in the clay content of the fill material, to the presence of dissolved solids in the groundwater, or to soil moisture. A north-south trending lineament was detected near the western boundary of the EM grid and was correlated to a drainage swale having a large quantity of clay sediment along its length.

Ten localized anomalies were identified as a result of the EM-31 survey completed at SEAD-59. Two of the 10 localized anomalies were correlated to surface features: one was attributed to a drainage culvert located under the railroad track along the northern boundary of the EM grid, and the second was correlated to an area of surface debris located in the southwestern portion of the EM grid. The sources of the remaining eight localized anomalies could not be attributed to surface features.

The results of the in-phase response, which reflect the presence of buried ferrous objects, are shown in **Figure 2-15**. Eight of the localized in-phase response anomalies are roughly coincident with the eight apparent ground conductivity anomalies of unknown origin previously mentioned. Several larger anomalies were identified in the northeastern quadrant of the EM grid and were associated to cultural features. Although many anomalies were observed in both the apparent ground conductivity and in-phase data, no clearly defined boundaries of the large fill area in the northeastern portion of the EM grid could be determined based upon the geophysical results.

The results of the electromagnetic (EM-61) survey performed for the Phase I RI at SEAD-59 are shown in **Figures 2-11** and **2-13**. Fifty-seven localized anomalies were identified as a result of the EM-61 survey completed at SEAD-59. Eighteen of the 57 localized anomalies were correlated to known surface features such as the drainage culvert located under the railroad track along the northern boundary of the EM grid, and the area of surface debris located in the southwestern portion of the EM grid. The sources of the remaining 39 localized anomalies could not be attributed to surface features and are due to unknown buried sources.

2.7.3.2 SEAD-71

The EM-31 survey was performed for the ESI at SEAD-71 in the western half of the site to help locate the burial pits. **Figure 2-16** shows the EM-31 quadrature response, which is proportional to the apparent ground conductivity survey. **Figure 2-17** shows the results of the in-phase response, which reflects the presence of buried ferrous objects.

Interferences from many cultural effects (e.g., railroad tracks, fences, etc.) along the perimeter of the surveyed area complicated the interpretation of the data. A review of the EM-31 data from SEAD-71 revealed one area, in the south central portion of the grid, where both the apparent conductivity and the in-phase response decreased noticeably. One other area of increased apparent ground conductivity measurements was detected along the west-central portion of the grid; however, an associated in-phase response was not observed.

2.7.4 Geophysics: GPR Survey

2.7.4.1 SEAD-59

Ground penetrating radar (GPR) data were acquired during the ESI at SEAD-59 along profiles spaced at 50-foot intervals. In addition, GPR data from two profiles were also collected over distinct EM-31 anomalies to provide better characterization of the suspected metallic sources. The GPR profiles revealed 17 locations where buried metallic objects were suspected. A small disposal pit was also detected in the southeastern portion of the area investigated. Twelve of the buried metallic object locations were situated within the suspected disposal area in the northeastern quadrant of SEAD-59. Ten of the GPR anomaly locations were either situated over a localized EM anomaly or within 15 feet of a localized EM anomaly.

GPR data were also acquired during the Phase I RI at SEAD-59 over each distinct EM-61 anomaly to provide better characterization of the suspected metallic sources. Test pit locations were selected based on GPR data indicating the strongest presence of disposal pits or debris.

2.7.4.2 SEAD-71

GPR data was acquired for the ESI at SEAD-71. The data from these surveys revealed an underground utility line or conduit running northwest - southeast across the northeastern corner of the storage compound. One area of anomalous subsurface reflections, typical of reflections from metallic objects, was detected in the south-central portion of the storage compound. The GPR survey conducted in the area west of the storage compound revealed five localized anomalies and three zones with multiple anomalies. The source of these EM-31 and the GPR anomalies was identified during test pit excavations as construction debris composed of chain-link fencing, sheet metal, asphalt, and a crushed, yellow, twenty gallon drum. Weathered shale, encountered at a depth of 5.5 feet, limited any further advancement of the excavation. There were no readings above background levels (0 ppmv of organic vapors and 10-15 micro rems per hour of radiation) during the excavations.

GPR data were also acquired during the Phase I RI at SEAD-71 in the area depicted in **Figure 2-12** to provide better characterization of the suspected metallic sources. Test pit locations were selected based on GPR data indicating the strongest presence of disposal pits or debris.

2.7.5 Test Pitting Program

2.7.5.1 SEAD-59

Test pits were excavated during both the ESI and Phase I RI in areas identified by geophysics and soil gas as anomalies. Test pit excavations were performed to investigate the nature of the anomaly and to collect chemical data to identify the presence of constituents of concern. The excavated material from all the test pits excavated during the Phase I RI was continuously screened for organic vapors with a Thermo Environmental Organic Vapor Meter (OVM) 580 PID. With the exception of the OVM readings cited below, no other readings above background levels (0 ppmv of organic vapors) were observed during the excavations.

Five test pits were excavated during the ESI and nineteen test pits were excavated during the Phase I RI at SEAD-59. Their locations are shown on **Figure 2-11**. Test pit logs can be found in the appendices of the ESI (Parsons, 1995) and Phase I RI (Parsons, 1998) reports. Test pit locations were selected based on the results of the EM-31, EM-61, GPR and soil gas anomalies located throughout the site. Geophysical anomalies that coincided with the presence of soil gas anomalies were considered to represent the greatest potential for contamination.

Ten test pits (TP59-2, TP59-3, TP59-4, TP59-7, TP59-10, TP59-11, TP59-14, TP59-15, TP59-16 and TP59-17) were excavated within the fill area during the ESI and Phase I RI. Debris consisting of concrete, asphalt, metal, and wood were found in this area. A layer of petroleum hydrocarbon stained silt (having a petroleum odor) was observed in the 1.4 to 1.8 feet depth interval of test pit TP59-4. A maximum reading of 132 ppmv of organic vapors was recorded from this depth interval with a hand-held Organic vapor meter (OVM). Soil sample TP59-4-1 was collected from this depth interval to confirm the presence of contamination.

Three, 55-gallon drums were found at approximately 3 feet below grade at the TP59-3 location. One drum had been buried in an upright position and the two others were found in a horizontal position. The excavation was halted when these drums were unearthed; therefore, the possible presence of additional drums at greater depths is unknown. Soils from the spaces between the drums were collected and identified as soil sample TP59-3. One end of one of the horizontally positioned drums was separated from the body of the drum, revealing a white, flexible, plastic-like substance. Some areas of this white substance showed a dark-yellow staining. A small amount of this substance was collected in a VOC vial and submitted for VOC analysis as sample number TP59-3X.

Drums were also found in test pits TP59-15 and TP59-16. A crushed 15-gallon drum containing black oily stains was located six feet below ground surface in TP59-15. An OVM reading of 16 ppmv was recorded at this location. Sample TP59-15-1 was collected from the exterior of the drum. Another drum was found in TP59-16. This drum did not appear to be leaking and no OVM reading was recorded. Sample TP59-16-1 was collected from beneath this drum. Corroded drum fragments having no contents were found in TP59-10.

Test pits TP59-13A, TP59-13B, and TP59-13C were excavated, in the area directly southwest of the fill area. Little debris was encountered in these pits. However, a petroleum-type odor was noted at a depth of 3.5 and 4 feet below grade in TP59-13A and an OVM reading of 7.4 ppmv was recorded. In addition, a sheen was observed on the water surface that was encountered at the top of the shale bedrock at four feet below ground surface. A silty sheen having no odor was also observed in water encountered at approximately the same depth in TP59-13C. Samples TP59-13A-1 and TP59-13C-1 were collected from the intervals above the bedrock where the water was encountered (between 3 to 4 feet below ground surface).

In the area south of the fill area, test pits TP59-1, TP59-5, TP59-6, TP59-12A, TP59-12B and TP59-12C were excavated. The excavation at TP59-1 revealed a large quantity of filled 2-gallon paint cans buried approximately 1 foot below the ground surface. Several zones of paint stained soil were observed and screened with an OVM. Soil and paint residues from the zone with the highest organic vapor reading (560 ppmv) were collected and submitted for chemical analysis as soil sample TP59-1. A 0.6-foot thick layer of construction debris had been disposed of over the paint cans. This

debris included a crushed, yellow, 20-gallon waste can and chain-link fencing. A 5-inch thick layer of crushed shale gravel overlaid the construction debris. A 5-gallon paint can was observed one foot below the surface at TP59-12A as well as a paint globule and a crushed 1-gallon paint can. No organic vapors were detected and sample TP59-12A-1 was collected from between 1 and 1.5 feet below ground surface. At test pit TP59-12B, a 5-gallon paint can leaking a brown grease-like substance was also uncovered one foot below the surface. White solidified paint was also observed in this interval. An OVM reading of 274 ppmv was recorded. Construction debris was encountered in TP59-5, the westernmost test pit at SEAD 59, and TP59-6, one of the southernmost test pits at SEAD-59.

Construction debris was encountered in the test pits excavated in the area southeast of the fill area (TP59-8, TP59-9 and TP59-18). Some iron-stained soil was noted between 1.5 and 2 feet below ground surface at TP59-18.

2.7.5.2 SEAD-71

Four test pits were excavated during the Phase I RI at SEAD-71 to characterize the source of the geophysical anomalies. Two test pits were excavated during the ESI as well. The locations of the test pits are shown on **Figure 2-12**. The test pit logs are presented in the appendices of the ESI (Parsons, 1995) and RI (Parsons, 1998) reports. The excavated material from the test pits was continuously screened for organic vapors during the Phase I RI with a Thermo OVM 580 PID. Except for the OVM readings cited below, no readings above background levels (0 ppm of organic vapors) were observed during the excavations.

The source of the EM-31 and the GPR anomalies identified during the ESI at the TP71-1 location was identified as construction debris composed of chain-link fencing, sheet metal, asphalt, and a crushed, yellow, 20-gallon drum. This debris was situated 0.75 to 1.3 feet below the ground surface. A 0.75 foot thick layer of fine angular black debris (resembling creosote or soot) was observed immediately below the construction debris layer. A weathered shale layer, encountered at a depth of 5.5 feet, limited any further advancement of the excavation.

Test pit TP71-2 was centered over a GPR anomaly located in the storage area. This location was situated along the southern boundary of compacted roadstone. A dark gray to black, possibly stained, fine shale gravel layer was encountered from 0.25 to 1.0 foot below ground surface. The source of the GPR anomaly was not identified at this test pit location. Changes in the electrical properties of the soils within a layer may give rise to spurious radar wave reflections resembling GPR signatures observed over metallic objects.

Test pit TP71-3 was located over a GPR anomaly located north of the road and near the steel garage. Sand and stone slabs were encountered between 0.5 and 2 feet. At 8 feet below ground surface, a slight hydrocarbon odor was noticed and an OVM reading of 4 to 6 ppmv was recorded. Sample TP71-3-1 was collected from between 8.5 and 9 feet below the ground surface. The soil at this depth was stained with a gray-brown color. A trace of an oily sheen was noted on the clay soil at ten feet and stones at 10.5 to 11 feet were covered with a brown oily liquid. Sample TP71-3-2 was collected from between 10.5 and 11 feet below ground surface.

Test pit TP71-4 was located over a GPR anomaly located north of the road. A stone slab layer was encountered at 1 foot below the surface and other slabs mixed with lumber sand and stone were located between 3 and 7 feet below the surface. At ten feet below ground surface, some iron staining was noted on the soil and an OVM reading of 6 ppm was recorded.

Test pit TP71-5 was located over a GPR anomaly located between the south edge of the road and the southern railroad tracks. Railroad ties were encountered at 3 to 7 feet below ground surface which matched the GPR anomaly. Sample TP71-5-1 was collected from between 7 and 7.5 feet below ground surface. At 12.5 feet below ground surface, an OVM reading of 8 ppmv was recorded and sample TP71-5-2 was collected from between 12.5 and 13 feet below ground surface for on-site screening.

Test pit TP71-6 was located south of the road and north of the railroad and salt shed. Fill within this test pit consisted of black cinders, wood, asphalt bricks, fencing, piping and railroad ties. Sample TP71-6-3 was collected from beneath the black cinders between 3 and 3.5 feet below ground surface. Two other samples (TP71-6-1 and TP71-6-2) were collected from the native soils beneath this test pit.

2.7.6 Summary of Affected Media

2.7.6.1 SEAD-59

The ESI and Phase I RI conducted at SEAD-59 identified several areas which have been impacted by releases of volatile organic compounds, semivolatile organic compounds, total petroleum hydrocarbons, and to a lesser extent, heavy metals.

Soil Data

Sampling conducted in SEAD-59 indicated impacts to soils from volatile organic compounds, semivolatile organic compounds, total petroleum hydrocarbons, and to a lesser extent, metals. A total of 24 soil samples were collected from soil borings and test pits as part of the ESI for SEAD-59. A total of 105 samples were collected during the Phase I RI for field screening and 34 of those

samples were sent to the laboratory for confirmatory analysis. **Table 2.7-1** presents a summary of the compounds detected during these investigations. **Table A-1** in Appendix A presents all validated data for soil from SEAD-59.

Six VOCs including acetone, methylene chloride, methyl ethyl ketone, methyl chloride, carbon disulfide, and trichloroethene, were detected in soil samples at concentrations that were below NYSDEC recommended soil cleanup levels.

In the fill area, PAH compounds were found in surface soil and subsurface soil samples at concentrations exceeding their NYSDEC soil cleanup objective levels. Total petroleum hydrocarbons were detected in the majority of the soil samples collected from the fill area. In the area directly southwest of the fill area, there is both physical and chemical evidence of the presence of hydrocarbons. In the area south of the fill area, several paint cans containing paint were found. BTEX constituents were detected in the sample from this location at concentrations exceeding their associated NYSDEC recommended soil cleanup objective levels. **Figure 2-18** presents the distribution of benzo[a]pyrene, chosen as an indicator of the distribution of PAHs throughout SEAD-59.

Endrin aldehyde was detected in 11 of the 55 soil samples in which it was analyzed for, at a maximum concentration of 15 ug/Kg. There is no NYSDEC recommended cleanup value for this compound.

A total of 22 metals were detected in soil samples collected from SEAD-59. Fifteen metals were detected in one or more samples at concentrations that exceeded their associated NYSDEC cleanup criteria values. Exceedances were reported in all but 11 of the soil samples collected. A variety of the metals were found at concentrations just slightly above their cleanup criteria levels, and approximately half of these exceedances appear to reflect natural variations in site soils. The exceptions to this are the metals antimony, calcium, lead, mercury, silver, sodium, and zinc which were reported at concentrations that are at least two times their recommended cleanup criteria levels.

Groundwater Data

One round of groundwater sampling was conducted at SEAD-59 during the ESI field program in 1994. The sampling procedure used at that time was not the EPA Region II low-flow groundwater sampling method and therefore the results may not be representative of the groundwater at the site due to turbidity in the groundwater samples.

The analytical results of the groundwater analyses (**Table A-2** in Appendix A of the Decision Document) indicate that the groundwater at SEAD-59 has been moderately impacted by total petroleum hydrocarbons and, to a lesser extent, by metals and semivolatile organic compounds. Total petroleum hydrocarbons were detected at low concentrations in both of the downgradient

groundwater samples, but it was not detected in the upgradient groundwater sample. Aluminum was detected in all three wells at concentrations above its EPA secondary MCL of 50 ug/L; the highest concentration measured for aluminum in groundwater was found in the upgradient well. Iron and sodium were also detected at concentrations above their associated groundwater criteria in all three wells, and again the highest concentrations measured for these compounds were found in the upgradient well. Thallium was found in the upgradient and one downgradient groundwater sample at concentrations above its federal MCL. Manganese was found in one downgradient sample at a concentration above NYSDEC's groundwater criteria. One SVOC, phenol, was reported at estimated concentrations above its groundwater criteria level.

The results of the ESI and RI have identified significant releases of BTEX and PAH compounds in the materials comprising the fill area and disposal pits at SEAD-59. It is important to note that trace quantities of total petroleum hydrocarbons detected in the fill materials are presumably being leached into the groundwater beneath the site.

2.7.6.2 SEAD-71

Soil and groundwater were sampled as part of the ESI conducted at SEAD-71 in 1994. Soils were also sampled as part of the Phase I RI conducted in 1998. Sampling and analyses were based upon historical usage of the area for the disposal of paint and solvents. The results of these investigations were detailed in the ESI and Phase I RI reports (Parsons, April 1995, July 1998). To evaluate whether each media (soil and groundwater) is being impacted, the chemical analysis data from both investigations were compared to available New York State and Federal standards, guidelines, and criteria. Only those state standards which are more stringent than federal requirements were used as criteria during the comparisons.

Soil Data

Twenty-one (21) surface soil (i.e., 0-0.2 ft) samples were obtained for chemical analysis as part of the Phase I RI for SEAD-71. Nine soil samples were collected from four test pits and screened for BTEX compounds using immunoassay field screening tests and five of these samples were sent to the laboratory for confirmatory chemical analysis. The chemical data for these surface soil and test pit soil samples in addition to the eight soil samples collected from two test pits during the ESI are summarized in **Table 2.7-2**. **Table B-1** in Appendix B presents all validated data from the two investigations at SEAD-71. The following sections describe the nature and extent of contamination identified at SEAD-71.

The Phase I RI confirmed the findings of the ESI conducted at SEAD-71. No burial pit for paint and solvents was uncovered during either investigation, although the investigations did indicate the soils at SEAD-71 have been impacted by the waste materials which have been disposed in at least one

disposal pit on site. At three test pit locations, PAHs were present at concentrations exceeding their associated criteria levels identified in NYSDEC's TAGM #4046. Heavy metals concentrations above their recommended soil cleanup levels were also present in these three test pits. There is clear evidence that surface soils at SEAD-71 have been impacted by waste materials disposed in the area. Both PAHs and heavy metals were detected above their associated NYSDEC criteria levels in every surface soil sample collected during the Phase I RI. **Figure 2-19** presents the benzo[a]pyrene concentrations detected at SEAD-71. Benzo[a]pyrene was selected as the indicator chemical for PAHs.

Groundwater Data

One round of groundwater sampling was conducted at SEAD-71 during the ESI field program in 1994. The sampling procedure used at that time was not the EPA Region II low-flow groundwater sampling method and therefore the results may not be representative of the groundwater at the site due to turbidity in the groundwater samples.

Groundwater at SEAD-71 has not been significantly impacted. Metals were the only constituents detected, with 20 being found in the samples collected. Five of the detected metals (aluminum, iron, lead, manganese, and thallium) were found at concentrations exceeding comparative criteria (**Table B-2** in Appendix B).

Table 2.2-1

Background Concentrations of Elements in Soils of the Eastern United States with Specific Data for New York State

SEAD-4 Remedial Investigation
Seneca Army Depot Activity

Element	Concentration Range (mg/kg)	Geographic Location
Aluminum	7,000 - 100,000	Eastern U.S. (2)
	1,000 - 25,000	Albany Area (1)
Arsenic	< 0.1 - 73	Eastern U.S. (2)
	3 - 12	New York State (1)
	< 0.1 - 6.5	Albany Area (1)
Barium	10 - 1,500	Eastern U.S. (2)
	15 - 600	New York State (1)
	250 -350	Albany Area (1)
Beryllium	1 - 7	Eastern U.S. (2)
	0 - 1.75	New York State (1)
	0 - 0.9	Albany Area (1)
Cadmium	Not Available	Eastern U.S. (2)
	0.0001 - 1.0	No Region Specified (1)
Calcium	100 - 280,000	Eastern U.S. (2)
	130 - 35,000	New York State (1)
	150 - 5,000	Albany Area (1)
	2,900 - 6,500	Albany Area (1)
Chromium	1 - 1,000	Eastern U.S. (2)
	1.5 - 40	New York State (1)
	1.5 - 25	Albany Area (1)
Cobalt	< 0.3 - 70	Eastern U.S. (2)
	2.5 - 60	New York State (1)
	2.5 - 6	Albany Area (1)
Copper	< 1 - 700	Eastern U.S. (2)
	< 1 - 15	Albany Area (1)
Iron	100 - 100,000	Eastern U.S. (2)
	17,000 - 25,000	Albany Area (1)
Lead	> 10 - 300	Eastern U.S. (2)
	1 - 12.5	Albany Area (1)

Table 2.2-1

Background Concentrations of Elements in Soils of the Eastern United States with Specific Data for New York State

SEAD-4 Remedial Investigation
Seneca Army Depot Activity

Element	Concentration Range (mg/kg)	Geographic Location
Magnesium	50 - 50,000	Eastern U.S. (2)
	2,500 - 6,000	New York State (1)
	1,700 - 4,000	Albany Area (1)
Manganese	> 2 - 7,000	Eastern U.S. (2)
	50 - 5,000	New York State (1)
	400 - 600	Albany Area (1)
Mercury	0.01 - 3.4	Eastern U.S. (2)
	0.042 - 0.066	Albany Area (1)
Nickel	< 5 - 700	Eastern U.S. (2)
	19.5 (mean)	New York State (1) (no range available)
Potassium	50 - 37,000	Eastern U.S. (2)
	47.5 - 117.5	New York State (1)
Selenium	> 0.1 - 3.9	Eastern U.S. (2)
	Not Available	
Sodium	500 - 50,000	Eastern U.S. (2)
	Not Available	
Vanadium	> 7 - 300	Eastern U.S. (2)
	Not Available	
Zinc	> 5 - 2,900	Eastern U.S. (2)
	37 - 60	Albany Area (1)

Notes:

1. (1) Source: McGovern, Carol E., Background Concentrations of 20 Elements in Soils with Special Regard for New York State, Wildlife Resources Center, New York Department of Environmental Conservation, Delmar, New York 12054, No Date.
2. (2) Source: Shacklette, H.T. and Boerngen, J.G., 1984, Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, U.S.G.S. Prof Paper 1270, Washington.
3. The data are for areas where surficial materials are thought to be uncontaminated, undisturbed, or areas far from pollution sources.

Table 2.3-1

Climatological Data for Seneca Army Depot Activity

SEAD-4 Remedial Investigation
Seneca Army Depot Activity

Month	Temperature (1),°F			Mean Precip-	Mean Relative	Percent	Mean Number of Days (4)		
	Maximum	Minimum	Mean	itation (1), in.	Humidity (%)	Sunshine	Clear	Partly Cloudy	Cloudy
January	30.9	14.0	22.5	1.88	70	35	3	7	21
February	32.4	14.1	23.3	2.16	70	50	3	6	19
March	40.6	23.4	32.0	2.45	70	50	4	7	20
April	54.9	34.7	44.8	2.86	70	50	6	7	17
May	66.1	42.9	54.5	3.17	70	50	6	10	15
June	76.1	53.1	64.6	3.70	70	60	8	10	12
July	80.7	57.2	69.0	3.46	70	60	8	13	10
August	78.8	55.2	67.0	3.18	70	60	8	11	12
September	72.1	49.1	60.7	2.95	70	60	7	11	12
October	61.2	39.5	50.3	2.80	70	50	7	8	16
November	47.1	31.4	39.3	3.15	70	30	2	6	22
December	35.1	20.4	27.8	2.57	70	30	2	5	24
Annual	56.3	36.3	46.3	34.33	70	50	64	101	200

Period	Mixing Height (2), m	Wind Speed (2), m/s
Morning (Winter)	900	8
Morning (Spring)	700	6
Morning (Summer)	500	5
Morning (Autumn)	600	5
Morning (Annual)	650	6
Afternoon (Winter)	900	8
Afternoon (Spring)	1600	8
Afternoon (Summer)	1800	7
Afternoon (Autumn)	1300	7
Afternoon (Annual)	1400	7

Mean Annual Pan Evaporation (3), inches : 35
Mean Annual Lake Evaporation (3), inches : 28

Number of episodes lasting more than 2 days (2), (No. of episode-days) :
Mixing Height < 500 m, wind speed < 2 m/s : 0 (0)
Mixing Height < 1000 m, wind speed < 2 m/s : 0 (0)
Number of episodes lasting more than 5 days (2), (No. of episode-days) :
Mixing Height < 500 m, wind speed < 4 m/s : 0 (0)

Notes:
1) Climate of New York Climatography of the United States No. 60. National Oceanic and Atmospheric Administration, June 1982. Data for Ithaca Cornell University, NY.
2) Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution throughout the Contiguous United States. George C. Holzworth, Jan. 1972.
3) Climate Atlas of the United States. U.S. Department of Commerce, 1983.
4) Climate of New York Climatography of the United States No. 60. National Oceanic and Atmospheric Administration, June 1982. Data for Syracuse, NY.

Table 2.7-1
SUMMARY OF COMPOUNDS DETECTED IN SOIL DURING
SEAD-59 ESI and Phase I RI
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses
VOLATILE ORGANIC COMPOUNDS							
Acetone	UG/KG	150	3.6%	200	0	2	56
Benzene	UG/KG	5900	5.4%	60	2	3	56
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56
Methyl chloride	UG/KG	3	3.6%		0	2	56
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56
Methylene chloride	UG/KG	2	5.4%	100	0	3	56
Toluene	UG/KG	830000	16.1%	1500	1	9	56
Total BTEX	MG/KG	15	86.7%		0	26	30
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56
Trichloroethene	UG/KG	2	3.6%	700	0	2	56
SEMIVOLATILE ORGANIC COMPOUNDS							
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56
Anthracene	UG/KG	38000	64.3%	50000	0	36	56
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56
Carbazole	UG/KG	33000	64.3%		0	36	56
Chrysene	UG/KG	63000	80.4%	400	26	45	56
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56
Fluorene	UG/KG	38000	67.9%	50000	0	38	56
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56
Phenol	UG/KG	17	3.6%	30	0	2	56
Pyrene	UG/KG	120000	85.5%	50000	1	47	55
PESTICIDES/PCBS							
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55
Aldrin	UG/KG	1.2	3.6%	41	0	2	55
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55
Endosulfan I	UG/KG	26	14.5%	900	0	8	55
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55
Endrin	UG/KG	32	14.5%	100	0	8	55
Endrin aldehyde	UG/KG	15	20.0%		0	11	55
Endrin ketone	UG/KG	77	14.5%		0	8	55
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55
Methoxychlor	UG/KG	110	3.6%		0	2	55

Table 2.7-1
SUMMARY OF COMPOUNDS DETECTED IN SOIL DURING
SEAD-59 ESI and Phase I RI
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

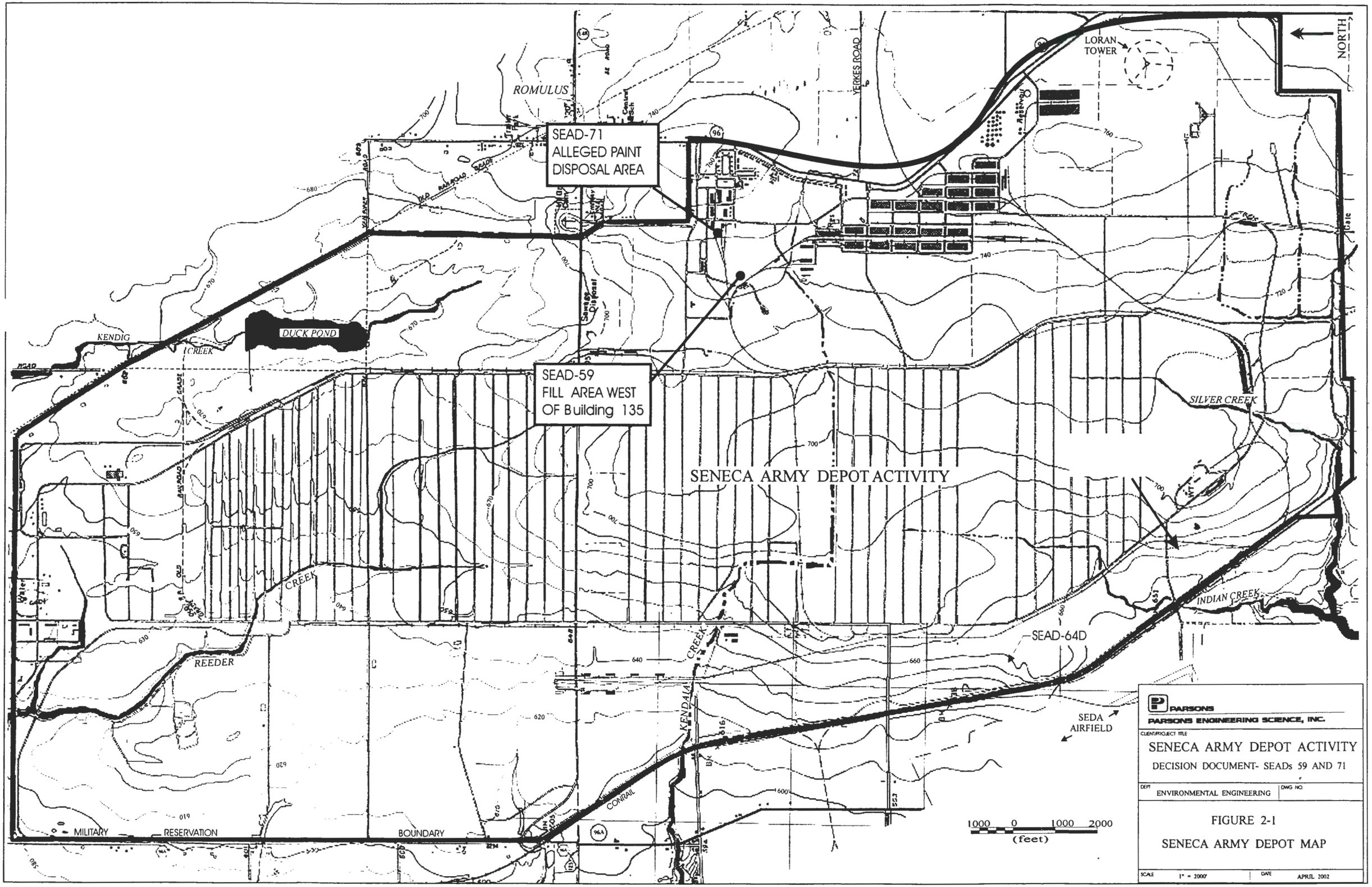
Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses
METALS							
Aluminum	MG/KG	20600	100.0%	19300	1	55	55
Antimony	MG/KG	424	21.8%	5.9	1	12	55
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55
Barium	MG/KG	304	100.0%	300	1	55	55
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55
Calcium	MG/KG	214000	100.0%	121000	5	55	55
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55
Cobalt	MG/KG	14.7	100.0%	30	0	55	55
Copper	MG/KG	36.1	100.0%	33	1	55	55
Iron	MG/KG	33300	100.0%	36500	0	55	55
Lead	MG/KG	139	100.0%	24.8	29	55	55
Magnesium	MG/KG	34400	100.0%	21500	1	55	55
Manganese	MG/KG	1150	100.0%	1060	1	55	55
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55
Nickel	MG/KG	41.4	100.0%	49	0	55	55
Potassium	MG/KG	2520	100.0%	2380	1	55	55
Selenium	MG/KG	2.2	32.7%	2	1	18	55
Silver	MG/KG	4.1	7.3%	0.75	1	4	55
Sodium	MG/KG	2310	80.0%	172	18	44	55
Vanadium	MG/KG	41.9	100.0%	150	0	55	55
Zinc	MG/KG	1550	100.0%	110	8	55	55
OTHER ANALYSES							
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55

Table 2.7-2
SUMMARY OF COMPOUNDS DETECTED IN SOIL DURING
SEAD-71 ESI and Phase I RI
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses
VOLATILE ORGANIC COMPOUNDS							
1,1,1-Trichloroethane	UG/KG	23	17.6%	800	0	6	34
Acetone	UG/KG	74	5.9%	200	0	2	34
Benzene	UG/KG	2	2.9%	60	0	1	34
Ethyl benzene	UG/KG	4	5.9%	5500	0	2	34
Methylene chloride	UG/KG	11	26.5%	100	0	9	34
Styrene	UG/KG	1	2.9%		0	1	34
Tetrachloroethene	UG/KG	33	11.8%	1400	0	4	34
Toluene	UG/KG	16	23.5%	1500	0	8	34
Total Xylenes	UG/KG	96	11.8%	1200	0	4	34
SEMIVOLATILE ORGANIC COMPOUNDS							
2-Methylnaphthalene	UG/KG	31000	41.2%	36400	0	14	34
Acenaphthene	UG/KG	42000	70.6%	50000	0	24	34
Acenaphthylene	UG/KG	340	14.7%	41000	0	5	34
Anthracene	UG/KG	100000	79.4%	50000	3	27	34
Benzo[a]anthracene	UG/KG	150000	94.1%	224	25	32	34
Benzo[a]pyrene	UG/KG	120000	91.2%	61	29	31	34
Benzo[b]fluoranthene	UG/KG	88000	91.2%	1100	16	31	34
Benzo[ghi]perylene	UG/KG	62000	88.2%	50000	1	30	34
Benzo[k]fluoranthene	UG/KG	130000	70.6%	1100	13	24	34
Bis(2-Ethylhexyl)phthalate	UG/KG	15	8.8%	50000	0	3	34
Carbazole	UG/KG	77000	82.4%		0	28	34
Chrysene	UG/KG	150000	94.1%	400	23	32	34
Di-n-butylphthalate	UG/KG	140	5.9%	8100	0	2	34
Dibenz[a,h]anthracene	UG/KG	25000	82.4%	14	27	28	34
Dibenzofuran	UG/KG	38000	64.7%	6200	5	22	34
Fluoranthene	UG/KG	440000	97.1%	50000	7	33	34
Fluorene	UG/KG	62000	73.5%	50000	1	25	34
Indeno[1,2,3-cd]pyrene	UG/KG	65000	88.2%	3200	9	30	34
Naphthalene	UG/KG	46000	44.1%	13000	2	15	34
Phenanthrene	UG/KG	290000	94.1%	50000	6	32	34
Phenol	UG/KG	5	2.9%	30	0	1	34
Pyrene	UG/KG	280000	97.1%	50000	7	33	34
PESTICIDES/PCBS							
4,4`-DDD	UG/KG	240	35.3%	2900	0	12	34
4,4`-DDE	UG/KG	810	61.8%	2100	0	21	34
4,4`-DDT	UG/KG	1300	67.6%	2100	0	23	34
Alpha-BHC	UG/KG	18	23.5%	110	0	8	34
Alpha-Chlordane	UG/KG	74	5.9%		0	2	34
Beta-BHC	UG/KG	35	23.5%	200	0	8	34
Delta-BHC	UG/KG	2	2.9%	300	0	1	34
Dieldrin	UG/KG	4	8.8%	44	0	3	34
Endosulfan I	UG/KG	200	32.4%	900	0	11	34
Endosulfan II	UG/KG	52	17.6%	900	0	6	34
Endosulfan sulfate	UG/KG	110	35.3%	1000	0	12	34
Endrin	UG/KG	120	35.3%	100	1	12	34
Endrin aldehyde	UG/KG	120	58.8%		0	20	34
Endrin ketone	UG/KG	180	52.9%		0	18	34
Gamma-BHC/Lindane	UG/KG	4	2.9%	60	0	1	34
Gamma-Chlordane	UG/KG	48	14.7%	540	0	5	34
Heptachlor	UG/KG	1	2.9%	100	0	1	34
Heptachlor epoxide	UG/KG	180	41.2%	20	4	14	34
Methoxychlor	UG/KG	520	35.3%		0	12	34
METALS							
Aluminum	MG/KG	18000	100.0%	19520	0	34	34
Antimony	MG/KG	19	35.3%	6	1	12	34
Arsenic	MG/KG	15	100.0%	8.9	4	34	34
Barium	MG/KG	179	100.0%	300	0	34	34
Beryllium	MG/KG	1	97.1%	1.13	0	33	34
Cadmium	MG/KG	12	44.1%	2.46	4	15	34

Table 2.7-2
SUMMARY OF COMPOUNDS DETECTED IN SOIL DURING
SEAD-71 ESI and Phase I RI
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses
Calcium	MG/KG	295000	100.0%	125300	11	34	34
Chromium	MG/KG	60	100.0%	30	4	34	34
Cobalt	MG/KG	15	100.0%	30	0	34	34
Copper	MG/KG	134	100.0%	33	12	34	34
Iron	MG/KG	65100	100.0%	37410	2	34	34
Lead	MG/KG	3470	100.0%	24.4	22	34	34
Magnesium	MG/KG	59300	100.0%	21700	6	34	34
Manganese	MG/KG	853	100.0%	1100	0	34	34
Mercury	MG/KG	3	47.1%	0.1	4	16	34
Nickel	MG/KG	110	100.0%	50	2	34	34
Potassium	MG/KG	2940	100.0%	2623	1	34	34
Selenium	MG/KG	2	44.1%	2	0	15	34
Silver	MG/KG	1	14.7%	0.8	0	5	34
Sodium	MG/KG	1040	88.2%	188	19	30	34
Thallium	MG/KG	2	2.9%	0.855	1	1	34
Vanadium	MG/KG	29	100.0%	150	0	34	34
Zinc	MG/KG	3660	97.1%	115	13	33	34
OTHER ANALYSES							
Total Petroleum Hydrocarbons	MG/KG	9060	84.6%		0	22	26
Nitrate/Nitrite Nitrogen	MG/KG	30	100.0%		0	26	26



PARSONS
PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

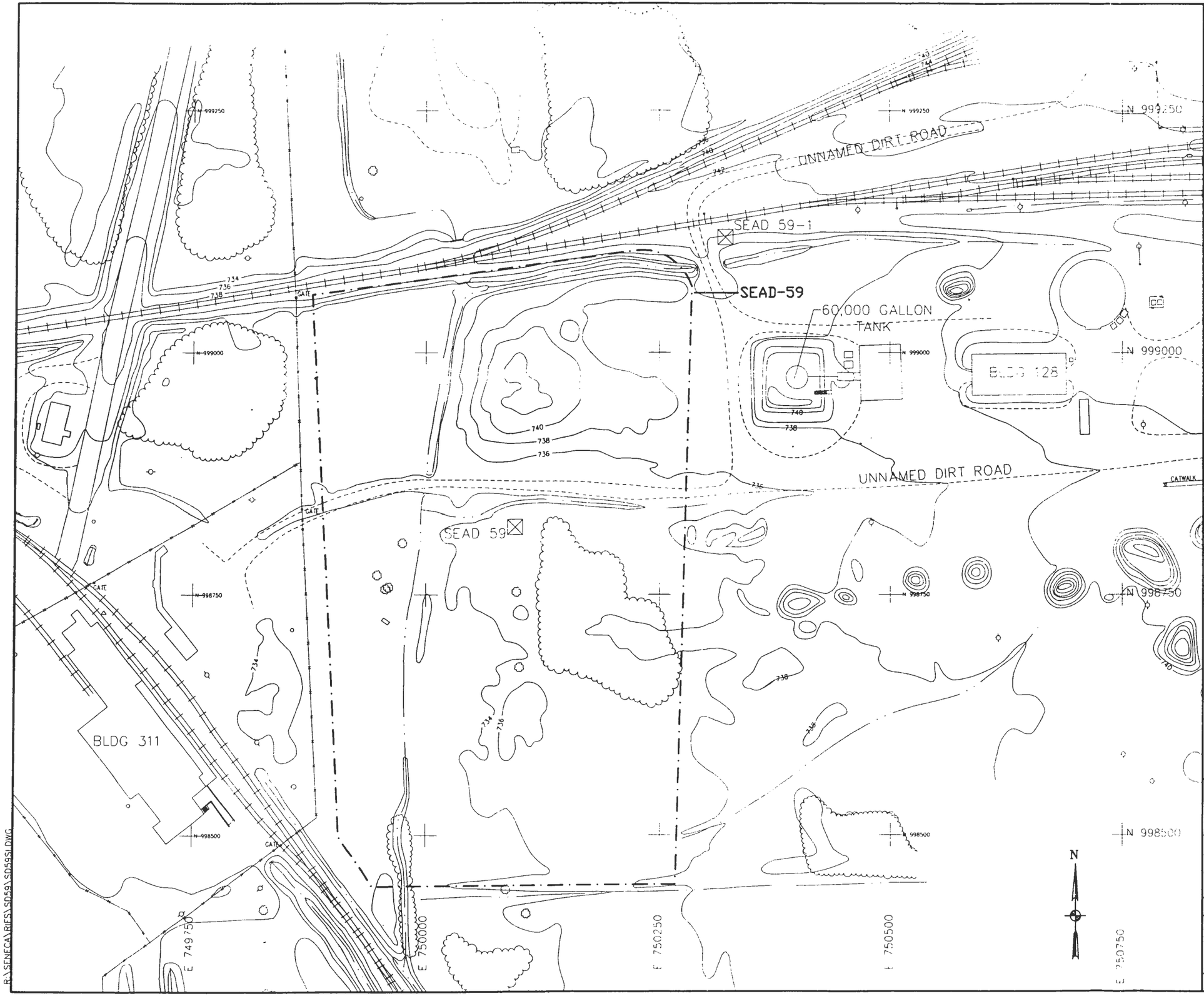
DECISION DOCUMENT- SEADs 59 AND 71

DEPT ENVIRONMENTAL ENGINEERING | DWG NO.

FIGURE 2-1

SENECA ARMY DEPOT MAP

SCALE 1" = 2000' | DATE APRIL 2002



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENTS
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- CORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- SURVEY MONUMENT
- OVERHEAD UTILITY POLE
- MAILBOX/RR SIGNAL
- APPROXIMATE EXTENT OF AOC

50 0 50 100
(feet)

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

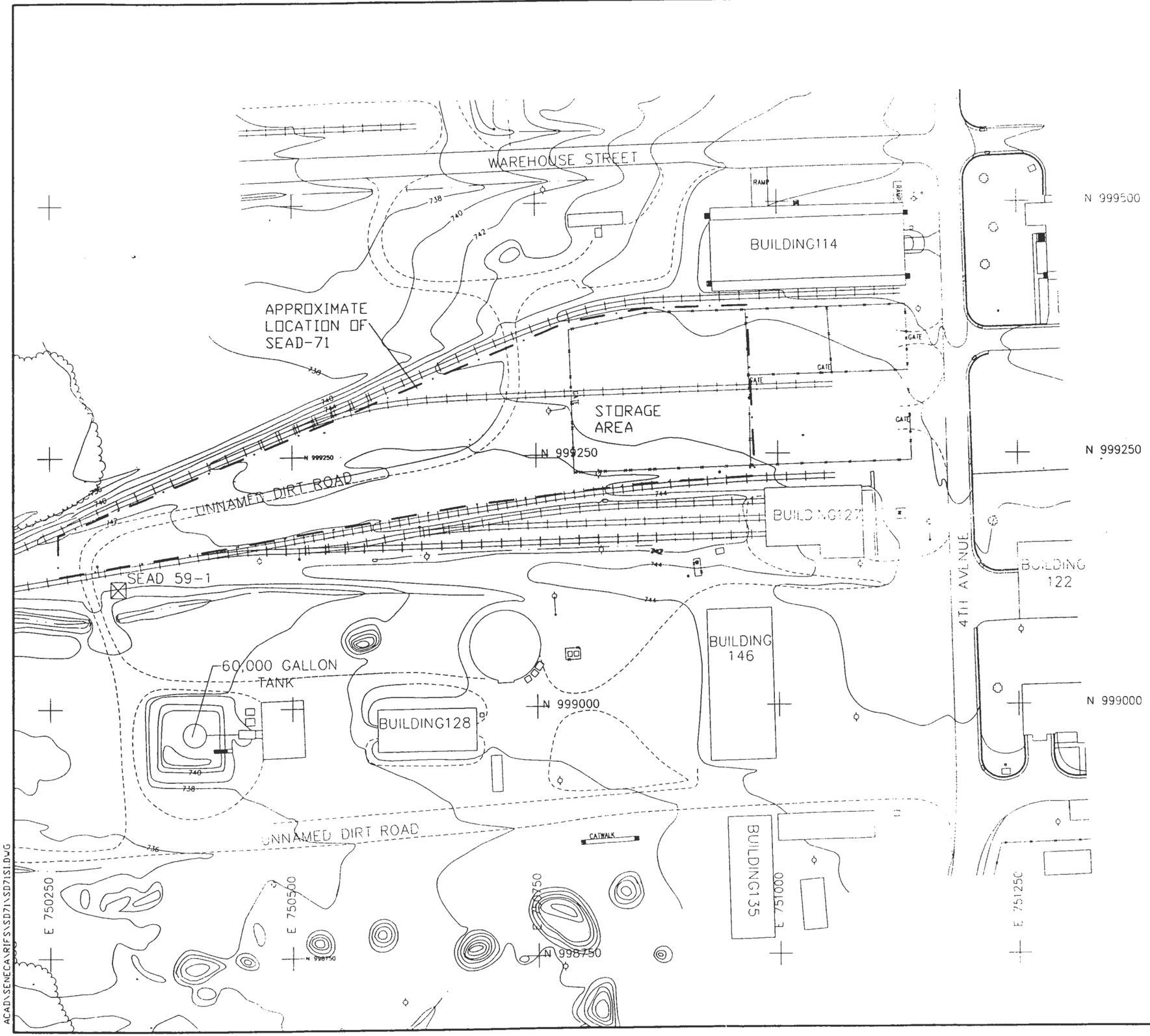
DECISION DOCUMENT-SEADs-59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-2

SEAD-59
SITE PLAN

JOB NUMBER	DATE	SHEET
734516-01001	APRIL 2001	No 1 OF 1

R:\SENECA\RIFS\SD59\SD59SI.DWG



N

LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENTS
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- CORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- OVERHEAD UTILITY POLE
- MAILBOX/RR SIGNAL
- APPROXIMATE EXTENT OF AOC

50 0 50 100
(feet)

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

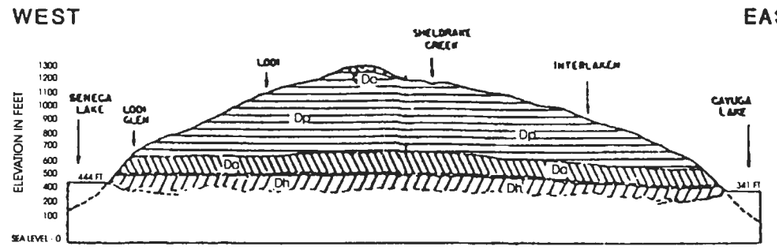
DECISION DOCUMENT-SEADs-59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-3

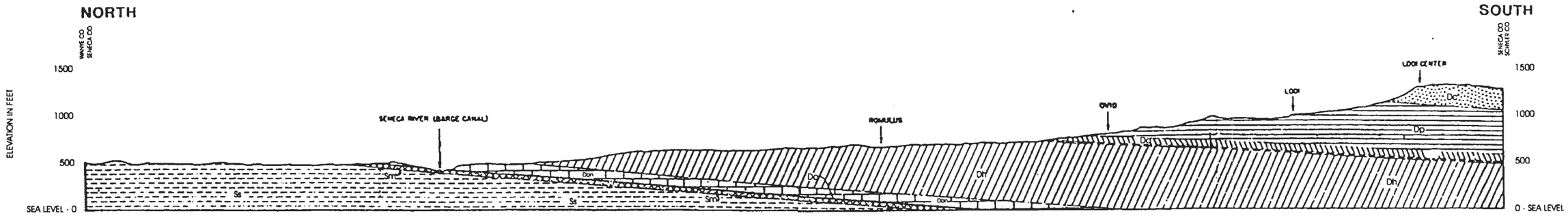
SEAD-71
SITE PLAN

JOB NUMBER	DATE	SHEET No. 1 OF 1
734516-01001	APRIL 2001	

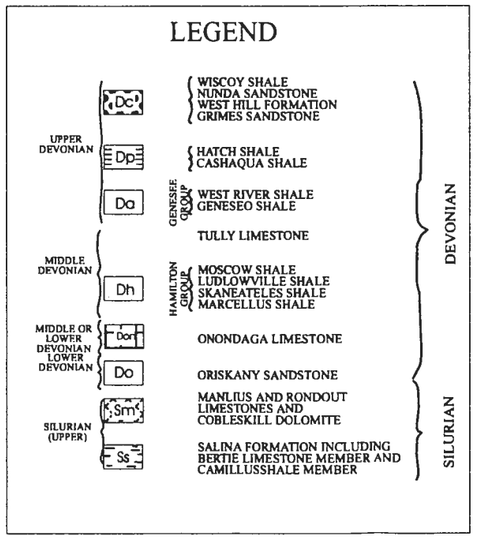
ACAD\SENECA\RIFS\SD71\SD71SLD.DWG



EAST-WEST SECTION ALONG A- A'



NORTH-SOUTH SECTION ALONG 76 50' (B-B')



SCALE

1 0 1 2 3 MILES

SOURCE:MODIFIED FROM-THE GROUND WATER RESOURCES OF SENECA COUNTY, NEW YORK: MOZOLA, A.J., BULLETIN GW-26, ALBANY, NY, 1951

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT - SEADs- 59 and 71

DEPT: ENVIRONMENTAL ENGINEERING

DWG NO: 734516-01001

FIGURE 2-4

REGIONAL GEOLOGIC CROSS SECTIONS

SCALE: AS NOTED

DATE: APRIL 2001

R:\PROJECT_GRAPHICS\SENECA\GEOXSEC.CDR(CVM)

MESOZOIC	Lower Cretaceous		MESOZOIC INTRUSIVES Kimberlite and alnoite dikes and diatremes
PALEOZOIC	Upper Devonian		CONNEAUT GROUP 600-1000 ft. (180-300 m.) Germania Formation-shale, sandstone; Whiteville Formation-shale, sandstone; Hinsdale Sandstone; Wellsville Formation-shale, sandstone; Cuba Sandstone. CANADAWAY GROUP 800-1200 FT(240-370) m.) Machias Formation-shale, siltsone; Rushford Sandstone; Caneadea, Canisteo, and Hume Shales; Canaseraga Sandstone; Stone Wales and Dunkirk Shales; in Pennsylvania: Towanda Foramtion-shale, sandstone, JAVA GROUP 300-700 FT (90-210 m.) Wiscoy Formation-sandstone, shale; Hanover and pipe creek shales. WEST FALLS GROUP 1100-1600 ft. (340-490 m.) Nunda Formation-sandstone, shale. West Hill and fardeau Formations-shale, siltstone; Roricks Glen Shale; upper Beers Hill Shale; Grimes Siltstone. lower Beers Hill Shale; Dunn Hill, Millport, and Moreland Shales. Nunda Formation-sandstone, shale; West Hill Formation-shale, siltstone; Corning Shale. "New Milford" Formation-sandstone, shale. Gardeau formation-shale, siltstone; Roricks Galn Shale. Slide Mountain Formation-sandstone, shale, conglomerate. Beers Hill Shale; Grimes Siltstone; Dunn Hill, Millport, and Moreland Shales SONYEA GROUP 200-1000 ft. (60-300 m.) In west: Cashaqua and Middlesex Shales. In east: Rye Point shale; Rock Stream ("Enfield") Siltstone; Pulteney, Sawmill Creek, John Creek, and Montour Shales. GENESEE GROUP AND TULLY LIMESTONE 200-1000 ft. (60-300 m.) West River Shale; Genundewa Limestone; Penn Yan and Geneseo Shales; all except Geneseo replaced eastwardly by Ithaca Formation-shale, siltstone and Sherburne Siltstone. Oneonta Formation-shale, sandstone. Unadilla Formation-shale, siltstone. Tully Limestone.
	Middle Devonian		HAMILTON GROUP 600-1500 ft. (180-460 m.) Moscow Foramtion-In west: Windom and Kashong Shales, Menteth Limestone Members; In east: Cooperstown Shale Member, Portland Point Limstone Member. Ludlowville Formation-In west: Deep Run Shale Tichenor Limestone, Wanakah and Ledyard Shale Members, Centerfield Limestone Member. In east: King Ferry Shale and other members, Stone Mill Sandstone Member. Skaneateles Formation-In west: Levanna shale and Stafford Limestone Members; In east: Butternut, Pompey, and Delphi Station Shale Members, Mottville Sandstone Member. Marcellus Formation-In west: Oakta Creek Shale Member; In east: Cardiff and Chittenango Shale Members, Cherry Valley Linestone and Union Springs Shale Members. Panther Mountain Formation-shale, siltstone, sandstone. ONONDAGA LIMESTONE AND ORISKANY SANDSTONE 75-150 ft. (23-45 m.) Onondaga Limestone-Seneca, Morehouse (cherty) and Nedrow Limestone Members, Edgecliff cherty Limestone Member, local bioherms. Oriskany Sandstone.
	Lower Devonian		HELDERBERG GROUP 0-200 ft. (0-60 m.) Coeymans and Manlius Limestones; Rondout Dolostone.
	Upper Silurian		AKRON DOLOSTONE, COBLESKILL LIMESTONE, AND SALINA GROUP 700-1000 FT. (210-200 M.) Akron Dolostone; Bertie Formation-dolostone , shale. Camillus and Syracuse Formatons-shale, dolostone, gypsum, salt. Cobleskill Limestone; Bertie and camillus Formations-dolostone, shale. LOCKPORT GROUP 80-175 FT (25-55 m.) Oak Orchard and Penfield Dolostones, both replaced eastwardly by Sconondoa Formation-limestone, dolostone.
	Lower Silurian		CLINTON GROUP 150-325 FT (40-100 m.) Decew Dolostone; Rochester Shale. Irondequoit Limestone; Williamson Shale; Wolcott Furnace Hematite; Wolcott Limestone; Sodus Shale; Bear Creek Shale; Wallington Limestone; Furnaceville Hematite; Maplewood shale; Kodak Sandstone. Herkimer Sandstone; Kirkland Hematite; Willowvale Shale; Westmoreland Hematite; Sauquoir Formation-sandstone shale; Oneida Conglomerate. MEDINA GROUP AND QUEENSTON FORMATION 0-900 FT. (0-270 m.) Medina Group: Grimb sy Formation-sandstone, shale. Queenston Formation-shale, siltstone.
	Upper Ordovician		LORRAINE GROUP 700-900 FT. (210-270 m.) Oswega Sandstone. Pulaski and Whetstone Gulf Formations-siltstoen, shale.
	Middle Ordovician		TRENTON GROUP 100-300 ft. (30-90 m.) Utica Shale.

Hamilton group

MOSCOW SHALE	140±	Lower two-thirds of section is a fossiliferous, soft gray calcareous shale; upper third highly friable but less calcareous and fossiliferous. Staining by iron oxide very common. Concretions present I greater abundance in lower beds, but irregular calcareous masses occur throughout section. Joints
LUDLOWVILLE SHALE	140±	Lower beds are thinly laminated, light-colored, fossiliferous, shaly passage beds; overlain by hard calcareous black shales 5 to 12 inches thick and rich in corals and brachiopods; hard layers responsible for falls and cascades. Middle beds are less fossiliferous, soft gray arenaceous shales, rich in concretions, calcareous lenses, and occasional thin sandstone layers. Upper beds (Tichenor limestone member) are thin, irregularly bedded ray shales becoming light blue gray upon exposure, calcareous, coarsely textured, and fossiliferous. Joint
SKANEATELES SHALE	185±	Basal beds composed of dark fissile shale. Upper shale more calcareous, grayish to bluish impure limestone layers. joint pattern N. 75° E. and N. 30° W.; diagonal joints N. 50° E. Joints sealed, parallel and spaced 6 inches to 4 feet apart.
MARCELLUS SHALE	50	Black, sletelike, bituminous shale with occasional limestone layers in sequence, containing zones rich in iron sulfides or calcareous conretions, often with septarian structures; very fissile, iron-stained and gray when weathered. Joint pattern N. 25° W., N. 65° E., 1 inch

SOURCE: MODIFIED FROM-THE GROUND WATER RESOURCES OF SENECA COUNTY, NEW YORK: MOZOLA, A.J., BULLETIN GW-26, ALBANY, NY, 1951

PARSONS ENGINEERING SCIENCE, INC.

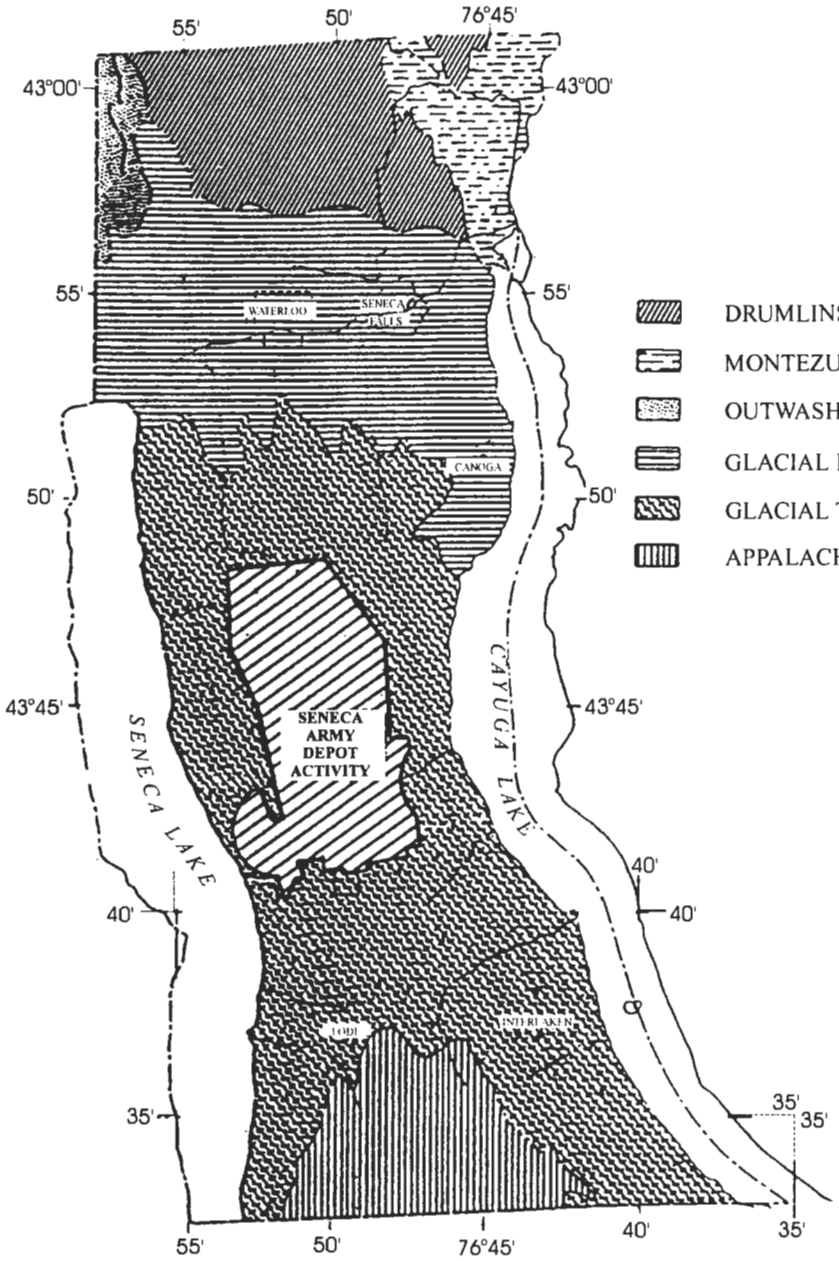
CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT - SEADs- 59 and 71

DEPT. ENVIRONMENTAL ENGINEERING | DWG NO. 734516-01001

FIGURE 2-5
BEDROCK STRATIGRAPHIC COLUMN

SCALE | DATE APRIL 2001

R: GRAPHICS\SENECA\BEDSTRAT.CDR(CVM)



SOURCE:MODIFIED FROM-THE GROUND WATER RESOURCES OF SENECA COUNTY, NEW YORK: MOZOLA, A.J., BULLETIN GW-26, ALBANY, NY, 1951

GRAPHICS SENECA PHYSIO.CDR(CVM)

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT- SEADs 59 and 71

DEPT	DWG NO
ENVIRONMENTAL ENGINEERING	734516-01001

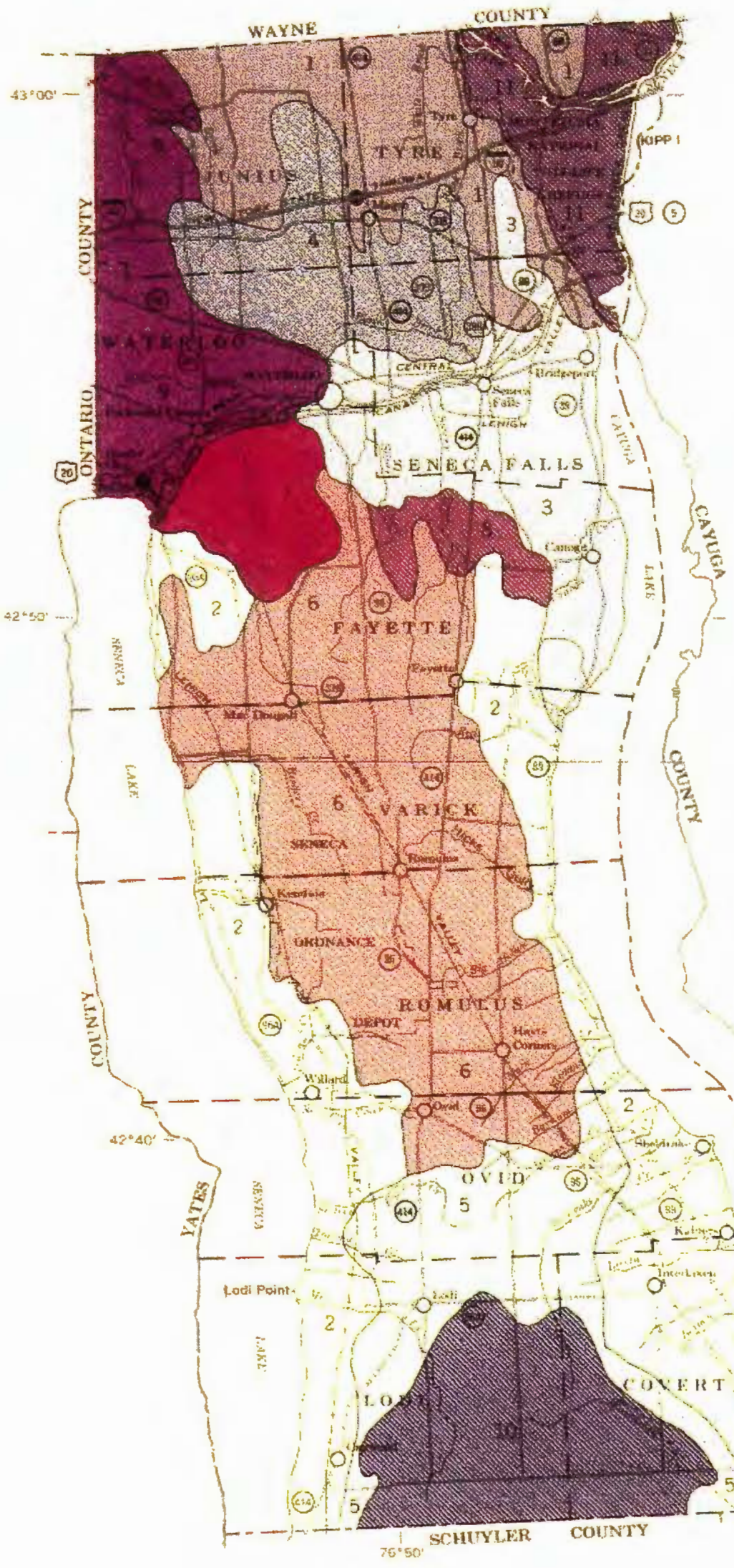
FIGURE 2-6

PHYSIOGRAPHIC MAP OF SENECA COUNTY

SCALE	DATE
1" = 5 MILES	APRIL 2001

N

1 0 1 2 3 4
SCALE IN MILES
1:190,080



SOIL ASSOCIATIONS

AREAS DOMINATED BY HIGH-LIME SOILS DEVELOPED IN GLACIAL TILL

1 — Ontario-Ovid association: Deep, well-drained to somewhat poorly drained soils that have a loam to silty clay loam subsoil

2 — Honeoye-Lima association: Deep, well-drained and moderately well drained soils that have a heavy silt loam to heavy loam subsoil

AREAS DOMINATED BY HIGH-LIME SOILS DEVELOPED IN GLACIAL LAKE SEDIMENTS

3 — Schoharie-Odessa association: Deep, well-drained to somewhat poorly drained soils that have a silty clay loam to clay subsoil

4 — Odessa-Lakemont association: Deep, dominantly somewhat poorly drained and poorly drained soils that have a silty clay loam to silty clay subsoil

AREAS DOMINATED BY MEDIUM-LIME SOILS DEVELOPED IN GLACIAL TILL

5 — Conesus-Lansing association: Deep, moderately well drained and well drained soils that have a heavy silt loam to heavy loam subsoil

6 — Darien-Angola association: Deep and moderately deep, somewhat poorly drained soils that have a silty clay loam and clay loam subsoil

AREAS DOMINATED BY MEDIUM-LIME SOILS DEVELOPED IN GLACIAL LAKE SEDIMENTS

7 — Dunkirk-Collamer association: Deep well drained and moderately well drained soils that have a silt loam to silty clay loam subsoil

8 — Dunkirk-Cazenovia association: Moderately deep and deep, well drained and moderately well drained soils that have a silt loam to silty clay loam subsoil that overlies limestone

9 — Arkport-Claverack association: Deep, dominantly well drained and moderately well drained soils that are loamy fine sand and fine sandy loam throughout or that have a loamy fine sand subsoil over silty clay or clay

AREAS DOMINATED BY LOW-LIME SOILS DEVELOPED IN GLACIAL TILL

10 — Langford-Erie association: Deep, moderately well drained and somewhat poorly drained soils that have a channery silt loam to channery loam fragipan

AREAS DOMINATED BY LOW-LIME SOILS DEVELOPED IN ORGANIC MATERIAL

11 — Muck-Peat-Fresh Water Marsh association: Deep to shallow, very poorly drained organic soils

FEBRUARY 1971

SOURCE: U.S. DEPARTMENT OF ARGRICULTURE
SOIL CONSERVATION SERVICE
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION

PARSONS
PARSONS ENGINEERING SCIENCE, INC.

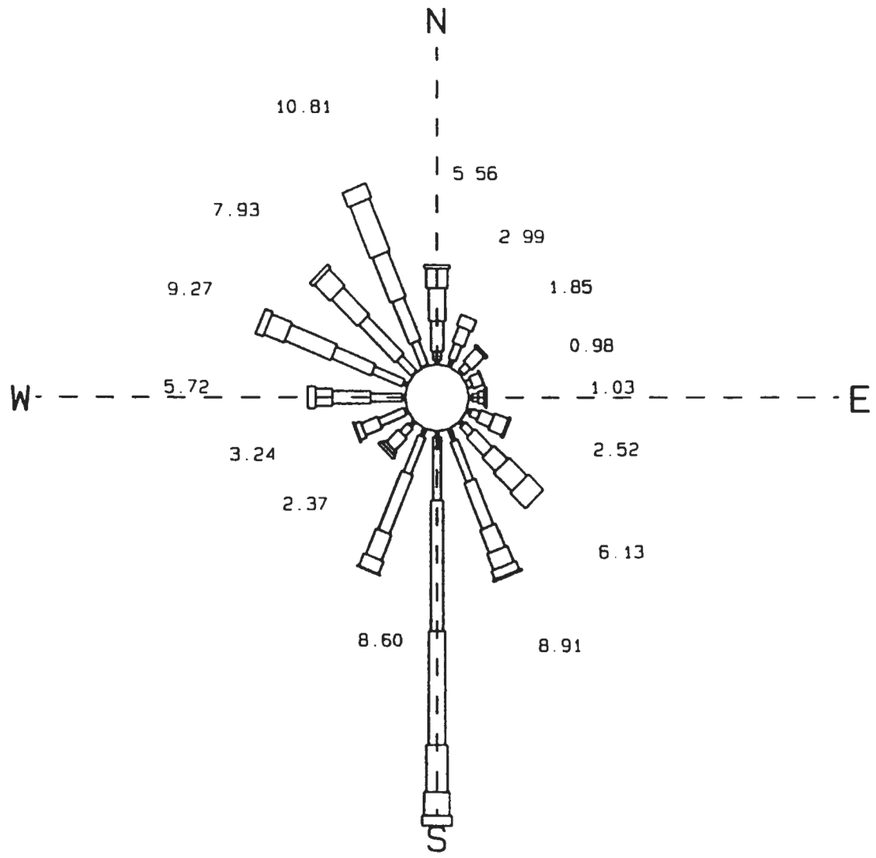
CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT - SEADs 59 and 71

DEPT ENVIRONMENTAL ENGINEERING | DWG NO. 734516-01001

FIGURE 2-7

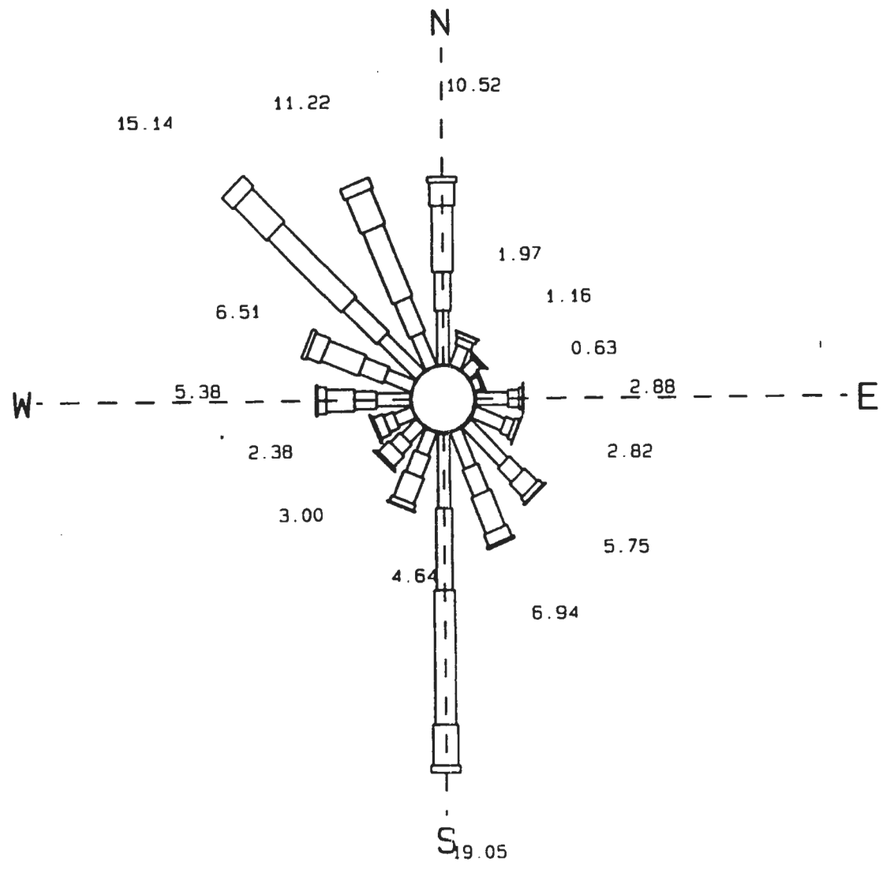
GENERAL SOIL MAP
SENECA COUNTY, NEW YORK

SCALE 1" = 2000' | DATE APRIL 2001



TOTAL HOURS: 2928
PERCENT CALM: 0.00

SENECA ARMY DEPOT
SENECA 10-M MET. TOWER
SEASONAL WIND ROSE
10 METER LEVEL APRIL 24 - JULY 14 1995



TOTAL HOURS: 29307
PERCENT CALM: 14.29
PERCENT MISSING: 0.00

SENECA ARMY DEPOT
ITHACA AIRPORT
ANNUAL WIND ROSE
20 FOOT LEVEL FOR: 1989-1993

PARSONS
PARSONS ENGINEERING SCIENCE, INC.

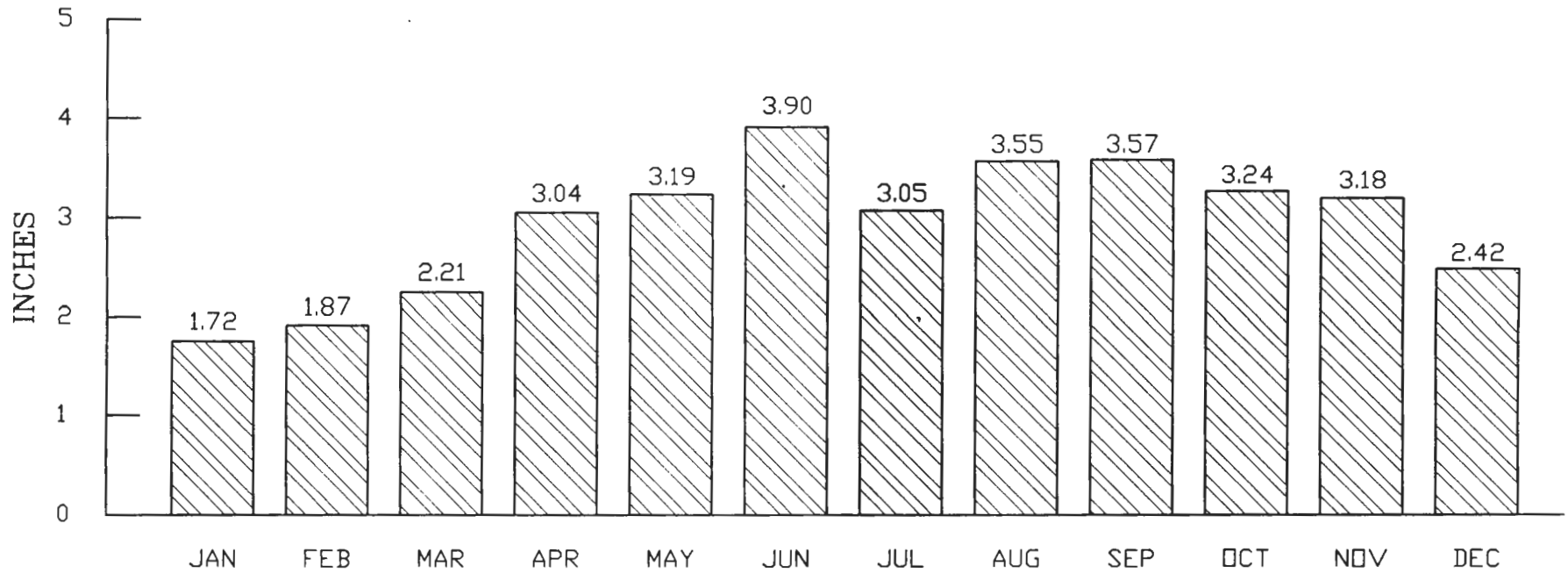
CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT- SEADs- 59 and 71

DEPT ENVIRONMENTAL ENGINEERING | DWG NO 734516-01001

FIGURE 2-8
WIND ROSES

SCALE NA | DATE APRIL 2001

GRAPHICS\SENECA\2WROSES.CDR



DATA IS FROM THE NORTHEAST REGIONAL CLIMATE CENTER, CORNELL UNIVERSITY, ITHACA, NY AND IS GIVEN A MONTHLY AVERAGE PRECIPITATION AVERAGED OVER THE YEARS 1957 THROUGH 1991.

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

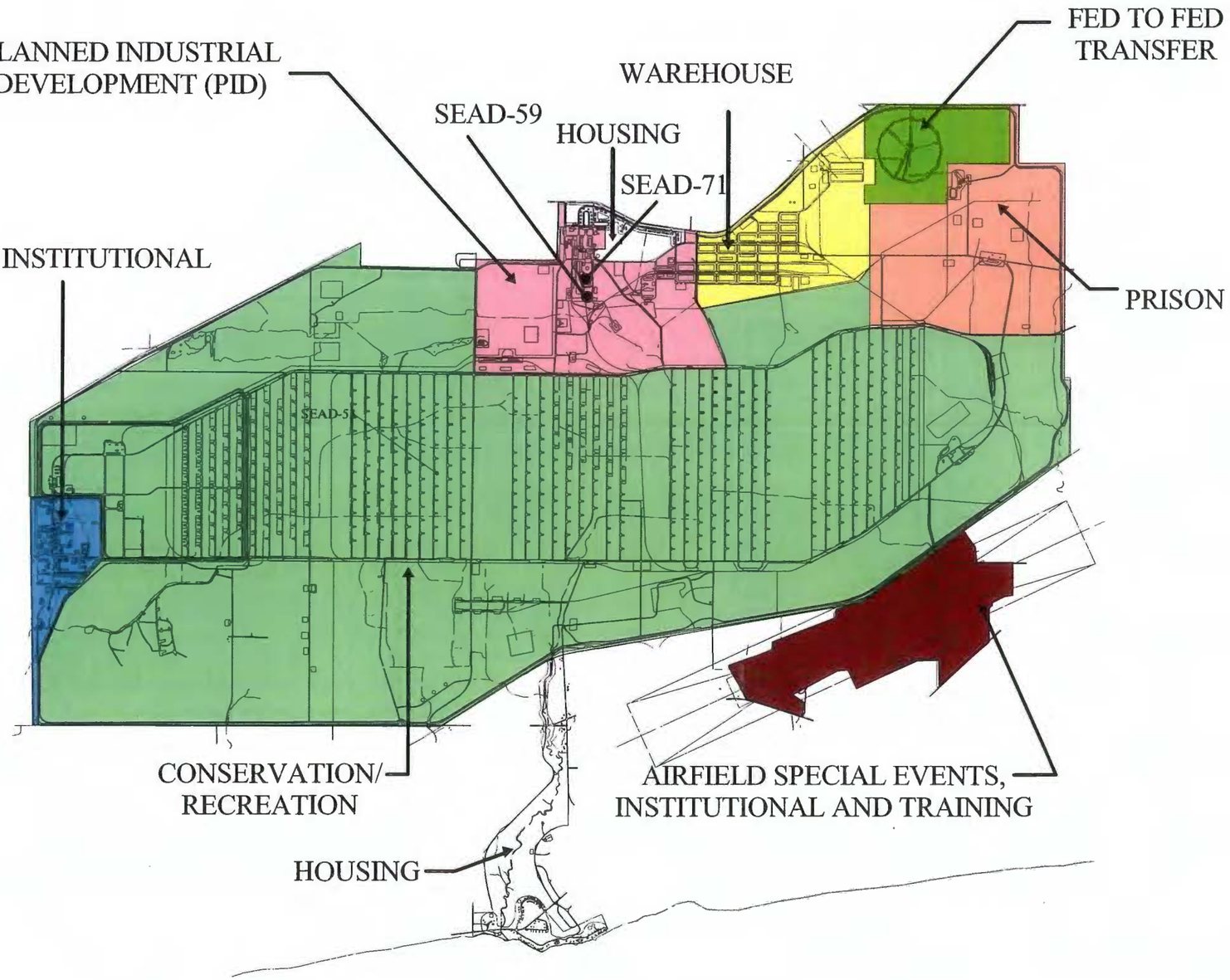
DECISION DOCUMENT-SEADs-59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-9

AVERAGE MONTHLY PRECIPATION
IN PROXIMITY OF
SENECA ARMY DEPOT ACTIVITY

JOB NUMBER	DATE	SHEET No 1 OF 1
734516-01001	APRIL 2001	

R:\SENECA\RFS\5059\AVG-MNTH.DWG



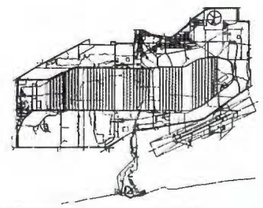
N

LEGEND

- Airfield
- Conservation
- Federal
- Industrial
- Institutional
- Prison
- Warehouse
- Housing

4000 0 4000 8000 Feet

KEY PLAN



PARSONS

PARSONS ENGINEERING SCIENCE, INC.

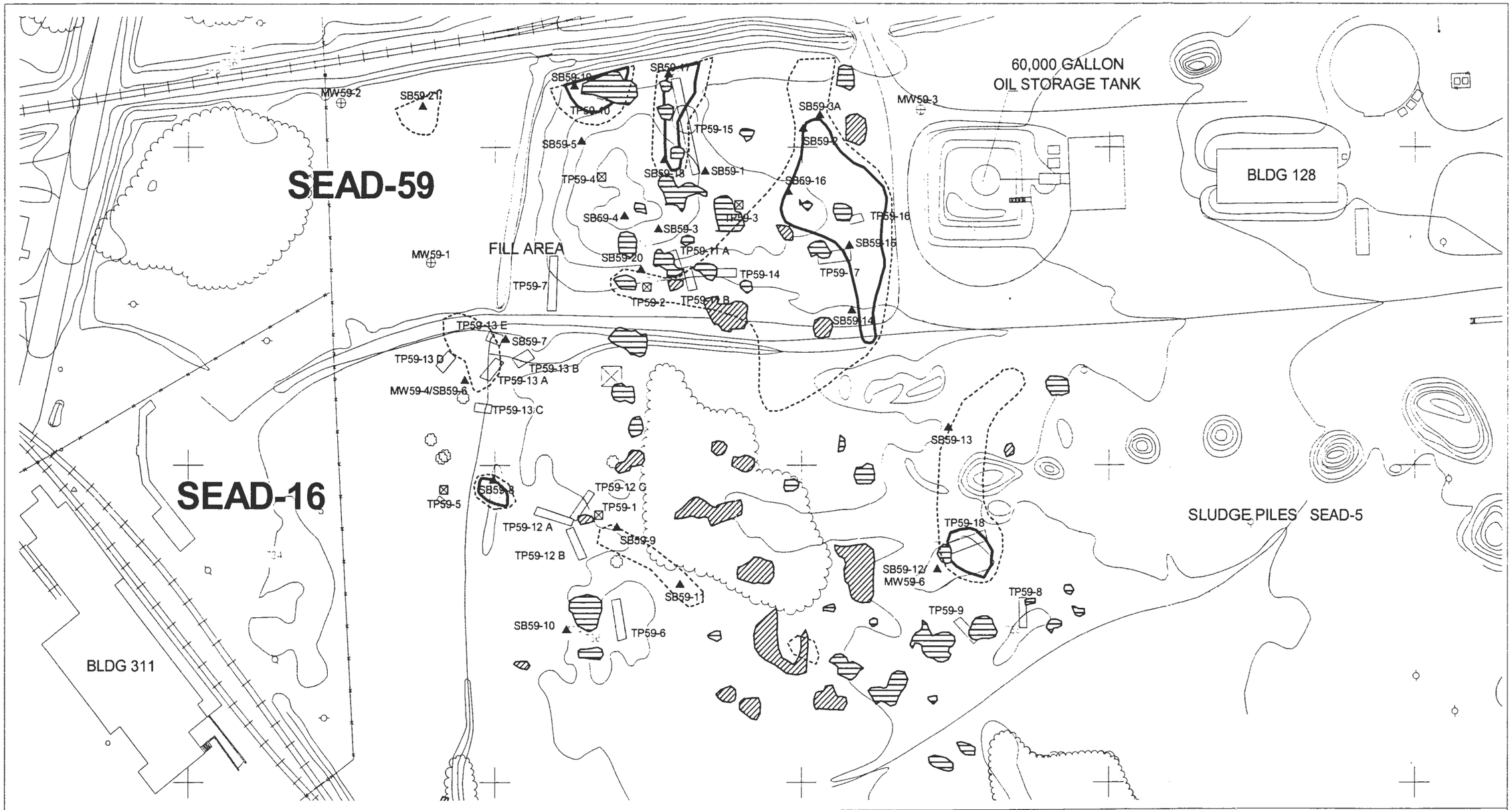
SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT- SEADs 59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-10

FUTURE LAND USE

JOB NUMBER: 734516-01001 | DATE: DECEMBER 2001

o:\seneca\sead59\71 sead59.apr



Base Map Features

Phase I RI Test Pit Locations

ESI Test Pit Locations

Monitoring Well Location

Soil Boring Location

Suspected Source of Geophysical Anomalies

Known Surface Debris

Unknown

Soil Gas

20 ppm or greater

10 ppm - 20 ppm

50 0 50 100 Feet

N

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

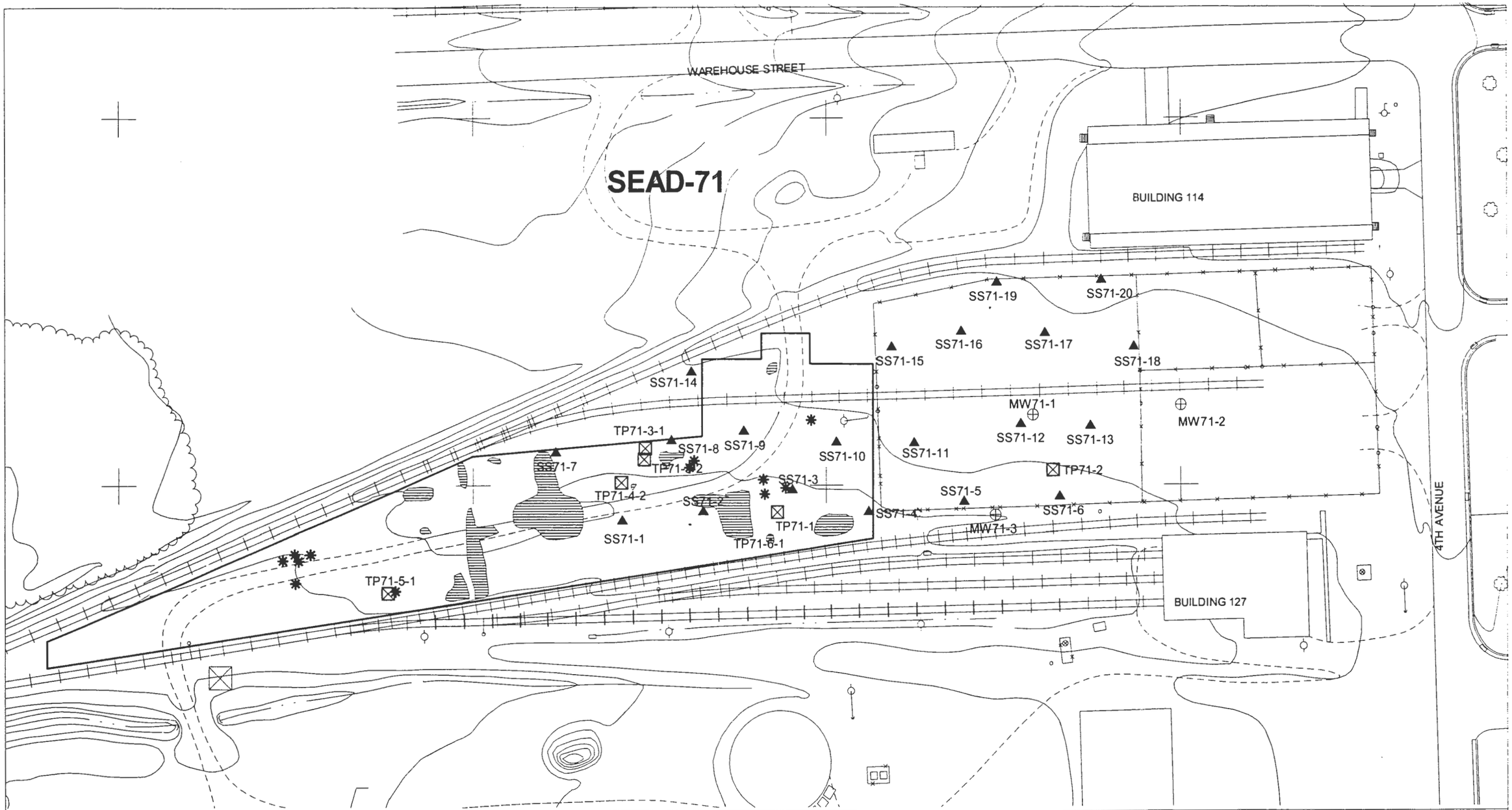
SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT- SEADs 59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-11
SEAD-59 Phase I Remediation Investigation
Sample Locations

JOB NUMBER	DATE	SHEET
734516-01001	MARCH 2002	No. 1 OF 1

o:\seneca\sead59\1\sead59.apr



o:\seneca\sead5971\sead59.apr

PARSONS

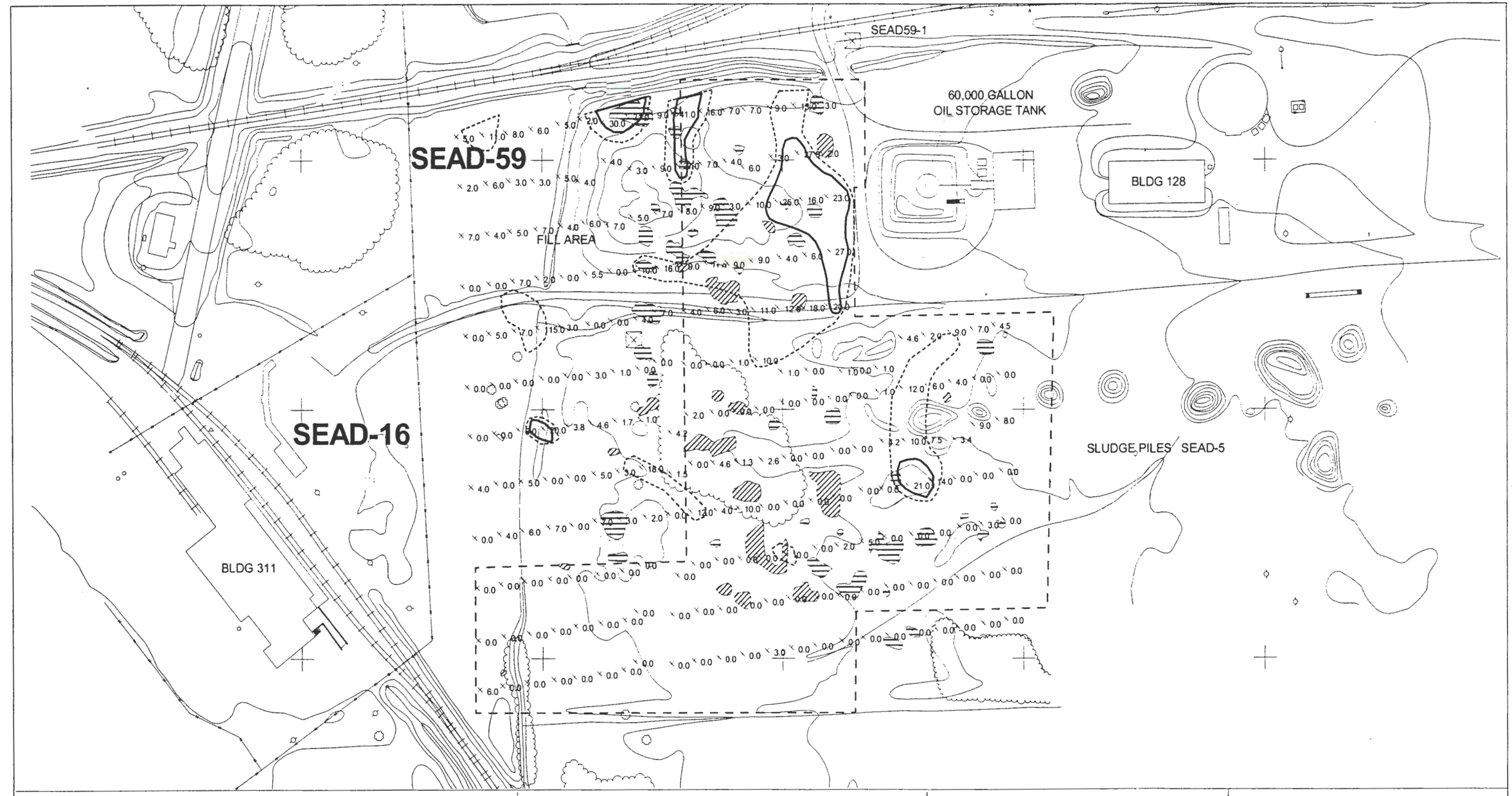
PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT SEADs 59 and 71

FIGURE 2-12
SEAD-71 Phase I Remediation Investigation
Sampling Locations and GPR Survey Results

JOB NUMBER	DATE	SHEET
734516-01001	FEBRUARY 2002	SHEET No. 1 OF 1



Base Map Features

Suspected Source of Geophysical Anomalies

- Known Surface Debris
- Unknown
- Extent of Geophysical Survey

Soil Gas

- 20 ppm or greater
- 10 ppm - 20 ppm

90 0 90 180 Feet

N

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

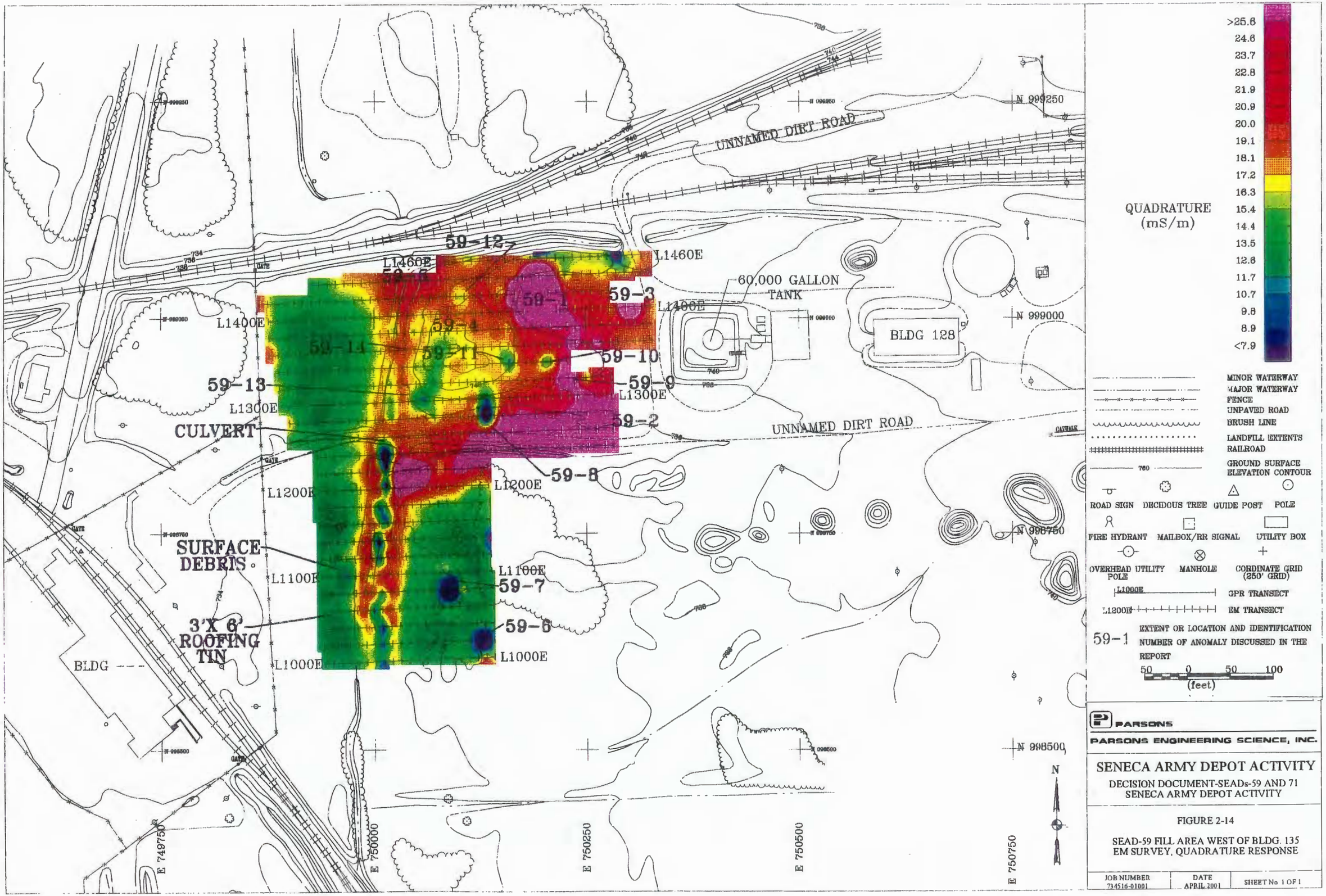
SENECA army DEPOT ACTIVITY

DECISION DOCUMENT - SEADs 59 AND 71

FIGURE 2-13
SEAD-59 Phase I Remediation Investigation
Results of Soil Gas Survey and Geophysical Investigation

JOB NUMBER	DATE	SHEET No.
734516-01001	MARCH 2002	1 OF 1

o:\seneca\sead5971\sead59.apr



PARSONS

PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT-SEADs-59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-14

SEAD-59 FILL AREA WEST OF BLDG. 135
EM SURVEY, QUADRATURE RESPONSE

JOB NUMBER	DATE	SHEET
734516-01001	APRIL 2001	No 1 OF 1

UNNAMED DIRT ROAD

N 999250

N 999000

N 998750

N 998500

N 998250

E 749750

E 750000

E 750250

E 750500

E 750750

L1460E

L1400E

L1300E

L1200E

L1100E

L1000E

59-12

59-5

59-1

59-3

59-4

59-14

59-11

59-10

59-13

59-9

59-2

59-8

59-7

59-6

60,000 GALLON TANK

BLDG 128

CULVERT

SURFACE DEBRIS

3'X 6' ROOFING TIN

BLDG

GATE

CATWALK

IN-PHASE (ppt.)

>1.63
1.39
1.14
0.90
0.65
0.41
0.17
-0.07
-0.31
-0.56
-0.80
-1.04
-1.29
-1.53
-1.78
-2.02
-2.26
-2.51
-2.75
<-2.99

MINOR WATERWAY
MAJOR WATERWAY
FENCE
UNPAVED ROAD
BRUSH LINE
LANDFILL EXTENTS
RAILROAD
760 GROUND SURFACE ELEVATION CONTOUR
ROAD SIGN
DECIDOUS TREE
GUIDE POST
POLE
FIRE HYDRANT
MAILBOX/RR SIGNAL
UTILITY BOX
OVERHEAD UTILITY POLE
MANHOLE
CORDINATE GRID (250' GRID)
L1000E GPR TRANSECT
L1200E EM TRANSECT
59-1 EXTENT OR LOCATION AND IDENTIFICATION NUMBER OF ANOMALY DISCUSSED IN THE REPORT

50 0 50 100
(feet)

N

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

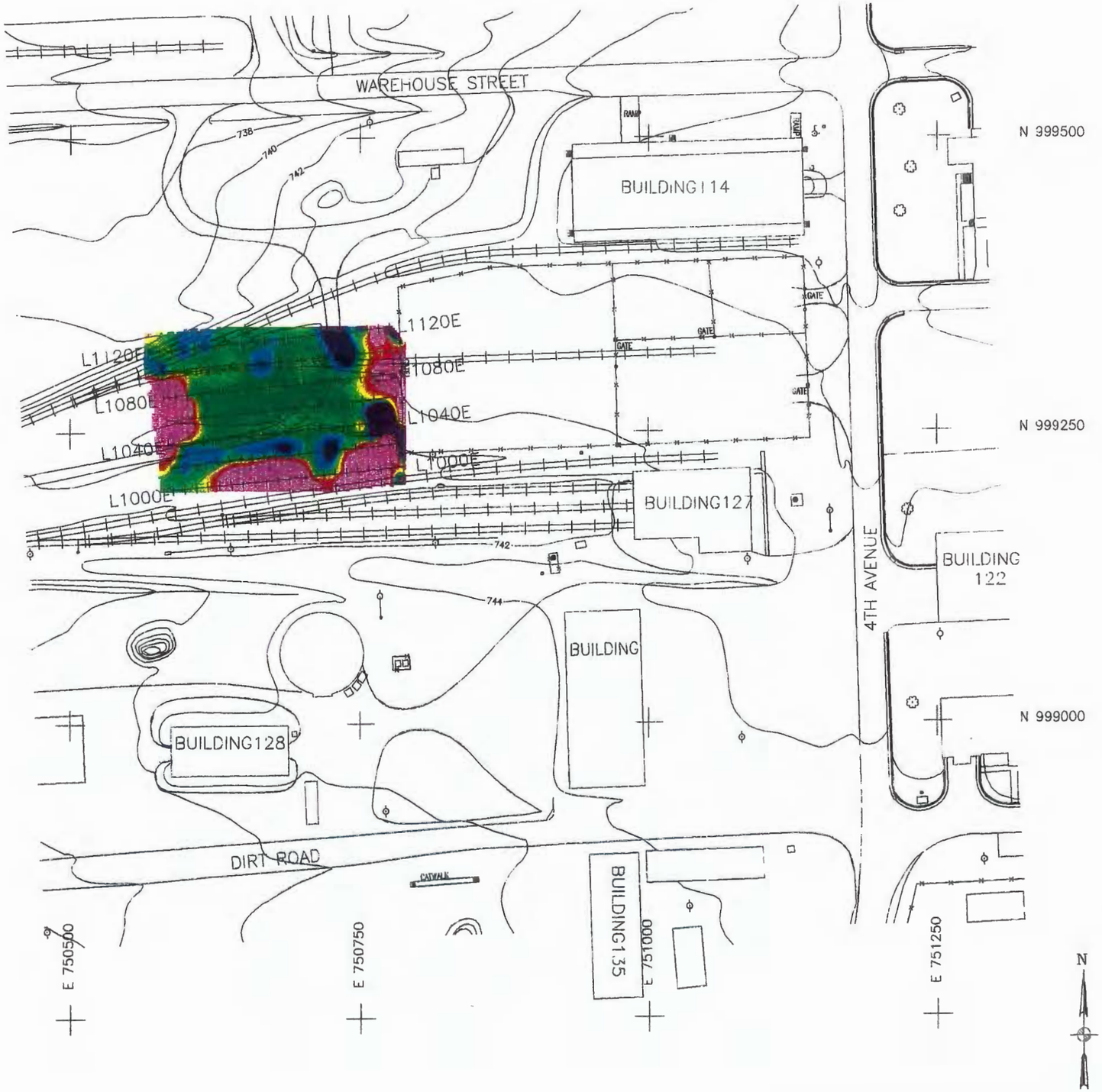
SENECA ARMY DEPOT ACTIVITY

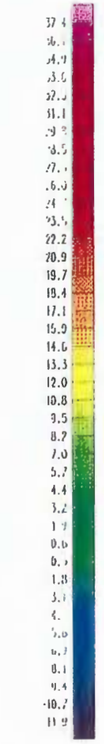
DECISION DOCUMENT-SEADs-59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-15

SEAD-59 FILL AREA WEST OF BLDG 135
EM SURVEY, IN-PHASE RESPONSE

JOB NUMBER	DATE	SHEET
734516-01001	APRIL 2001	No 1 OF 1





50 0 50 100
(feet)

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

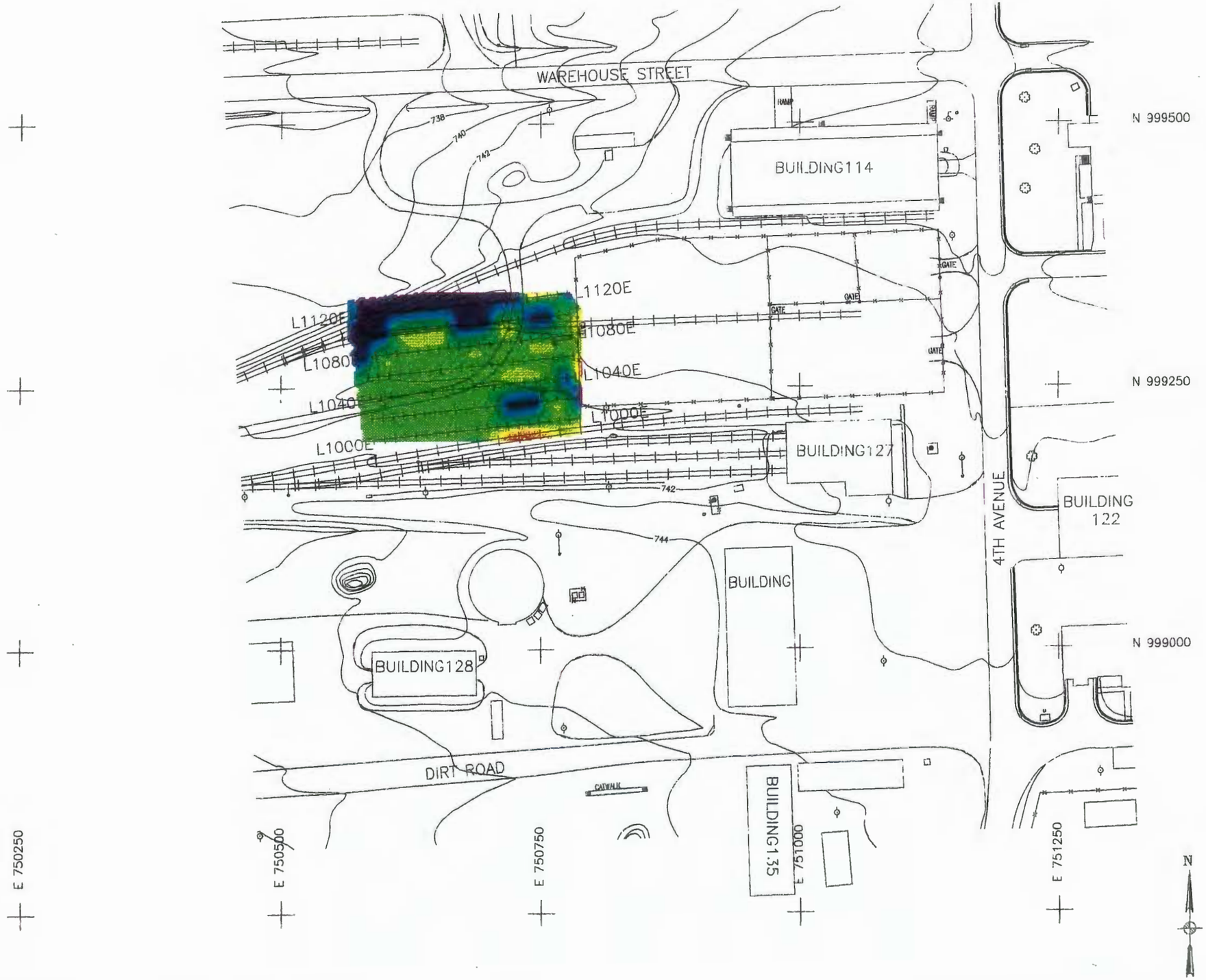
SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT-SEADs-59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-16

SEAD-71 ALLEGED PAINT DISPOSAL AREA
EM SURVEY, QUADRATURE RESPONSE

JOB NUMBER	DATE	SHEET
734516-01001	APRIL 2001	No 1 OF 1



PARSONS

PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT-SEADs-59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-17

SEAD-71 ALLEGED PAINT DISPOSAL AREA
EM SURVEY, IN-PHASE RESPONSE RESPONSE

JOB NUMBER	DATE	SHEET No 1 OF 1
734516-01001	APRIL 2001	

3 RECOMMENDATIONS

This section presents the Army's recommendation that a time-critical removal action be conducted at SEAD-59 and SEAD-71, both of which are located in a portion of SEDA that is designated for Planned Industrial Development. The time-critical removal action would consist of excavation of the debris and visually impacted soil, off-site disposal, verification sampling and analysis, backfilling, and re-establishment of grade surface and vegetation at each excavation site. Soil excavated from the site that was determined not to pose a risk to human health or groundwater quality would be used as part of the backfill for the excavations. Verification sampling would be conducted after the excavation of debris and soils.

3.1 REMEDIAL ACTION OBJECTIVE

For SEAD-59 and SEAD-71, the remedial objective is to remove the source of potential risks to human health, the environment, and groundwater quality.

The results of the test pitting investigations have confirmed the presence of 55-gallon drums, paint cans, and other containers at SEADs-59 and 71. The presence of such buried objects is of concern since the nature of the contents is unknown. The uncertainty of the contents of the buried items that may remain in the disposal area and at geophysical anomalies and the contamination in soils and groundwater are considered justification for performing removal actions at SEADs-59 and 71. While removal of drums, paint cans, and other containers is the focus of the planned removal actions for both sites, the potential for contamination to be present in the soils and groundwater that surround these items will also be addressed by this action.

3.2 REMEDIATION GOALS

Soil verification samples will be collected from the base and side walls of each excavation and analyzed for contaminants of concern. The results obtained will be compared to the NYSDEC's recommended soil cleanup goals presented in Tables 1, 2, 3, and 4 of TAGM #4046. The soil data will also be used to complete the RI/FS process and to evaluate the risk at the sites.

3.3 RECOMMENDED REMOVAL ACTION

SEAD-59 consists of two areas that are located north and south of an access road that bisects the site from east to west. The area north of the road is a fill area and the area south of the road was used as a staging area for heavy equipment and construction materials.

As part of the removal action at SEAD-59, approximately 23,025 cy of soil will be excavated (**Figure 3-1**). The fill area (Area 1) will be excavated. Geophysical anomalies located south of the road will be excavated. Drums, paint cans, and construction debris will be screened out and disposed

off-site at approved facilities. The excavation limits will be determined based on the visual extent of contamination. Excavation will continue until all debris and visually impacted soils have been removed. Cleanup verification sampling of soil will be collected from the bottom and sides of the excavations based on a 50 feet by 50 feet grid. For small excavations measuring less than 2,500 square feet, five samples will be collected (1 from the base and one from each sidewall) at each excavation site. Confirmatory samples will not be collected in areas where only inert surface debris such as concrete or scrap metal is removed.

Following excavation, soils will be placed in 150 cy piles for testing to ensure that they comply with the cleanup goals established for the site. One confirmatory sample will be collected per 150 cy pile. Soils with concentration of VOCs, SVOCs, pesticides, and metals exceeding the cleanup goals will be disposed of at an off-site facility. These soils will also be analyzed for the characteristic of toxicity via the Toxicity Characteristic Leaching Procedure (TCLP) (every 150 cy), which is required for landfill disposal. Soils from SEAD-59 are not expected to exceed TCLP limits. Based on the soil data obtained from SEAD-59, it was assumed that 65% of the excavated soil will contain concentrations of compounds above the associated cleanup goals and will require off-site disposal. There is a possibility that some soils from SEAD-59 will also exceed the TCLP limits. These soils will be treated offsite. Once treatment of necessary soils has occurred, these contaminated soils will be transported to an off-site, Subtitle D, solid waste industrial landfill for disposal.

Prior to backfilling, the Army will provide the results of the confirmatory sampling analyses to the NYSDEC and EPA for prior written approval of the excavated material as backfill. Excavated soil that is not found to contain concentrations of contaminants in excess of NYSDEC TAGM 4046 criteria will be used as backfill into the former fill area or the area south of the road. Additional clean fill will be brought on-site to supplement the soil recovered from the excavations. The sites will be regraded. A two-foot thick vegetative cover will be placed over the former fill area. It is assumed that provisions of NYCRR Part 360 will no longer apply to SEAD-59 because the fill area is being removed. The remaining areas will be covered with crushed stone.

The excavations at SEAD-59 will be dewatered and the water will be collected and placed in holding tanks. Any groundwater collected will be treated via air stripping and disposed in accordance with applicable state and federal regulations in a storm drain or drainage ditch.

A contingency plan will be added to the Removal Action Work Plan in case additional debris, or debris that does not fit the description of materials excavated to date is found and excavated. The contingency plan will also provide procedures to be followed if drums, similar to those encountered in the test pits conducted during the Phase I RI, are encountered.

At SEAD-71, approximately 861 cubic yards of geophysical anomalies and soils with concentrations exceeding the soil cleanup goals for the site will be excavated (**Figure 3-2**). Paint cans and debris will be screened out and disposed offsite. The excavation limits will be determined based on the visual extent of contamination. Excavation will continue until all debris and visually impacted soils have been removed. Cleanup verification sampling of soil will be collected from the bottom and sides of the excavations based on a 50 feet by 50 feet grid. For small excavations, five samples will be collected (one from the based and one from each sidewall) at each excavation site. Confirmatory samples will not be collected in areas where only inert surface debris such as concrete or scrap metal is removed.

Following excavation, soils will be placed in 150 cy piles for testing to ensure that they comply with the cleanup goals developed for the site. One confirmatory sample will be collected from each 150 cy pile of excavated soil. Soils with concentration of VOCs, SVOCs, and metals exceeding the cleanup goals will be disposed at an off-site facility. These soils will also be analyzed for the characteristic of toxicity via the Toxicity Characteristic Leaching Procedure (TCLP) (every 150 cy) which is required for landfill disposal. About 3% (26 cy) of SEAD-71 soils are expected to exceed TCLP limits due to elevated levels of lead. There is a possibility that more than 3% of the soil may exceed the TCLP limits. These soils will be treated offsite. Once treatment of necessary soils has occurred, these contaminated soils will be transported to an off-site, Subtitle D, solid waste industrial landfill for disposal.

Prior to backfilling, the Army will provide the results of the confirmatory sampling analyses to the NYSDEC and EPA for prior written approval of the excavated material as backfill. Excavated soil that is not found to contain concentrations of contaminants in excess of NYSDEC TAGM 4046 criteria will be used as backfill at SEAD-71. No backfilling will occur without prior written approval from the NYSDEC. The area will be covered with crushed stone.

3.4 JUSTIFICATION

A time-critical removal action at both SEAD-59 and SEAD-71 is proposed due to the increased potential for exposure of workers and other re-users now present at the Depot to chemicals and debris that have been identified at these sites. The presence of drums and other containers and the uncertainty of their contents is also justification for a removal action at both sites.

Since the historic military mission of the Depot has been terminated, the Depot has been closed by the DoD and the US Army. This time-critical removal action would eliminate contaminants that have been identified in the soil that represent a potential threat to the environment and neighboring populations. In accordance with provisions of the DoD's BRAC process, the land and the facilities of the former Depot have been surveyed and evaluated, and prospective beneficial uses of the facility have been identified. Portions of the Depot are now being released to the public and private sectors for reuse under the

BRAC process. As portions of the former Depot are released for other beneficial uses, increased access is afforded to all portions of the former Depot. This may result in an increased potential for exposure of populations to any residual chemicals that are present at former solid waste management units (SWMUs) remaining at the depot pending clean-up. Therefore, the goal of the proposed time-critical removal action at SEAD-59 and SEAD-71 is to remove debris and visually contaminated soil. This removal action would remove or at least lessen the magnitude of the potential threat that it represents to surrounding populations and the environment.

3.5 POST-REMOVAL VERIFICATION SAMPLING

Verification of the surrounding soil quality will be demonstrated and documented by conducting post-removal verification sampling and analysis (i.e., confirmational sampling and analysis). Analytical results produced from the analysis of the samples will be compared to soil cleanup levels presented in Tables 1, 2, 3, and 4 of TAGM 4046.

Cleanup verification sampling of soil will be collected from the bottom and sides of the excavations based on a 50 feet by 50 feet grid. For small excavations measuring less than 2,500 square feet, five samples will be collected (1 from the base and one from each sidewall) at each excavation site. Confirmatory samples will not be collected in areas where only inert surface debris such as concrete or scrap metal is removed. At the proposed spacing of the confirmational soil samples, the Army anticipates that approximately 162 confirmational samples will be collected from SEAD-59 and 37 samples will be collected from SEAD-71.

All of the collected samples will be analyzed in accordance with NYSDEC CLP procedures at a state-certified laboratory. Each of the proposed SEAD-59 confirmatory samples will be analyzed for VOCs, SVOCs, pesticides, and metals. Each of the proposed SEAD-71 confirmatory samples will be analyzed for VOCs, SVOCs, and metals. Specific details of the proposed confirmational sampling are provided in **Appendix F** of this Action Memorandum and Decision Document.

3.6 REMEDIAL ACTION COSTS

Preliminary capital costs for excavation, off-site disposal of debris and on-site backfilling of soil were developed using TRACES/MCACES for Windows v1.2 software. The estimated capital cost and present worth cost for this alternative is $4,077,107. Annual costs associated with this removal action include maintenance of the vegetative covers. **Table 3.6-1** provides the cost breakdown, with cost backup and assumptions provided in **Appendix D**.

Table 3.6-1
Cost Estimate for Excavation and Off-site Disposal
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SEAD-59	Recommended Removal Action Excavation/Off-site Disposal
Cost to Prime	$2,609,953
Cost to Owner	$3,603,130
Annual O&M Costs	$2,000
Annual Post Remediation Monitoring Costs	$0
Present Worth O&M and Monitoring Costs (5 years)	$8,904
Total Evaluated Price	$3,612,034

SEAD-71	Recommended Removal Action Excavation/Off-site Disposal
Cost to Prime	$340,960
Cost to Owner	$456,170
Annual O&M Costs	$2,000
Annual Post Remediation Monitoring Costs	$0
Present Worth O&M and Monitoring Costs (5 years)	$8,904
Total Evaluated Price	$465,074

SEADs-59 and 71	Recommended Removal Action Excavation/Off-site Disposal
Cost to Prime	$2,950,913
Cost to Owner	$4,059,300
Annual O&M Costs	$4,000
Annual Post Remediation Monitoring Costs	$0
Present Worth O&M and Monitoring Costs (5 years)	$17,807
Total Evaluated Price	$4,077,107

NOTES:

1. Cost to Prime (Contractor) is the sum of the direct costs plus any sales tax, subcontractor markups, and adjust pricing that have been applied in the project.
2. Cost to Owner is the sum of the Cost to Prime plus prime contractor Indirect Cost. Also known as the bid amount or construction contract cost.
3. Annual Costs are costs that will occur yearly due to activities such as maintenance or monitoring.
4. Post Remediation Monitoring consists of semi-annual groundwater monitoring.
5. Present Worth Cost is based on a 4% interest rate over the number of years specified above.
6. Total Evaluated Price is the sum of the Project Cost and Present Worth Cost.

SEAD-71

BUILDING 114

BUILDING 127

Area - E1
Area = 194 sf
Depth = 3 ft
Volume = 22 cy

Area - E2
Area = 655 sf
Depth = 3 ft
Volume = 73 cy

Area - C
Area = 2996 sf
Depth = 3 ft
Volume =334 cy

Area - A
Area = 971sf
Depth = 3 ft
Volume = 108 cy

Area - B
Area = 2103 sf
Depth = 3 ft
Volume = 234 cy

Area - D
Area = 807 sf
Depth = 3 ft
Volume = 90 cy

SS71-19
SS71-20
SS71-16
SS71-17
SS71-15
SS71-18
SS71-14
SS71-9
MW71-1
MW71-2
TP71-3-1
SS71-8
SS71-12
SS71-13
SS71-7
TP71-3-2
SS71-10
SS71-11
TP71-2
TP71-4-2
SS71-3
SS71-5
MW71-3
SS71-6
SS71-2
TP71-1
SS71-4
SS71-1
TP71-6-1
TP71-5-1

A
B
C
D
E 1
E 2
E 3

Base Map Features

Approximate Extent of 1997 GPR Survey

Suspected Locations of GPR Anomalies

ESI Test Pit Locations

Monitoring Well Location

Soil Boring/Soil Sample Location

A Soil to be Removed

Areas identified as A, B, C, D, E1, E2 and E3 are geophysical anomalies to be removed.
(volume = 861 cubic yards)

50 0 50 100 Feet

N

PARSONS
PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT-SEADs-59 AND 71
SENECA ARMY DEPOT ACTIVITY

FIGURE 3-2

SOIL AREAS TO BE REMEDIATED
AT SEAD-71

JOB NUMBER	DATE	SHEET No.
734516-01001	FEBRUARY 2002	1 OF 1

o:\seneca\sead5971\sead59.apr

APPENDIX A
Laboratory Analyses Results – SEAD-59

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 MW59-4 SOIL 59055 4 6 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 MW59-6 SOIL 59129 1 2.6 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-01 0 0.2 2/20/1994 SA ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-08 6 8 2/20/1994 DU ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-04 6 8 2/20/1994 SA ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-06 10 12 2/20/1994 SA ESI Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	12 U	12 U	12 U		13 U	12 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	12 U	12 U	12 U		13 U	12 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	12 U	12 U	12 U		13 U	12 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	12 U	12 U	12 U		13 U	12 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	12 U	12 U	12 U		13 U	12 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
Acetone	UG/KG	150	3.6%	200	0	2	56	12 U	12 U	12 U		47 U	23 U
Benzene	UG/KG	5900	5.4%	60	2	3	56	12 U	12 U	12 U		13 U	12 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
Bromoform	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	12 U	12 U	12 U		13 U	12 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	12 U	12 U	12 U		13 U	12 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	12 U	12 U	12 U		13 U	12 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	12 U	12 U	12 U		13 U	12 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	12 U	12 U	12 U		13 U	12 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	12 U	12 U	12 U		13 U	12 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	12 U	12 U	12 U		13 U	12 U
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	12 U	12 U	12 U		14 U	12 U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	12 U	12 U	12 U		13 U	12 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	12 U	12 U	12 U		13 U	12 U
Styrene	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	12 U	12 U	12 U		13 U	12 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	12 U	12 U	12 U		13 U	12 U
Total BTEX	MG/KG	15	86.7%		0	26	30	4	4.8				
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	12 U	12 U	12 U		13 U	12 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	12 U	12 U	12 U		13 U	12 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	12 U	12 U	12 U		13 U	12 U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	12 U	12 U	12 U		13 U	12 U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	78 U	73 U	1500 U	1900 U	420 U	530 U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22			1500 U	1900 U	420 U	530 U
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	190 U	180 U	3700 U	4700 U	1000 U	1300 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 MW59-4 SOIL 59055 4 6 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 MW59-6 SOIL 59129 1 2.6 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-01 0 0.2 2/20/1994 SA ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-08 6 8 2/20/1994 DU ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-04 6 8 2/20/1994 SA ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-06 10 12 2/20/1994 SA ESI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	190 U	180 U	3700 U	4700 U	1000 U	1300 U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	78 U	9.9 J	150 J	150 J	110 J	78 J
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	190 U	180 U	3700 U	4700 U	1000 U	1300 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	78 U	73 UJ	1500 U	1900 U	420 U	530 U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	190 U	180 UJ	3700 U	4700 U	1000 U	1300 U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	190 U	180 U	3700 U	4700 U	1000 U	1300 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	78 U	73 U	1500 U	1900 U	420 U	530 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	190 U	180 U	3700 U	4700 U	1000 U	1300 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	190 U	180 U	3700 U	4700 U	1000 U	1300 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	78 U	28 J	390 J	390 J	160 J	190 J
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	78 U	12 J	660 J	640 J	120 J	97 J
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	78 U	63 J	1400 J	1400 J	270 J	600
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	78 U	**270**	**4700**	**5000**	**780**	**1200**
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	78 U	**230**	**5400** J	**5500** J	**870**	**1100**
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	78 U	180	**5000** J	**5100** J	730	860
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	78 U	180	1900 J	2400 J	430	560
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	78 U	280	**5800** J	**6100** J	800	810
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34	78 U	73 U				
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	13 J	15 J	1500 U	1900 U	80 J	260 J
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Carbazole	UG/KG	33000	64.3%		0	36	56	78 U	80	1200 J	1300 J	210 J	260 J
Chrysene	UG/KG	63000	80.4%	400	26	45	56	78 U	280	**4800**	**5100**	**930**	**1200**
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	78 U	8.2 J	1500 U	1900 U	30 J	29 J
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	78 U	4 J	1500 UJ	1900 UJ	420 U	530 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	78 U	**60** J	**930** J	1900 UJ	420 U	530 U
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	78 U	22 J	280 J	280 J	110 J	130 J
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	5.5 J	11 J	1500 U	1900 U	420 U	530 U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 MW59-4 SOIL 59055 4 6 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 MW59-6 SOIL 59129 1 2.6 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-01 0 0.2 2/20/1994 SA ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-08 6 8 2/20/1994 DU ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-04 6 8 2/20/1994 SA ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-06 10 12 2/20/1994 SA ESI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	78 U	540	9700	9900	1500	2600
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	78 U	42 J	730 J	730 J	200 J	280 J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	78 U	180	2000 J	2200 J	400 J	590
Isophorone	UG/KG	0	0.0%	4400	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	78 U	12 J	130 J	140 J	160 J	110 J
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	190 U	180 U	3700 U	4700 U	1000 U	1300 U
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	78 U	360	6100	6200	980	1800
Phenol	UG/KG	17	3.6%	30	0	2	56	78 U	73 U	1500 U	1900 U	420 U	530 U
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	78 U	470	12000	13000	1400	2200
PESTICIDES/PCBS													
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	3.9 U	2.4 J	5.9		36	11
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	3.6 J	25	11 J		25	7.3 J
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	4.4	33	38 J		25	21
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	2 U	1.9 U	2 U		2.2 U	2.1 U
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	9.9 J	1.9 U	2 U		2.2 U	2.1 U
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	2 U	1.2 J	2 U		2.2 U	2.1 U
Aroclor-1016	UG/KG	0	0.0%		0	0	55	39 U	37 U	38 U		42 U	40 U
Aroclor-1221	UG/KG	0	0.0%		0	0	55	80 U	74 U	78 U		86 U	81 U
Aroclor-1232	UG/KG	0	0.0%		0	0	55	39 U	37 U	38 U		42 U	40 U
Aroclor-1242	UG/KG	0	0.0%		0	0	54	39 U	37 U	38 U		42 U	40 U
Aroclor-1248	UG/KG	0	0.0%		0	0	55	39 U	37 U	38 U		42 U	40 U
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	39 U	37 U	38 U		42 U	40 U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	39 U	37 U	38 U		42 U	40 U
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	3.4 J	1.9 U	2 U		2.2 U	2.1 U
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	1.2 J	1.9 U	2 U		2.2 U	2.1 U
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	3.9 U	3.7 U	3.8 U		4.2 U	4 U
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	2 U	1.9 U	2 U		2.2 U	2.1 U
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	3.9 U	3.7 U	5.1 J		4.2 U	4 U
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	3.9 U	3.7 U	3.8 U		4.2 U	4 U
Endrin	UG/KG	32	14.5%	100	0	8	55	3.9 U	3.7 U	3.8 U		4.2 U	4 U
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	3.9 U	3.7 U	5.6 J		4.2 U	3.9 J
Endrin ketone	UG/KG	77	14.5%		0	8	55	3.9 U	4	3.8 U		4.2 U	4 U
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	2.6 U	1.9 U	2 U		2.2 U	2.1 U
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	2 U	1.5 J	2 U		2.2 U	2.1 U
Heptachlor	UG/KG	0	0.0%	100	0	0	55	2 U	1.9 U	2 U		2.2 U	2.1 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 MW59-4 SOIL 59055 4 6 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 MW59-6 SOIL 59129 1 2.6 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-01 0 0.2 2/20/1994 SA ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-08 6 8 2/20/1994 DU ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-04 6 8 2/20/1994 SA ESI Value (Q)	SEAD-59 SB59-1 SOIL SB59-1-06 10 12 2/20/1994 SA ESI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	2 U	1 J	2 U		2.2 U	2.1 U
Methoxychlor	UG/KG	110	3.6%		0	2	55	20 U	19 U	20 U		22 U	21 U
Toxaphene	UG/KG	0	0.0%		0	0	55	200 U	190 U	200 U		220 U	210 U
METALS													
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	10700	15100	11200 J		13000 J	11800 J
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.58 UJ	0.62 UJ	0.56 J		0.74 J	0.24 J
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	4.8	4.7	5 J		4.4 J	3.8 J
Barium	MG/KG	304	100.0%	300	1	55	55	49.7	88.8	77.6 J		108 J	75.7 J
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.39	0.46	0.46 J		0.58 J	0.48 J
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.08 U	0.09 U	0.5 J		0.37 J	0.1 J
Calcium	MG/KG	214000	100.0%	121000	5	55	55	2060	34200	150000 J		83700 J	37400 J
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	18.5	24	18.4 J		18.4 J	18.1 J
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	11.4	12	9.4 J		7.1 J	8.6 J
Copper	MG/KG	36.1	100.0%	33	1	55	55	12.5	31.2	25.4 J		32.9 J	23.5 J
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.62 UJ	0.6 UJ	0.56 U		0.63 U	0.59 U
Iron	MG/KG	33300	100.0%	36500	0	55	55	25300	28600	20400 J		18300 J	20500 J
Lead	MG/KG	139	100.0%	24.8	29	55	55	15.7	32.7	51.6 J		38.4 J	10.5 J
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	4390	7020	8690 J		8610 J	14500 J
Manganese	MG/KG	1150	100.0%	1060	1	55	55	376	623	516 J		418 J	329 J
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	0.04 U	0.08	0.05 J		0.16 J	0.03 J
Nickel	MG/KG	41.4	100.0%	49	0	55	55	29.7	40.2	27 J		23 J	27.9 J
Potassium	MG/KG	2520	100.0%	2380	1	55	55	1110	2060	2140 J		2290 J	2520 J
Selenium	MG/KG	2.2	32.7%	2	1	18	55	0.8 U	2.2	0.27 J		1 J	0.42 J
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.22 U	0.24 U	0.16 U		0.15 U	0.12 U
Sodium	MG/KG	2310	80.0%	172	18	44	55	98	103 U	135 J		353 J	164 J
Thallium	MG/KG	0	0.0%	0.7	0	0	55	0.82 UJ	0.88 UJ	0.17 U		0.27 U	0.22 U
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	14.8	23.6	41.9 J		24.8 J	22 J
Zinc	MG/KG	1550	100.0%	110	8	55	55	133	86.1	86.4 J		116 J	69.7 J
OTHER ANALYSES													
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34	0.55	3.01				
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	27.7 U	50.2	380	182	220	78

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-10 SOIL 59130 0 0.8 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-11 SOIL 59132 3 5 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-13 SOIL 59060 6 6.9 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-14 SOIL 59062 0 1.6 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-15 SOIL 59061 4 5.3 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-16 SOIL 59064 0 1.5 10/23/1997 SA Phase I RI Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Acetone	UG/KG	150	3.6%	200	0	2	56	12 U	11 U	55 U	150	11 U	11 U
Benzene	UG/KG	5900	5.4%	60	2	3	56	12 U	11 U	55 U	11 U	11 U	11 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Bromoform	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	12 U	11 U	55 U	11 U	11 U	11 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	12 U	11 U	55 U	11 U	11 U	11 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	12 U	11 U	55 U	11 U	11 U	11 U
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	12 U	11 U	55 U	11 U	11 U	11 U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	12 U	11 U	55 U	2 J	11 U	11 U
Styrene	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	12 U	11 U	55 U	11 U	11 U	11 U
Total BTEX	MG/KG	15	86.7%		0	26	30	2.5 U		6	2.8	4.8	3
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	12 U	11 U	55 U	11 U	11 U	11 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	12 U	11 U	55 U	2 J	11 U	11 U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	12 U	11 U	55 U	11 U	11 U	11 U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	82 U	70 U	140 U	190 U	77 U	190 U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22						
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	200 U	170 U	350 U	450 U	190 U	460 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-10 SOIL 59130 0 0.8 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-11 SOIL 59132 3 5 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-13 SOIL 59060 6 6.9 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-14 SOIL 59062 0 1.6 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-15 SOIL 59061 4 5.3 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-16 SOIL 59064 0 1.5 10/23/1997 SA Phase I RI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	82 U	70 UJ	140 U	190 U	77 U	190 UJ
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	200 U	170 UJ	350 U	450 U	190 U	460 UJ
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	82 U	70 U	93 J	35 J	77 U	20 J
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	200 U	170 U	350 U	450 U	190 U	460 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 UJ	77 U	190 UJ
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	200 U	170 UJ	350 U	450 UJ	190 U	460 UJ
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	200 U	170 U	350 U	450 U	190 U	460 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	82 U	70 UJ	140 U	190 U	77 U	190 UJ
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	82 U	70 U	140 U	190 U	77 U	190 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	200 U	170 U	350 U	450 U	190 U	460 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	200 U	170 U	350 U	450 U	190 U	460 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	82 U	70 U	110 J	50 J	77 U	52 J
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	82 U	70 U	140 U	190 U	77 U	14 J
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	82 U	70 U	140 U	140 J	77 U	94 J
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	52 J	3.8 J	140 U	**530**	77 U	**420**
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	44 J	3.6 J	140 U	**380**	77 U	**410**
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	59 J	3.8 J	140 U	320	7.6 J	420
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	20 J	70 U	140 U	250	77 U	250
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	70 J	3.7 J	140 U	380	77 U	390
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34	82 U	70 U	140 U	190 U	77 U	190 U
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	15 J	16 J	38 J	47 J	17 J	22 J
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	82 U	70 U	140 U	190 U	77 U	190 U
Carbazole	UG/KG	33000	64.3%		0	36	56	82 U	70 U	140 U	140 J	77 U	220
Chrysene	UG/KG	63000	80.4%	400	26	45	56	61 J	4.8 J	140 U	**610**	4.8 J	**490**
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	6.7 J	9.9 J	140 U	190 U	5.4 J	190 U
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	5.3 J	70 U	140 U	190 U	77 U	190 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	9.8 J	70 U	140 U	**110** J	77 U	**130** J
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	82 U	70 U	110 J	30 J	77 U	20 J
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	7.9 J	5.4 J	140 U	12 J	11 J	190 U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-10 SOIL 59130 0 0.8 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-11 SOIL 59132 3 5 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-13 SOIL 59060 6 6.9 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-14 SOIL 59062 0 1.6 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-15 SOIL 59061 4 5.3 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-16 SOIL 59064 0 1.5 10/23/1997 SA Phase I RI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	22 J	9.4 J	140 U	1100	4.8 J	1000
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	82 U	70 U	260	51 J	77 U	40 J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	23 J	70 U	140 U	230	77 U	250
Isophorone	UG/KG	0	0.0%	4400	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	82 U	70 U	69 J	33 J	77 U	62 J
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	82 U	70 U	140 U	190 U	77 U	190 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	200 U	170 UJ	350 U	450 U	190 U	460 UJ
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	82 U	11 J	280	800	4.6 J	520
Phenol	UG/KG	17	3.6%	30	0	2	56	82 U	70 U	140 U	190 U	77 U	190 U
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	49 J	7.2 J	25 J	1100	5.1 J	790
PESTICIDES/PCBS													
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	4.1 U	3.5 U	3.6 U	30	3.8 U	41
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	4.1 U	3.5 U	3.6 U	42	1.8 J	21
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	4.1 U	3.5 U	3.6 U	52	3.8 U	23
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	2.1 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	2.1 U	1.8 U	6.6 UJ	18 UJ	6.3 UJ	1.9 U
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	2.1 U	1.8 U	1.8 U	5.1	2 U	1.9 U
Aroclor-1016	UG/KG	0	0.0%		0	0	55	41 U	35 U	36 U	38 U	38 U	37 U
Aroclor-1221	UG/KG	0	0.0%		0	0	55	84 U	71 U	73 U	76 U	78 U	75 U
Aroclor-1232	UG/KG	0	0.0%		0	0	55	41 U	35 U	36 U	38 U	38 U	37 U
Aroclor-1242	UG/KG	0	0.0%		0	0	54	41 U	35 U	36 U	38 U	38 U	37 U
Aroclor-1248	UG/KG	0	0.0%		0	0	55	41 U	35 U	36 U	38 U	38 U	37 U
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	41 U	35 U	36 U	38 U	38 U	37 U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	41 U	35 U	36 U	38 U	38 U	37 U
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	2.1 U	1.8 U	2.6 J	1.9 UJ	2.4 J	1.9 U
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	2.1 U	1.8 U	0.95 J	8.5 J	2 U	1.9 U
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	4.1 U	3.5 U	3.6 U	3.8 U	3.8 U	3.7 U
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	2.1 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	4.1 U	3.5 U	3.6 U	3.8 U	3.8 U	3.7 U
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	4.1 U	3.5 U	3.6 U	10	3.8 U	3.7 U
Endrin	UG/KG	32	14.5%	100	0	8	55	4.1 U	3.5 U	3.6 U	3.7 J	3.8 U	5.6
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	4.1 U	3.5 U	3.6 U	3.1 J	3.8 U	4
Endrin ketone	UG/KG	77	14.5%		0	8	55	4.1 U	3.5 U	3.6 U	11	3.8 U	5.1
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	2.1 U	1.8 U	2 UJ	1.9 U	1.9 UJ	1.9 U
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	2.1 U	1.8 U	1.8 U	5.8	2 U	1.9 U
Heptachlor	UG/KG	0	0.0%	100	0	0	55	2.1 U	1.8 U	1.8 U	1.9 U	2 U	1.9 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-10 SOIL 59130 0 0.8 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-11 SOIL 59132 3 5 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-13 SOIL 59060 6 6.9 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-14 SOIL 59062 0 1.6 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-15 SOIL 59061 4 5.3 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-16 SOIL 59064 0 1.5 10/23/1997 SA Phase I RI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	2.1 U	1.8 U	1.8 U	2.6	2 U	1.9 J
Methoxychlor	UG/KG	110	3.6%		0	2	55	21 U	18 U	18 U	19 U	20 U	19 U
Toxaphene	UG/KG	0	0.0%		0	0	55	210 U	180 U	180 U	190 U	200 U	190 U
METALS													
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	**20600**	7740	11100	8970	7450	10500
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.69 UJ	0.61 UJ	0.6 UJ	0.63 UJ	0.64 UJ	0.64 UJ
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	5.1	4.1	5.7	4.5	3.9	5.3
Barium	MG/KG	304	100.0%	300	1	55	55	154	43.7	52	67	52.7	85.6
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.91	0.24	0.27	0.31	0.23	0.43
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.1 U	0.08 U	0.08 U	0.09 U	0.09 U	0.09 U
Calcium	MG/KG	214000	100.0%	121000	5	55	55	4030	72200	33900	51000	**123000**	71000
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	25.5	13	18.6	16.6	12.7	16.3
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	9	8.1	14.2	8.7	8.1	9.8
Copper	MG/KG	36.1	100.0%	33	1	55	55	25	19.7	21	21.4	19.1	22
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.67 UJ	0.56 UJ	0.58 UJ	0.57 UJ	0.58 UJ	0.57 UJ
Iron	MG/KG	33300	100.0%	36500	0	55	55	29000	18400	28900	19300	16900	19300
Lead	MG/KG	139	100.0%	24.8	29	55	55	15	9.6	8.7	**45.5**	8.3	19.8
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	4880	13600	7990	8340	14900	8410
Manganese	MG/KG	1150	100.0%	1060	1	55	55	313	356	576	406	469	370
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	0.09	0.04 U	0.05 U	0.05	0.06 U	0.05
Nickel	MG/KG	41.4	100.0%	49	0	55	55	31.1	23.2	35.5	25.4	23.8	27.8
Potassium	MG/KG	2520	100.0%	2380	1	55	55	2340	1000	1060	1480	1160	1400
Selenium	MG/KG	2.2	32.7%	2	1	18	55	1.2	0.84 U	0.83 U	0.87 U	0.89 U	0.88 U
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.26 U	0.23 U	0.23 U	0.24 U	0.24 U	0.24 U
Sodium	MG/KG	2310	80.0%	172	18	44	55	**287**	127	112	**1440**	**817**	**194**
Thallium	MG/KG	0	0.0%	0.7	0	0	55	0.97 UJ	0.86 UJ	0.85 UJ	0.89 UJ	0.91 UJ	0.9 UJ
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	34.3	12.6	15	17.2	12.9	18.8
Zinc	MG/KG	1550	100.0%	110	8	55	55	81	80.5	60.5	72.8	67.1	70.9
OTHER ANALYSES													
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34	0.39	0.16	0.03	0.17	0.06	3.3
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	26.8 U	24.2 U	691	197	24.7 U	2390

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-17 SOIL 59131 8 9.2 10/23/1997 DU Phase I RI Value (Q)	SEAD-59 SB59-17 SOIL 59068 8 9.2 10/23/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-18 SOIL 59127 10 11 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-19 SOIL 59065 2 2.7 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-20 0 0.2 5/26/1994 DU ESI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-00 0 0.2 5/26/1994 SA ESI Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Acetone	UG/KG	150	3.6%	200	0	2	56	60 U	11 U	11 U	53 U	11 U	11 U
Benzene	UG/KG	5900	5.4%	60	2	3	56	6 J	11 U	11 U	53 U	11 U	11 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Bromoform	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	60 U	11 U	11 U	53 U	11 U	11 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	14 J	11 U	11 U	53 U	11 U	11 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	60 U	11 U	11 U	53 U	11 U	11 U
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	60 U	11 U	11 U	53 U	11 U	11 U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	60 U	11 U	11 U	53 U	11 U	11 U
Styrene	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	16 J	11 U	11 U	12 J	11 U	11 U
Total BTEX	MG/KG	15	86.7%		0	26	30		5.2	4.8	15		
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	140	11 U	11 U	98	11 U	11 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	60 U	11 U	11 U	53 U	11 U	11 U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	60 U	11 U	11 U	53 U	11 U	11 U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	75 U	75 U	380 U	22000 U	740 U	740 U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22					740 U	740 U
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	180 U	180 U	910 U	53000 U	1800 U	1800 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-17 SOIL 59131 8 9.2 10/23/1997 DU Phase I RI Value (Q)	SEAD-59 SB59-17 SOIL 59068 8 9.2 10/23/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-18 SOIL 59127 10 11 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-19 SOIL 59065 2 2.7 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-20 0 0.2 5/26/1994 DU ESI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-00 0 0.2 5/26/1994 SA ESI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 UJ	740 U	740 U
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	180 U	180 U	910 UJ	53000 UJ	1800 U	1800 U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	18 J	22 J	250 J	29000	68 J	75 J
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	180 U	180 U	910 U	53000 U	1800 U	1800 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 UJ	740 U	740 U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	180 U	180 U	910 U	53000 UJ	1800 U	1800 U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	180 U	180 U	910 U	53000 U	1800 U	1800 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	75 U	75 U	380 UJ	22000 UJ	740 U	740 U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	75 U	75 U	380 UJ	22000 U	740 U	740 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	180 U	180 U	910 U	53000 U	1800 U	1800 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	180 U	180 U	910 U	53000 U	1800 U	1800 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	11 J	16 J	180 J	20000 J	110 J	60 J
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	75 U	4.6 J	41 J	5700 J	490 J	390 J
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	16 J	35 J	380	38000	560 J	250 J
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	23 J	71 J	**620**	**67000**	**3500** J	**1700** J
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	18 J	54 J	**570**	**70000**	**3000**	**1900**
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	20 J	56 J	920	**58000**	**4400**	**3700** J
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	10 J	35 J	320 J	35000	1500	1100
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	20 J	66 J	380 U	**48000**	**2100** J	740 UJ
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34	75 U	75 U	380 U	22000 U		
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	15 J	26 J	380 U	22000 U	37 J	67 J
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	75 U	75 U	380 U	22000 U	740 U	740 U
Carbazole	UG/KG	33000	64.3%		0	36	56	14 J	29 J	370 J	33000	190 J	97 J
Chrysene	UG/KG	63000	80.4%	400	26	45	56	22 J	72 J	**600**	**63000**	**2700** J	**1600** J
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	5.1 J	5 J	380 U	22000 U	740 U	740 U
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	75 U	75 U	380 U	22000 U	740 U	740 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	4.8 J	13 J	**150** J	**17000** J	**870**	**610** J
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	9.1 J	16 J	280 J	**18000** J	83 J	53 J
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	6.8 J	8.5 J	380 U	22000 U	740 U	740 U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-17 SOIL 59131 8 9.2 10/23/1997 DU Phase I RI Value (Q)	SEAD-59 SB59-17 SOIL 59068 8 9.2 10/23/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-18 SOIL 59127 10 11 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-19 SOIL 59065 2 2.7 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-20 0 0.2 5/26/1994 DU ESI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-00 0 0.2 5/26/1994 SA ESI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	55 J	170	1500	**160000**	4400 J	2600 J
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	15 J	34 J	530	38000	220 J	130 J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 UJ	22000 U	740 U	740 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	10 J	33 J	300 J	**34000**	2200	1600
Isophorone	UG/KG	0	0.0%	4400	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	23 J	20 J	750	**29000**	78 J	68 J
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	75 U	75 U	380 U	22000 U	740 U	740 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	180 U	180 U	910 U	53000 UJ	1800 U	1800 U
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	63 J	180	1900	**140000**	2100 J	870 J
Phenol	UG/KG	17	3.6%	30	0	2	56	75 U	75 U	380 U	22000 U	740 U	740 U
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	53 J	170	1300	**120000**	5800 J	3200 J
PESTICIDES/PCBS													
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	3.8 U	3.8 U	12 U	16	4.8 J	4.3 J
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	3.8 U	3.8 U	8.2 U	10	6.5 J	11 J
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	3.8 U	3.8 U	11 U	43	13 J	26 J
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	1.9 U	1.9 U	1.9 U	1.8 U	0.96 J	1.9 UJ
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	1.9 U	1.9 U	1.9 U	1.8 U	1.9 UJ	1.9 UJ
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	1.9 U	1.9 U	1.9 U	1.8 U	3.4 J	2.1 J
Aroclor-1016	UG/KG	0	0.0%		0	0	55	38 U	38 U	38 U	35 U	37 UJ	37 UJ
Aroclor-1221	UG/KG	0	0.0%		0	0	55	76 U	76 U	76 U	71 U	75 UJ	75 UJ
Aroclor-1232	UG/KG	0	0.0%		0	0	55	38 U	38 U	38 U	35 U	37 UJ	37 UJ
Aroclor-1242	UG/KG	0	0.0%		0	0	54	38 U	38 U	38 U	35 U	37 UJ	37 UJ
Aroclor-1248	UG/KG	0	0.0%		0	0	55	38 U	38 U	38 U	35 U	37 UJ	37 UJ
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	38 U	38 U	38 U	35 U	37 UJ	37 UJ
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	38 U	38 U	38 U	35 U	37 UJ	37 UJ
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	1.9 U	1.9 U	1.9 U	1.8 U	1.9 UJ	1.9 UJ
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	1.9 U	1.9 U	1.9 U	1.8 U	1.9 UJ	1.9 UJ
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	3.8 U	3.8 U	3.8 U	2.9 J	3.7 UJ	3.7 UJ
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	1.9 U	1.9 U	1.9 U	3.8	2.6 J	22 J
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	3.8 U	3.8 U	3.8 U	2.8 J	4 J	3.7 UJ
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	3.8 U	3.8 U	3.8 U	20	3.7 UJ	3.7 UJ
Endrin	UG/KG	32	14.5%	100	0	8	55	3.8 U	3.8 U	3.8 U	32	3.7 UJ	3.9 J
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	3.8 U	3.8 U	3.8 U	15	3.7 UJ	3.7 UJ
Endrin ketone	UG/KG	77	14.5%		0	8	55	3.8 U	3.8 U	3.8 U	77 J	3.7 UJ	3.7 UJ
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	1.9 U	1.9 U	1.9 U	1.8 U	1.9 UJ	1.9 UJ
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	1.9 U	1.9 U	1.9 U	1.8 U	1.9 UJ	1.9 UJ
Heptachlor	UG/KG	0	0.0%	100	0	0	55	1.9 U	1.9 U	1.9 U	1.8 U	1.9 UJ	1.9 UJ

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-17 SOIL 59131 8 9.2 10/23/1997 DU Phase I RI Value (Q)	SEAD-59 SB59-17 SOIL 59068 8 9.2 10/23/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-18 SOIL 59127 10 11 10/24/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-19 SOIL 59065 2 2.7 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-20 0 0.2 5/26/1994 DU ESI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-00 0 0.2 5/26/1994 SA ESI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	1.9 U	1.9 U	1.9 U	2.5	1.9 UJ	1.9 UJ
Methoxychlor	UG/KG	110	3.6%		0	2	55	19 U	19 U	19 U	110	19 UJ	19 UJ
Toxaphene	UG/KG	0	0.0%		0	0	55	190 U	190 U	190 U	180 U	190 UJ	190 UJ
METALS													
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	6390	5400	9660	11500	11800	8640
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.62 UJ	0.55 UJ	0.64 UJ	0.61 UJ	0.38 J	0.43 J
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	3.5	2.9	3	4.4	5.7	5.5
Barium	MG/KG	304	100.0%	300	1	55	55	40	35.8	71.7	75.3	79.5	76.4
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.21	0.16	0.32	0.42	0.53 J	0.41 J
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.09 U	0.08 U	0.09 U	0.08 U	0.87 J	0.74 J
Calcium	MG/KG	214000	100.0%	121000	5	55	55	88800	101000	95900	60000	66400	**135000**
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	10.2	9	14.2	19.3	21.2	16.3
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	7.3	5.9	7.1	11.3	12.3	7.9 J
Copper	MG/KG	36.1	100.0%	33	1	55	55	17.6	17.4	18.6	26	28.9	21.7
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.59 UJ	0.61 UJ	0.58 UJ	0.58 UJ	0.54 U	0.5 U
Iron	MG/KG	33300	100.0%	36500	0	55	55	14800	12300	16500	22400	24500	18200
Lead	MG/KG	139	100.0%	24.8	29	55	55	6.6	5.9	19.6	20.8	**49.8**	**40**
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	14800	14200	17200	11000	15200	11100
Manganese	MG/KG	1150	100.0%	1060	1	55	55	391	334	378	436	542	410
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	0.05 U	0.05 U	0.07	0.05	**1.6** J	0.06 J
Nickel	MG/KG	41.4	100.0%	49	0	55	55	19.8	17.1	20.9	36	32.3	23.8
Potassium	MG/KG	2520	100.0%	2380	1	55	55	1230	936	1940	1950	1750 J	1590 J
Selenium	MG/KG	2.2	32.7%	2	1	18	55	0.86 U	0.76 U	0.88 U	0.84 U	0.81 J	0.48 U
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.24 U	0.21 U	0.24 U	0.23 U	0.11 UJ	0.09 UJ
Sodium	MG/KG	2310	80.0%	172	18	44	55	165	152	**258**	101 U	171 J	**189** J
Thallium	MG/KG	0	0.0%	0.7	0	0	55	0.88 UJ	0.77 UJ	0.9 UJ	0.86 UJ	0.41 U	0.34 U
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	12.3	9.9	19.1	22	21.3	18.1
Zinc	MG/KG	1550	100.0%	110	8	55	55	64.7	51.1	50	76.2	102	76.5
OTHER ANALYSES													
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34	0.02	0.03	0.11	0.03		
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	25.3 U	22.7 U	1290	2880	774	951

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-2 SOIL SB59-2-02 2 4 5/26/1994 SA ESI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-04 6 7 5/26/1994 SA ESI Value (Q)	SEAD-59 SB59-20 SOIL 59066 4 4.5 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-21 SOIL 59067 0 1.1 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-3 SOIL SB59-3-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-3 SOIL SB59-3-02 2 4 5/25/1994 SA ESI Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Acetone	UG/KG	150	3.6%	200	0	2	56	45 U	23 U	11 U	12 U	11 U	12 U
Benzene	UG/KG	5900	5.4%	60	2	3	56	12 U	12 U	11 U	12 U	11 U	12 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Bromoform	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	12 U	12 U	11 U	12 U	11 U	12 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	12 U	12 U	11 U	12 U	11 U	12 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	12 U	12 U	11 U	12 U	11 U	12 U
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	12 J	12 U	11 U	12 U	11 U	12 U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	12 U	12 U	11 U	12 U	11 U	12 U
Styrene	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	12 U	12 U	11 U	12 U	11 U	12 U
Total BTEX	MG/KG	15	86.7%		0	26	30			4	6.5		
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	12 U	12 U	11 U	12 U	11 U	12 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	12 U	12 U	11 U	12 U	11 U	12 U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	12 U	12 U	11 U	12 U	11 U	12 U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	820 U	390 U	66 U	66 U	370 U	380 U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22	820 U	390 U			370 U	380 U
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	2000 U	940 U	160 U	160 U	890 U	930 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-2 SOIL SB59-2-02 2 4 5/26/1994 SA ESI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-04 6 7 5/26/1994 SA ESI Value (Q)	SEAD-59 SB59-20 SOIL 59066 4 4.5 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-21 SOIL 59067 0 1.1 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-3 SOIL SB59-3-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-3 SOIL SB59-3-02 2 4 5/25/1994 SA ESI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 UJ	66 UJ	370 U	380 U
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	2000 U	940 U	160 UJ	160 UJ	890 U	930 U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	160 J	150 J	14 J	66 U	370 U	380 U
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	2000 U	940 U	160 U	160 U	890 U	930 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 UJ	66 UJ	370 U	380 U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	2000 U	940 U	160 UJ	160 UJ	890 U	930 U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	2000 U	940 U	160 U	160 U	890 U	930 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	820 U	390 U	66 UJ	66 UJ	370 U	380 U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	820 U	28 J	66 U	66 U	370 U	380 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	2000 U	940 U	160 U	160 U	890 U	930 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	2000 U	940 U	160 U	160 U	890 U	930 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	230 J	100 J	6.1 J	66 U	56 J	380 U
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	100 J	23 J	66 U	66 U	120 J	380 U
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	440 J	160 J	8.4 J	66 U	290 J	380 U
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	**1600**	**260** J	20 J	9.6 J	**910**	34 J
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	**1500**	**250** J	22 J	8.1 J	47 J	380 U
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	**3100** J	290 J	19 J	15 J	430	45 J
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	740 J	130 J	22 J	11 J	370 U	380 U
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	820 UJ	270 J	20 J	12 J	440	28 J
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34			66 U	66 U		
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	72 J	35 J	16 J	21 J	660	1300
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	820 U	390 U	66 U	66 U	370 U	380 U
Carbazole	UG/KG	33000	64.3%		0	36	56	220 J	64 J	11 J	6.6 J	39 J	380 U
Chrysene	UG/KG	63000	80.4%	400	26	45	56	**1500**	270 J	25 J	14 J	**700**	42 J
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	820 U	390 U	5.5 J	4.8 J	67 J	380 U
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	820 U	390 U	66 U	66 U	370 U	380 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	**470** J	**84** J	4.7 J	66 U	**160** J	380 U
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	820 U	82 J	5.6 J	66 U	26 J	380 U
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	820 U	390 U	10 J	8.1 J	370 U	380 U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-2 SOIL SB59-2-02 2 4 5/26/1994 SA ESI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-04 6 7 5/26/1994 SA ESI Value (Q)	SEAD-59 SB59-20 SOIL 59066 4 4.5 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-21 SOIL 59067 0 1.1 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-3 SOIL SB59-3-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-3 SOIL SB59-3-02 2 4 5/25/1994 SA ESI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	3200	750	54 J	28 J	1700	67 J
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	380 J	160 J	8.6 J	66 U	79 J	380 U
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	940	130 J	14 J	9.6 J	82 J	380 U
Isophorone	UG/KG	0	0.0%	4400	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	170 J	160 J	19 J	66 U	21 J	380 U
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	820 U	390 U	66 U	66 U	370 U	380 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	2000 U	940 U	160 UJ	160 UJ	890 U	930 U
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	1800	620	43 J	20 J	740	380 U
Phenol	UG/KG	17	3.6%	30	0	2	56	820 U	390 U	66 U	66 U	370 U	380 U
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	3200	510	48 J	21 J	190 J	32 J
PESTICIDES/PCBS													
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	48 J	5.4 J	3.7 U	4.2 U	7.7 J	3.8 U
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	81 J	8.2 J	3.7 U	4.2 U	19 J	3.8 U
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	16 J	3.9 UJ	3.7 U	4.2 U	33	3.8 U
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	1.2 J	2 UJ	1.9 U	2.2 U	3.8 U	2 U
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	2.1 UJ	2 UJ	1.9 U	2.2 U	3.8 U	2 U
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	5.2 J	2 UJ	1.9 U	2.2 U	5.1 J	2 U
Aroclor-1016	UG/KG	0	0.0%		0	0	55	41 UJ	39 UJ	37 U	42 U	73 U	38 U
Aroclor-1221	UG/KG	0	0.0%		0	0	55	84 UJ	79 UJ	75 U	85 U	150 U	78 U
Aroclor-1232	UG/KG	0	0.0%		0	0	55	41 UJ	39 UJ	37 U	42 U	73 U	38 U
Aroclor-1242	UG/KG	0	0.0%		0	0	54	41 UJ	39 UJ	37 U	42 U	73 U	38 U
Aroclor-1248	UG/KG	0	0.0%		0	0	55	41 UJ	39 UJ	37 U	42 U	73 U	38 U
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	41 UJ	39 UJ	37 U	42 U	73 U	25 J
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	41 UJ	39 UJ	37 U	42 U	73 U	38 U
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	2.1 UJ	2 UJ	1.9 U	2.2 U	3.8 U	2 U
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	2.1 UJ	2 UJ	1.9 U	2.2 U	3.8 U	2 U
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	4.1 UJ	3.9 UJ	3.7 U	4.2 U	7.3 U	3.8 U
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	16 J	4.1 J	1.9 U	2.2 U	3.8 U	2 U
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	4.1 UJ	3.9 UJ	3.7 U	4.2 U	7.3 U	3.8 U
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	4.1 UJ	3.9 UJ	3.7 U	4.2 U	7.3 U	3.8 U
Endrin	UG/KG	32	14.5%	100	0	8	55	4.1 UJ	3.9 UJ	3.7 U	4.2 U	7.3 U	3.8 U
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	4.1 UJ	3.9 UJ	3.7 U	4.2 U	13 J	3.8 U
Endrin ketone	UG/KG	77	14.5%		0	8	55	4.1 UJ	3.9 UJ	3.7 U	4.2 U	7.3 U	3.8 U
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	2.1 UJ	2 UJ	1.9 U	2.2 U	3.8 U	2 U
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	2.1 UJ	2 UJ	1.9 U	2.2 U	7.4	2 U
Heptachlor	UG/KG	0	0.0%	100	0	0	55	2.1 UJ	2 UJ	1.9 U	2.2 U	3.8 U	2 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-2 SOIL SB59-2-02 2 4 5/26/1994 SA ESI Value (Q)	SEAD-59 SB59-2 SOIL SB59-2-04 6 7 5/26/1994 SA ESI Value (Q)	SEAD-59 SB59-20 SOIL 59066 4 4.5 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-21 SOIL 59067 0 1.1 10/22/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-3 SOIL SB59-3-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-3 SOIL SB59-3-02 2 4 5/25/1994 SA ESI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	2.1 UJ	2 UJ	1.9 U	2.2 U	3.8 U	2 U
Methoxychlor	UG/KG	110	3.6%		0	2	55	21 UJ	20 UJ	19 U	22 U	38 U	20 U
Toxaphene	UG/KG	0	0.0%		0	0	55	210 UJ	200 UJ	190 U	220 U	380 U	200 U
METALS													
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	12500	9340	10700	14300	9020	11700
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.84 J	0.26 J	0.63 UJ	0.68 UJ	0.15 UJ	0.17 UJ
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	6	3.8	3.9	5.2	5.1	4.3
Barium	MG/KG	304	100.0%	300	1	55	55	93.4	66	88.2	167	59.1	77.5
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.67 J	0.42 J	0.38	0.44	0.48 J	0.54 J
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.9 J	0.41 J	0.09 U	0.09 U	0.75	0.55 J
Calcium	MG/KG	214000	100.0%	121000	5	55	55	44500	65800	44000	5450	108000	69500
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	21.1	15.5	15.7	20.7	15.2	17.7
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	11.7	9.1	8.3	11.3	8.7	8.1 J
Copper	MG/KG	36.1	100.0%	33	1	55	55	28.1	19.7	17.5	25	21.1	24.2
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.56 U	0.59 U	0.63 UJ	0.75 UJ	0.46 U	0.57 U
Iron	MG/KG	33300	100.0%	36500	0	55	55	24600	20900	19100	24700	18100	19400
Lead	MG/KG	139	100.0%	24.8	29	55	55	50.3	12.9	9.3	58.6	29.2 J	11.4 J
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	8540	9190	9770	4300	11500	17500
Manganese	MG/KG	1150	100.0%	1060	1	55	55	664	836	407	1050	555	411
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	0.08 J	0.04 J	0.05 U	0.32	0.04 J	0.05 J
Nickel	MG/KG	41.4	100.0%	49	0	55	55	31.8	24.7	23.7	28.8	23.4	29
Potassium	MG/KG	2520	100.0%	2380	1	55	55	1690 J	1280 J	1440	1600	1460 J	1880 J
Selenium	MG/KG	2.2	32.7%	2	1	18	55	1.3	0.49 J	0.87 U	1.5	0.38 J	0.3 U
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.32 J	0.08 UJ	0.24 U	0.26 U	0.1 UJ	0.12 UJ
Sodium	MG/KG	2310	80.0%	172	18	44	55	168 J	148 J	696	113 U	183 J	556 J
Thallium	MG/KG	0	0.0%	0.7	0	0	55	0.4 U	0.29 U	0.89 UJ	0.97 UJ	0.24 U	0.28 U
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	24.2	16.4	18.8	23.1	17.3	19.9
Zinc	MG/KG	1550	100.0%	110	8	55	55	115	75.5	81.7	87	75	59.1
OTHER ANALYSES													
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34			0.1	1.15		
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	513	69	24.8	26 U	1360	29 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-3 SOIL SB59-3-04 6 8 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-05 8 10 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-10 10 20 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-5 SOIL SB59-5-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-5 SOIL SB59-5-03 4 6 5/25/1994 SA ESI Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Acetone	UG/KG	150	3.6%	200	0	2	56	11 U	11 U	18 U	11 U	11 U	11 U
Benzene	UG/KG	5900	5.4%	60	2	3	56	11 U	11 U	18 U	11 U	11 U	11 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Bromoform	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	11 U	11 U	4 J	11 U	11 U	11 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	11 U	11 U	18 U	11 U	11 U	11 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	11 U	11 U	18 U	11 U	11 U	11 U
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	11 U	11 U	18 U	11 U	11 U	11 U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	11 U	11 U	2 J	11 U	11 U	11 U
Styrene	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	11 U	11 U	18 U	11 U	11 U	11 U
Total BTEX	MG/KG	15	86.7%		0	26	30						
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	11 U	11 U	18 U	11 U	11 U	11 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	11 U	11 U	18 U	11 U	11 U	1 J
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	11 U	11 U	18 U	11 U	11 U	11 U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	360 U	740 U	420 U	360 U	1800 U	370 U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22	360 U	740 U	420 U	360 U	1800 U	370 U
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	880 U	1800 U	1000 U	870 U	4400 U	910 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-3 SOIL SB59-3-04 6 8 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-05 8 10 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-10 10 20 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-5 SOIL SB59-5-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-5 SOIL SB59-5-03 4 6 5/25/1994 SA ESI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	880 U	1800 U	1000 U	870 U	4400 U	910 U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	360 U	56 J	37 J	360 U	1800 U	45 J
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	880 U	1800 U	1000 U	870 U	4400 U	910 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	880 U	1800 U	1000 U	870 U	4400 U	910 U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	880 U	1800 U	1000 U	870 U	4400 U	910 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	360 U	740 U	420 U	360 U	1800 U	370 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	880 U	1800 U	1000 U	870 U	4400 U	910 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	880 U	1800 U	1000 U	870 U	4400 U	910 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	360 U	63 J	93 J	360 U	310 J	44 J
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	360 U	610 J	52 J	360 U	1100 J	190 J
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	360 U	740 J	250 J	360 U	1500 J	410 J
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	360 U	**2100**	**740**	360 U	**6400**	**1400**
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	360 U	**420** J	**360** J	360 U	**5800**	**1200** J
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	360 U	**2200**	730	360 U	**6300**	1100 J
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	360 U	740 U	420 U	360 U	790 J	150 J
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	360 U	**1500**	590	360 U	**4600**	870 J
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34						
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	360 U	740 U	420 U	360 U	1800 U	370 U
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	360 U	740 U	420 U	360 U	1800 U	370 U
Carbazole	UG/KG	33000	64.3%		0	36	56	360 U	63 J	160 J	360 U	180 J	370 U
Chrysene	UG/KG	63000	80.4%	400	26	45	56	360 U	**1800**	**820**	360 U	**6200**	**1400**
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	360 U	250 J	120 J	360 U	1800 U	370 U
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	360 U	740 U	420 U	360 U	1800 U	370 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	360 U	**570** J	**160** J	360 U	**1900**	**300** J
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	360 U	45 J	64 J	360 U	1800 U	28 J
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	360 U	740 U	420 U	360 U	1800 U	370 U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-3 SOIL SB59-3-04 6 8 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-05 8 10 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-10 10 20 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-5 SOIL SB59-5-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-5 SOIL SB59-5-03 4 6 5/25/1994 SA ESI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	360 U	3200	1900	19 J	9900	2300 J
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	360 U	90 J	100 J	360 U	300 J	90 J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	360 U	470 J	300 J	360 U	5300	570 J
Isophorone	UG/KG	0	0.0%	4400	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	360 U	95 J	100 J	360 U	240 J	44 J
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	360 U	740 U	420 U	360 U	1800 U	370 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	880 U	1800 U	1000 U	870 U	4400 U	910 U
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	360 U	1100	1100	360 U	4300	1200 J
Phenol	UG/KG	17	3.6%	30	0	2	56	360 U	740 U	420 U	360 U	1800 U	370 U
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	360 U	1200	940	28 J	10000	2800
PESTICIDES/PCBS													
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	3.6 UJ	6.1 J	450	3.6 UJ	37 U	22 J
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	3.6 UJ	7.3 J	140	3.6 UJ	37 U	21
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	3.6 UJ	15 J	350	3.6 UJ	37 U	23 J
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	1.9 UJ	3.8 U	22 U	1.8 UJ	19 U	3.9 U
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	1.9 UJ	3.8 U	22 U	1.8 UJ	19 U	3.9 U
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	1.9 UJ	3.8 U	22 U	1.8 UJ	19 U	3.9 U
Aroclor-1016	UG/KG	0	0.0%		0	0	55	36 UJ	74 U	420 U	36 UJ	370 U	75 U
Aroclor-1221	UG/KG	0	0.0%		0	0	55	74 UJ	150 U	850 U	73 UJ	740 U	150 U
Aroclor-1232	UG/KG	0	0.0%		0	0	55	36 UJ	74 U	420 U	36 UJ	370 U	75 U
Aroclor-1242	UG/KG	0	0.0%		0	0	54	36 UJ	74 U	420 U	36 UJ	370 U	75 U
Aroclor-1248	UG/KG	0	0.0%		0	0	55	36 UJ	74 U	420 U	36 UJ	370 U	75 U
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	36 UJ	74 U	420 U	36 UJ	370 U	75 U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	36 UJ	74 U	420 U	36 UJ	370 U	75 U
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	1.9 UJ	3.8 U	22 U	1.8 UJ	19 U	3.9 U
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	1.9 UJ	3.8 U	22 U	1.8 UJ	19 U	3.9 U
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	3.6 UJ	7.4 U	42 U	3.6 UJ	37 U	7.5 U
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	1.9 UJ	3.8 U	22 U	1.8 UJ	19 U	3.9 U
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	3.6 UJ	7.4 U	42 U	3.6 UJ	37 U	7.5 U
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	3.6 UJ	7.4 U	42 U	3.6 UJ	37 U	7.5 U
Endrin	UG/KG	32	14.5%	100	0	8	55	3.6 UJ	7.4 U	42 U	3.6 UJ	37 U	7.5 U
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	3.6 UJ	7.4 U	42 U	3.6 UJ	37 U	7.5 U
Endrin ketone	UG/KG	77	14.5%		0	8	55	3.6 UJ	7.4 U	42 U	3.6 UJ	37 U	7.5 U
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	1.9 UJ	3.8 U	22 U	1.8 UJ	19 U	3.9 U
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	1.9 UJ	2.7 J	22 U	1.8 UJ	19 U	2.2 J
Heptachlor	UG/KG	0	0.0%	100	0	0	55	1.9 UJ	3.8 U	22 U	1.8 UJ	19 U	3.9 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-3 SOIL SB59-3-04 6 8 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-05 8 10 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-4 SOIL SB59-4-10 10 20 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-5 SOIL SB59-5-00 0 0.2 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-5 SOIL SB59-5-03 4 6 5/25/1994 SA ESI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	1.9 UJ	3.8 U	22 U	1.8 UJ	19 U	3.9 U
Methoxychlor	UG/KG	110	3.6%		0	2	55	19 UJ	38 U	220 U	18 UJ	190 U	39 U
Toxaphene	UG/KG	0	0.0%		0	0	55	190 UJ	380 U	2200 U	180 UJ	1900 U	390 U
METALS													
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	8020	13100	4200	7550	12600	12800
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.15 UJ	0.17 UJ	**424** J	0.22 UJ	0.41 J	0.2 UJ
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	4.4	5.3	3.8	3.7	5.1	5.5
Barium	MG/KG	304	100.0%	300	1	55	55	62.9	90.1	**304**	21.1 J	101	81.9
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.39 J	0.62 J	0.37 J	0.38 J	0.63 J	0.61 J
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.52 J	1	**3.2**	0.42 J	1.3	0.91 J
Calcium	MG/KG	214000	100.0%	121000	5	55	55	71100	51000	**214000**	61700	59500	62800
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	13.3	20.8	14.7	12.8	22.1	20.1
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	7.9	10.7	4 J	7.7 J	11.3	10.8
Copper	MG/KG	36.1	100.0%	33	1	55	55	18.4	31	14.2	15.6	32.5	26
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.51 U	0.51 U	0.61 U	0.47 U	0.53 U	0.5 U
Iron	MG/KG	33300	100.0%	36500	0	55	55	17600	23800	6540	17300	24800	24100
Lead	MG/KG	139	100.0%	24.8	29	55	55	9.3 J	**59.8** J	**139** J	9.5 J	**91.9** J	**42.1** J
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	18500	10600	7980	14600	8640	11500
Manganese	MG/KG	1150	100.0%	1060	1	55	55	403	653	298	328	586	640
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	0.03 J	0.08	**0.11**	0.03 J	0.04 J	**0.15**
Nickel	MG/KG	41.4	100.0%	49	0	55	55	22.5	41.3	10.6	21.3	33.1	29.8
Potassium	MG/KG	2520	100.0%	2380	1	55	55	1370 J	1850 J	845 J	1100 J	1620 J	1710 J
Selenium	MG/KG	2.2	32.7%	2	1	18	55	0.26 U	0.28 U	0.28 J	0.96 J	0.37 U	0.53 J
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.11 UJ	0.12 UJ	0.11 J	0.15 UJ	0.15 UJ	0.14 UJ
Sodium	MG/KG	2310	80.0%	172	18	44	55	**198** J	80 J	125 J	140 J	79.1 J	161 J
Thallium	MG/KG	0	0.0%	0.7	0	0	55	0.24 U	0.27 U	0.22 U	0.34 U	0.35 U	0.32 U
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	13.6	23.2	13.9	12.1	22.1	23.2
Zinc	MG/KG	1550	100.0%	110	8	55	55	53.6	**131**	**341**	54.9	106	101
OTHER ANALYSES													
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34						
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	29 U	594	778	40	527	637

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-5 SOIL SB59-5-06 10 12 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-7 SOIL 59056 0 2 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-8 SOIL 59057 0 2 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-9 SOIL 59059 2 3.7 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-1 SOIL TP59-1 2 2 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-10-2 SOIL 59004 3 3.5 10/7/1997 SA Phase I RI Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Acetone	UG/KG	150	3.6%	200	0	2	56	11 U	11 U	13 U	10 U	30000 U	5 U
Benzene	UG/KG	5900	5.4%	60	2	3	56	11 U	11 U	13 U	10 U	**5900** J	11 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Bromoform	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	11 U	11 U	13 U	10 U	30000 U	11 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	11 U	11 U	13 U	10 U	**260000**	11 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	11 U	11 U	13 U	10 U	30000 U	11 U
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	11 U	11 U	13 U	10 U	30000 U	11 U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	11 U	11 U	13 U	10 U	30000 U	11 U
Styrene	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	11 U	11 U	13 U	10 U	**830000**	11 U
Total BTEX	MG/KG	15	86.7%		0	26	30		2.5 U	6.3	4.6		5.7
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	11 U	11 U	13 U	10 U	**1000000**	11 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	11 U	11 U	13 U	10 U	30000 U	11 U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	11 U	11 U	13 U	10 U	30000 U	11 U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	380 U	81 U	81 U	69 U	87000 U	9400 U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22	380 U				87000 U	
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	920 U	200 U	200 U	170 U	210000 U	23000 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-5 SOIL SB59-5-06 10 12 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-7 SOIL 59056 0 2 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-8 SOIL 59057 0 2 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-9 SOIL 59059 2 3.7 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-1 SOIL TP59-1 2 2 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-10-2 SOIL 59004 3 3.5 10/7/1997 SA Phase I RI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	920 U	200 U	200 U	170 U	210000 U	23000 U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	380 U	15 J	81 U	69 U	87000 U	3600 J
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	920 U	200 U	200 U	170 U	210000 U	23000 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 UJ
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	920 U	200 U	200 U	170 U	210000 U	23000 UJ
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	920 U	200 U	200 U	170 U	210000 U	23000 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	380 U	81 U	81 U	69 U	87000 U	9400 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	920 U	200 U	200 U	170 U	210000 U	23000 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	920 U	200 U	200 U	170 U	210000 U	23000 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	380 U	9.1 J	81 U	69 U	87000 U	4200 J
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	380 U	81 U	81 U	69 U	87000 U	1200 J
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	380 U	19 J	81 U	69 U	87000 U	13000
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	380 U	160	6.6 J	69 U	87000 U	**20000**
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	380 U	**140**	7 J	69 U	87000 U	**18000**
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	380 U	180	7.7 J	4.8 J	87000 U	**14000**
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	380 U	88	6.3 J	69 U	87000 U	9900
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	380 U	160	8.4 J	69 U	87000 U	**14000**
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34		81 U	81 U	69 U		9400 U
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	380 U	42 J	69 J	24 J	15000 J	9400 U
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	380 U	9.6 J	81 U	69 U	87000 U	9400 U
Carbazole	UG/KG	33000	64.3%		0	36	56	380 U	33 J	81 U	69 U	87000 U	4100 J
Chrysene	UG/KG	63000	80.4%	400	26	45	56	380 U	180	7.8 J	69 U	87000 U	**19000**
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	380 U	8.2 J	5.8 J	7.1 J	87000 U	9400 U
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	380 U	8.4 J	11 J	69 U	87000 U	9400 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	380 U	**36** J	81 U	69 U	87000 U	**3700** J
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	380 U	9.4 J	81 U	69 U	87000 U	4200 J
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	380 U	12 J	10 J	12 J	87000 U	9400 U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-5 SOIL SB59-5-06 10 12 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-7 SOIL 59056 0 2 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-8 SOIL 59057 0 2 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-9 SOIL 59059 2 3.7 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-1 SOIL TP59-1 2 2 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-10-2 SOIL 59004 3 3.5 10/7/1997 SA Phase I RI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	380 U	320	11 J	69 U	87000 U	50000
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	380 U	81 U	81 U	69 U	87000 U	10000
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	380 U	83	6 J	69 U	87000 U	9200 J
Isophorone	UG/KG	0	0.0%	4400	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	380 U	11 J	81 U	69 U	87000 U	2000 J
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	380 U	81 U	81 U	69 U	87000 U	9400 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	920 U	200 U	200 U	170 U	210000 U	23000 U
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	380 U	120	6 J	69 U	87000 U	46000
Phenol	UG/KG	17	3.6%	30	0	2	56	380 U	81 U	81 U	69 U	87000 U	9400 U
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	380 U	290	13 J	69 U	87000 U	36000
PESTICIDES/PCBS													
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	3.8 U	6	4.1 U	3.5 U	7	3.8 J
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	3.8 U	14	4.1 U	2.5 J	13 J	5.9 J
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	3.8 U	21	4.1 U	3.9	4.3 U	8.6 J
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	2 U	2.1 U	2.1 U	1.8 U	2.2 U	1.8 U
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	2 U	14 J	9	8.2 UJ	2.2 U	1.8 U
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	2 U	3.6	2.1 U	1.8 U	1.3 J	1.8 U
Aroclor-1016	UG/KG	0	0.0%		0	0	55	38 U	41 U	41 U	35 U	43 U	35 U
Aroclor-1221	UG/KG	0	0.0%		0	0	55	77 U	83 U	84 U	70 U	88 U	72 U
Aroclor-1232	UG/KG	0	0.0%		0	0	55	38 U	41 U	41 U	35 U	43 U	35 U
Aroclor-1242	UG/KG	0	0.0%		0	0	54	38 U	41 U	41 U	35 U	43 U	35 U
Aroclor-1248	UG/KG	0	0.0%		0	0	55	38 U	41 U	41 U	35 U	43 U	35 U
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	38 U	41 U	41 U	35 U	43 U	35 U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	38 U	41 U	41 U	35 U	43 U	35 U
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	2 U	4.7 J	3.6 J	3 J	2.2 U	1.8 U
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	2 U	1.8 J	1.4 J	1.1 J	2.2 J	1.8 U
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	3.8 U	4.1 U	4.1 U	3.5 U	3.6 J	3.5 U
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	2 U	2.1 U	2.1 U	1.8 U	1.5 J	1.8 U
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	3.8 U	4.1 U	4.1 U	3.5 U	4.3 U	3.5 U
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	3.8 U	4.1 U	4.1 U	3.5 U	4.3 U	3.5 U
Endrin	UG/KG	32	14.5%	100	0	8	55	3.8 U	4.1 U	4.1 U	3.5 U	4.3 U	17
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	3.8 U	4.1 U	4.1 U	3.5 U	4.3 U	6.7
Endrin ketone	UG/KG	77	14.5%		0	8	55	3.8 U	4.1 U	4.1 U	3.5 U	4.3 U	12
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	2 U	2.6 U	2.9 U	2.6 UJ	2.2 U	1.8 U
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	2 U	3.8	2.1 U	1.8 U	2.2 U	1.8 U
Heptachlor	UG/KG	0	0.0%	100	0	0	55	2 U	2.1 U	2.1 U	1.8 U	2.2 U	1.8 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 SB59-5 SOIL SB59-5-06 10 12 5/25/1994 SA ESI Value (Q)	SEAD-59 SB59-7 SOIL 59056 0 2 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-8 SOIL 59057 0 2 10/20/1997 SA Phase I RI Value (Q)	SEAD-59 SB59-9 SOIL 59059 2 3.7 10/21/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-1 SOIL TP59-1 2 2 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-10-2 SOIL 59004 3 3.5 10/7/1997 SA Phase I RI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	2 U	1.2 J	2.1 U	1.8 U	2.2 U	1 J
Methoxychlor	UG/KG	110	3.6%		0	2	55	20 U	21 U	21 U	18 U	22 U	23 J
Toxaphene	UG/KG	0	0.0%		0	0	55	200 U	210 U	210 U	180 U	220 U	180 U
METALS													
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	7030	9840	15200	7180	16000 J	10200 J
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.18 UJ	0.72 UJ	0.69 UJ	0.58 UJ	0.26 UJ	0.55 UJ
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	5.1	4.1	5.2	3.8	6.1	2.8
Barium	MG/KG	304	100.0%	300	1	55	55	36 J	66.2	192	47.9	120 J	71.7
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.42 J	0.41	0.36	0.25	0.61 J	0.39
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.61 J	0.1 U	0.1 U	0.08 U	0.6 J	0.08 U
Calcium	MG/KG	214000	100.0%	121000	5	55	55	85200	59700	7390	91000	7690 J	39700
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	13.1	19.5	20.7	11.9	23.8 J	16.7
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	8.1 J	9.4	12.5	8.1	14.7 J	9.9
Copper	MG/KG	36.1	100.0%	33	1	55	55	18.8	24.9	28.4	18.7	19.6 J	21.6
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.56 U	0.62 UJ	0.65 UJ	0.53 UJ	0.58 U	0.58 U
Iron	MG/KG	33300	100.0%	36500	0	55	55	18100	19900	26300	16100	33300 J	19000
Lead	MG/KG	139	100.0%	24.8	29	55	55	12.3 J	**40.9**	**55.5**	8.5	15	17.3 J
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	**34400**	7840	4740	18300	5210 J	7500 J
Manganese	MG/KG	1150	100.0%	1060	1	55	55	477	367	**1150**	385	507 J	352 J
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	0.04 J	0.06	**0.21**	0.05 U	0.07 JR	0.04 U
Nickel	MG/KG	41.4	100.0%	49	0	55	55	27	25.7	28.5	21.4	34.4 J	29.8
Potassium	MG/KG	2520	100.0%	2380	1	55	55	922 J	1500	1770	1430	1540	1480
Selenium	MG/KG	2.2	32.7%	2	1	18	55	0.31 U	0.99 U	1.4	0.79 U	1.2	0.76 U
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.13 UJ	0.27 U	0.26 U	0.22 U	0.1 UJ	0.21 U
Sodium	MG/KG	2310	80.0%	172	18	44	55	**274** J	**1510**	115 U	142	140 J	162
Thallium	MG/KG	0	0.0%	0.7	0	0	55	0.29 U	1 UJ	0.98 UJ	0.81 UJ	0.38 U	1.1 U
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	13.3	18.1	25.4	13.7	25.3 J	17.2
Zinc	MG/KG	1550	100.0%	110	8	55	55	64.9	67.6	86	61.2	**1550** J	54.9 J
OTHER ANALYSES													
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34		0.5	8.34	0.15		0.58
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	70	133	27.3 U	23.3 U	3820	607

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-11A-2 SOIL 59026 4 4.5 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-12A-1 SOIL 59018 1 1.5 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-12A-2 SOIL 59019 1 1.5 10/9/1997 DU Phase I RI Value (Q)	SEAD-59 TP59-12B-2 SOIL 59023 2.5 3 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-13A-1 SOIL 59010 3.5 4 10/8/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-13C-1 SOIL 59015 3 3.5 10/8/1997 SA Phase I RI Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Acetone	UG/KG	150	3.6%	200	0	2	56	7 U	12 U	12 U	11 U	120 U	11 U
Benzene	UG/KG	5900	5.4%	60	2	3	56	7 U	12 U	12 U	11 U	120 U	11 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Bromoform	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	11 U	12 U	12 U	11 U	120 U	11 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	11 U	12 U	12 U	11 U	110 J	11 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	11 U	12 U	12 U	11 U	120 U	11 U
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	11 U	12 U	12 U	11 U	120 U	11 U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	11 U	12 U	12 U	11 U	120 U	11 U
Styrene	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	11 U	12 U	12 U	11 U	120 U	11 U
Total BTEX	MG/KG	15	86.7%		0	26	30	2.5	5.2	5	6		9.5
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	11 U	12 U	12 U	11 U	120 U	11 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	11 U	12 U	12 U	11 U	120 U	11 U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	11 U	12 U	12 U	11 U	120 U	11 U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	1400 U	200 U	160 U	74 U	8000 U	76 U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22						
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	3500 U	490 U	380 U	180 U	20000 U	180 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-11A-2 SOIL 59026 4 4.5 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-12A-1 SOIL 59018 1 1.5 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-12A-2 SOIL 59019 1 1.5 10/9/1997 DU Phase I RI Value (Q)	SEAD-59 TP59-12B-2 SOIL 59023 2.5 3 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-13A-1 SOIL 59010 3.5 4 10/8/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-13C-1 SOIL 59015 3 3.5 10/8/1997 SA Phase I RI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	3500 U	490 U	380 U	180 U	20000 U	180 U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	210 J	21 J	16 J	74 U	10000	76 U
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	3500 U	490 U	380 U	180 UJ	20000 U	180 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 UJ	8000 U	76 UJ
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	3500 U	490 U	380 U	180 UJ	20000 U	180 UJ
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	3500 U	490 U	380 U	180 U	20000 U	180 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	1400 U	200 U	160 U	74 U	8000 U	76 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	3500 U	490 U	380 U	180 U	20000 U	180 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	3500 U	490 U	380 U	180 UJ	20000 U	180 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	340 J	92 J	59 J	74 U	1600 J	76 U
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	290 J	200 U	160 U	74 U	8000 U	76 U
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	1100 J	130 J	110 J	74 U	8000 U	76 U
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	**3500**	**450**	**480**	74 U	8000 U	8.2 J
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	**4100**	**480**	**450**	74 U	8000 U	10 J
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	**3400**	480	470	74 U	8000 U	11 J
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	2400	340	290	74 U	8000 U	7.7 J
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	**3200**	430	380	74 U	8000 U	10 J
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34	1400 U	200 U	160 U	74 U	8000 U	76 U
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	1400 U	200 U	14 J	6.8 J	8000 U	7 J
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Carbazole	UG/KG	33000	64.3%		0	36	56	610 J	250	150 J	74 U	8000 U	76 U
Chrysene	UG/KG	63000	80.4%	400	26	45	56	**3700**	**520**	**500**	74 U	8000 U	12 J
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	1400 U	200 U	160 U	6.3 J	8000 U	76 U
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	**890** J	**110** J	**140** J	74 U	8000 U	76 U
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	230 J	42 J	27 J	74 U	1400 J	76 U
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	1400 U	200 U	160 U	74 U	8000 U	5.3 J
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-11A-2 SOIL 59026 4 4.5 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-12A-1 SOIL 59018 1 1.5 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-12A-2 SOIL 59019 1 1.5 10/9/1997 DU Phase I RI Value (Q)	SEAD-59 TP59-12B-2 SOIL 59023 2.5 3 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-13A-1 SOIL 59010 3.5 4 10/8/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-13C-1 SOIL 59015 3 3.5 10/8/1997 SA Phase I RI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	7300	1100	1000	74 U	8000 U	14 J
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	640 J	81 J	55 J	74 U	3000 J	76 U
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	2300	300	270	74 U	8000 U	7.5 J
Isophorone	UG/KG	0	0.0%	4400	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	110 J	34 J	17 J	74 U	8000 U	76 U
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	3500 U	490 U	380 U	180 U	20000 U	180 U
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	5000	750	610	74 U	5200 J	8.9 J
Phenol	UG/KG	17	3.6%	30	0	2	56	1400 U	200 U	160 U	74 U	8000 U	76 U
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	7000	800	890	74 U	8000 U	14 J
PESTICIDES/PCBS													
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	13	10	7.5	3.7 U	26	3.8 U
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	13	29	21	3.7 U	10	3.8 U
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	12	8.1	5.1	3.7 U	4 U	3.8 U
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	1.8 U	2.1 U	2 U	1.9 U	2.1 U	2 U
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	1.8 U	2.1 U	2 U	1.9 U	2.1 U	2 U
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	1.1 J	2.1 U	2 U	1.9 U	17	2 U
Aroclor-1016	UG/KG	0	0.0%		0	0	55	36 U	40 U	40 U	37 U	40 U	38 U
Aroclor-1221	UG/KG	0	0.0%		0	0	55	73 U	82 U	81 U	75 U	82 U	77 U
Aroclor-1232	UG/KG	0	0.0%		0	0	55	36 U	40 U	40 U	37 U	40 U	38 U
Aroclor-1242	UG/KG	0	0.0%		0	0	54	36 U	40 U	40 U	37 U	40 U	38 U
Aroclor-1248	UG/KG	0	0.0%		0	0	55	36 U	40 U	40 U	37 U	40 U	38 U
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	36 U	40 U	40 U	37 U	40 U	38 U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	36 U	40 U	40 U	37 U	40 U	38 U
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	1.8 U	2.1 U	2 U	1.9 U	2.1 U	2 U
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	1.8 U	2.1 U	2 U	1.9 U	2.1 U	2 U
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	3.6 U	4 U	4 U	3.7 U	4 U	3.8 U
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	1.8 U	2.1 U	2 U	1.9 U	2.1 U	2 U
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	3.6 U	4 U	4 U	3.7 U	4 U	3.8 U
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	3.6 U	4 U	4 U	3.7 U	4 U	3.8 U
Endrin	UG/KG	32	14.5%	100	0	8	55	7.7	4 U	4 U	3.7 U	4 U	3.8 U
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	3.5 J	4 U	4 U	3.7 U	4 U	3.8 U
Endrin ketone	UG/KG	77	14.5%		0	8	55	4.4	4 U	4 U	3.7 U	4 U	3.8 U
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	1.8 U	2.1 U	2 U	1.9 U	2.1 U	2 U
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	1 J	2.1 U	2 U	1.9 U	18	2 U
Heptachlor	UG/KG	0	0.0%	100	0	0	55	1.8 U	2.1 U	2 U	1.9 U	2.1 U	2 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-11A-2 SOIL 59026 4 4.5 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-12A-1 SOIL 59018 1 1.5 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-12A-2 SOIL 59019 1 3 10/9/1997 DU Phase I RI Value (Q)	SEAD-59 TP59-12B-2 SOIL 59023 2.5 3 10/9/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-13A-1 SOIL 59010 3.5 4 10/8/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-13C-1 SOIL 59015 3 3.5 10/8/1997 SA Phase I RI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	1 J	1.7 J	1 J	1.9 U	2.1 U	2 U
Methoxychlor	UG/KG	110	3.6%		0	2	55	18 U	21 U	20 U	19 U	21 U	20 U
Toxaphene	UG/KG	0	0.0%		0	0	55	180 U	210 U	200 U	190 U	210 U	200 U
METALS													
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	9950 J	12000 J	10000 J	11900 J	9510 J	6630 J
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.56 UJ	0.54 UJ	0.58 UJ	0.61 UJ	0.51 UJ	0.6 UJ
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	3.5	2.7	3	4	4.8	3.6
Barium	MG/KG	304	100.0%	300	1	55	55	77.8	91.6	79.7	84.5	33.2	33.6
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.39	0.48	0.36	0.49	0.46	0.25
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.08 U	0.07 U	0.08 U	0.08 U	0.07 U	0.08 U
Calcium	MG/KG	214000	100.0%	121000	5	55	55	98900	26900	63900	2770	8570	73900
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	16.4	19.4	15.2	17.7	17.5	11.6
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	9.5	11.5	8.5	8.1	13.8	9
Copper	MG/KG	36.1	100.0%	33	1	55	55	**36.1**	28.1	23	16.6	27	15.8
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.58 U	0.65 U	0.6 U	0.61 U	0.65 U	0.57 U
Iron	MG/KG	33300	100.0%	36500	0	55	55	18200	22600	17600	20800	22200	15400
Lead	MG/KG	139	100.0%	24.8	29	55	55	**65.2** J	**81.6** J	**38.4** J	8.5 J	17.6 J	11.1 J
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	8970 J	6770 J	9300 J	4240 J	6250 J	7700 J
Manganese	MG/KG	1150	100.0%	1060	1	55	55	442 J	375 J	463 J	226 J	285 J	340 J
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	**0.15**	0.1	**0.11**	0.05 U	0.05 U	0.05 U
Nickel	MG/KG	41.4	100.0%	49	0	55	55	26.8	28.2	23.3	24	35	21.5
Potassium	MG/KG	2520	100.0%	2380	1	55	55	1540	1510	1590	1580	1090	1000
Selenium	MG/KG	2.2	32.7%	2	1	18	55	0.78 U	0.74 U	0.79 U	0.84 U	0.71 U	0.83 U
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.25	0.2 U	0.22 U	0.23 U	0.2 U	0.23 U
Sodium	MG/KG	2310	80.0%	172	18	44	55	99.5	80.1 U	85.5 U	90.6 U	**1150**	**385**
Thallium	MG/KG	0	0.0%	0.7	0	0	55	1.2 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	18.7	21.4	18.4	19.8	16	11.6
Zinc	MG/KG	1550	100.0%	110	8	55	55	90.9 J	**122** J	87.9 J	70.4 J	97.2 J	69.7 J
OTHER ANALYSES													
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34	1.5	1.6	1.3	0.31	0.08	0.09
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	1220	156	151	25.8 U	5090	25.4 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-14-3 SOIL 59030 1.5 2 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-15-1 SOIL 59031 6 6 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-15-5 SOIL 59035 6 6.5 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-16-1 SOIL 59036 3.5 4 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-17-3 SOIL 59044 3 3.5 10/13/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-18-1 SOIL 59047 2 2.5 10/13/1997 SA Phase I RI Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Acetone	UG/KG	150	3.6%	200	0	2	56	12 U	57 U	12 U	13 U	11 U	13 U
Benzene	UG/KG	5900	5.4%	60	2	3	56	12 U	57 U	12 U	13 U	11 U	13 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Bromoform	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	12 U	57 U	12 U	13 U	11 U	13 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	12 U	22 J	12 U	13 U	11 U	13 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	12 U	57 U	12 U	13 U	11 U	1 J
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	12 U	57 U	12 U	30	11 U	13 U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	12 U	57 U	12 U	13 U	11 U	13 U
Styrene	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	12 U	9 J	2 J	13 U	2 J	13 U
Total BTEX	MG/KG	15	86.7%		0	26	30	3.9		6	2.5 U	2.8	5.9
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	12 U	190	12 U	13 U	11 U	13 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	12 U	57 U	12 U	13 U	11 U	13 U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	12 U	57 U	12 U	13 U	11 U	13 U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	380 U	76000 U	1500 U	78 U	360 U	28 J
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22						
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	920 U	180000 U	3700 U	190 U	880 U	200 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-14-3 SOIL 59030 1.5 2 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-15-1 SOIL 59031 6 6 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-15-5 SOIL 59035 6 6.5 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-16-1 SOIL 59036 3.5 4 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-17-3 SOIL 59044 3 3.5 10/13/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-18-1 SOIL 59047 2 2.5 10/13/1997 SA Phase I RI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	920 U	180000 U	3700 UJ	190 U	880 U	200 U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	26 J	66000 J	100 J	16 J	970	29 J
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	920 U	180000 U	3700 U	190 U	880 U	200 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 UJ	360 U	81 U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	920 U	180000 U	3700 U	190 UJ	880 U	200 U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	920 U	180000 U	3700 U	190 U	880 U	200 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	380 U	76000 U	1500 U	78 U	360 U	81 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	920 U	180000 U	3700 U	190 U	880 U	200 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	920 U	180000 U	3700 U	190 UJ	880 U	200 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	68 J	12000 J	270 J	19 J	510	13 J
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	53 J	76000 U	130 J	9.9 J	130 J	81 U
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	120 J	11000 J	390 J	27 J	210 J	81 U
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	800	20000 J	3200	210	1000	17 J
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	910	22000 J	3600	220	1300	21 J
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	880	16000 J	3200	250	1000	22 J
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	580	11000 J	2300	160	900	16 J
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	710	18000 J	3100	180	1200	18 J
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34	380 U	76000 U	1500 U	78 U	360 U	81 U
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	380 U	76000 U	1500 U	17 J	360 U	74 J
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	380 U	76000 U	1000 J	4.2 J	360 U	81 U
Carbazole	UG/KG	33000	64.3%		0	36	56	160 J	76000 U	590 J	34 J	150 J	5.3 J
Chrysene	UG/KG	63000	80.4%	400	26	45	56	1100	21000 J	4400	240	1100	23 J
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	380 U	76000 U	1500 U	78 U	360 U	4.7 J
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	380 U	76000 U	1500 U	5.6 J	360 U	81 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	210 J	4100 J	710 J	74 J	350 J	6.5 J
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	34 J	76000 U	140 J	78 U	440	12 J
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	380 U	76000 U	1500 U	78 U	360 U	81 U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-14-3 SOIL 59030 1.5 2 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-15-1 SOIL 59031 6 6 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-15-5 SOIL 59035 6 6.5 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-16-1 SOIL 59036 3.5 4 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-17-3 SOIL 59044 3 3.5 10/13/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-18-1 SOIL 59047 2 2.5 10/13/1997 SA Phase I RI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	1900	47000 J	8600	430	1900	39 J
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	120 J	26000 J	620 J	78 U	220 J	5.5 J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	510	10000 J	2000	160	840	15 J
Isophorone	UG/KG	0	0.0%	4400	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	380 U	14000 J	1500 U	10 J	610	17 J
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	380 U	76000 U	1500 U	78 U	360 U	81 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	920 U	180000 U	3700 UJ	190 U	880 U	200 U
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	1400	53000 J	6500	160	830	22 J
Phenol	UG/KG	17	3.6%	30	0	2	56	380 U	76000 U	1500 U	78 U	360 U	7.3 J
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	1800	43000 J	8000	370	1600	30 J
PESTICIDES/PCBS													
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	3.8 U	37	3.8 U	3.9 U	11 J	4.1 U
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	3.8 U	3.8 U	3.8 U	3.9 U	15	4.1 U
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	3.8 U	17 J	3.8 U	3.9 U	24	4.1 U
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	2 U	1.9 U	2 U	2 U	1.9 U	2.1 U
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	2 U	1 J	2 U	2 U	1.9 U	2.1 U
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	2 U	2.4	2 U	2 U	1.9 U	2.6 J
Aroclor-1016	UG/KG	0	0.0%		0	0	55	38 U	38 U	38 U	39 U	36 U	41 U
Aroclor-1221	UG/KG	0	0.0%		0	0	55	77 U	76 U	77 U	80 U	74 U	83 U
Aroclor-1232	UG/KG	0	0.0%		0	0	55	38 U	38 U	38 U	39 U	36 U	41 U
Aroclor-1242	UG/KG	0	0.0%		0	0	54	38 U	38 U	38 U	39 U	36 U	41 U
Aroclor-1248	UG/KG	0	0.0%		0	0	55	38 U	38 U	38 U	39 U	36 U	41 U
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	38 U	38 U	38 U	39 U	36 U	41 U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	38 U	38 U	38 U	39 U	36 U	41 U
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	2 U	1.5 J	2 U	2 U	1.9 U	2.1 U
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	2 U	1.9 U	2 U	2 U	1.9 U	2.1 U
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	3.8 U	3.8 U	3.8 U	3.9 U	3.6 U	4.1 U
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	2 U	26 J	2 U	2 U	1.9 U	2.1 U
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	3.8 U	2.2 J	3.8 U	3.9 U	3.6 U	4.1 U
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	3.8 U	3.8 U	3.8 U	3.9 U	3.6 U	4.1 U
Endrin	UG/KG	32	14.5%	100	0	8	55	3.8 U	5.8 J	3.8 U	3.9 U	6.2	4.1 U
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	3.8 U	7.8	3.8 U	3.9 U	3.7 J	4.1 U
Endrin ketone	UG/KG	77	14.5%		0	8	55	3.8 U	6 J	3.8 U	3.9 U	3.3 J	4.1 U
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	2 U	1.9 U	2 U	2 U	1.9 U	2.1 U
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	2 U	1.9 U	2 U	2 U	1 J	1.8 J
Heptachlor	UG/KG	0	0.0%	100	0	0	55	2 U	1.9 U	2 U	2 U	1.9 U	2.1 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-14-3 SOIL 59030 1.5 2 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-15-1 SOIL 59031 6 6 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-15-5 SOIL 59035 6 6.5 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-16-1 SOIL 59036 3.5 4 10/10/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-17-3 SOIL 59044 3 3.5 10/13/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-18-1 SOIL 59047 2 2.5 10/13/1997 SA Phase I RI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	2 U	1.9 U	2 U	2 U	1.6 J	2.1 U
Methoxychlor	UG/KG	110	3.6%		0	2	55	20 U	19 U	20 U	20 U	19 U	21 U
Toxaphene	UG/KG	0	0.0%		0	0	55	200 U	190 U	200 U	200 U	190 U	210 U
METALS													
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	8210 J	8390 J	11900 J	12400 J	12300 J	12900 J
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.51 UJ	0.53 UJ	0.62 UJ	0.6 UJ	0.56 UJ	0.49 UJ
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	3.9	3.6	4.1	3.8	5.5	4.7
Barium	MG/KG	304	100.0%	300	1	55	55	80.8	49.1	72.6	94.4	69.5	121
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.41	0.28	0.45	0.45	0.46	0.47
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.07 U	0.07 U	0.09 U	0.08 U	0.08 U	0.07 U
Calcium	MG/KG	214000	100.0%	121000	5	55	55	85000	71700	29200	5590	59600	5650
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	15.8	20.4	18.4	18.9	21.2	19.8
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	9.4	8.2	8.9	9.8	12.6	9.4
Copper	MG/KG	36.1	100.0%	33	1	55	55	30.3	30.1	28.1	20.2	30.2	28.6
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.7 U	0.63 U	0.61 U	0.66 U	0.66 U	0.95 U
Iron	MG/KG	33300	100.0%	36500	0	55	55	17600	32700	21300	22700	25800	22500
Lead	MG/KG	139	100.0%	24.8	29	55	55	36.5 J	65.1 J	47 J	13.9 J	30.4 J	54.6 J
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	10000 J	9580 J	9520 J	4810 J	12900 J	3850 J
Manganese	MG/KG	1150	100.0%	1060	1	55	55	358 J	528 J	496 J	561 J	454 J	561 J
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.2
Nickel	MG/KG	41.4	100.0%	49	0	55	55	29.5	26.6	24.4	29.5	41.4	28.4
Potassium	MG/KG	2520	100.0%	2380	1	55	55	1180	1340	1590	1610	1780	1530
Selenium	MG/KG	2.2	32.7%	2	1	18	55	0.7 U	0.73 U	0.86 U	0.82 U	0.77 U	1.2
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.19 U	0.2 U	0.24 U	0.23 U	0.21 U	0.19 U
Sodium	MG/KG	2310	80.0%	172	18	44	55	120	110	92.5 U	355	155	73 U
Thallium	MG/KG	0	0.0%	0.7	0	0	55	1.1 U	1.1 U	1.3 U	1.2 U	1.2 U	1 U
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	18	17.9	26.3	21.5	21.2	21.5
Zinc	MG/KG	1550	100.0%	110	8	55	55	81.8 J	102 J	83.6 J	72.6 J	83.8 J	88.1 J
OTHER ANALYSES													
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34	0.6	0.05	4	0.18	1.3	9.9
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	430	19700	667	218	23.8 U	25.6 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-2 SOIL TP59-2 7 7 2/20/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3-2 1.5 1.5 6/28/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3X 1.5 1.5 6/28/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3-1 3 3 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-4 SOIL TP59-4 2 2 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-5 SOIL TP59-5 2.5 2.5 6/8/1994 SA ESI Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	11 U	12 U	3300 U		1800 U	12 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	11 U	12 U	3300 U		1800 U	12 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	11 U	12 U	3300 U		1800 U	12 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	11 U	12 U	3300 U		1800 U	12 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	11 U	12 U	3300 U		1800 U	12 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
Acetone	UG/KG	150	3.6%	200	0	2	56	17 U	16 U	3300 U		1800 U	30
Benzene	UG/KG	5900	5.4%	60	2	3	56	11 U	12 U	2000 J		1800 U	12 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
Bromoform	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	11 U	12 U	3300 U		1800 U	12 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	11 U	12 U	3300 U		1800 U	12 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	11 U	12 U	3300 U		1800 U	12 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	11 U	12 U	3300 U		1800 U	12 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	11 U	12 U	3300 U		1800 U	12 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	11 U	12 U	3300 U		1800 U	12 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	11 U	12 U	3300 U		1800 U	3 J
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	11 U	12 U	3300 U		1800 U	12
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	11 U	12 U	3300 U		1800 U	12 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	11 U	12 U	3300 U		1800 U	1 J
Styrene	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	11 U	12 U	3300 U		1800 U	12 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	11 U	12 U	440 J		220 J	2 J
Total BTEX	MG/KG	15	86.7%		0	26	30						
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	11 U	12 U	1200 J		410 J	12 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	11 U	12 U	3300 U		1800 U	12 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	11 U	12 U	3300 U		1800 U	12 U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	11 U	12 U	3300 U		1800 U	12 U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	1800 U			4000 U	98000 U	390 U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	1800 U			4000 U	98000 U	390 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	1800 U			4000 U	98000 U	390 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	1800 U			4000 U	98000 U	390 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22	1800 U			4000 U	98000 U	390 U
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	4500 U			9800 U	240000 U	940 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-2 SOIL TP59-2 7 7 2/20/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3-2 1.5 1.5 6/28/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3X 1.5 1.5 6/28/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3-1 3 3 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-4 SOIL TP59-4 2 2 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-5 SOIL TP59-5 2.5 2.5 6/8/1994 SA ESI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	1800 U			4000 U	98000 U	390 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	4500 U			9800 U	240000 U	940 U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	1800 U			4000 U	98000 U	390 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	1800 U			4000 U	98000 U	390 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	400 J			4000 U	**67000** J	390 U
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	1800 U			4000 U	98000 U	390 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	4500 U			9800 U	240000 U	940 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	1800 U			4000 U	98000 U	390 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	4500 U			9800 U	240000 U	940 U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	4500 U			9800 U	240000 U	940 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	1800 U			4000 U	98000 U	390 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	1800 U			4000 U	98000 U	390 U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	1800 U			4000 U	98000 U	390 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	4500 U			9800 U	240000 U	940 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	4500 U			9800 U	240000 U	940 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	870 J			4000 U	98000 U	390 U
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	460 J			4000 U	98000 U	390 U
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	2100			4000 U	98000 U	390 U
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	**4200**			**930** J	98000 U	390 U
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	**4600** J			**900** J	98000 U	390 U
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	**4400** J			830 J	98000 U	390 U
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	1400 J			640 J	98000 U	390 U
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	**4900** J			710 J	98000 U	390 U
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34						
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	1800 U			4000 U	98000 U	46 J
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	1800 U			320 J	98000 U	390 U
Carbazole	UG/KG	33000	64.3%		0	36	56	1500 J			4000 U	98000 U	390 U
Chrysene	UG/KG	63000	80.4%	400	26	45	56	**4400**			**1100** J	98000 U	390 U
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	1800 U			4000 U	98000 U	390 U
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	1800 UJ			4000 U	98000 U	390 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	1800 UJ			4000 U	98000 U	390 U
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	1800 U			4000 U	98000 U	390 U
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	1800 U			4000 U	98000 U	390 U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	1800 U			4000 U	98000 U	390 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-2 SOIL TP59-2 7 7 2/20/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3-2 1.5 1.5 6/28/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3X 1.5 1.5 6/28/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3-1 3 3 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-4 SOIL TP59-4 2 2 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-5 SOIL TP59-5 2.5 2.5 6/8/1994 SA ESI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	10000			1500 J	98000 U	390 U
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	1300 J			4000 U	22000 J	390 U
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	1800 U			4000 U	98000 U	390 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	1500 J			520 J	98000 U	390 U
Isophorone	UG/KG	0	0.0%	4400	0	0	56	1800 U			4000 U	98000 U	390 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	1800 U			4000 U	98000 U	390 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	290 J			4000 U	98000 U	390 U
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	1800 U			4000 U	98000 U	390 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	4500 U			9800 U	240000 U	940 U
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	8300			980 J	46000 J	390 U
Phenol	UG/KG	17	3.6%	30	0	2	56	1800 U			4000 U	98000 U	390 U
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	12000			1700 J	98000 U	
PESTICIDES/PCBS													
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	15			7 J	25 J	3.9 U
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	26 J			7.7 J	12	3.9 U
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	20 J			8.2 J	4.9 U	3.9 U
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	3.8 U			2.1 U	2.5 U	2 U
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	3.8 U			2.1 U	2.5 U	2 U
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	3.8 U			2.1 U	2.5 U	2 U
Aroclor-1016	UG/KG	0	0.0%		0	0	55	73 U			40 U	49 U	39 U
Aroclor-1221	UG/KG	0	0.0%		0	0	55	150 U			82 U	100 U	79 U
Aroclor-1232	UG/KG	0	0.0%		0	0	55	73 U			40 U	49 U	39 U
Aroclor-1242	UG/KG	0	0.0%		0	0	54				40 U	49 U	39 U
Aroclor-1248	UG/KG	0	0.0%		0	0	55	73 U			40 U	49 U	39 U
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	73 U			63	49 U	39 U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	73 U			40 U	49 U	39 U
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	3.8 U			2.1 U	2.5 U	2 U
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	3.8 U			2.1 U	2.5 U	2 U
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	7.3 U			4 U	4.9 U	3.9 U
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	3.8 U			2.1 U	1.5 J	2 U
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	7.1 J			4 U	4.9 U	3.9 U
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	7.3 U			2.6 J	4.9 U	3.9 U
Endrin	UG/KG	32	14.5%	100	0	8	55	7.3 U			4 U	4.9 U	3.9 U
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	6.3 J			4 U	4.9 U	3.9 U
Endrin ketone	UG/KG	77	14.5%		0	8	55	7.3 U			4 U	4.9 U	3.9 U
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	3.8 U			2.1 U	2.5 U	2 U
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	3.8 U			2.1 U	2.5 U	2 U
Heptachlor	UG/KG	0	0.0%	100	0	0	55	3.8 U			2.1 U	2.5 U	2 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-2 SOIL TP59-2 7 7 2/20/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3-2 1.5 1.5 6/28/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3X 1.5 1.5 6/28/1994 SA ESI Value (Q)	SEAD-59 TP59-3 SOIL TP59-3-1 3 3 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-4 SOIL TP59-4 2 2 6/8/1994 SA ESI Value (Q)	SEAD-59 TP59-5 SOIL TP59-5 2.5 2.5 6/8/1994 SA ESI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	2.2 J			2.1 U	2.5 U	2 U
Methoxychlor	UG/KG	110	3.6%		0	2	55	38 U			21 U	25 U	20 U
Toxaphene	UG/KG	0	0.0%		0	0	55	380 U			210 U	250 U	200 U
METALS													
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	10200 J			12300 J	14600 J	8730 J
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.47 J			0.32 J	0.65 J	0.25 UJ
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	4.8 J			4.6	4.9	4.1
Barium	MG/KG	304	100.0%	300	1	55	55	52.6 J			104 J	114 J	72 J
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.43 J			0.52 J	0.72 J	0.33 J
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.4 J			0.63 J	0.74 J	0.38 J
Calcium	MG/KG	214000	100.0%	121000	5	55	55	42700 J			53100 J	7780 J	77700 J
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	16.9 J			20.7 J	19.9 J	13.2 J
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	9.1 J			9.8 J	7.9 J	6.3 J
Copper	MG/KG	36.1	100.0%	33	1	55	55	24 J			26.9 J	23.2 J	17.2 J
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.55 U			0.46 U	0.69 U	0.45 U
Iron	MG/KG	33300	100.0%	36500	0	55	55	19700 J			23600 J	21000 J	16800 J
Lead	MG/KG	139	100.0%	24.8	29	55	55	29.7 J			31.2	19.9	10.2
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	6380 J			14600 J	2710 J	15400 J
Manganese	MG/KG	1150	100.0%	1060	1	55	55	425 J			426 J	1050 J	326 J
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	0.04 J			0.11 UR	0.17 UR	0.05 JR
Nickel	MG/KG	41.4	100.0%	49	0	55	55	25.3 J			30.1 J	17.2 J	21.1 J
Potassium	MG/KG	2520	100.0%	2380	1	55	55	1350 J			1820	1320	1310
Selenium	MG/KG	2.2	32.7%	2	1	18	55	0.12 U			0.49 U	1.9	0.52 U
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.09 U			0.09 UJ	0.13 UJ	0.1 UJ
Sodium	MG/KG	2310	80.0%	172	18	44	55	116 J			272 J	2310	169 J
Thallium	MG/KG	0	0.0%	0.7	0	0	55	0.21 U			0.34 U	0.48 U	0.37 U
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	18.7 J			22.1 J	24 J	15.2 J
Zinc	MG/KG	1550	100.0%	110	8	55	55	72.3 J			89.7 J	73.1 J	52.5 J
OTHER ANALYSES													
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34						
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	1790			440	7870	

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-6-2 SOIL 59002 6 6.5 10/7/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-7-2 SOIL 59008 3 3.5 10/8/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-8-2 SOIL 59050 1.5 2 10/13/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-9-2 SOIL 59052 2 2.5 10/13/1997 SA Phase I RI Value (Q)
VOLATILE ORGANIC COMPOUNDS											
1,1,1-Trichloroethane	UG/KG	0	0.0%	800	0	0	56	13 U	11 U	12 U	12 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	56	13 U	11 U	12 U	12 U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	56	13 U	11 U	12 U	12 U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	56	13 U	11 U	12 U	12 U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	56	13 U	11 U	12 U	12 U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
Acetone	UG/KG	150	3.6%	200	0	2	56	13 U	9 U	12 U	12 U
Benzene	UG/KG	5900	5.4%	60	2	3	56	13 U	11 U	12 U	12 U
Bromodichloromethane	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
Bromoform	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
Carbon disulfide	UG/KG	4	1.8%	2700	0	1	56	13 U	11 U	12 U	12 U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	56	13 U	11 U	12 U	12 U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	56	13 U	11 U	12 U	12 U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
Chloroethane	UG/KG	0	0.0%	1900	0	0	56	13 U	11 U	12 U	12 U
Chloroform	UG/KG	0	0.0%	300	0	0	56	13 U	11 U	12 U	12 U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
Ethyl benzene	UG/KG	260000	7.1%	5500	1	4	56	13 U	11 U	12 U	12 U
Methyl bromide	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
Methyl chloride	UG/KG	3	3.6%		0	2	56	13 U	11 U	12 U	12 U
Methyl ethyl ketone	UG/KG	36	7.1%	300	0	4	56	36 J	11 U	12 U	12 U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	56	13 U	11 U	12 U	12 U
Methylene chloride	UG/KG	2	5.4%	100	0	3	56	13 U	11 U	12 U	12 U
Styrene	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
Tetrachloroethene	UG/KG	0	0.0%	1400	0	0	56	13 U	11 U	12 U	12 U
Toluene	UG/KG	830000	16.1%	1500	1	9	56	13 U	11 U	12 U	12 U
Total BTEX	MG/KG	15	86.7%		0	26	30	8	4.5	3.5	2.5 U
Total Xylenes	UG/KG	1000000	10.7%	1200	1	6	56	13 U	11 U	12 U	12 U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	56	13 U	11 U	12 U	12 U
Trichloroethene	UG/KG	2	3.6%	700	0	2	56	13 U	11 U	12 U	12 U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	56	13 U	11 U	12 U	12 U
SEMIVOLATILE ORGANIC COMPOUNDS											
1,2,4-Trichlorobenzene	UG/KG	28	1.8%	3400	0	1	56	89 U	88 U	150 U	150 U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	56	89 U	88 U	150 U	150 U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	56	89 U	88 U	150 U	150 U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	56	89 U	88 U	150 U	150 U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	22				
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	56	220 U	210 U	360 U	370 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-6-2 SOIL 59002 6 6.5 10/7/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-7-2 SOIL 59008 3 3.5 10/8/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-8-2 SOIL 59050 1.5 2 10/13/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-9-2 SOIL 59052 2 2.5 10/13/1997 SA Phase I RI Value (Q)
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	56	89 U	88 U	150 U	150 U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	56	220 U	210 U	360 U	370 U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	56	89 U	88 U	150 U	150 U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	56	89 U	88 U	150 U	150 U
2-Methylnaphthalene	UG/KG	67000	66.1%	36400	2	37	56	17 J	88 U	14 J	10 J
2-Methylphenol	UG/KG	0	0.0%	100	0	0	56	89 U	88 U	150 U	150 U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	56	220 U	210 U	360 U	370 U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	56	89 U	88 U	150 U	150 U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	56	89 UJ	88 UJ	150 U	150 U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	56	220 UJ	210 UJ	360 U	370 U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	56	220 U	210 U	360 U	370 U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	56	89 U	88 U	150 U	150 U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	56	89 U	88 U	150 U	150 U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
4-Methylphenol	UG/KG	83	3.6%	900	0	2	56	83 J	88 U	150 U	150 U
4-Nitroaniline	UG/KG	0	0.0%		0	0	56	220 U	210 U	360 U	370 U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	56	220 U	210 U	360 U	370 U
Acenaphthene	UG/KG	20000	69.6%	50000	0	39	56	29 J	15 J	18 J	44 J
Acenaphthylene	UG/KG	5700	51.8%	41000	0	29	56	11 J	18 J	8 J	7.9 J
Anthracene	UG/KG	38000	64.3%	50000	0	36	56	61 J	54 J	43 J	88 J
Benzo(a)anthracene	UG/KG	67000	78.6%	224	31	44	56	**280**	**290**	200	**320**
Benzo(a)pyrene	UG/KG	70000	76.8%	61	33	43	56	**260**	**330**	**210**	**340**
Benzo(b)fluoranthene	UG/KG	58000	82.1%	1100	13	46	56	220 J	310	230	320
Benzo(ghi)perylene	UG/KG	35000	69.6%	50000	0	39	56	180	200	140 J	210
Benzo(k)fluoranthene	UG/KG	48000	73.2%	1100	12	41	56	260	300	180	300
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	34	89 U	88 U	150 U	150 U
Bis(2-Ethylhexyl)phthalate	UG/KG	15000	60.7%	50000	0	34	56	13 J	14 J	19 J	41 J
Butylbenzylphthalate	UG/KG	1000	7.1%	50000	0	4	56	89 U	88 U	150 U	150 U
Carbazole	UG/KG	33000	64.3%		0	36	56	82 J	51 J	56 J	120 J
Chrysene	UG/KG	63000	80.4%	400	26	45	56	310	340	220	360
Di-n-butylphthalate	UG/KG	250	39.3%	8100	0	22	56	8.2 J	13 J	12 J	80 J
Di-n-octylphthalate	UG/KG	11	8.9%	50000	0	5	56	89 U	88 U	150 U	150 U
Dibenz(a,h)anthracene	UG/KG	17000	60.7%	14	29	34	56	**74** J	**92**	**52** J	**84** J
Dibenzofuran	UG/KG	18000	60.7%	6200	1	34	56	14 J	9.6 J	13 J	21 J
Diethyl phthalate	UG/KG	12	26.8%	7100	0	15	56	89 U	4.9 J	150 U	150 U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	56	89 U	88 U	150 U	150 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-6-2 SOIL 59002 6 6.5 10/7/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-7-2 SOIL 59008 3 3.5 10/8/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-8-2 SOIL 59050 1.5 2 10/13/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-9-2 SOIL 59052 2 2.5 10/13/1997 SA Phase I RI Value (Q)
Fluoranthene	UG/KG	160000	82.1%	50000	1	46	56	590	590	460	790
Fluorene	UG/KG	38000	67.9%	50000	0	38	56	27 J	22 J	18 J	46 J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	56	89 U	88 U	150 U	150 U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
Hexachloroethane	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
Indeno(1,2,3-cd)pyrene	UG/KG	34000	75.0%	3200	4	42	56	180	190	140 J	200
Isophorone	UG/KG	0	0.0%	4400	0	0	56	89 U	88 U	150 U	150 U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	56	89 U	88 U	150 U	150 U
Naphthalene	UG/KG	29000	62.5%	13000	2	35	56	15 J	88 U	11 J	12 J
Nitrobenzene	UG/KG	0	0.0%	200	0	0	56	89 U	88 U	150 U	150 U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	56	220 U	210 U	360 U	370 U
Phenanthrene	UG/KG	140000	82.1%	50000	2	46	56	370	280	200	460
Phenol	UG/KG	17	3.6%	30	0	2	56	17 J	88 U	150 U	150 U
Pyrene	UG/KG	120000	85.5%	50000	1	47	55	500	500	340	550
PESTICIDES/PCBS											
4,4'-DDD	UG/KG	450	54.5%	2900	0	30	55	70	42 J	3.7 U	3.4 J
4,4'-DDE	UG/KG	150	60.0%	2100	0	33	55	48	150 J	10	80
4,4'-DDT	UG/KG	350	52.7%	2100	0	29	55	59	290 J	10	36
Aldrin	UG/KG	1.2	3.6%	41	0	2	55	2.3 U	3.6 U	1.9 U	2 U
Alpha-BHC	UG/KG	14	7.3%	110	0	4	55	2.3 U	3.6 U	1.9 U	2 U
Alpha-Chlordane	UG/KG	81	23.6%		0	13	55	2.3 U	81 J	1.9 U	2 U
Aroclor-1016	UG/KG	0	0.0%		0	0	55	44 U	70 U	37 U	38 U
Aroclor-1221	UG/KG	0	0.0%		0	0	55	90 U	140 U	75 U	78 U
Aroclor-1232	UG/KG	0	0.0%		0	0	55	44 U	70 U	37 U	38 U
Aroclor-1242	UG/KG	0	0.0%		0	0	54	44 U	70 U	37 U	38 U
Aroclor-1248	UG/KG	0	0.0%		0	0	55	44 U	70 U	37 U	38 U
Aroclor-1254	UG/KG	63	3.6%	10000	0	2	55	44 U	70 U	37 U	38 U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	55	44 U	70 U	37 U	38 U
Beta-BHC	UG/KG	4.7	12.7%	200	0	7	55	2.3 U	3.6 U	1.9 U	2 U
Delta-BHC	UG/KG	8.5	12.7%	300	0	7	55	2.3 U	3.6 U	1.9 U	2 U
Dieldrin	UG/KG	4.9	7.3%	44	0	4	55	4.4 U	4.9 J	1.8 J	3.8 U
Endosulfan I	UG/KG	26	14.5%	900	0	8	55	2.3 U	3.6 U	1.9 U	2 U
Endosulfan II	UG/KG	7.1	9.1%	900	0	5	55	4.4 U	7 U	3.7 U	3.8 U
Endosulfan sulfate	UG/KG	20	7.3%	1000	0	4	55	4.3 J	7 U	3.7 U	3.8 U
Endrin	UG/KG	32	14.5%	100	0	8	55	4.4 U	7 U	3.7 U	3.8 U
Endrin aldehyde	UG/KG	15	20.0%		0	11	55	4.4 U	7 U	3.7 U	3.8 U
Endrin ketone	UG/KG	77	14.5%		0	8	55	4.4 U	7 U	3.7 U	3.8 U
Gamma-BHC/Lindane	UG/KG	0	0.0%	60	0	0	55	2.3 U	3.6 U	1.9 U	2 U
Gamma-Chlordane	UG/KG	100	20.0%	540	0	11	55	2.3 U	100 J	1.9 U	2 U
Heptachlor	UG/KG	0	0.0%	100	0	0	55	2.3 U	3.6 U	1.9 U	2 U

TABLE A-1
SOIL ANALYSIS RESULTS - SEAD-59
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

Parameter	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	SEAD-59 TP59-6-2 SOIL 59002 6 6.5 10/7/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-7-2 SOIL 59008 3 3.5 10/8/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-8-2 SOIL 59050 1.5 2 10/13/1997 SA Phase I RI Value (Q)	SEAD-59 TP59-9-2 SOIL 59052 2 2.5 10/13/1997 SA Phase I RI Value (Q)
Heptachlor epoxide	UG/KG	10	25.5%	20	0	14	55	5.7 J	10	1.9 U	3 J
Methoxychlor	UG/KG	110	3.6%		0	2	55	23 U	36 U	19 U	20 U
Toxaphene	UG/KG	0	0.0%		0	0	55	230 U	360 U	190 U	200 U
METALS											
Aluminum	MG/KG	20600	100.0%	19300	1	55	55	12600 J	4450 J	12500 J	10700 J
Antimony	MG/KG	424	21.8%	5.9	1	12	55	0.73 UJ	0.51 UJ	0.56 UJ	0.6 UJ
Arsenic	MG/KG	6.1	100.0%	8.2	0	55	55	6	2.7	5.1	4.5
Barium	MG/KG	304	100.0%	300	1	55	55	101	51	113	77.1
Beryllium	MG/KG	0.91	100.0%	1.1	0	55	55	0.52	0.24	0.32	0.4
Cadmium	MG/KG	3.2	38.2%	2.3	1	21	55	0.1 U	0.07 U	0.08 U	0.08 U
Calcium	MG/KG	214000	100.0%	121000	5	55	55	28000	**190000**	28200	25900
Chromium	MG/KG	25.5	100.0%	29.6	0	55	55	18.8	8.4	18.6	15.8
Cobalt	MG/KG	14.7	100.0%	30	0	55	55	10.6	4.2	11.7	8.9
Copper	MG/KG	36.1	100.0%	33	1	55	55	25.1	20.6	25.3	21.1
Cyanide	MG/KG	0	0.0%	0.35	0	0	55	0.72 U	0.55 U	0.48 U	0.71 U
Iron	MG/KG	33300	100.0%	36500	0	55	55	25600	8280	23200	19500
Lead	MG/KG	139	100.0%	24.8	29	55	55	**65.5** J	**31.3** J	**53.7** J	**29.5** J
Magnesium	MG/KG	34400	100.0%	21500	1	55	55	4600 J	8290 J	5710 J	5940 J
Manganese	MG/KG	1150	100.0%	1060	1	55	55	572 J	249 J	886 J	422 J
Mercury	MG/KG	1.6	61.8%	0.1	11	34	55	**0.15**	**0.11**	0.09	0.09
Nickel	MG/KG	41.4	100.0%	49	0	55	55	25.4	12	27.8	23.1
Potassium	MG/KG	2520	100.0%	2380	1	55	55	1490	726	1460	1180
Selenium	MG/KG	2.2	32.7%	2	1	18	55	1 U	0.7 U	0.77	0.83 U
Silver	MG/KG	4.1	7.3%	0.75	1	4	55	0.28 U	**4.1**	0.21 U	0.23 U
Sodium	MG/KG	2310	80.0%	172	18	44	55	134	87.9	83.1 U	89.6 U
Thallium	MG/KG	0	0.0%	0.7	0	0	55	1.5 U	1 U	1.2 U	1.2 U
Vanadium	MG/KG	41.9	100.0%	150	0	55	55	21.5	14.4	20.9	17.3
Zinc	MG/KG	1550	100.0%	110	8	55	55	**114** J	61.5 J	105 J	68.8 J
OTHER ANALYSES											
Nitrate/Nitrite Nitrogen	MG/KG	9.9	100.0%		0	34	34	1	0.45	1.5	2.7
Total Petroleum Hydrocarbons	MG/KG	19700	70.9%		0	39	55	111	393	55.3	27.6 U

TABLE A-2
GROUNDWATER ANALYSIS RESULTS FROM SEAD-59 ESI
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	MATRIX LOCATION SAMPLE DATE ES ID LAB ID SDG NUMBER UNITS	MAXIMUM	FREQUENCY OF DETECTION	LOWEST CRITERIA	CRITERIA SOURCE	NUMBER ABOVE CRITERIA	WATER SEAD-59 3/30/1994 MW59-1 216042 43179	WATER SEAD-59 7/21/1994 MW59-2 227726 45448	WATER SEAD-59 7/21/1994 MW59-3 227727 45448
SEMIVOLATILE ORGANICS									
Phenol	ug/L	2	67%	1	GA	2	10 U	2 J	1 J
METALS									
Aluminum	ug/L	2680	100%	50	SEC. MCL	3	1940	299	2680
Arsenic	ug/L	2	33%	10	MCL	0	2 J	2 U	2 U
Barium	ug/L	103	100%	1000	GA	0	102 J	99.6 J	103 J
Calcium	ug/L	146000	100%	NA		0	140000	125000	146000
Chromium	ug/L	3.6	100%	50	GA	0	3.4 J	0.78 J	3.6 J
Cobalt	ug/L	3.5	100%	NA		0	3.5 J	1.1 J	2.1 J
Copper	ug/L	4.3	67%	200	GA	0	4.3 J	0.5 U	3.6 J
Iron	ug/L	3940	100%	300	GA	3	3120	731 J	3940 J
Lead	ug/L	2.4	67%	15	MCL	0	2.4 J	0.9 U	1.5 J
Magnesium	ug/L	29200	100%	NA		0	29000	29200	21200
Manganese	ug/L	780	100%	50	SEC. MCL	3	780	109	253
Mercury	ug/L	0.06	67%	0.7	GA	0	0.03 U	0.05 J	0.06 J
Nickel	ug/L	7.6	100%	100	GA	0	7.6 J	1.9 J	6.7 J
Potassium	ug/L	4150	100%	NA		0	2110 J	2640 J	4150 J
Sodium	ug/L	239000	100%	20000	GA	3	66000	32100	239000
Thallium	ug/L	4	67%	2	MCL	2	1.6 U	4 J	2.8 J
Vanadium	ug/L	4.7	100%	NA		0	3.4 J	1.1 J	4.7 J
Zinc	ug/L	26.2	100%	5000	SEC. MCL	0	21.8	4 J	26.2
OTHER ANALYSES									
Total Petroleum Hydrocarbons	mg/L	2.6				NA	2.6 J	1.38	0.34 U
pH	Standard Units						7.2	7.9	7.1
Conductivity	umhos/cm						650	750	1600
Temperature	°C						3.9	14.6	17.6
Turbidity	NTU						146	14	56

NOTES:
GA = NY State Class GA Groundwater Standard (TOGS 1.1.1, June 1998)
MCL = US EPA National Primary Drinking Water Standards, EPA 816-F-01-007 March 2001
MCL for arsenic announced 10/31/01. Source http://www.epa.gov/safewater/arsenic.html
SEC. MCL = US EPA Secondary Drinking Water Regulation, non-enforceable (EPA 822-B-00-001, Summer 2000)
NA = Not Available
U = The compound was not detected below this concentration.
J = The reported value is an estimated concentration.

APPENDIX B
Laboratory Analyses Results – SEAD-71

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1
								SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
								SS71-1	SS71-10	SS71-11	SS71-12	SS71-13	SS71-14
								71013	71017	71024	71023	71027	71025
								SA	SA	SA	SA	SA	SA
								0	0	0	0	0	0
								0.2	0.2	0.2	0.2	0.2	0.2
								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	19-Nov-97	19-Nov-97	20-Nov-97	20-Nov-97	21-Nov-97	20-Nov-97
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	23	17.6%	800	0	6	34	13. U	12. U	11. U	11. U	18. U	12. U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Acetone	UG/KG	74	5.9%	200	0	2	34	13. U	12. U	11. U	11. U	18. U	74.
Benzene	UG/KG	2	2.9%	60	0	1	34	2. J	12. U	11. U	11. U	18. U	12. U
Bromodichloromethane	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Bromoform	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Carbon disulfide	UG/KG	0	0.0%	2700	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Chloroethane	UG/KG	0	0.0%	1900	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Chloroform	UG/KG	0	0.0%	300	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Ethyl benzene	UG/KG	4	5.9%	5500	0	2	34	13. U	12. U	11. U	11. U	4. J	12. U
Methyl bromide	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Methyl chloride	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Methyl ethyl ketone	UG/KG	0	0.0%	300	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Methylene chloride	UG/KG	11	26.5%	100	0	9	34	2. J	12. U	11. U	11. U	18. U	12. U
Styrene	UG/KG	1	2.9%		0	1	34	13. U	12. U	11. U	11. U	18. U	12. U
Tetrachloroethene	UG/KG	33	11.8%	1400	0	4	34	13. U	12. U	11. U	11. U	18. U	12. U
Toluene	UG/KG	16	23.5%	1500	0	8	34	4. J	12. U	4. J	4. J	9. J	12. U
Total Xylenes	UG/KG	96	11.8%	1200	0	4	34	13. U	12. U	11. U	11. U	11. J	12. U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Trichloroethene	UG/KG	0	0.0%	700	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	34	13. U	12. U	11. U	11. U	18. U	12. U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	0	0.0%	3400	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	8						
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	34	720. U	220. U	180,000. U	56,000. U	170,000. U	220. U
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U

Taole B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 SS71-1 71013 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-10 71017 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-11 71024 SA 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-12 71023 SA 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-13 71027 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-14 71025 SA 0 0.2 SOIL 20-Nov-97 Value (Q)
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	34	720. U	220. U	180,000. U	56,000. U	170,000. U	220. U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
2-Methylnaphthalene	UG/KG	31000	41.2%	36400	0	14	34	72. J	8.6 J	5,300. J	4,000. J	19,000. J	23. J
2-Methylphenol	UG/KG	0	0.0%	100	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	34	720. U	220. U	180,000. U	56,000. U	170,000. U	220. U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
3,3`-Dichlorobenzidine	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	34	720. U	220. U	180,000. U	56,000. U	170,000. U	220. U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	34	720. U	220. U	180,000. U	56,000. U	170,000. U	220. U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
4-Methylphenol	UG/KG	0	0.0%	900	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
4-Nitroaniline	UG/KG	0	0.0%		0	0	34	720. U	220. U	180,000. U	56,000. U	170,000. U	220. U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	34	720. U	220. U	180,000. U	56,000. U	170,000. U	220. U
Acenaphthene	UG/KG	42000	70.6%	50000	0	24	34	300. U	22. J	28,000. J	12,000. J	42,000. J	10. J
Acenaphthylene	UG/KG	340	14.7%	41000	0	5	34	300 U	93. U	72,000. U	23,000. U	70,000. U	20. J
Anthracene	UG/KG	100000	79.4%	50000	3	27	34	68. J	47. J	**100,000.**	32,000.	**100,000.**	380.
Benzo[a]anthracene	UG/KG	150000	94.1%	224	25	32	34	**500.**	220.	**150,000.**	**38,000.**	**100,000.**	**360.**
Benzo[a]pyrene	UG/KG	120000	91.2%	61	29	31	34	**550.**	**220.**	**120,000.**	**34,000.**	**80,000.**	**350.**
Benzo[b]fluoranthene	UG/KG	88000	91.2%	1100	16	31	34	750.	280.	**88,000.**	**21,000.** J	**63,000.** J	830. E
Benzo[ghi]perylene	UG/KG	62000	88.2%	50000	1	30	34	370.	140.	**62,000.** J	19,000. J	42,000. J	220.
Benzo[k]fluoranthene	UG/KG	130000	70.6%	1100	13	24	34	750.	250.	**130,000.**	**39,000.**	**76,000.**	89. U
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	26	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Bis(2-Ethylhexyl)phthalate	UG/KG	15	8.8%	50000	0	3	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Butylbenzylphthalate	UG/KG	0	0.0%	50000	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Carbazole	UG/KG	77000	82.4%		0	28	34	110. J	75. J	39,000. J	20,000. J	77,000.	150.
Chrysene	UG/KG	150000	94.1%	400	23	32	34	**930.**	290.	**150,000.**	**37,000.**	**90,000.**	**560.**
Di-n-butylphthalate	UG/KG	140	5.9%	8100	0	2	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Di-n-octylphthalate	UG/KG	0	0.0%	50000	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Dibenz[a,h]anthracene	UG/KG	25000	82.4%	14	27	28	34	**130.** J	**51.** J	**25,000.** J	**8,200.** J	**17,000.** J	**83.** J
Dibenzofuran	UG/KG	38000	64.7%	6200	5	22	34	100. J	13. J	**14,000.** J	**10,000.** J	**38,000.** J	31. J
Diethyl phthalate	UG/KG	0	0.0%	7100	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Fluoranthene	UG/KG	440000	97.1%	50000	7	33	34	1,100.	480.	**440,000.**	**96,000.**	**240,000.**	480.

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 SS71-1 71013 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-10 71017 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-11 71024 SA 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-12 71023 SA 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-13 71027 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-14 71025 SA 0 0.2 SOIL 20-Nov-97 Value (Q)
Fluorene	UG/KG	62000	73.5%	50000	1	25	34	300. U	18. J	35,000. J	19,000. J	**62,000.** J	47. J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Hexachloroethane	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Indeno[1,2,3-cd]pyrene	UG/KG	65000	88.2%	3200	9	30	34	360.	140.	**65,000.** J	**19,000.** J	**38,000.** J	190.
Isophorone	UG/KG	0	0.0%	4400	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Naphthalene	UG/KG	46000	44.1%	13000	2	15	34	78. J	93. U	6,000. J	8,000. J	**46,000.** J	31. J
Nitrobenzene	UG/KG	0	0.0%	200	0	0	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	34	720. U	220. U	180,000. U	56,000. U	170,000. U	220. U
Phenanthrene	UG/KG	290000	94.1%	50000	6	32	34	440.	210.	**280,000.**	**98,000.**	**290,000.**	210.
Phenol	UG/KG	5	2.9%	30	0	1	34	300. U	93. U	72,000. U	23,000. U	70,000. U	89. U
Pyrene	UG/KG	280000	97.1%	50000	7	33	34	900.	380.	**280,000.**	**74,000.**	**200,000.**	520.
PESTICIDES/PCBS													
4,4`-DDD	UG/KG	240	35.3%	2900	0	12	34	5.9	4.6 U	26. J	35. U	57.	4.4 U
4,4`-DDE	UG/KG	810	61.8%	2100	0	21	34	88.	22.	26. J	35. U	35. U	18.
4,4`-DDT	UG/KG	1300	67.6%	2100	0	23	34	54.	25.	43.	35. U	40.	21.
Aldrin	UG/KG	0	0.0%	41	0	0	34	2.3 U	2.4 U	19. U	18. U	18. U	2.3 U
Alpha-BHC	UG/KG	18	23.5%	110	0	8	34	2.2 J	2.4 U	19. U	18. U	18. U	2.3 U
Alpha-Chlordane	UG/KG	74	5.9%		0	2	34	2.3 U	2.4 U	19. U	18. U	18. U	2.3 U
Aroclor-1016	UG/KG	0	0.0%		0	0	34	44. U	46. U	370. U	350. U	350. U	44. U
Aroclor-1221	UG/KG	0	0.0%		0	0	34	90. U	94. U	740. U	700. U	710. U	90. U
Aroclor-1232	UG/KG	0	0.0%		0	0	34	44. U	46. U	370. U	350. U	350. U	44. U
Aroclor-1242	UG/KG	0	0.0%		0	0	34	44. U	46. U	370. U	350. U	350. U	44. U
Aroclor-1248	UG/KG	0	0.0%		0	0	34	44. U	46. U	370. U	350. U	350. U	44. U
Aroclor-1254	UG/KG	0	0.0%	10000	0	0	34	44. U	46. U	370. U	350. U	350. U	44. U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	34	44. U	46. U	370. U	350. U	350. U	44. U
Beta-BHC	UG/KG	35	23.5%	200	0	8	34	2.3 U	2.4 U	21.	18. U	32.	2.3 U
Delta-BHC	UG/KG	2	2.9%	300	0	1	34	2.3 U	2.4 U	19. U	18. U	18. U	2.3 U
Dieldrin	UG/KG	4	8.8%	44	0	3	34	4.4 U	4.6 U	37. U	35. U	35. U	3.4 J
Endosulfan I	UG/KG	200	32.4%	900	0	11	34	2.3 U	2.4 U	15. J	18. U	15. J	2.3 U
Endosulfan II	UG/KG	52	17.6%	900	0	6	34	4.4 U	4.6 U	37. U	35. U	35. U	4.4 U
Endosulfan sulfate	UG/KG	110	35.3%	1000	0	12	34	2.7 J	4.6 U	37. U	48.	110.	4.4 U
Endrin	UG/KG	120	35.3%	100	1	12	34	6.3	4.6 U	55.	35. U	22. J	8.1
Endrin aldehyde	UG/KG	120	58.8%		0	20	34	4.8	9.1	70.	34. J	22. J	5.2
Endrin ketone	UG/KG	180	52.9%		0	18	34	7.7	17.	160.	35. U	87.	14.
Gamma-BHC/Lindane	UG/KG	4	2.9%	60	0	1	34	2.3 U	2.4 U	19. U	18. U	18. U	2.3 U
Gamma-Chlordane	UG/KG	48	14.7%	540	0	5	34	1.2 J	2.4 U	19. U	18. U	18. U	2.3 U
Heptachlor	UG/KG	1	2.9%	100	0	1	34	2.3 U	2.4 U	19. U	18. U	18. U	2.3 U
Heptachlor epoxide	UG/KG	180	41.2%	20	4	14	34	4.3	2.4 U	17. J	18. U	9.8 J	2.3 U

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 SS71-1 71013 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-10 71017 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-11 71024 SA 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-12 71023 SA 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-13 71027 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-14 71025 SA 0 0.2 SOIL 20-Nov-97 Value (Q)
Methoxychlor	UG/KG	520	35.3%		0	12	34	23. U	24. U	270.	210.	250.	39.
Toxaphene	UG/KG	0	0.0%		0	0	34	230. U	240. U	1,900. U	1,800. U	1,800. U	230. U
METALS													
Aluminum	MG/KG	18000	100.0%	19520	0	34	34	7,250.	9,080.	2,900.	2,450.	1,890.	10,500.
Antimony	MG/KG	19	35.3%	6	1	12	34	1.9 J	.95 UJ	.98 J	.7 UJ	.63 UJ	.85 UJ
Arsenic	MG/KG	15	100.0%	8.9	4	34	34	4.9	7.4	5.8	3.2	3.5	4.1
Barium	MG/KG	179	100.0%	300	0	34	34	51.2 J	53.4 J	50.5 J	88.1 J	65.1 J	58.8 J
Beryllium	MG/KG	1	97.1%	1.13	0	33	34	.26	.25	.08	.08	.05	.31
Cadmium	MG/KG	12	44.1%	2.46	4	15	34	.08 UJ	.08 UJ	**5.2** J	.06 UJ	.05 UJ	.07 UJ
Calcium	MG/KG	295000	100.0%	125300	11	34	34	35,100.	11,100.	**205,000.**	**222,000.**	**190,000.**	**295,000.**
Chromium	MG/KG	60	100.0%	30	4	34	34	13.4 J	14.2 J	19.1 J	5.8 J	4.2 J	16.5 J
Cobalt	MG/KG	15	100.0%	30	0	34	34	7.4	8.7	5.6	4.3	3.7	10.
Copper	MG/KG	134	100.0%	33	12	34	34	**47.7** J	28.8 J	24.8 J	5.4 J	5.9 J	19.5 J
Cyanide	MG/KG	0	0.0%	0.35	0	0	34	.67 U	.74 U	.59 U	.59 U	.53 U	.71 U
Iron	MG/KG	65100	100.0%	37410	2	34	34	31,800.	24,100.	19,100.	5,990.	6,220.	19,600.
Lead	MG/KG	3470	100.0%	24.4	22	34	34	**185.** J	**28.5** J	**92.8** J	16.9 J	11.4 J	**33.3** J
Magnesium	MG/KG	59300	100.0%	21700	6	34	34	5,050.	4,170.	**24,500.**	**34,300.**	**33,800.**	**59,300.**
Manganese	MG/KG	853	100.0%	1100	0	34	34	383. J	554. J	361. J	286. J	306. J	640. J
Mercury	MG/KG	3	47.1%	0.1	4	16	34	**.14** J	.07 UJ	**.29** J	.05 UJ	.05 UJ	.07 J
Nickel	MG/KG	110	100.0%	50	2	34	34	19.9	**110.**	18.2	11.9	10.7	20.8
Potassium	MG/KG	2940	100.0%	2623	1	34	34	1,330.	1,030.	1,190.	1,370.	903.	1,540.
Selenium	MG/KG	2	44.1%	2	0	15	34	1.4 J	1.8 J	.99 UJ	.94 UJ	.85 UJ	1.3 J
Silver	MG/KG	1	14.7%	0.8	0	5	34	.54 UJ	.57 UJ	2.2 UJ	.42 UJ	.38 UJ	.51 UJ
Sodium	MG/KG	1040	88.2%	188	19	30	34	**215.**	**636.**	**324.**	**257.**	**224.**	**233.**
Thallium	MG/KG	2	2.9%	0.855	1	1	34	1.6 U	1.7 U	1.3 U	1.3 U	1.1 U	1.5 U
Vanadium	MG/KG	29	100.0%	150	0	34	34	16.	13.7	14.8	10.	6.9	17.8
Zinc	MG/KG	3660	97.1%	115	13	33	34	95.3 J	**1,740.** J	**201.** J	44.7 J	44.4 J	**389.** J
OTHER ANALYSES													
Total Petroleum Hydrocarbons	MG/KG	9060	84.6%		0	22	26	243.	26. U	29.7 U	182.	325.	45.3
Nitrate/Nitrite Nitrogen	MG/KG	30	100.0%		0	26	26	.11	.52	.12	.02	.02	.52

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1
								SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
								SS71-15	SS71-16	SS71-17	SS71-18	SS71-19	SS71-2
								71032	71021	71030	71022	71020	71014
								SA	SA	SA	SA	SA	SA
								0	0	0	0	0	0
								0.2	0.2	0.2	0.2	0.2	0.2
								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	21-Nov-97	20-Nov-97	21-Nov-97	20-Nov-97	20-Nov-97	19-Nov-97
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	23	17.6%	800	0	6	34	13. U	12. U	11. U	11. U	13. U	15. U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Acetone	UG/KG	74	5.9%	200	0	2	34	13. U	12. U	11. U	11. U	13. U	8. J
Benzene	UG/KG	2	2.9%	60	0	1	34	13. U	12. U	11. U	11. U	13. U	15. U
Bromodichloromethane	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Bromoform	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Carbon disulfide	UG/KG	0	0.0%	2700	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Chloroethane	UG/KG	0	0.0%	1900	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Chloroform	UG/KG	0	0.0%	300	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Ethyl benzene	UG/KG	4	5.9%	5500	0	2	34	13. U	12. U	11. U	11. U	13. U	15. U
Methyl bromide	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Methyl chloride	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Methyl ethyl ketone	UG/KG	0	0.0%	300	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Methylene chloride	UG/KG	11	26.5%	100	0	9	34	13. U	12. U	11. U	11. U	13. U	15. U
Styrene	UG/KG	1	2.9%		0	1	34	13. U	12. U	11. U	11. U	13. U	15. U
Tetrachloroethene	UG/KG	33	11.8%	1400	0	4	34	13. U	33.	11. U	11. U	13. U	15. U
Toluene	UG/KG	16	23.5%	1500	0	8	34	2. J	12. U	16.	11. U	13. U	15. U
Total Xylenes	UG/KG	96	11.8%	1200	0	4	34	13. U	12. U	11. U	11. U	13. U	15. U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Trichloroethene	UG/KG	0	0.0%	700	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	34	13. U	12. U	11. U	11. U	13. U	15. U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	0	0.0%	3400	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	8						
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	34	20,000. U	94,000. U	85,000. U	2,200. U	6,800. U	2,100. U
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1
								SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
								SS71-15	SS71-16	SS71-17	SS71-18	SS71-19	SS71-2
								71032	71021	71030	71022	71020	71014
								SA	SA	SA	SA	SA	SA
								0	0	0	0	0	0
								0.2	0.2	0.2	0.2	0.2	0.2
								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	21-Nov-97	20-Nov-97	21-Nov-97	20-Nov-97	20-Nov-97	19-Nov-97
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	34	20,000. U	94,000. U	85,000. U	2,200. U	6,800. U	2,100. U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
2-Methylnaphthalene	UG/KG	31000	41.2%	36400	0	14	34	8,400. U	39,000. U	5,100. J	56. J	2,800. U	880. U
2-Methylphenol	UG/KG	0	0.0%	100	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	34	20,000. U	94,000. U	85,000. U	2,200. U	6,800. U	2,100. U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
3,3`-Dichlorobenzidine	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	34	20,000. U	94,000. U	85,000. U	2,200. U	6,800. U	2,100. U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	34	20,000. U	94,000. U	85,000. U	2,200. U	6,800. U	2,100. U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
4-Methylphenol	UG/KG	0	0.0%	900	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
4-Nitroaniline	UG/KG	0	0.0%		0	0	34	20,000. U	94,000. U	85,000. U	2,200. U	6,800. U	2,100. U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	34	20,000. U	94,000. U	85,000. U	2,200. U	6,800. U	2,100. U
Acenaphthene	UG/KG	42000	70.6%	50000	0	24	34	1,600. J	6,400. J	30,000. J	230. J	510. J	69. J
Acenaphthylene	UG/KG	340	14.7%	41000	0	5	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Anthracene	UG/KG	100000	79.4%	50000	3	27	34	7,900. J	30,000. J	**77,000.**	390. J	1,000. J	170. J
Benzo[a]anthracene	UG/KG	150000	94.1%	224	25	32	34	**18,000.**	**91,000.**	**120,000.**	**2,200.**	**4,500.**	**1,100.**
Benzo[a]pyrene	UG/KG	120000	91.2%	61	29	31	34	**16,000.**	**70,000.**	**96,000.**	**2,100.**	**4,400.**	**1,300.**
Benzo[b]fluoranthene	UG/KG	88000	91.2%	1100	16	31	34	**14,000.**	**59,000.**	**78,000.**	**4,000.**	**4,600.**	**1,200.**
Benzo[ghi]perylene	UG/KG	62000	88.2%	50000	1	30	34	12,000.	36,000. J	46,000.	1,300.	2,600. J	820. J
Benzo[k]fluoranthene	UG/KG	130000	70.6%	1100	13	24	34	**19,000.**	**74,000.**	**93,000.**	900. U	**4,700.**	**1,600.**
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	26	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Bis(2-Ethylhexyl)phthalate	UG/KG	15	8.8%	50000	0	3	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Butylbenzylphthalate	UG/KG	0	0.0%	50000	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Carbazole	UG/KG	77000	82.4%		0	28	34	5,100. J	9,300. J	47,000.	780. J	1,700. J	350. J
Chrysene	UG/KG	150000	94.1%	400	23	32	34	**20,000.**	**82,000.**	**110,000.**	**2,800.**	**5,500.**	**1,600.**
Di-n-butylphthalate	UG/KG	140	5.9%	8100	0	2	34	8,400. U	39,000. U	35,000. U	900. U	140. J	880. U
Di-n-octylphthalate	UG/KG	0	0.0%	50000	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Dibenz[a,h]anthracene	UG/KG	25000	82.4%	14	27	28	34	**3,600.** J	**16,000.** J	**21,000.** J	**440.** J	**1,100.** J	**300.** J
Dibenzofuran	UG/KG	38000	64.7%	6200	5	22	34	680. J	3,000. J	**23,000.** J	110. J	270. J	64. J
Diethyl phthalate	UG/KG	0	0.0%	7100	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Fluoranthene	UG/KG	440000	97.1%	50000	7	33	34	37,000.	**190,000.**	**270,000.**	5,300.	12,000.	3,000.

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1
								SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
								SS71-15	SS71-16	SS71-17	SS71-18	SS71-19	SS71-2
								71032	71021	71030	71022	71020	71014
								SA	SA	SA	SA	SA	SA
								0	0	0	0	0	0
								0.2	0.2	0.2	0.2	0.2	0.2
								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	21-Nov-97	20-Nov-97	21-Nov-97	20-Nov-97	20-Nov-97	19-Nov-97
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Fluorene	UG/KG	62000	73.5%	50000	1	25	34	1,900. J	7,300. J	39,000.	190. J	570. J	67. J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Hexachloroethane	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Indeno[1,2,3-cd]pyrene	UG/KG	65000	88.2%	3200	9	30	34	**11,000.**	**36,000.** J	**45,000.**	1,200.	2,500. J	780. J
Isophorone	UG/KG	0	0.0%	4400	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Naphthalene	UG/KG	46000	44.1%	13000	2	15	34	8,400. U	39,000. U	5,500. J	88. J	2,800. U	880. U
Nitrobenzene	UG/KG	0	0.0%	200	0	0	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	34	20,000. U	94,000. U	85,000. U	2,200. U	6,800. U	2,100. U
Phenanthrene	UG/KG	290000	94.1%	50000	6	32	34	24,000.	**92,000.**	**240,000.**	2,800.	8,300.	1,400.
Phenol	UG/KG	5	2.9%	30	0	1	34	8,400. U	39,000. U	35,000. U	900. U	2,800. U	880. U
Pyrene	UG/KG	280000	97.1%	50000	7	33	34	35,000.	**170,000.**	**220,000.**	4,700.	11,000.	2,300.
PESTICIDES/PCBS													
4,4`-DDD	UG/KG	240	35.3%	2900	0	12	34	110.	53.	240.	3.1 J	40. J	2.8 J
4,4`-DDE	UG/KG	810	61.8%	2100	0	21	34	440.	360.	810.	20.	390.	44.
4,4`-DDT	UG/KG	1300	67.6%	2100	0	23	34	910.	1,300.	1,300.	46.	960.	53.
Aldrin	UG/KG	0	0.0%	41	0	0	34	22. U	20. U	18. U	1.8 U	22. U	2.3 U
Alpha-BHC	UG/KG	18	23.5%	110	0	8	34	22. U	20. U	18. J	1.2 J	22. U	1.9 J
Alpha-Chlordane	UG/KG	74	5.9%		0	2	34	22. U	20. U	18. U	1.8 U	22. U	2.3 U
Aroclor-1016	UG/KG	0	0.0%		0	0	34	420. U	390. U	350. U	36. U	420. U	44. U
Aroclor-1221	UG/KG	0	0.0%		0	0	34	850. U	790. U	710. U	73. U	850. U	89. U
Aroclor-1232	UG/KG	0	0.0%		0	0	34	420. U	390. U	350. U	36. U	420. U	44. U
Aroclor-1242	UG/KG	0	0.0%		0	0	34	420. U	390. U	350. U	36. U	420. U	44. U
Aroclor-1248	UG/KG	0	0.0%		0	0	34	420. U	390. U	350. U	36. U	420. U	44. U
Aroclor-1254	UG/KG	0	0.0%	10000	0	0	34	420. U	390. U	350. U	36. U	420. U	44. U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	34	420. U	390. U	350. U	36. U	420. U	44. U
Beta-BHC	UG/KG	35	23.5%	200	0	8	34	21. J	11. J	35.	1.9	22. U	2.3 U
Delta-BHC	UG/KG	2	2.9%	300	0	1	34	22. U	20. U	18. U	1.8 U	22. U	2.3 U
Dieldrin	UG/KG	4	8.8%	44	0	3	34	42. U	39. U	35. U	3.6 U	42. U	3. J
Endosulfan I	UG/KG	200	32.4%	900	0	11	34	13. J	20. U	18. U	1.5 J	22. U	2.3 U
Endosulfan II	UG/KG	52	17.6%	900	0	6	34	52.	39. U	35. U	3.6 U	42. U	4.4 U
Endosulfan sulfate	UG/KG	110	35.3%	1000	0	12	34	110.	39. U	35. U	12.	31. J	4.4
Endrin	UG/KG	120	35.3%	100	1	12	34	53.	**120.**	53.	2.7 J	42. U	2.4 J
Endrin aldehyde	UG/KG	120	58.8%		0	20	34	110.	61.	53.	7.8	36. J	4.7
Endrin ketone	UG/KG	180	52.9%		0	18	34	130.	140.	180.	12.	26. J	6.6
Gamma-BHC/Lindane	UG/KG	4	2.9%	60	0	1	34	22. U	20. U	18. U	1.8 U	22. U	2.3 U
Gamma-Chlordane	UG/KG	48	14.7%	540	0	5	34	22. U	22.	48.	1.5 J	22. U	2.3 U
Heptachlor	UG/KG	1	2.9%	100	0	1	34	22. U	20. U	18. U	1.8 U	22. U	2.3 U
Heptachlor epoxide	UG/KG	180	41.2%	20	4	14	34	**28.**	**24.**	**180.**	3.1	19. J	6.4

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 SS71-15 71032 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-16 71021 SA 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-17 71030 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-18 71022 SA 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-19 71020 SA 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-2 71014 SA 0 0.2 SOIL 19-Nov-97 Value (Q)
Methoxychlor	UG/KG	520	35.3%		0	12	34	140. J	200.	240.	11. J	220. U	23. U
Toxaphene	UG/KG	0	0.0%		0	0	34	2,200. U	2,000. U	1,800. U	180. U	2,200. U	230. U
METALS													
Aluminum	MG/KG	18000	100.0%	19520	0	34	34	4,230.	4,690.	1,910.	1,710.	12,400.	14,000.
Antimony	MG/KG	19	35.3%	6	1	12	34	1.8 J	**19.3** J	.67 UJ	.75 J	1.9 J	1. J
Arsenic	MG/KG	15	100.0%	8.9	4	34	34	5.9	**9.8**	3.5	2.1	**11.5**	6.1
Barium	MG/KG	179	100.0%	300	0	34	34	40.4 J	179. J	127. J	20.9 J	110. J	76.5 J
Beryllium	MG/KG	1	97.1%	1.13	0	33	34	.19	.08	.07	.08	.36	.46
Cadmium	MG/KG	12	44.1%	2.46	4	15	34	**12.1** J	**3.1** J	.06 UJ	1.5 J	**3.9** J	.08 UJ
Calcium	MG/KG	295000	100.0%	125300	11	34	34	**192,000.**	**245,000.**	**221,000.**	**222,000.**	8,780.	8,370.
Chromium	MG/KG	60	100.0%	30	4	34	34	23.1 J	**33.2** J	5.3 J	21.4 J	**60.3** J	21. J
Cobalt	MG/KG	15	100.0%	30	0	34	34	7.8	9.8	4.3	3.3	12.4	11.1
Copper	MG/KG	134	100.0%	33	12	34	34	**40.3** J	**134.** J	7.4 J	19.8 J	**95.6** J	**55.** J
Cyanide	MG/KG	0	0.0%	0.35	0	0	34	.63 U	.59 U	.56 U	.63 U	.64 U	.68 U
Iron	MG/KG	65100	100.0%	37410	2	34	34	18,400.	36,100.	6,420.	8,260.	34,300.	25,900.
Lead	MG/KG	3470	100.0%	24.4	22	34	34	**212.** J	**3,470.** J	15.6 J	**205.** J	**572.** J	**171.** J
Magnesium	MG/KG	59300	100.0%	21700	6	34	34	11,800.	10,800.	**33,300.**	11,300.	4,750.	5,570.
Manganese	MG/KG	853	100.0%	1100	0	34	34	389. J	534. J	277. J	202. J	660. J	602. J
Mercury	MG/KG	3	47.1%	0.1	4	16	34	.06 UJ	**2.7** J	.05 UJ	.05 UJ	.06 UJ	.09 J
Nickel	MG/KG	110	100.0%	50	2	34	34	27.3	32.6	11.1	8.7	**98.8**	28.3
Potassium	MG/KG	2940	100.0%	2623	1	34	34	1,120.	1,020.	849.	671.	1,610.	2,070.
Selenium	MG/KG	2	44.1%	2	0	15	34	1.1 UJ	1.8 J	.9 UJ	.9 UJ	1.5 J	1.4 J
Silver	MG/KG	1	14.7%	0.8	0	5	34	.6 J	.44 J	.4 UJ	.4 UJ	.69 J	.54 UJ
Sodium	MG/KG	1040	88.2%	188	19	30	34	**573.**	**314.**	**302.**	**208.**	**514.**	176.
Thallium	MG/KG	2	2.9%	0.855	1	1	34	1.5 U	1.3 U	1.2 U	1.2 U	1.5 U	1.6 U
Vanadium	MG/KG	29	100.0%	150	0	34	34	20.1	17.3	7.4	8.8	22.3	23.9
Zinc	MG/KG	3660	97.1%	115	13	33	34	**1,810.** J	**351.** J	43.4 J	73.1 J	**1,790.** J	**144.** J
OTHER ANALYSES													
Total Petroleum Hydrocarbons	MG/KG	9060	84.6%		0	22	26	5,220.	1,120.	411.	851.	307.	90.4
Nitrate/Nitrite Nitrogen	MG/KG	30	100.0%		0	26	26	.03	4.91	.51	5.07	.2	.98

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1
								SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
								SS71-20	SS71-3	SS71-4	SS71-5	SS71-6	SS71-7
								71031	71015	71016	71029	71028	71026
								SA	SA	SA	SA	SA	SA
								0	0	0	0	0	0
								0.2	0.2	0.2	0.2	0.2	0.2
								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	21-Nov-97	19-Nov-97	19-Nov-97	21-Nov-97	21-Nov-97	20-Nov-97
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	23	17.6%	800	0	6	34	13. U	12. U	12. U	11. U	11. U	12. U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Acetone	UG/KG	74	5.9%	200	0	2	34	13. U	12. U	12. U	11. U	11. U	12. U
Benzene	UG/KG	2	2.9%	60	0	1	34	13. U	12. U	12. U	11. U	11. U	12. U
Bromodichloromethane	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Bromoform	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Carbon disulfide	UG/KG	0	0.0%	2700	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Chloroethane	UG/KG	0	0.0%	1900	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Chloroform	UG/KG	0	0.0%	300	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Ethyl benzene	UG/KG	4	5.9%	5500	0	2	34	4. J	12. U	12. U	11. U	11. U	12. U
Methyl bromide	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Methyl chloride	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Methyl ethyl ketone	UG/KG	0	0.0%	300	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Methylene chloride	UG/KG	11	26.5%	100	0	9	34	13. U	12. U	12. U	11. U	11. U	12. U
Styrene	UG/KG	1	2.9%		0	1	34	1. J	12. U	12. U	11. U	11. U	12. U
Tetrachloroethene	UG/KG	33	11.8%	1400	0	4	34	13. U	12. U	12. U	11. U	11. U	12. U
Toluene	UG/KG	16	23.5%	1500	0	8	34	7. J	12. U	12. U	5. J	11. U	12. U
Total Xylenes	UG/KG	96	11.8%	1200	0	4	34	9. J	12. U	12. U	11. U	11. U	12. U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Trichloroethene	UG/KG	0	0.0%	700	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	34	13. U	12. U	12. U	11. U	11. U	12. U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	0	0.0%	3400	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	8						
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	34	2,000. U	410. U	190. U	3,600. U	44,000. U	3,800. U
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1
								SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
								SS71-20	SS71-3	SS71-4	SS71-5	SS71-6	SS71-7
								71031	71015	71016	71029	71028	71026
								SA	SA	SA	SA	SA	SA
								0	0	0	0	0	0
								0.2	0.2	0.2	0.2	0.2	0.2
								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	21-Nov-97	19-Nov-97	19-Nov-97	21-Nov-97	21-Nov-97	20-Nov-97
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	34	2,000. U	410. U	190. U	3,600. U	44,000. U	3,800. U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
2-Methylnaphthalene	UG/KG	31000	41.2%	36400	0	14	34	800. U	15. J	9.4 J	1,500. U	18,000. U	1,600. U
2-Methylphenol	UG/KG	0	0.0%	100	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	34	2,000. U	410. U	190. U	3,600. U	44,000. U	3,800. U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
3,3'-Dichlorobenzidine	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	34	2,000. U	410. U	190. U	3,600. U	44,000. U	3,800. U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	34	2,000. U	410. U	190. U	3,600. U	44,000. U	3,800. U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
4-Methylphenol	UG/KG	0	0.0%	900	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
4-Nitroaniline	UG/KG	0	0.0%		0	0	34	2,000. U	410. U	190. U	3,600. U	44,000. U	3,800. U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	34	2,000. U	410. U	190. U	3,600. U	44,000. U	3,800. U
Acenaphthene	UG/KG	42000	70.6%	50000	0	24	34	160. J	52. J	5.5 J	290. J	2,600. J	1,600. U
Acenaphthylene	UG/KG	340	14.7%	41000	0	5	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Anthracene	UG/KG	100000	79.4%	50000	3	27	34	440. J	120. J	12. J	590. J	10,000. J	2,600.
Benzo[a]anthracene	UG/KG	150000	94.1%	224	25	32	34	**2,100.**	**570.**	70. J	**3,200.**	**42,000.**	**11,000.**
Benzo[a]pyrene	UG/KG	120000	91.2%	61	29	31	34	**2,000.**	**540.**	**83.**	**3,400.**	**47,000.**	**8,200.**
Benzo[b]fluoranthene	UG/KG	88000	91.2%	1100	16	31	34	**1,900.**	950.	130.	**4,300.**	**56,000.**	**22,000.** J
Benzo[ghi]perylene	UG/KG	62000	88.2%	50000	1	30	34	1,200.	310.	69. J	2,300.	31,000.	5,100.
Benzo[k]fluoranthene	UG/KG	130000	70.6%	1100	13	24	34	**2,000.**	170. U	80. U	**4,500.**	**47,000.**	1,600. U
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	26	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Bis(2-Ethylhexyl)phthalate	UG/KG	15	8.8%	50000	0	3	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Butylbenzylphthalate	UG/KG	0	0.0%	50000	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Carbazole	UG/KG	77000	82.4%		0	28	34	680. J	160. J	15. J	1,300. J	16,000. J	2,500.
Chrysene	UG/KG	150000	94.1%	400	23	32	34	**2,400.**	**660.**	80.	**6,200.**	**64,000.**	**19,000.** J
Di-n-butylphthalate	UG/KG	140	5.9%	8100	0	2	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Di-n-octylphthalate	UG/KG	0	0.0%	50000	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Dibenz[a,h]anthracene	UG/KG	25000	82.4%	14	27	28	34	**430.** J	**120.** J	**29.** J	**760.** J	**12,000.** J	**2,300.**
Dibenzofuran	UG/KG	38000	64.7%	6200	5	22	34	89. J	22. J	80. U	190. J	1,300. J	1,600. U
Diethyl phthalate	UG/KG	0	0.0%	7100	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Fluoranthene	UG/KG	440000	97.1%	50000	7	33	34	4,300.	1,200.	140.	12,000.	**110,000.**	37,000. J

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 SS71-20 71031 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-3 71015 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-4 71016 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-5 71029 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-6 71028 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-7 71026 SA 0 0.2 SOIL 20-Nov-97 Value (Q)
Fluorene	UG/KG	62000	73.5%	50000	1	25	34	160. J	36. J	4.7 J	290. J	3,200. J	230. J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Hexachloroethane	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Indeno[1,2,3-cd]pyrene	UG/KG	65000	88.2%	3200	9	30	34	1,100.	310.	57. J	2,100.	**28,000.**	**4,900.**
Isophorone	UG/KG	0	0.0%	4400	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Naphthalene	UG/KG	46000	44.1%	13000	2	15	34	800. U	11. J	10. J	1,500. U	18,000. U	1,600. U
Nitrobenzene	UG/KG	0	0.0%	200	0	0	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	34	2,000. U	410. U	190. U	3,600. U	44,000. U	3,800. U
Phenanthrene	UG/KG	290000	94.1%	50000	6	32	34	2,600.	530.	50. J	5,700.	49,000.	5,200.
Phenol	UG/KG	5	2.9%	30	0	1	34	800. U	170. U	80. U	1,500. U	18,000. U	1,600. U
Pyrene	UG/KG	280000	97.1%	50000	7	33	34	3,900.	950.	110.	9,400.	**98,000.**	35,000. J
PESTICIDES/PCBS													
4,4`-DDD	UG/KG	240	35.3%	2900	0	12	34	40. U	4.2 U	3.2 J	37. U	50.	40. U
4,4`-DDE	UG/KG	810	61.8%	2100	0	21	34	86.	21.	19.	45.	99.	21. J
4,4`-DDT	UG/KG	1300	67.6%	2100	0	23	34	100.	19.	16.	37. U	250.	220.
Aldrin	UG/KG	0	0.0%	41	0	0	34	21. U	2.2 U	2. U	19. U	19. U	20. U
Alpha-BHC	UG/KG	18	23.5%	110	0	8	34	21. U	2.2 U	2. U	14. J	19. U	20. U
Alpha-Chlordane	UG/KG	74	5.9%		0	2	34	21. U	2.2 U	2. U	19. U	19. U	20. U
Aroclor-1016	UG/KG	0	0.0%		0	0	34	400. U	42. U	40. U	370. U	370. U	400. U
Aroclor-1221	UG/KG	0	0.0%		0	0	34	820. U	86. U	81. U	750. U	740. U	810. U
Aroclor-1232	UG/KG	0	0.0%		0	0	34	400. U	42. U	40. U	370. U	370. U	400. U
Aroclor-1242	UG/KG	0	0.0%		0	0	34	400. U	42. U	40. U	370. U	370. U	400. U
Aroclor-1248	UG/KG	0	0.0%		0	0	34	400. U	42. U	40. U	370. U	370. U	400. U
Aroclor-1254	UG/KG	0	0.0%	10000	0	0	34	400. U	42. U	40. U	370. U	370. U	400. U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	34	400. U	42. U	40. U	370. U	370. U	400. U
Beta-BHC	UG/KG	35	23.5%	200	0	8	34	21. U	2.2 U	2. U	19. U	19. U	20. U
Delta-BHC	UG/KG	2	2.9%	300	0	1	34	21. U	2.2 U	2. U	19. U	19. U	20. U
Dieldrin	UG/KG	4	8.8%	44	0	3	34	40. U	4.2 U	4. U	37. U	37. U	40. U
Endosulfan I	UG/KG	200	32.4%	900	0	11	34	21. U	2.2 U	2. U	19. U	19. U	20. U
Endosulfan II	UG/KG	52	17.6%	900	0	6	34	40. U	4.2 U	4. U	37. U	50.	52.
Endosulfan sulfate	UG/KG	110	35.3%	1000	0	12	34	40. U	4. J	4. U	37. U	36. J	62.
Endrin	UG/KG	120	35.3%	100	1	12	34	40. U	4.2 U	4. U	37. U	54.	40. U
Endrin aldehyde	UG/KG	120	58.8%		0	20	34	40. U	8.3	4.	37. U	120.	86.
Endrin ketone	UG/KG	180	52.9%		0	18	34	40. U	6.4	4. U	23. J	120.	62.
Gamma-BHC/Lindane	UG/KG	4	2.9%	60	0	1	34	21. U	2.2 U	2. U	19. U	19. U	20. U
Gamma-Chlordane	UG/KG	48	14.7%	540	0	5	34	21. U	2.2 U	2. U	19. U	19. U	20. U
Heptachlor	UG/KG	1	2.9%	100	0	1	34	21. U	2.2 U	2. U	19. U	19. U	20. U
Heptachlor epoxide	UG/KG	180	41.2%	20	4	14	34	21. U	2.2 U	1.5 J	19. U	**70.**	12. J

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 SS71-20 71031 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-3 71015 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-4 71016 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-5 71029 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-6 71028 SA 0 0.2 SOIL 21-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-7 71026 SA 0 0.2 SOIL 20-Nov-97 Value (Q)
Methoxychlor	UG/KG	520	35.3%		0	12	34	210. U	22. U	20. U	520.	170. J	200. U
Toxaphene	UG/KG	0	0.0%		0	0	34	2,100. U	220. U	200. U	1,900. U	1,900. U	2,000. U
METALS													
Aluminum	MG/KG	18000	100.0%	19520	0	34	34	10,600.	12,500.	13,400.	2,060.	2,860.	3,020.
Antimony	MG/KG	19	35.3%	6	1	12	34	.77 UJ	.85 UJ	.82 UJ	5.2 J	.76 UJ	.78 UJ
Arsenic	MG/KG	15	100.0%	8.9	4	34	34	6.1	4.6	4.7	**9.5**	4.8	2.5
Barium	MG/KG	179	100.0%	300	0	34	34	111. J	75.4 J	76.9 J	42.1 J	39.9 J	48.6 J
Beryllium	MG/KG	1	97.1%	1.13	0	33	34	.52	.41	.44	.02 U	.11	.16
Cadmium	MG/KG	12	44.1%	2.46	4	15	34	.62 J	.07 UJ	.07 UJ	.07 UJ	1.1 J	.07 UJ
Calcium	MG/KG	295000	100.0%	125300	11	34	34	13,800.	27,100.	43,200.	**204,000.**	**261,000.**	4,210.
Chromium	MG/KG	60	100.0%	30	4	34	34	**31.9** J	18. J	19.5 J	**39.9** J	14.6 J	10.2 J
Cobalt	MG/KG	15	100.0%	30	0	34	34	9.7	9.4	11.2	7.8	6.4	5.6
Copper	MG/KG	134	100.0%	33	12	34	34	**98.7** J	**40.5** J	24.9 J	**48.3** J	18.4 J	27.5 J
Cyanide	MG/KG	0	0.0%	0.35	0	0	34	.7 U	.73 U	.61 U	.58 U	.58 U	.65 U
Iron	MG/KG	65100	100.0%	37410	2	34	34	25,900.	22,800.	24,900.	**65,100.**	11,000.	9,050.
Lead	MG/KG	3470	100.0%	24.4	22	34	34	**346.** J	**90.8** J	**30.1** J	**148.** J	**99.9** J	**64.7** J
Magnesium	MG/KG	59300	100.0%	21700	6	34	34	4,490.	8,250.	10,200.	**23,200.**	18,500.	900.
Manganese	MG/KG	853	100.0%	1100	0	34	34	523. J	482. J	510. J	520. J	427. J	175. J
Mercury	MG/KG	3	47.1%	0.1	4	16	34	.07 J	.06 UJ	.05 UJ	.05 UJ	.05 UJ	.05 J
Nickel	MG/KG	110	100.0%	50	2	34	34	27.7	25.1	30.6	33.6	16.4	16.8
Potassium	MG/KG	2940	100.0%	2623	1	34	34	1,700.	1,960.	1,810.	918.	1,240.	574.
Selenium	MG/KG	2	44.1%	2	0	15	34	1.3 J	1.1 UJ	1.1 UJ	1.7 J	1. UJ	1. UJ
Silver	MG/KG	1	14.7%	0.8	0	5	34	.63 J	.51 UJ	.49 UJ	.46 UJ	.46 UJ	.47 UJ
Sodium	MG/KG	1040	88.2%	188	19	30	34	**344.**	**226.**	**251.**	**1,040.**	**297.**	135. U
Thallium	MG/KG	2	2.9%	0.855	1	1	34	1.4 U	1.5 U	1.5 U	1.4 U	1.4 U	1.4 U
Vanadium	MG/KG	29	100.0%	150	0	34	34	19.2	20.	19.6	9.2	11.	15.6
Zinc	MG/KG	3660	97.1%	115	13	33	34	**525.** J	105. J	352. UJ	**3,660.** J	94.4 J	**128.** J
OTHER ANALYSES													
Total Petroleum Hydrocarbons	MG/KG	9060	84.6%		0	22	26	343.	100.	53.6	29.	174.	78.6
Nitrate/Nitrite Nitrogen	MG/KG	30	100.0%		0	26	26	.32	2.6	2.06	.33	.52	30.2

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 SS71-7 71203 DU 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-8 71019 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-9 71018 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ESI SEAD-71 TP71-1 TP71-1-1 SA 3 3 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-1 TP71-1-2 SA 3 3 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-1 TP71-1-3 SA 3 3 SOIL 07-Jun-94 Value (Q)
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	UG/KG	23	17.6%	800	0	6	34	12. U	12. U	12. U	4. J	7. J	10. J
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Acetone	UG/KG	74	5.9%	200	0	2	34	12. U	12. U	12. U	12. U	12. U	11. U
Benzene	UG/KG	2	2.9%	60	0	1	34	12. U	12. U	12. U	12. U	12. U	11. U
Bromodichloromethane	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Bromoform	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Carbon disulfide	UG/KG	0	0.0%	2700	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Chloroethane	UG/KG	0	0.0%	1900	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Chloroform	UG/KG	0	0.0%	300	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Ethyl benzene	UG/KG	4	5.9%	5500	0	2	34	12. U	12. U	12. U	12. U	12. U	11. U
Methyl bromide	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Methyl chloride	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Methyl ethyl ketone	UG/KG	0	0.0%	300	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Methylene chloride	UG/KG	11	26.5%	100	0	9	34	12. U	12. U	12. U	2. J	2. J	2. J
Styrene	UG/KG	1	2.9%		0	1	34	12. U	12. U	12. U	12. U	12. U	11. U
Tetrachloroethene	UG/KG	33	11.8%	1400	0	4	34	12. U	12. U	12. U	1. J	1. J	3. J
Toluene	UG/KG	16	23.5%	1500	0	8	34	12. U	12. U	12. U	12. U	12. U	11. U
Total Xylenes	UG/KG	96	11.8%	1200	0	4	34	12. U	12. U	12. U	12. U	12. U	11. U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Trichloroethene	UG/KG	0	0.0%	700	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	34	12. U	12. U	12. U	12. U	12. U	11. U
SEMIVOLATILE ORGANIC COMPOUNDS													
1,2,4-Trichlorobenzene	UG/KG	0	0.0%	3400	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	8				19,000. U	500. U	370. U
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	34	1,300. U	1,000. U	220. U	45,000. U	1,200. U	900. U
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ESI	ESI	ESI
								SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
								SS71-7	SS71-8	SS71-9	TP71-1	TP71-1	TP71-1
								71203	71019	71018	TP71-1-1	TP71-1-2	TP71-1-3
								DU	SA	SA	SA	SA	SA
								0	0	0	3	3	3
								0.2	0.2	0.2	3	3	3
								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	20-Nov-97	19-Nov-97	19-Nov-97	07-Jun-94	07-Jun-94	07-Jun-94
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	34	1,300. U	1,000. U	220. U	45,000. U	1,200. U	900. U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
2-Methylnaphthalene	UG/KG	31000	41.2%	36400	0	14	34	530. U	430. U	9.6 J	19,000. U	29. J	370. U
2-Methylphenol	UG/KG	0	0.0%	100	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	34	1,300. U	1,000. U	220. U	45,000. U	1,200. U	900. U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
3,3`-Dichlorobenzidine	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	34	1,300. U	1,000. U	220. U	45,000. U	1,200. U	900. U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	34	1,300. U	1,000. U	220. U	45,000. U	1,200. U	900. U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
4-Methylphenol	UG/KG	0	0.0%	900	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
4-Nitroaniline	UG/KG	0	0.0%		0	0	34	1,300. U	1,000. U	220. U	45,000. U	1,200. U	900. U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	34	1,300. U	1,000. U	220. U	45,000. U	1,200. U	900. U
Acenaphthene	UG/KG	42000	70.6%	50000	0	24	34	530. U	96. J	38. J	5,800. J	280. J	76. J
Acenaphthylene	UG/KG	340	14.7%	41000	0	5	34	220. J	73. J	22. J	19,000. U	500. U	370. U
Anthracene	UG/KG	100000	79.4%	50000	3	27	34	730.	240. J	70. J	11,000. J	560.	120. J
Benzo[a]anthracene	UG/KG	150000	94.1%	224	25	32	34	4,800. J	880.	310.	37,000.	1,200.	660.
Benzo[a]pyrene	UG/KG	120000	91.2%	61	29	31	34	4,100.	1,100.	360.	22,000.	750.	630.
Benzo[b]fluoranthene	UG/KG	88000	91.2%	1100	16	31	34	13,000. J	1,400.	810.	26,000.	930.	710.
Benzo[ghi]perylene	UG/KG	62000	88.2%	50000	1	30	34	2,700.	940.	220.	10,000. J	500.	500.
Benzo[k]fluoranthene	UG/KG	130000	70.6%	1100	13	24	34	530. U	1,400.	89. U	15,000. J	570.	490.
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	26	530. U	430. U	89. U			
Bis(2-Ethylhexyl)phthalate	UG/KG	15	8.8%	50000	0	3	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Butylbenzylphthalate	UG/KG	0	0.0%	50000	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Carbazole	UG/KG	77000	82.4%		0	28	34	1,100.	510.	160.	9,500. J	360. J	100. J
Chrysene	UG/KG	150000	94.1%	400	23	32	34	9,000. J	1,600.	500.	36,000.	1,000.	750.
Di-n-butylphthalate	UG/KG	140	5.9%	8100	0	2	34	530. U	430. U	6.4 J	19,000. U	500. U	370. U
Di-n-octylphthalate	UG/KG	0	0.0%	50000	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Dibenz[a,h]anthracene	UG/KG	25000	82.4%	14	27	28	34	1,400.	340. J	93.	9,800. J	190. J	320. J
Dibenzofuran	UG/KG	38000	64.7%	6200	5	22	34	87. J	75. J	21. J	19,000. U	120. J	370. U
Diethyl phthalate	UG/KG	0	0.0%	7100	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Fluoranthene	UG/KG	440000	97.1%	50000	7	33	34	14,000. J	2,400.	710.	88,000.	2,600.	1,400.

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 SS71-7 71203 DU 0 0.2 SOIL 20-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-8 71019 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ase 1 Step 1 SEAD-71 SS71-9 71018 SA 0 0.2 SOIL 19-Nov-97 Value (Q)	ESI SEAD-71 TP71-1 TP71-1-1 SA 3 3 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-1 TP71-1-2 SA 3 3 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-1 TP71-1-3 SA 3 3 SOIL 07-Jun-94 Value (Q)
Fluorene	UG/KG	62000	73.5%	50000	1	25	34	75. J	100. J	31. J	2,800. J	230. J	56. J
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Hexachloroethane	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Indeno[1,2,3-cd]pyrene	UG/KG	65000	88.2%	3200	9	30	34	2,700.	780.	200.	**12,000.** J	390. J	520.
Isophorone	UG/KG	0	0.0%	4400	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Naphthalene	UG/KG	46000	44.1%	13000	2	15	34	120. J	430. U	15. J	19,000. U	77. J	370. U
Nitrobenzene	UG/KG	0	0.0%	200	0	0	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	34	1,300. U	1,000. U	220. U	45,000. U	1,200. U	900. U
Phenanthrene	UG/KG	290000	94.1%	50000	6	32	34	2,100.	880.	390.	**66,000.**	1,900.	770.
Phenol	UG/KG	5	2.9%	30	0	1	34	530. U	430. U	89. U	19,000. U	500. U	370. U
Pyrene	UG/KG	280000	97.1%	50000	7	33	34	14,000. E	1,900.	590.	**63,000.**	1,600.	2,000.
PESTICIDES/PCBS													
4,4`-DDD	UG/KG	240	35.3%	2900	0	12	34	40. U	4.3 U	4.4 U	37. U	3.7 U	3.7 U
4,4`-DDE	UG/KG	810	61.8%	2100	0	21	34	20. J	19.	15.	37. U	3.7 U	3.1 J
4,4`-DDT	UG/KG	1300	67.6%	2100	0	23	34	210.	77.	25.	37. U	3.7 U	8.4
Aldrin	UG/KG	0	0.0%	41	0	0	34	20. U	2.2 U	2.3 U	19. U	1.9 U	1.9 U
Alpha-BHC	UG/KG	18	23.5%	110	0	8	34	20. U	2.2 U	2.3 U	19. U	1.9 U	1.9 U
Alpha-Chlordane	UG/KG	74	5.9%		0	2	34	20. U	2.2 U	2.3 U	74. J	1.9 U	1.9 U
Aroclor-1016	UG/KG	0	0.0%		0	0	34	400. U	43. U	44. U	370. U	37. U	37. U
Aroclor-1221	UG/KG	0	0.0%		0	0	34	810. U	87. U	90. U	750. U	76. U	75. U
Aroclor-1232	UG/KG	0	0.0%		0	0	34	400. U	43. U	44. U	370. U	37. U	37. U
Aroclor-1242	UG/KG	0	0.0%		0	0	34	400. U	43. U	44. U	370. U	37. U	37. U
Aroclor-1248	UG/KG	0	0.0%		0	0	34	400. U	43. U	44. U	370. U	37. U	37. U
Aroclor-1254	UG/KG	0	0.0%	10000	0	0	34	400. U	43. U	44. U	370. U	37. U	37. U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	34	400. U	43. U	44. U	370. U	37. U	37. U
Beta-BHC	UG/KG	35	23.5%	200	0	8	34	20. U	2.2 U	2.3 U	19. U	1.9 U	1.9 U
Delta-BHC	UG/KG	2	2.9%	300	0	1	34	20. U	2.2 U	2.3 U	19. U	1.9 U	1.9 U
Dieldrin	UG/KG	4	8.8%	44	0	3	34	40. U	4.3 U	4.4 U	37. U	3.5 J	3.7 U
Endosulfan I	UG/KG	200	32.4%	900	0	11	34	20. U	2.2 U	2.3 U	200. J	3.5	6.6 J
Endosulfan II	UG/KG	52	17.6%	900	0	6	34	40. U	4.3 U	4.4 U	26. J	2.5 J	3.7 U
Endosulfan sulfate	UG/KG	110	35.3%	1000	0	12	34	40. U	4.6	4.4 U	37. U	3.7 U	3.7 U
Endrin	UG/KG	120	35.3%	100	1	12	34	40. U	4.3 U	4.4 U	29. J	3.7 U	3.7 U
Endrin aldehyde	UG/KG	120	58.8%		0	20	34	46.	6.1	4.4 U	37. U	3.7 U	3.7 U
Endrin ketone	UG/KG	180	52.9%		0	18	34	44.	11.	4.4 U	37. U	3.7 U	3.7 U
Gamma-BHC/Lindane	UG/KG	4	2.9%	60	0	1	34	20. U	2.2 U	2.3 U	19. U	1.9 U	1.9 U
Gamma-Chlordane	UG/KG	48	14.7%	540	0	5	34	20. U	2.2 U	2.3 U	19. U	1.9 U	1.9 U
Heptachlor	UG/KG	1	2.9%	100	0	1	34	20. U	2.2 U	2.3 U	19. U	1.2 J	1.9 U
Heptachlor epoxide	UG/KG	180	41.2%	20	4	14	34	15. J	2.2 U	2.3 U	19. U	1.9 U	1.9 U

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ESI	ESI	ESI
								SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
								SS71-7	SS71-8	SS71-9	TP71-1	TP71-1	TP71-1
								71203	71019	71018	TP71-1-1	TP71-1-2	TP71-1-3
								DU	SA	SA	SA	SA	SA
								0	0	0	3	3	3
								0.2	0.2	0.2	3	3	3
								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	20-Nov-97	19-Nov-97	19-Nov-97	07-Jun-94	07-Jun-94	07-Jun-94
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Methoxychlor	UG/KG	520	35.3%		0	12	34	200. U	62.	23. U	190. U	19. U	19. U
Toxaphene	UG/KG	0	0.0%		0	0	34	2,000. U	220. U	230. U	1,900. U	190. U	190. U
METALS													
Aluminum	MG/KG	18000	100.0%	19520	0	34	34	3,040.	13,600.	15,900.	12,900.	13,100.	10,900.
Antimony	MG/KG	19	35.3%	6	1	12	34	1.2 J	.84 UJ	.93 UJ	.19 J	.27 UJ	.23 UJ
Arsenic	MG/KG	15	100.0%	8.9	4	34	34	2.4	5.9	**14.6**	5.4	5.1	5.2
Barium	MG/KG	179	100.0%	300	0	34	34	48.7 J	101. J	86.2 J	86.2	69.2	69.8
Beryllium	MG/KG	1	97.1%	1.13	0	33	34	.16	.38	.43	.58 J	.56 J	.53 J
Cadmium	MG/KG	12	44.1%	2.46	4	15	34	.07 UJ	.07 UJ	.08 UJ	.53 J	.39 J	.45 J
Calcium	MG/KG	295000	100.0%	125300	11	34	34	9,990.	27,300.	9,080.	38,000. J	52,800. J	32,200. J
Chromium	MG/KG	60	100.0%	30	4	34	34	12.6 J	22.2 J	23.8 J	18.4	17.9	16.3
Cobalt	MG/KG	15	100.0%	30	0	34	34	5.	11.5	12.5	9.4	9.3 J	9.7
Copper	MG/KG	134	100.0%	33	12	34	34	**33.4** J	23.6 J	**45.3** J	25.4	19.	23.
Cyanide	MG/KG	0	0.0%	0.35	0	0	34	.62 U	.71 U	.67 U	.54 U	.46 U	.5 U
Iron	MG/KG	65100	100.0%	37410	2	34	34	10,200.	27,200.	**38,000.**	23,600.	22,700.	21,600.
Lead	MG/KG	3470	100.0%	24.4	22	34	34	**72.4** J	**74.3** J	**33.** J	**96.9**	10.3	**43.8**
Magnesium	MG/KG	59300	100.0%	21700	6	34	34	1,680.	6,820.	5,570.	8,690.	7,910.	8,840.
Manganese	MG/KG	853	100.0%	1100	0	34	34	188. J	743. J	735. J	497.	390.	474.
Mercury	MG/KG	3	47.1%	0.1	4	16	34	.06 J	.06 UJ	.07 UJ	.03 J	.03 J	.03 J
Nickel	MG/KG	110	100.0%	50	2	34	34	14.2	26.9	30.9	26.8	25.2	24.9
Potassium	MG/KG	2940	100.0%	2623	1	34	34	510.	1,750.	2,180.	1,340. J	1,540. J	1,230. J
Selenium	MG/KG	2	44.1%	2	0	15	34	1.1 J	1.1 UJ	1.4 J	.43 J	.57 U	.47 U
Silver	MG/KG	1	14.7%	0.8	0	5	34	.47 UJ	.51 UJ	.67 J	.07 UJ	.11 UJ	.09 UJ
Sodium	MG/KG	1040	88.2%	188	19	30	34	**217.**	**215.**	**237.**	54.9 J	108. J	140. J
Thallium	MG/KG	2	2.9%	0.855	1	1	34	1.4 U	1.5 U	**2.3**	.25 U	.4 U	.33 U
Vanadium	MG/KG	29	100.0%	150	0	34	34	11.6	19.8	23.4	19.7	20.1	17.9
Zinc	MG/KG	3660	97.1%	115	13	33	34	**182.** J	**118.** J	95.5 J	96.2	63.9	86.1
OTHER ANALYSES													
Total Petroleum Hydrocarbons	MG/KG	9060	84.6%		0	22	26	89.	292.	148.			
Nitrate/Nitrite Nitrogen	MG/KG	30	100.0%		0	26	26	26.9	.03	.97			

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Ph	ESI	ESI	ESI	ESI	ESI	ase 1 Step 1
									SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
									TP71-1	TP71-2	TP71-2	TP71-2	TP71-2	TP71-3-1
									TP71-1-4	TP71-2-1	TP71-2-2	TP71-2-3	TP71-2-4	71002
									SA	SA	SA	SA	SA	SA
									4	1	2	2	2	0
									4	1	2	3.3	2	8
									SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number		07-Jun-94	07-Jun-94	07-Jun-94	07-Jun-94	07-Jun-94	14-Oct-97
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses		Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
VOLATILE ORGANIC COMPOUNDS														
1,1,1-Trichloroethane	UG/KG	23	17.6%	800	0	6	34		23.	11. U	11. U	3. J	12. U	11. U
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Acetone	UG/KG	74	5.9%	200	0	2	34		12. U	11. U	11. U	12. U	12. U	11. U
Benzene	UG/KG	2	2.9%	60	0	1	34		12. U	11. U	11. U	12. U	12. U	11. U
Bromodichloromethane	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Bromoform	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Carbon disulfide	UG/KG	0	0.0%	2700	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Chloroethane	UG/KG	0	0.0%	1900	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Chloroform	UG/KG	0	0.0%	300	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Ethyl benzene	UG/KG	4	5.9%	5500	0	2	34		12. U	11. U	11. U	12. U	12. U	11. U
Methyl bromide	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Methyl chloride	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Methyl ethyl ketone	UG/KG	0	0.0%	300	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Methylene chloride	UG/KG	11	26.5%	100	0	9	34		2. J	2. J	2. J	3. J	11. J	11. U
Styrene	UG/KG	1	2.9%		0	1	34		12. U	11. U	11. U	12. U	12. U	11. U
Tetrachloroethene	UG/KG	33	11.8%	1400	0	4	34		12. U	11. U	11. U	12. U	12. U	11. U
Toluene	UG/KG	16	23.5%	1500	0	8	34		12. U	11. U	11. U	12. U	12. U	11. U
Total Xylenes	UG/KG	96	11.8%	1200	0	4	34		12. U	11. U	11. U	12. U	12. U	3. J
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Trichloroethene	UG/KG	0	0.0%	700	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	34		12. U	11. U	11. U	12. U	12. U	11. U
SEMIVOLATILE ORGANIC COMPOUNDS														
1,2,4-Trichlorobenzene	UG/KG	0	0.0%	3400	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	8		390. U	1,500. U	380. U	420. U	380. U	
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	34		940. U	3,600. U	930. U	1,000. U	930. U	160. U
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Ph	ESI SEAD-71 TP71-1 TP71-1-4 SA 4 4 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-2 TP71-2-1 SA 1 1 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-2 TP71-2-2 SA 2 2 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-2 TP71-2-3 SA 2 2 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-2 TP71-2-4 SA 2 2 SOIL 07-Jun-94 Value (Q)	ase 1 Step 1 SEAD-71 TP71-3-1 71002 SA 0 8 SOIL 14-Oct-97 Value (Q)
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	34		940. U	3,600. U	930. U	1,000. U	930. U	160. U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
2-Methylnaphthalene	UG/KG	31000	41.2%	36400	0	14	34		390. U	1,500. U	380. U	420. U	380. U	520.
2-Methylphenol	UG/KG	0	0.0%	100	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	34		940. U	3,600. U	930. U	1,000. U	930. U	160. U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
3,3`-Dichlorobenzidine	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	34		940. U	3,600. U	930. U	1,000. U	930. U	160. U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	34		940. U	3,600. U	930. U	1,000. U	930. U	160. U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
4-Methylphenol	UG/KG	0	0.0%	900	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
4-Nitroaniline	UG/KG	0	0.0%		0	0	34		940. U	3,600. U	930. U	1,000. U	930. U	160. U
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	34		940. U	3,600. U	930. U	1,000. U	930. U	160. U
Acenaphthene	UG/KG	42000	70.6%	50000	0	24	34		38. J	1,500. U	380. U	420. U	380. U	830. J
Acenaphthylene	UG/KG	340	14.7%	41000	0	5	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Anthracene	UG/KG	100000	79.4%	50000	3	27	34		59. J	1,500. U	380. U	420. U	380. U	48. J
Benzo[a]anthracene	UG/KG	150000	94.1%	224	25	32	34		180. J	**370.** J	**250.** J	420. U	120. J	32. J
Benzo[a]pyrene	UG/KG	120000	91.2%	61	29	31	34		**160.** J	**490.** J	**290.** J	420. U	**94.** J	66. U
Benzo[b]fluoranthene	UG/KG	88000	91.2%	1100	16	31	34		130. J	750. J	400.	420. U	110. J	66. U
Benzo[ghi]perylene	UG/KG	62000	88.2%	50000	1	30	34		82. J	370. J	150. J	420. U	36. J	66. U
Benzo[k]fluoranthene	UG/KG	130000	70.6%	1100	13	24	34		140. J	490. J	240. J	420. U	77. J	66. U
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	26							66. U
Bis(2-Ethylhexyl)phthalate	UG/KG	15	8.8%	50000	0	3	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Butylbenzylphthalate	UG/KG	0	0.0%	50000	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Carbazole	UG/KG	77000	82.4%		0	28	34		30. J	1,500. U	380. U	420. U	380. U	40. J
Chrysene	UG/KG	150000	94.1%	400	23	32	34		220. J	**610.** J	360. J	420. U	130. J	49. J
Di-n-butylphthalate	UG/KG	140	5.9%	8100	0	2	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Di-n-octylphthalate	UG/KG	0	0.0%	50000	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Dibenz[a,h]anthracene	UG/KG	25000	82.4%	14	27	28	34		**38.** J	**170.** J	**130.** J	420. U	380. U	66. U
Dibenzofuran	UG/KG	38000	64.7%	6200	5	22	34		390. U	1,500. U	380. U	420. U	380. U	670. J
Diethyl phthalate	UG/KG	0	0.0%	7100	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Fluoranthene	UG/KG	440000	97.1%	50000	7	33	34		330. J	690. J	580.	63. J	240. J	220.

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Ph	ESI	ESI	ESI	ESI	ESI	ase 1 Step 1
									SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71	SEAD-71
									TP71-1	TP71-2	TP71-2	TP71-2	TP71-2	TP71-3-1
									TP71-1-4	TP71-2-1	TP71-2-2	TP71-2-3	TP71-2-4	71002
									SA	SA	SA	SA	SA	SA
									4	1	2	2	2	0
									4	1	2	3.3	2	8
									SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number		07-Jun-94	07-Jun-94	07-Jun-94	07-Jun-94	07-Jun-94	14-Oct-97
			of		of	of	of							
COMPOUND	Units	Maximum	Detection	TAGM	Exceed.	Detections	Analyses		Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Fluorene	UG/KG	62000	73.5%	50000	1	25	34		390. U	1,500. U	380. U	420. U	380. U	270.
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Hexachloroethane	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Indeno[1,2,3-cd]pyrene	UG/KG	65000	88.2%	3200	9	30	34		88. J	430. J	220. J	420. U	52. J	66. U
Isophorone	UG/KG	0	0.0%	4400	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Naphthalene	UG/KG	46000	44.1%	13000	2	15	34		29. J	1,500. U	380. U	420. U	380. U	590. J
Nitrobenzene	UG/KG	0	0.0%	200	0	0	34		390. U	1,500. U	380. U	420. U	380. U	66. U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	34		940. U	3,600. U	930. U	1,000. U	930. U	160. U
Phenanthrene	UG/KG	290000	94.1%	50000	6	32	34		260. J	270. J	180. J	30. J	80. J	350.
Phenol	UG/KG	5	2.9%	30	0	1	34		390. U	1,500. U	380. U	420. U	380. U	4.5 J
Pyrene	UG/KG	280000	97.1%	50000	7	33	34		390.	1,000. J	660.	73. J	260. J	370.
PESTICIDES/PCBS														
4,4`-DDD	UG/KG	240	35.3%	2900	0	12	34		3.9 U	3.4 J	3.8 U	4.2 U	3.8 U	3.9 U
4,4`-DDE	UG/KG	810	61.8%	2100	0	21	34		4.2 J	3.7 U	3.8 U	4.2 U	3.8 U	3.9 U
4,4`-DDT	UG/KG	1300	67.6%	2100	0	23	34		13.	2.7 J	3.8 U	4.2 U	3.8 U	3.9 U
Aldrin	UG/KG	0	0.0%	41	0	0	34		2. U	1.9 U	2. U	2.2 U	2. U	2. U
Alpha-BHC	UG/KG	18	23.5%	110	0	8	34		2. U	1.9 U	2. U	2.2 U	2. U	2. U
Alpha-Chlordane	UG/KG	74	5.9%		0	2	34		2. U	2. J	2. U	2.2 U	2. U	2. U
Aroclor-1016	UG/KG	0	0.0%		0	0	34		39. U	37. U	38. U	42. U	38. U	39. U
Aroclor-1221	UG/KG	0	0.0%		0	0	34		79. U	76. U	78. U	86. U	78. U	80. U
Aroclor-1232	UG/KG	0	0.0%		0	0	34		39. U	37. U	38. U	42. U	38. U	39. U
Aroclor-1242	UG/KG	0	0.0%		0	0	34		39. U	37. U	38. U	42. U	38. U	39. U
Aroclor-1248	UG/KG	0	0.0%		0	0	34		39. U	37. U	38. U	42. U	38. U	39. U
Aroclor-1254	UG/KG	0	0.0%	10000	0	0	34		39. U	37. U	38. U	42. U	38. U	39. U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	34		39. U	37. U	38. U	42. U	38. U	39. U
Beta-BHC	UG/KG	35	23.5%	200	0	8	34		2. U	1.9 U	2. U	2.2 U	2. U	2. U
Delta-BHC	UG/KG	2	2.9%	300	0	1	34		2. U	1.9 U	2. U	2.2 U	2. U	2. U
Dieldrin	UG/KG	4	8.8%	44	0	3	34		3.9 U	3.7 U	3.8 U	4.2 U	3.8 U	3.9 U
Endosulfan I	UG/KG	200	32.4%	900	0	11	34		2.8 J	5.1 J	6.9 J	2.2 U	3.4 J	2. U
Endosulfan II	UG/KG	52	17.6%	900	0	6	34		3.9 U	2. J	3.8 U	4.2 U	3.8 U	3.9 U
Endosulfan sulfate	UG/KG	110	35.3%	1000	0	12	34		3.9 U	2.2 J	3.8 U	4.2 U	3.8 U	3.9 U
Endrin	UG/KG	120	35.3%	100	1	12	34		3.9 U	3.7 U	3.8 U	4.2 U	3.8 U	3.9 U
Endrin aldehyde	UG/KG	120	58.8%		0	20	34		3.9 U	3.7 U	3.8 U	4.2 U	3.8 U	3.9 U
Endrin ketone	UG/KG	180	52.9%		0	18	34		3.9 U	3.7 U	3.8 U	4.2 U	3.8 U	3.9 U
Gamma-BHC/Lindane	UG/KG	4	2.9%	60	0	1	34		2. U	1.9 U	2. U	2.2 U	2. U	2. U
Gamma-Chlordane	UG/KG	48	14.7%	540	0	5	34		2. U	1.9 U	2. U	2.2 U	2. U	2. U
Heptachlor	UG/KG	1	2.9%	100	0	1	34		2. U	1.9 U	2. U	2.2 U	2. U	2. U
Heptachlor epoxide	UG/KG	180	41.2%	20	4	14	34		2. U	1.9 U	2. U	2.2 U	2. U	2. U

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Ph ESI SEAD-71 TP71-1 TP71-1-4 SA 4 4 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-2 TP71-2-1 SA 1 1 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-2 TP71-2-2 SA 2 2 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-2 TP71-2-3 SA 2 3.3 SOIL 07-Jun-94 Value (Q)	ESI SEAD-71 TP71-2 TP71-2-4 SA 2 2 SOIL 07-Jun-94 Value (Q)	ase 1 Step 1 SEAD-71 TP71-3-1 71002 SA 0 8 SOIL 14-Oct-97 Value (Q)
Methoxychlor	UG/KG	520	35.3%		0	12	34	20. U	19. U	20. U	22. U	20. U	20. U
Toxaphene	UG/KG	0	0.0%		0	0	34	200. U	190. U	200. U	220. U	200. U	200. U
METALS													
Aluminum	MG/KG	18000	100.0%	19520	0	34	34	9,960.	9,630.	12,500.	18,000.	15,200.	8,090. J
Antimony	MG/KG	19	35.3%	6	1	12	34	.47 J	.21 J	.18 UJ	.23 UJ	.25 UJ	.56 UJ
Arsenic	MG/KG	15	100.0%	8.9	4	34	34	4.8	4.2	4.8	7.6	7.8	4.3
Barium	MG/KG	179	100.0%	300	0	34	34	63.5	37.5	57.6	108.	76.1	51.3
Beryllium	MG/KG	1	97.1%	1.13	0	33	34	.47 J	.44 J	.48 J	.88 J	.7 J	.21
Cadmium	MG/KG	12	44.1%	2.46	4	15	34	.45 J	.44 J	.43 J	.45 J	.48 J	.08 U
Calcium	MG/KG	295000	100.0%	125300	11	34	34	36,500. J	10,500. J	37,200. J	4,260. J	27,300. J	**134,000.**
Chromium	MG/KG	60	100.0%	30	4	34	34	15.5	18.1	16.7	25.8	22.	12.9
Cobalt	MG/KG	15	100.0%	30	0	34	34	8.7 J	11.4	9.	14.6	13.4	11.
Copper	MG/KG	134	100.0%	33	12	34	34	26.7	**37.5**	17.5	**36.2**	23.5	15.2
Cyanide	MG/KG	0	0.0%	0.35	0	0	34	.35 U	.54 U	.44 U	.54 U	.56 U	.65 U
Iron	MG/KG	65100	100.0%	37410	2	34	34	20,000.	22,400.	22,100.	32,700.	32,100.	18,000.
Lead	MG/KG	3470	100.0%	24.4	22	34	34	**67.8**	**25.3**	11.2	15.3	15.1	8.9 J
Magnesium	MG/KG	59300	100.0%	21700	6	34	34	9,180.	4,830.	13,100.	6,680.	6,320.	6,760. J
Manganese	MG/KG	853	100.0%	1100	0	34	34	458.	255.	434.	749.	503.	784. J
Mercury	MG/KG	3	47.1%	0.1	4	16	34	.03 J	.04 J	**.15**	.04 J	.02 J	.05 U
Nickel	MG/KG	110	100.0%	50	2	34	34	24.6	42.5	23.2	38.8	36.1	26.2
Potassium	MG/KG	2940	100.0%	2623	1	34	34	1,520. J	992. J	1,010. J	1,830. J	1,300. J	1,120.
Selenium	MG/KG	2	44.1%	2	0	15	34	.56 U	.91	.37 U	.61 J	.74 J	.77 U
Silver	MG/KG	1	14.7%	0.8	0	5	34	.1 UJ	.06 UJ	.07 UJ	.09 UJ	.1 UJ	.21 U
Sodium	MG/KG	1040	88.2%	188	19	30	34	90.7 J	50. J	45.6 J	17.6 U	37.2 J	83.3 U
Thallium	MG/KG	2	2.9%	0.855	1	1	34	.4 U	.24 U	.26 U	.34 U	.36 U	1.2 U
Vanadium	MG/KG	29	100.0%	150	0	34	34	18.2	15.4	19.2	29.2	23.1	15.1
Zinc	MG/KG	3660	97.1%	115	13	33	34	79.7	**128.**	58.9	71.8	79.3	57. J
OTHER ANALYSES													
Total Petroleum Hydrocarbons	MG/KG	9060	84.6%		0	22	26						1,800.
Nitrate/Nitrite Nitrogen	MG/KG	30	100.0%		0	26	26						.02

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 TP71-3-2 71003 SA 10.5 11 SOIL 14-Oct-97 Value (Q)	ase 1 Step 1 SEAD-71 TP71-4-2 71006 SA 10 10.5 SOIL 14-Oct-97 Value (Q)	ase 1 Step 1 SEAD-71 TP71-5-1 71007 SA 7 7.5 SOIL 14-Oct-97 Value (Q)	ase 1 Step 1 SEAD-71 TP71-6-1 71010 SA 12.5 13 SOIL 15-Oct-97 Value (Q)
VOLATILE ORGANIC COMPOUNDS											
1,1,1-Trichloroethane	UG/KG	23	17.6%	800	0	6	34	110. U	12. U	12. U	4. J
1,1,2,2-Tetrachloroethane	UG/KG	0	0.0%	600	0	0	34	110. U	12. U	12. U	12. U
1,1,2-Trichloroethane	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
1,1-Dichloroethane	UG/KG	0	0.0%	200	0	0	34	110. U	12. U	12. U	12. U
1,1-Dichloroethene	UG/KG	0	0.0%	400	0	0	34	110. U	12. U	12. U	12. U
1,2-Dichloroethane	UG/KG	0	0.0%	100	0	0	34	110. U	12. U	12. U	12. U
1,2-Dichloroethene (total)	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
1,2-Dichloropropane	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
Acetone	UG/KG	74	5.9%	200	0	2	34	110. U	12. U	12. U	12. U
Benzene	UG/KG	2	2.9%	60	0	1	34	110. U	12. U	12. U	12. U
Bromodichloromethane	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
Bromoform	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
Carbon disulfide	UG/KG	0	0.0%	2700	0	0	34	110. U	12. U	12. U	12. U
Carbon tetrachloride	UG/KG	0	0.0%	600	0	0	34	110. U	12. U	12. U	12. U
Chlorobenzene	UG/KG	0	0.0%	1700	0	0	34	110. U	12. U	12. U	12. U
Chlorodibromomethane	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
Chloroethane	UG/KG	0	0.0%	1900	0	0	34	110. U	12. U	12. U	12. U
Chloroform	UG/KG	0	0.0%	300	0	0	34	110. U	12. U	12. U	12. U
Cis-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
Ethyl benzene	UG/KG	4	5.9%	5500	0	2	34	110. U	12. U	12. U	12. U
Methyl bromide	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
Methyl butyl ketone	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
Methyl chloride	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
Methyl ethyl ketone	UG/KG	0	0.0%	300	0	0	34	110. U	12. U	12. U	12. U
Methyl isobutyl ketone	UG/KG	0	0.0%	1000	0	0	34	110. U	12. U	12. U	12. U
Methylene chloride	UG/KG	11	26.5%	100	0	9	34	110. U	12. U	12. U	12. U
Styrene	UG/KG	1	2.9%		0	1	34	110. U	12. U	12. U	12. U
Tetrachloroethene	UG/KG	33	11.8%	1400	0	4	34	110. U	12. U	12. U	12. U
Toluene	UG/KG	16	23.5%	1500	0	8	34	110. U	12. U	12. U	12. U
Total Xylenes	UG/KG	96	11.8%	1200	0	4	34	96. J	12. U	12. U	12. U
Trans-1,3-Dichloropropene	UG/KG	0	0.0%		0	0	34	110. U	12. U	12. U	12. U
Trichloroethene	UG/KG	0	0.0%	700	0	0	34	110. U	12. U	12. U	12. U
Vinyl chloride	UG/KG	0	0.0%	200	0	0	34	110. U	12. U	12. U	12. U
SEMIVOLATILE ORGANIC COMPOUNDS											
1,2,4-Trichlorobenzene	UG/KG	0	0.0%	3400	0	0	34	760. U	78. U	78. U	78. U
1,2-Dichlorobenzene	UG/KG	0	0.0%	7900	0	0	34	760. U	78. U	78. U	78. U
1,3-Dichlorobenzene	UG/KG	0	0.0%	1600	0	0	34	760. U	78. U	78. U	78. U
1,4-Dichlorobenzene	UG/KG	0	0.0%	8500	0	0	34	760. U	78. U	78. U	78. U
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0.0%		0	0	8				
2,4,5-Trichlorophenol	UG/KG	0	0.0%	100	0	0	34	1,800. U	190. U	190. U	190. U
2,4,6-Trichlorophenol	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1
								SEAD-71	SEAD-71	SEAD-71	SEAD-71
								TP71-3-2	TP71-4-2	TP71-5-1	TP71-6-1
								71003	71006	71007	71010
								SA	SA	SA	SA
								10.5	10	7	12.5
								11	10.5	7.5	13
								SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	14-Oct-97	14-Oct-97	14-Oct-97	15-Oct-97
			of		of	of	of				
COMPOUND	Units	Maximum	Detection	TAGM	Exceed.	Detections	Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)
2,4-Dichlorophenol	UG/KG	0	0.0%	400	0	0	34	760. U	78. U	78. U	78. U
2,4-Dimethylphenol	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
2,4-Dinitrophenol	UG/KG	0	0.0%	200	0	0	34	1,800. U	190. U	190. U	190. U
2,4-Dinitrotoluene	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
2,6-Dinitrotoluene	UG/KG	0	0.0%	1000	0	0	34	760. U	78. U	78. U	78. U
2-Chloronaphthalene	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
2-Chlorophenol	UG/KG	0	0.0%	800	0	0	34	760. U	78. U	78. U	78. U
2-Methylnaphthalene	UG/KG	31000	41.2%	36400	0	14	34	31,000. J	78. U	78. U	78. U
2-Methylphenol	UG/KG	0	0.0%	100	0	0	34	760. U	78. U	78. U	78. U
2-Nitroaniline	UG/KG	0	0.0%	430	0	0	34	1,800. U	190. U	190. U	190. U
2-Nitrophenol	UG/KG	0	0.0%	330	0	0	34	760. U	78. U	78. U	78. U
3,3`-Dichlorobenzidine	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. UJ	78. UJ
3-Nitroaniline	UG/KG	0	0.0%	500	0	0	34	1,800. U	190. UJ	190. UJ	190. U
4,6-Dinitro-2-methylphenol	UG/KG	0	0.0%		0	0	34	1,800. U	190. U	190. U	190. U
4-Bromophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
4-Chloro-3-methylphenol	UG/KG	0	0.0%	240	0	0	34	760. U	78. U	78. U	78. U
4-Chloroaniline	UG/KG	0	0.0%	220	0	0	34	760. U	78. U	78. U	78. U
4-Chlorophenyl phenyl ether	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
4-Methylphenol	UG/KG	0	0.0%	900	0	0	34	760. U	78. U	78. U	78. U
4-Nitroaniline	UG/KG	0	0.0%		0	0	34	1,800. U	190. UJ	190. UJ	190. UJ
4-Nitrophenol	UG/KG	0	0.0%	100	0	0	34	1,800. U	190. U	190. U	190. U
Acenaphthene	UG/KG	42000	70.6%	50000	0	24	34	13,000. J	78. U	78. U	78. U
Acenaphthylene	UG/KG	340	14.7%	41000	0	5	34	340. J	78. U	78. U	78. U
Anthracene	UG/KG	100000	79.4%	50000	3	27	34	590. J	78. U	78. U	78. U
Benzo[a]anthracene	UG/KG	150000	94.1%	224	25	32	34	**240.** J	78. U	18. J	3.9 J
Benzo[a]pyrene	UG/KG	120000	91.2%	61	29	31	34	**160.** J	78. U	19. J	3.9 J
Benzo[b]fluoranthene	UG/KG	88000	91.2%	1100	16	31	34	130. J	78. U	21. J	4.4 J
Benzo[ghi]perylene	UG/KG	62000	88.2%	50000	1	30	34	76. J	78. U	12. J	78. U
Benzo[k]fluoranthene	UG/KG	130000	70.6%	1100	13	24	34	98. J	78. U	24. J	4.6 J
Bis(2-Chloroethoxy)methane	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
Bis(2-Chloroethyl)ether	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
Bis(2-Chloroisopropyl)ether	UG/KG	0	0.0%		0	0	26	760. U	78. U	78. U	78. U
Bis(2-Ethylhexyl)phthalate	UG/KG	15	8.8%	50000	0	3	34	760. U	7.8 J	15. J	7.6 J
Butylbenzylphthalate	UG/KG	0	0.0%	50000	0	0	34	760. U	78. U	78. U	78. U
Carbazole	UG/KG	77000	82.4%		0	28	34	380. J	78. U	4.2 J	78. U
Chrysene	UG/KG	150000	94.1%	400	23	32	34	290. J	78. U	28. J	4.6 J
Di-n-butylphthalate	UG/KG	140	5.9%	8100	0	2	34	760. U	78. U	78. U	78. U
Di-n-octylphthalate	UG/KG	0	0.0%	50000	0	0	34	760. U	78. U	78. U	78. U
Dibenz[a,h]anthracene	UG/KG	25000	82.4%	14	27	28	34	760. U	78. U	4.4 J	78. U
Dibenzofuran	UG/KG	38000	64.7%	6200	5	22	34	**11,000.** J	78. U	78. U	78. U
Diethyl phthalate	UG/KG	0	0.0%	7100	0	0	34	760. U	78. U	78. U	78. U
Dimethylphthalate	UG/KG	0	0.0%	2000	0	0	34	760. U	78. U	78. U	78. U
Fluoranthene	UG/KG	440000	97.1%	50000	7	33	34	1,900.	78. U	52. J	6.9 J

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	Units	Maximum	Frequency of Detection	TAGM	Number of Exceed.	Number of Detections	Number of Analyses	RI Phase 1 Step 1 SEAD-71 TP71-3-2 71003 SA 10.5 11 SOIL 14-Oct-97 Value (Q)	ase 1 Step 1 SEAD-71 TP71-4-2 71006 SA 10 10.5 SOIL 14-Oct-97 Value (Q)	ase 1 Step 1 SEAD-71 TP71-5-1 71007 SA 7 7.5 SOIL 14-Oct-97 Value (Q)	ase 1 Step 1 SEAD-71 TP71-6-1 71010 SA 12.5 13 SOIL 15-Oct-97 Value (Q)
Fluorene	UG/KG	62000	73.5%	50000	1	25	34	4,100.	78. U	78. U	78. U
Hexachlorobenzene	UG/KG	0	0.0%	410	0	0	34	760. U	78. U	78. U	78. U
Hexachlorobutadiene	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
Hexachlorocyclopentadiene	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
Hexachloroethane	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
Indeno[1,2,3-cd]pyrene	UG/KG	65000	88.2%	3200	9	30	34	56. J	78. U	12. J	78. U
Isophorone	UG/KG	0	0.0%	4400	0	0	34	760. U	78. U	78. U	78. U
N-Nitrosodiphenylamine	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
N-Nitrosodipropylamine	UG/KG	0	0.0%		0	0	34	760. U	78. U	78. U	78. U
Naphthalene	UG/KG	46000	44.1%	13000	2	15	34	17,000. J	78. U	78. U	78. U
Nitrobenzene	UG/KG	0	0.0%	200	0	0	34	760. U	78. U	78. U	78. U
Pentachlorophenol	UG/KG	0	0.0%	1000	0	0	34	1,800. U	190. U	190. U	190. U
Phenanthrene	UG/KG	290000	94.1%	50000	6	32	34	3,800.	78. U	24. J	78. U
Phenol	UG/KG	5	2.9%	30	0	1	34	760. U	78. U	78. U	78. U
Pyrene	UG/KG	280000	97.1%	50000	7	33	34	1,700.	78. U	44. J	6. J
PESTICIDES/PCBS											
4,4`-DDD	UG/KG	240	35.3%	2900	0	12	34	3.8 U	3.9 U	3.9 U	3.9 U
4,4`-DDE	UG/KG	810	61.8%	2100	0	21	34	3.8 U	3.9 U	3.9 U	3.9 U
4,4`-DDT	UG/KG	1300	67.6%	2100	0	23	34	5.1 J	3.9 U	3.9 U	3.9 U
Aldrin	UG/KG	0	0.0%	41	0	0	34	2. U	2. U	2. U	2. U
Alpha-BHC	UG/KG	18	23.5%	110	0	8	34	2. U	2.9	4.9	18.
Alpha-Chlordane	UG/KG	74	5.9%		0	2	34	2. U	2. U	2. U	2. U
Aroclor-1016	UG/KG	0	0.0%		0	0	34	38. U	39. U	39. U	39. U
Aroclor-1221	UG/KG	0	0.0%		0	0	34	77. U	79. U	80. U	79. U
Aroclor-1232	UG/KG	0	0.0%		0	0	34	38. U	39. U	39. U	39. U
Aroclor-1242	UG/KG	0	0.0%		0	0	34	38. U	39. U	39. U	39. U
Aroclor-1248	UG/KG	0	0.0%		0	0	34	38. U	39. U	39. U	39. U
Aroclor-1254	UG/KG	0	0.0%	10000	0	0	34	38. U	39. U	39. U	39. U
Aroclor-1260	UG/KG	0	0.0%	10000	0	0	34	38. U	39. U	39. U	39. U
Beta-BHC	UG/KG	35	23.5%	200	0	8	34	2. U	2. U	2. J	2.7
Delta-BHC	UG/KG	2	2.9%	300	0	1	34	2. U	2. U	2. U	1.8 J
Dieldrin	UG/KG	4	8.8%	44	0	3	34	3.8 U	3.9 U	3.9 U	3.9 U
Endosulfan I	UG/KG	200	32.4%	900	0	11	34	2. U	2. U	2. U	2. U
Endosulfan II	UG/KG	52	17.6%	900	0	6	34	3.8 U	3.9 U	3.9 U	3.9 U
Endosulfan sulfate	UG/KG	110	35.3%	1000	0	12	34	3.8 U	3.9 U	3.9 U	3.9 U
Endrin	UG/KG	120	35.3%	100	1	12	34	3.7 J	3.9 U	3.9 U	3.9 U
Endrin aldehyde	UG/KG	120	58.8%		0	20	34	7.2 J	3.9 U	3. J	3.9 U
Endrin ketone	UG/KG	180	52.9%		0	18	34	2.2 J	3.9 U	3.9 U	3.9 U
Gamma-BHC/Lindane	UG/KG	4	2.9%	60	0	1	34	2. U	2. U	2. U	4.
Gamma-Chlordane	UG/KG	48	14.7%	540	0	5	34	1.1 J	2. U	2. U	2. U
Heptachlor	UG/KG	1	2.9%	100	0	1	34	2. U	2. U	2. U	2. U
Heptachlor epoxide	UG/KG	180	41.2%	20	4	14	34	1.5 J	2. U	2. U	2. U

Table B-1
SOIL ANALYSIS RESULTS - SEAD-71
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

								RI Phase 1 Step 1	ase 1 Step 1	ase 1 Step 1	ase 1 Step 1
								SEAD-71	SEAD-71	SEAD-71	SEAD-71
								TP71-3-2	TP71-4-2	TP71-5-1	TP71-6-1
								71003	71006	71007	71010
								SA	SA	SA	SA
								10.5	10	7	12.5
								11	10.5	7.5	13
								SOIL	SOIL	SOIL	SOIL
			Frequency		Number	Number	Number	14-Oct-97	14-Oct-97	14-Oct-97	15-Oct-97
COMPOUND	Units	Maximum	of Detection	TAGM	of Exceed.	of Detections	of Analyses	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Methoxychlor	UG/KG	520	35.3%		0	12	34	19. J	20. U	20. U	20. U
Toxaphene	UG/KG	0	0.0%		0	0	34	200. U	200. U	200. U	200. U
METALS											
Aluminum	MG/KG	18000	100.0%	19520	0	34	34	8,430. J	14,500. J	12,400.	9,400.
Antimony	MG/KG	19	35.3%	6	1	12	34	.52 UJ	.68 UJ	.65 UJ	.64 UJ
Arsenic	MG/KG	15	100.0%	8.9	4	34	34	2.9	3.1	5.3	4.1
Barium	MG/KG	179	100.0%	300	0	34	34	60.6	94.1	78.1	48.8
Beryllium	MG/KG	1	97.1%	1.13	0	33	34	.13	.56	.31	.31
Cadmium	MG/KG	12	44.1%	2.46	4	15	34	.07 U	.09 U	.09 U	.09 U
Calcium	MG/KG	295000	100.0%	125300	11	34	34	66,100.	36,000.	42,800.	46,600.
Chromium	MG/KG	60	100.0%	30	4	34	34	13.9	21.2	17.6	14.5
Cobalt	MG/KG	15	100.0%	30	0	34	34	7.	9.	9.4	8.6
Copper	MG/KG	134	100.0%	33	12	34	34	17.1	19.1	19.4	18.8
Cyanide	MG/KG	0	0.0%	0.35	0	0	34	.67 U	.64 U	.6 UJ	.59 UJ
Iron	MG/KG	65100	100.0%	37410	2	34	34	15,900.	21,600.	21,500.	19,200.
Lead	MG/KG	3470	100.0%	24.4	22	34	34	7.6 J	9.8 J	16.	7.3
Magnesium	MG/KG	59300	100.0%	21700	6	34	34	17,700. J	8,120. J	10,100.	10,100.
Manganese	MG/KG	853	100.0%	1100	0	34	34	853. J	345. J	623.	345.
Mercury	MG/KG	3	47.1%	0.1	4	16	34	.05 U	.05 U	.05 U	.05 U
Nickel	MG/KG	110	100.0%	50	2	34	34	21.	28.	24.1	23.3
Potassium	MG/KG	2940	100.0%	2623	1	34	34	1,440.	**2,940.**	1,950.	1,340.
Selenium	MG/KG	2	44.1%	2	0	15	34	.72 U	.93 U	1.2	.88 U
Silver	MG/KG	1	14.7%	0.8	0	5	34	.2 U	.26 U	.25 U	.24 U
Sodium	MG/KG	1040	88.2%	188	19	30	34	92.	109.	108. U	138.
Thallium	MG/KG	2	2.9%	0.855	1	1	34	1.1 U	1.4 U	.92 UJ	.91 UJ
Vanadium	MG/KG	29	100.0%	150	0	34	34	15.	24.9	20.2	14.8
Zinc	MG/KG	3660	97.1%	115	13	33	34	64.3 J	61.5 J	82.1	73.4
OTHER ANALYSES											
Total Petroleum Hydrocarbons	MG/KG	9060	84.6%		0	22	26	9,060.	23.3 U	24.4 U	74.
Nitrate/Nitrite Nitrogen	MG/KG	30	100.0%		0	26	26	.06	.02	.21	.02

TABLE B-2
GROUNDWATER ANALYSIS RESULTS FROM SEAD-71 ESI
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

COMPOUND	MATRIX LOCATION SAMPLE DATE ES ID LAB ID SDG NUMBER UNITS	MAXIMUM	FREQUENCY OF DETECTION	LOWEST CRITERIA (a)	CRITERIA	NUMBER ABOVE CRITERIA	WATER SEAD-71 3/29/1994 MW71-1 215839 43179	WATER SEAD-71 7/7/1994 MW71-3 226311 45257
METALS								
Aluminum	ug/L	19700	100%	50	SEC. MCL	2	19700	334
Arsenic	ug/L	2.7	50%	10	MCL	0	2.7 J	2 U
Barium	ug/L	164	100%	1000	GA	0	164 J	37.7 J
Beryllium	ug/L	0.88	50%	4	MCL	0	0.88 J	0.1 U
Cadmium	ug/L	0.33	50%	5	GA	0	0.33 J	0.2 U
Calcium	ug/L	212000	100%	NA		0	212000	146000
Chromium	ug/L	33.1	100%	50	GA	0	33.1	0.59 J
Cobalt	ug/L	22.1	100%	NA		0	22.1 J	1.1 J
Copper	ug/L	16.1	100%	200	GA	0	16.1 J	0.75 J
Iron	ug/L	35100	100%	300	GA	2	35100	613
Lead	ug/L	17.2	50%	15	MCL	1	17.2	0.89 U
Magnesium	ug/L	32400	100%	NA		0	32400	18000
Manganese	ug/L	1680	100%	50	SEC. MCL	2	1680	557
Mercury	ug/L	0.06	100%	0.7	GA	0	0.06 J	0.05 J
Nickel	ug/L	49.4	100%	100	GA	0	49.4	2.6 J
Potassium	ug/L	4910	100%	NA		0	3260 J	4910 J
Sodium	ug/L	9180	100%	20,000	GA	0	9180	4130 J
Thallium	ug/L	2.5	50%	2	MCL	1	1.6 U	2.5 J
Vanadium	ug/L	25.7	100%	NA		0	25.7 J	0.9 J
Zinc	ug/L	97.3	100%	5000	SEC. MCL	0	97.3	6.5 J
OTHER ANALYSES								
pH	Standard Units						6.8	7.1
Conductivity	umhos/cm						620	660
Temperature	°C						6.1	17.5
Turbidity	NTU						1860	64

NOTES:
GA = NY State Class GA Groundwater Standard (TOGS 1.1.1, June 1998)
MCL = US EPA National Primary Drinking Water Standards, EPA 816-F-01-007 March 2001
MCL for arsenic announced 10/31/01. Source http://www.epa.gov/safewater/arsenic.html
SEC. MCL = US EPA Secondary Drinking Water Regulation, non-enforceable (EPA 822-B-00-001, Summer 2000)
NA = Not Available
U = The compound was not detected below this concentration.
J = The reported value is an estimated concentration.
UJ = The compound may have been present above this concentration,
but was not detected due to problems with the analysis.
R = The data was rejected during the data validation process.

APPENDIX C

Background Data

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	11/05/91	11/05/91	11/05/91	11/05/91	11/05/91
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	S1105-24SOIL1 VALUE (Q)	S1105-25SOIL1 VALUE (Q)	S1105-26(1)SOIL1 VALUE (Q)	S1105-27SOIL1 VALUE (Q)	S1105-28SOIL1 VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	19200	**20500**	17700	12700	14800
Antimony	MG/KG	6.55	17%	5.9	1	9	54	10.3 UJ	8.8 UJ	8.2 UJ	8.4 UJ	9.9 UJ
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	5.1 J	6.1 J	6 J	4.2 J	4.3 J
Barium	MG/KG	159	100%	300	0	54	54	136 J	98.9 J	86.7 J	56.2 J	101 J
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	**1.4**	**1.2**	1	0.78 J	1.1
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	**2.6**	**2.9**	**2.4**	1.9	2.3
Calcium	MG/KG	293000	100%	121000	3	54	54	5390	4870	3560	85900	45600
Chromium	MG/KG	32.7	100%	29.6	3	54	54	27.4 J	**30.1** J	26.9 J	19.8 J	22.5 J
Cobalt	MG/KG	29.1	100%	30	0	54	54	13.8	18.4	14	14.2	13.7
Copper	MG/KG	62.8	100%	33	3	54	54	22.3	27.6	26	16.2	22.6
Cyanide	MG/KG	0	0%	0.35	0	0	48	0.6 U	0.63 U	0.67 U	0.58 U	0.7 U
Iron	MG/KG	38600	100%	36500	3	54	54	**37200**	36100	32500	27400	31000
Lead	MG/KG	266	94%	24.8	3	51	54	14.5	11.4	13.6	10.1	10.8
Magnesium	MG/KG	29100	100%	21500	2	51	51	5850	7300	6490	6720	8860
Manganese	MG/KG	2380	96%	1060	3	51	53	**1130**	956	832	926	903
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.09	0.06 J	0.06 J	0.05 J	0.08 J
Nickel	MG/KG	62.3	98%	49	3	53	54	42.3	48.7	44.4	30.4	38.4
Potassium	MG/KG	3160	100%	2380	3	54	54	1910	2110	1760	1430	1320
Selenium	MG/KG	1.7	41%	2	0	22	54	0.17 UJ	0.21 UJ	0.2 UJ	0.61 UJ	0.21 UJ
Silver	MG/KG	0.87	4%	0.75	1	2	51	1.6 U	1.3 U	1.2 U	1.3 U	1.5 U
Sodium	MG/KG	269	83%	172	3	45	54	79.2 U	67.5 U	62.6 U	75.3 J	84.2 J
Thallium	MG/KG	1.2	16%	0.7	2	8	51	0.47 U	0.58 U	0.57 U	0.34 U	0.59 U
Vanadium	MG/KG	32.7	100%	150	0	54	54	32.2	25.4	26.4	15.7	19.7
Zinc	MG/KG	126	93%	110	3	50	54	85.1 J	94.2 J	85 J	75 J	**126** J

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	11/05/91	11/05/91	12/16/92	12/16/92	01/20/93
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	S1105-29SOIL1 VALUE (Q)	S1105-30RESOIL1 VALUE (Q)	BK-1SOIL3 VALUE (Q)	BK-2RESOIL3 VALUE (Q)	GB35-1GRID VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	8880	7160	**19400**	14400	18000
Antimony	MG/KG	6.55	17%	5.9	1	9	54	9.9 UJ	7 UJ	7.9 U	7.2 U	5.8 UJ
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	3.8 J	4.4 J	3	2.7	6.2
Barium	MG/KG	159	100%	300	0	54	54	110 J	39.9 J	159	106	93.6
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	0.76	0.52 J	1.1	0.81	0.85
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	1.7	1.5	0.45 U	0.41 U	0.33 U
Calcium	MG/KG	293000	100%	121000	3	54	54	104000	101000	4590	22500	1590
Chromium	MG/KG	32.7	100%	29.6	3	54	54	13.8 J	11.2 J	**30**	22.3	23.5
Cobalt	MG/KG	29.1	100%	30	0	54	54	10.7	8.1	14.4	12.3	9.4
Copper	MG/KG	62.8	100%	33	3	54	54	21.6	19.3	26.9	18.8	17.5
Cyanide	MG/KG	0	0%	0.35	0	0	48	0.63 U	0.62 U	0.57 U	0.61 U	0.78 U
Iron	MG/KG	38600	100%	36500	3	54	54	19600	17300	**38600**	26600	25200
Lead	MG/KG	266	94%	24.8	3	51	54	10.1	7.8	15.8	18.9	14.4
Magnesium	MG/KG	29100	100%	21500	2	51	51	17000	12600	5980	7910	3850
Manganese	MG/KG	2380	96%	1060	3	51	53	532	514	**2380**	800	701
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.04 J	0.05 J	**0.13** J	**0.11**	0.06 J
Nickel	MG/KG	62.3	98%	49	3	53	54	23.8	19	47.7	31	26.3
Potassium	MG/KG	3160	100%	2380	3	54	54	1080	1050	1720	1210	1110
Selenium	MG/KG	1.7	41%	2	0	22	54	0.65 UJ	0.21 UJ	0.73 J	0.94	0.23 UJ
Silver	MG/KG	0.87	4%	0.75	1	2	51	1.5 U	1.1 U	0.47 U	0.43 U	0.34 U
Sodium	MG/KG	269	83%	172	3	45	54	112 J	116 J	49.1 J	61.1 J	35.6 J
Thallium	MG/KG	1.2	16%	0.7	2	8	51	0.36 U	0.6 U	0.42 U	0.38 U	0.55 U
Vanadium	MG/KG	32.7	100%	150	0	54	54	19.5	12.9	28	22.4	27.1
Zinc	MG/KG	126	93%	110	3	50	54	84.3 J	74.8 J	98.6	63.7	55

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	*01/20/93*	*01/20/93*	01/20/93	01/20/93	01/20/93
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	*GB35-2GRID VALUE (Q)*	*GB35-6DUGRID VALUE (Q)*	gb35-Pair VALUE (Q)	GB36-1GRID VALUE (Q)	GB36-2GRID VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	*17600*	*16200*	16900	18100	16200
Antimony	MG/KG	6.55	17%	5.9	1	9	54	*6.8 J*	*6.3 J*	**6.55**	5.9 J	5.8 UJ
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	*7.7*	*5.3*	6.5	4.6	**9.7**
Barium	MG/KG	159	100%	300	0	54	54	*61.7*	*61.7*	61.7	74.8	50.8
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	*0.74*	*0.77*	0.755	0.77	0.65
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	*0.31 U*	*0.35 U*	0.165 U	0.3 U	0.33 U
Calcium	MG/KG	293000	100%	121000	3	54	54	*17700*	*1370*	9535	1660	22900
Chromium	MG/KG	32.7	100%	29.6	3	54	54	*29.3*	*25.1*	27.2	24.8	27.4
Cobalt	MG/KG	29.1	100%	30	0	54	54	*16.3*	*10.3*	13.3	20.4	13.2
Copper	MG/KG	62.8	100%	33	3	54	54	*24.5*	*17.2*	20.85	17.7	17.5
Cyanide	MG/KG	0	0%	0.35	0	0	48	*0.71 U*	*0.82 U*	0.3825 u	0.7 U	0.68 U
Iron	MG/KG	38600	100%	36500	3	54	54	*34200*	*30800*	32500	26100	30700
Lead	MG/KG	266	94%	24.8	3	51	54	*5.4*	*19.1*	12.25	12.7	6.2
Magnesium	MG/KG	29100	100%	21500	2	51	51	*7790*	*4490*	6140	4490	7150
Manganese	MG/KG	2380	96%	1060	3	51	53	*646*	*775*	710.5	426	507
Mercury	MG/KG	0.13	72%	0.1	2	39	54	*0.03 U*	*0.07 J*	0.0425 J	0.02 J	0.02 J
Nickel	MG/KG	62.3	98%	49	3	53	54	*48.7*	*28.3*	38.5	28.3	42.8
Potassium	MG/KG	3160	100%	2380	3	54	54	*1110*	*975*	1042.5	1400	1100
Selenium	MG/KG	1.7	41%	2	0	22	54	*0.23 UJ*	*0.21 UJ*	0.11 UJ	0.2 UJ	0.18 UJ
Silver	MG/KG	0.87	4%	0.75	1	2	51	*0.32 U*	*0.36 U*	0.17 U	0.31 U	0.34 U
Sodium	MG/KG	269	83%	172	3	45	54	*77.5 J*	*34.6 J*	56.05 J	46.6 J	97.6 J
Thallium	MG/KG	1.2	16%	0.7	2	8	51	*0.54 U*	*0.5 U*	0.26 U	0.46 U	0.43 U
Vanadium	MG/KG	32.7	100%	150	0	54	54	*22.3*	*26.1*	24.2	27.8	19.7
Zinc	MG/KG	126	93%	110	3	50	54	*83.4*	*53.1*	68.25	59.2	74.1

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	01/11/93	11/20/91	12/02/93	12/02/93	12/02/93
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	MW36-3GRID VALUE (Q)	S2011121M W34GRID VALUE (Q)	SB24-5-1 VALUE (Q)	SB24-5-3 VALUE (Q)	SB24-5-5 VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	12700	16100	16200	10100	13700
Antimony	MG/KG	6.55	17%	5.9	1	9	54	5.7 UJ	5.7 J	12.5 UJ	5.8 UJ	11.3 UJ
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	2.9 J	6.3 U	4.2	3.3	5
Barium	MG/KG	159	100%	300	0	54	54	46.9 J	67.5	117	58.3	67.2
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	0.59	0.86	0.98 J	0.48 J	0.62 J
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	0.33 U	2.3	0.78 U	0.36 U	0.7 U
Calcium	MG/KG	293000	100%	121000	3	54	54	4170	28600	4540	74200	49000
Chromium	MG/KG	32.7	100%	29.6	3	54	54	23.3 J	26.6	24.5	16.9	23.1
Cobalt	MG/KG	29.1	100%	30	0	54	54	18.6	17	16	8.2	12
Copper	MG/KG	62.8	100%	33	3	54	54	19.2 J	32.7	28.4	20.9	22.2
Cyanide	MG/KG	0	0%	0.35	0	0	48	0.56 U	0.54 U	0.6 U	0.51 U	0.57 U
Iron	MG/KG	38600	100%	36500	3	54	54	27500	35000	33600	21300	26700
Lead	MG/KG	266	94%	24.8	3	51	54	20.2	11.9	**45.5** J	8.7 J	7.9 J
Magnesium	MG/KG	29100	100%	21500	2	51	51	5750	6850	5150	12100	11400
Manganese	MG/KG	2380	96%	1060	3	51	53	540	803	**1080**	400	450
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.02 J	0.07 R	0.07 JR	0.06 JR	0.04 JR
Nickel	MG/KG	62.3	98%	49	3	53	54	43.3 J	**49.3** J	37.3	26.4	35.2
Potassium	MG/KG	3160	100%	2380	3	54	54	754	1290	1170 J	993	1660
Selenium	MG/KG	1.7	41%	2	0	22	54	0.19 UJ	0.18 UJ	0.15 UJ	0.23 UJ	0.22 UJ
Silver	MG/KG	0.87	4%	0.75	1	2	51	0.34 U	**0.87** J	1.6 U	0.73 U	1.4 U
Sodium	MG/KG	269	83%	172	3	45	54	31.6 U	55.2 J	50.9 J	153 J	139 J
Thallium	MG/KG	1.2	16%	0.7	2	8	51	0.45 U	0.51 U	0.16 U	0.25 U	0.24 U
Vanadium	MG/KG	32.7	100%	150	0	54	54	16.2 J	22.3	29.9	14.4	19.5
Zinc	MG/KG	126	93%	110	3	50	54	34.7 J	95.7	85.7	62.8	63.2

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	12/03/93	12/03/93	*09/25/95*	*09/25/95*	
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	SB25-6-01 VALUE (Q)	SB25-6-02 VALUE (Q)	*SB25-7-00 VALUE (Q)*	*SB25-7-10 VALUE (Q)*	SB25-7 Pair VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	10600	7070	*12500*	*12500*	12500
Antimony	MG/KG	6.55	17%	5.9	1	9	54	4.2 U	3 U	*0.4*	*0.4 UJ*	0.3 J
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	**8.3**	4.8	*4.3*	*4.3*	4.3
Barium	MG/KG	159	100%	300	0	54	54	59.1	35	*71.3*	*71.3*	71.3
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	0.48 J	0.35 J	*0.56*	*0.56*	0.56
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	0.41 U	0.29 U	*0.05 U*	*0.05 U*	0.025
Calcium	MG/KG	293000	100%	121000	3	54	54	82500	**122000**	*47400 J*	*47400 J*	47400 J
Chromium	MG/KG	32.7	100%	29.6	3	54	54	16.9	11.3	*16.9 J*	*16.9 J*	16.9 J
Cobalt	MG/KG	29.1	100%	30	0	54	54	11.2	6.6 J	*8*	*8*	8
Copper	MG/KG	62.8	100%	33	3	54	54	20.2 J	12 J	*15.7*	*15.7*	15.7
Cyanide	MG/KG	0	0%	0.35	0	0	48	0.58 U	0.64 U	*0.44 U*	*0.444 U*	0.221 U
Iron	MG/KG	38600	100%	36500	3	54	54	21400	15800	*20500*	*20500*	20500
Lead	MG/KG	266	94%	24.8	3	51	54	9.5	13.8	*11.1*	*11.1*	11.1
Magnesium	MG/KG	29100	100%	21500	2	51	51	19600	**22800**	*11700*	*11700*	11700
Manganese	MG/KG	2380	96%	1060	3	51	53	722 J	610 J	*452*	*452*	452
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.03 J	0.04 U	*0.03*	*0.03*	0.03
Nickel	MG/KG	62.3	98%	49	3	53	54	26.8	18	*22.3*	*22.3*	22.3
Potassium	MG/KG	3160	100%	2380	3	54	54	1480	1060	*1110*	*1110*	1110
Selenium	MG/KG	1.7	41%	2	0	22	54	0.97 J	0.63 J	*0.63 U*	*0.66 U*	0.3225 U
Silver	MG/KG	0.87	4%	0.75	1	2	51	0.82 U	0.59 U	*0.89 U*	*0.92 U*	0.4525 U
Sodium	MG/KG	269	83%	172	3	45	54	**269** J	**186** J	*59.9*	*57.5*	58.7
Thallium	MG/KG	1.2	16%	0.7	2	8	51	0.24 UJ	0.21 UJ	*1.2*	*1.2*	**1.2**
Vanadium	MG/KG	32.7	100%	150	0	54	54	18.5	12	*21*	*21*	21
Zinc	MG/KG	126	93%	110	3	50	54	71.6 J	40.6 J	*54.1*	*54.1*	54.1

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	09/25/95	09/25/95	04/02/94	04/02/94	04/02/94
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	SB25-7-03 VALUE (Q)	SB25-7-04 VALUE (Q)	MW64A-1-1 VALUE (Q)	MW64A-1-2 VALUE (Q)	MW64A-1-3 VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	8020	7550	16100	**19800**	12600
Antimony	MG/KG	6.55	17%	5.9	1	9	54	0.42 UJ	0.44 U	0.23 J	0.2 UJ	0.2 UJ
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	4.1	3.4	7.1	8.2	5
Barium	MG/KG	159	100%	300	0	54	54	58	52	83.7	91.2	62.3
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	0.43	0.39	0.68 J	0.74 J	0.53 J
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	0.06 U	0.06 U	0.11 J	0.02 U	0.12 J
Calcium	MG/KG	293000	100%	121000	3	54	54	120000 J	**133000** J	7210	4300	72400
Chromium	MG/KG	32.7	100%	29.6	3	54	54	13.7 J	12.4 J	23	25	19
Cobalt	MG/KG	29.1	100%	30	0	54	54	8.2	6.9	11.8	11.3	9.1 J
Copper	MG/KG	62.8	100%	33	3	54	54	17.7	16.4	25.5	21	23.7
Cyanide	MG/KG	0	0%	0.35	0	0	48	0.57 U	0.51 U	0.66 U	0.56 U	0.55 U
Iron	MG/KG	38600	100%	36500	3	54	54	18900	15400	28500	28000	22600
Lead	MG/KG	266	94%	24.8	3	51	54	7	6.5	21.6	13.6	15.4
Magnesium	MG/KG	29100	100%	21500	2	51	51	17400	20700	5480	5010	14800
Manganese	MG/KG	2380	96%	1060	3	51	53	735	402	558	604	402
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.02	0.01	0.05 J	0.03 J	0.02 J
Nickel	MG/KG	62.3	98%	49	3	53	54	26.4	22.4	32.2	28.6	26.7
Potassium	MG/KG	3160	100%	2380	3	54	54	1280	1430	**2590** J	2260 J	**2700** J
Selenium	MG/KG	1.7	41%	2	0	22	54	0.7 U	0.74 U	0.96	1.7	0.34 U
Silver	MG/KG	0.87	4%	0.75	1	2	51	0.98 U	1 U	0.12 U	0.14 U	0.14 U
Sodium	MG/KG	269	83%	172	3	45	54	89.1	110	27.5 U	31.8 U	92.1 J
Thallium	MG/KG	1.2	16%	0.7	2	8	51	**1.1**	0.6 U	0.42 J	0.32 U	0.32 U
Vanadium	MG/KG	32.7	100%	150	0	54	54	13.4	13.7	27.6	32.2	22.8
Zinc	MG/KG	126	93%	110	3	50	54	64.9	65.1	104	87.1	64.9

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	05/13/94	05/13/94	05/13/94	05/13/94	03/30/94
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	MW64B-1-1 VALUE (Q)	MW64B-1-2 VALUE (Q)	MW64B-1-3 VALUE (Q)	MW64B-1-04 VALUE (Q)	MW67-2-1 VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	13400	8870	7620	7620	16700
Antimony	MG/KG	6.55	17%	5.9	1	9	54	0.3 J	0.15 UJ	0.15 UJ	0.15 UJ	0.27 J
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	5.5	4.3	5.5	5.5	4.4
Barium	MG/KG	159	100%	300	0	54	54	75.5	70.8	76.7	76.7	114
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	0.56 J	0.43 J	0.37 J	0.37 J	0.67 J
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	0.63 J	0.64 J	0.54 J	0.54 J	0.2 J
Calcium	MG/KG	293000	100%	121000	3	54	54	5530	70000	75900	75900	3580
Chromium	MG/KG	32.7	100%	29.6	3	54	54	17.5	14.1	13.5	13.5	19.5
Cobalt	MG/KG	29.1	100%	30	0	54	54	7.2 J	10	7.4 J	7.4 J	7.5 J
Copper	MG/KG	62.8	100%	33	3	54	54	18.9	20.2	17.6	17.6	16.5
Cyanide	MG/KG	0	0%	0.35	0	0	48	0.6 U	0.5 U	0.48 U	0.48 U	0.64 U
Iron	MG/KG	38600	100%	36500	3	54	54	20900	18400	17100	17100	20500
Lead	MG/KG	266	94%	24.8	3	51	54	21.4	8.8	8.3	8.3	17.5
Magnesium	MG/KG	29100	100%	21500	2	51	51	3720	18900	21500	21500	
Manganese	MG/KG	2380	96%	1060	3	51	53	207	434	389	389	438
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.05 J	0.02 J	0.01 U	0.01 U	0.04
Nickel	MG/KG	62.3	98%	49	3	53	54	19.8	28.2	22.6	22.6	18.7
Potassium	MG/KG	3160	100%	2380	3	54	54	1700	1630	1650	1650	1780 J
Selenium	MG/KG	1.7	41%	2	0	22	54	0.99 J	0.26 U	0.57 J	0.57 J	0.81
Silver	MG/KG	0.87	4%	0.75	1	2	51	0.16 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 U
Sodium	MG/KG	269	83%	172	3	45	54	35.9 U	96.8 J	79.6 J	79.6 J	25.1 U
Thallium	MG/KG	1.2	16%	0.7	2	8	51	0.41 J	0.24 U	0.24 U	0.24 U	0.48 J
Vanadium	MG/KG	32.7	100%	150	0	54	54	23.3	14.8	14.2	14.2	28.2
Zinc	MG/KG	126	93%	110	3	50	54	72.2	59	45.6	45.600	64.8

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

.able C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	03/30/94	03/30/94	05/11/94	05/11/94	05/11/94
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	MW67-2-2 VALUE (Q)	MW67-2-3 VALUE (Q)	MW70-1-1 VALUE (Q)	MW70-1-2 VALUE (Q)	MW70-1-3 VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	14900	9460	12200	9480	11000
Antimony	MG/KG	6.55	17%	5.9	1	9	54	0.22 J	0.2 UJ	0.23 UJ	0.21 UJ	0.19 UJ
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	4.5	4.2	5.4	4.1	5.7
Barium	MG/KG	159	100%	300	0	54	54	105	80.8	67.5	56.6	79.9
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	0.61 J	0.4 J	0.44 J	0.41 J	0.54 J
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	0.11 J	0.12 J	0.57 J	0.43 J	0.8 J
Calcium	MG/KG	293000	100%	121000	3	54	54	79000	77800	3600	51600	48600
Chromium	MG/KG	32.7	100%	29.6	3	54	54	22.5	14.8	13.7	14.7	17.8
Cobalt	MG/KG	29.1	100%	30	0	54	54	10.4 J	9.7 J	5.5 J	7.1 J	21
Copper	MG/KG	62.8	100%	33	3	54	54	20.3	20.5	12.4	19.7	**33.5**
Cyanide	MG/KG	0	0%	0.35	0	0	48	0.5 U	0.54 U			
Iron	MG/KG	38600	100%	36500	3	54	54	24400	18700	17700	16000	26400
Lead	MG/KG	266	94%	24.8	3	51	54	9.3	8.5	20.7	9.1	13.6
Magnesium	MG/KG	29100	100%	21500	2	51	51			2830	13600	7980
Manganese	MG/KG	2380	96%	1060	3	51	53	528	411	233	470	1040
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.01 J	0.02 J	0.1 J	0.03 J	0.02 J
Nickel	MG/KG	62.3	98%	49	3	53	54	32.3	25.9	12.3	17.6	**52.4**
Potassium	MG/KG	3160	100%	2380	3	54	54	**3160** J	1970 J	982 J	1590	1350
Selenium	MG/KG	1.7	41%	2	0	22	54	0.36 U	0.34 U	1 J	0.64 J	0.32 U
Silver	MG/KG	0.87	4%	0.75	1	2	51	0.15 U	0.14 U			
Sodium	MG/KG	269	83%	172	3	45	54	112 J	107 J	36.4 U	126 J	165 J
Thallium	MG/KG	1.2	16%	0.7	2	8	51	0.34 U	0.32 U			
Vanadium	MG/KG	32.7	100%	150	0	54	54	24.8	16.5	23.3	17.2	17.6
Zinc	MG/KG	126	93%	110	3	50	54	62	60.1	55.4	42.4	**116**

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	11/02/93	11/02/93	11/03/93	12/08/93	
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	SB11-3-1 VALUE (Q)	SB11-3-2 VALUE (Q)	SB11-3-6 VALUE (Q)	SB13-1-1 VALUE (Q)	SB13-1-2 VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	17600	6330	10900	18300	8250
Antimony	MG/KG	6.55	17%	5.9	1	9	54	10.8 UJ	8 UJ	7.6 UJ	5.1 J	3.7 UJ
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	5.6 R	3.4 R	6 R	7	6.2
Barium	MG/KG	159	100%	300	0	54	54	113	57.4	62.7	106	88.1
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	0.85 J	0.34 J	0.47 J	0.92 J	0.42 J
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	0.67 U	0.5 U	0.48 U	0.45 U	0.36 U
Calcium	MG/KG	293000	100%	121000	3	54	54	4950	91300	48600	3570	87700
Chromium	MG/KG	32.7	100%	29.6	3	54	54	24	11.1	18.6	29.4	13.3
Cobalt	MG/KG	29.1	100%	30	0	54	54	11.3	6.5 J	10.1	12	7.2 J
Copper	MG/KG	62.8	100%	33	3	54	54	20	12.2	21.7	11.6	18.4
Cyanide	MG/KG	0	0%	0.35	0	0	48	0.57 U	0.47 U	0.53 U	0.61 U	0.5 U
Iron	MG/KG	38600	100%	36500	3	54	54	27200	13200	28300	32500	17400
Lead	MG/KG	266	94%	24.8	3	51	54	27.9	11.4	10.1	15 R	9 R
Magnesium	MG/KG	29100	100%	21500	2	51	51	4160	12900	10100	5890	20800
Manganese	MG/KG	2380	96%	1060	3	51	53	674	356	434	451	517
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.05 J	0.04 U	0.03 U	0.03 J	0.07 J
Nickel	MG/KG	62.3	98%	49	3	53	54	28.3	16.7	29.5	34.9	24
Potassium	MG/KG	3160	100%	2380	3	54	54	2110	1110	1230	2190	1390
Selenium	MG/KG	1.7	41%	2	0	22	54	0.24 J	0.13 UJ	0.21 UJ	0.26 J	0.56 J
Silver	MG/KG	0.87	4%	0.75	1	2	51	1.4 UJ	1 UJ	0.97 UJ	0.9 U	0.71 U
Sodium	MG/KG	269	83%	172	3	45	54	66.3 J	136 J	146 J	80.6 J	155 J
Thallium	MG/KG	1.2	16%	0.7	2	8	51	0.19 U	1.5 U	0.23 U	0.43 J	0.43 J
Vanadium	MG/KG	32.7	100%	150	0	54	54	31.8	13.3	17	32.7	13.3
Zinc	MG/KG	126	93%	110	3	50	54	83.2 R	65 R	77.3 R	81.9	56.2

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	12/08/93	12/15/93	12/15/93	12/15/93	12/01/93
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	SB13-1-3 VALUE (Q)	SB13-6-1 VALUE (Q)	SB13-6-3 VALUE (Q)	SB13-6-4 VALUE (Q)	SB17-1-1 VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	11700	16000	13500	10200	13700
Antimony	MG/KG	6.55	17%	5.9	1	9	54	2.8 UJ	3.2 UJ	2.5 UJ	2.9 UJ	11.7 UJ
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	5.7	4.6	2.7	2.3	4.3
Barium	MG/KG	159	100%	300	0	54	54	33.9	103	60.4	56.8	107
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	0.54 J	0.92	0.71	0.58 J	0.7 J
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	0.27 U	0.31 U	0.25 U	0.28 U	0.73 U
Calcium	MG/KG	293000	100%	121000	3	54	54	50300	5140	31800	45200	2870
Chromium	MG/KG	32.7	100%	29.6	3	54	54	19.6	21.5	23.5	17.8	17.6
Cobalt	MG/KG	29.1	100%	30	0	54	54	11.1	10.6	15	11.3	9.9 J
Copper	MG/KG	62.8	100%	33	3	54	54	17.6	16	27.4	14.5	**46.4**
Cyanide	MG/KG	0	0%	0.35	0	0	48	0.53 U	0.6 U	0.53 U	0.51 U	0 NA
Iron	MG/KG	38600	100%	36500	3	54	54	24700	25300	26900	20700	25100
Lead	MG/KG	266	94%	24.8	3	51	54	11.7 R	13.8	11.6	11.7	**266**
Magnesium	MG/KG	29100	100%	21500	2	51	51	12600	3750	6640	5220	3330
Manganese	MG/KG	2380	96%	1060	3	51	53	404	934	508	556	547
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.02 U	0.03 J	0.01 U	0.01 U	0.05 J
Nickel	MG/KG	62.3	98%	49	3	53	54	33.1	22.7	41.9	33	19.1
Potassium	MG/KG	3160	100%	2380	3	54	54	1270	1330	1120	1000	628 J
Selenium	MG/KG	1.7	41%	2	0	22	54	0.51 J	1.2	0.11 J	0.24 J	0.25 UJ
Silver	MG/KG	0.87	4%	0.75	1	2	51	0.54 U	0.62 U	0.49 U	0.56 U	1.5 U
Sodium	MG/KG	269	83%	172	3	45	54	134 J	61.9 J	116 J	141 J	46.2 J
Thallium	MG/KG	1.2	16%	0.7	2	8	51	0.64 J	0.18 U	0.14 U	0.23 U	0.28 UJ
Vanadium	MG/KG	32.7	100%	150	0	54	54	16.3	29.9	18.5	13.8	23.1
Zinc	MG/KG	126	93%	110	3	50	54	45.8	62.5	64.7	39.3	93.4

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	12/01/93	12/01/93	11/17/93	11/17/93	12/06/93
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	SB17-1-2 VALUE (Q)	SB17-1-3 VALUE (Q)	SB26-1-1 VALUE (Q)	SB26-1-2 VALUE (Q)	SB4-1-1 VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	18100	8700	5560	9040	*14800*
Antimony	MG/KG	6.55	17%	5.9	1	9	54	11.8 UJ	9 UJ	7.3 UJ	6.7 UJ	*4.8 UJ*
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	5.2	3.4	3.2	5.3	*6.2*
Barium	MG/KG	159	100%	300	0	54	54	114	59.4	73.2	43.7	*72*
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	0.9 J	0.42 J	0.35 J	0.41 J	*0.73 J*
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	0.74 U	0.56 U	0.46 U	0.42 U	*0.47 U*
Calcium	MG/KG	293000	100%	121000	3	54	54	20900	72800	**293000**	47300	*4280*
Chromium	MG/KG	32.7	100%	29.6	3	54	54	25.1	13.9	10.3	15.7	*23.2*
Cobalt	MG/KG	29.1	100%	30	0	54	54	13.3	8.8	5.9 J	9.5	*11.3*
Copper	MG/KG	62.8	100%	33	3	54	54	26.9	20	9.7	14.3	*14.1*
Cyanide	MG/KG	0	0%	0.35	0	0	48	0 NA	0 NA	0.48 U	0.57 U	*0.52 U*
Iron	MG/KG	38600	100%	36500	3	54	54	29900	18800	8770	19100	*27500*
Lead	MG/KG	266	94%	24.8	3	51	54	11.4 J	7.5 J	6.33	8.5	*17.7 J*
Magnesium	MG/KG	29100	100%	21500	2	51	51	8490	18100	**29100**	9160	*4270*
Manganese	MG/KG	2380	96%	1060	3	51	53	487	391	309	551	*615 JR*
Mercury	MG/KG	0.13	72%	0.1	2	39	54	0.06 J	0.03 UJ	0.02 U	0.02 U	*0.05 J*
Nickel	MG/KG	62.3	98%	49	3	53	54	42	25.2	31.6 R	23.9	*27.8*
Potassium	MG/KG	3160	100%	2380	3	54	54	1560	1090	1710	901	*1250*
Selenium	MG/KG	1.7	41%	2	0	22	54	0.24 UJ	0.14 UJ	0.13 UJ	0.26 J	*0.4 J*
Silver	MG/KG	0.87	4%	0.75	1	2	51	1.5 U	1.1 U	0.92 UJ	0.85 UJ	*0.93 U*
Sodium	MG/KG	269	83%	172	3	45	54	74.6 J	137 J	**192** J	108 J	*43.8 U*
Thallium	MG/KG	1.2	16%	0.7	2	8	51	0.26 UJ	0.15 UJ	0.73 U	0.17 U	*0.23 U*
Vanadium	MG/KG	32.7	100%	150	0	54	54	27	13.9	12.7	14.4	*28.6*
Zinc	MG/KG	126	93%	110	3	50	54	80.2	57.1	283 R	90.6	*79.6*

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

Table C-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

SAMPLE DATE:			FREQUENCY		NUMBER	NUMBER	NUMBER	*12/06/93*	*12/06/93*	12/06/93	12/06/93	11/08/93
METALs	UNIT	MAXIMUM CONCENTRATION	OF DETECTION	TAGM VALUE	ABOVE TAGM	OF DETECTS	OF ANALYSES	*SB4-1-10 VALUE (Q)*	*SB4-pair VALUE (Q)*	SB4-1-2 VALUE (Q)	SB4-1-3 VALUE (Q)	TP57-11 VALUE (Q)
Aluminum	MG/KG	20500	100%	19300	3	54	54	*21000*	17900	15300	19200	14600
Antimony	MG/KG	6.55	17%	5.9	1	9	54	*3.8 UJ*	2.15 UJ	5 UJ	2.8 UJ	11.3 UJ
Arsenic	MG/KG	21.5	93%	8.2	3	50	54	*4.2*	5.2	3.9	**21.5**	5.9
Barium	MG/KG	159	100%	300	0	54	54	*97.7*	84.85	40.4 J	81.2	120
Beryllium	MG/KG	1.4	100%	1.1	2	54	54	*0.64 J*	0.685 J	0.74 J	1	0.81 J
Cadmium	MG/KG	2.9	39%	2.3	3	21	54	*0.37 U*	0.21 U	0.49 U	0.27 U	0.71 U
Calcium	MG/KG	293000	100%	121000	3	54	54	*2460*	3370	30900	14400	22300
Chromium	MG/KG	32.7	100%	29.6	3	54	54	*27.9*	25.55	27.6	**32.7**	20.1
Cobalt	MG/KG	29.1	100%	30	0	54	54	*5.9 J*	8.6 J	16.5	29.1	8.8 J
Copper	MG/KG	62.8	100%	33	3	54	54	*15.1*	14.6	**62.8**	21.6	21.7
Cyanide	MG/KG	0	0%	0.35	0	0	48	*0.53 U*	0.2625 U	0.53 U	0.47 U	0.54 U
Iron	MG/KG	38600	100%	36500	3	54	54	*19500*	23500	34300	**37900**	24900
Lead	MG/KG	266	94%	24.8	3	51	54	*9.8 J*	13.75 J	7.5 J	9.1 J	11.3
Magnesium	MG/KG	29100	100%	21500	2	51	51	*4460*	4365	7130	8040	5360
Manganese	MG/KG	2380	96%	1060	3	51	53	*119 JR*		337 R	0	329
Mercury	MG/KG	0.13	72%	0.1	2	39	54	*0.04 J*	0.045 J	0.04 J	0.04 J	0.04 J
Nickel	MG/KG	62.3	98%	49	3	53	54	*25.1*	26.45 J	47.6	**62.3**	25.7
Potassium	MG/KG	3160	100%	2380	3	54	54	*2490*	1870	1300	2030	1430
Selenium	MG/KG	1.7	41%	2	0	22	54	*0.23 J*	0.315 J	0.09 U	0.14 U	0.46 J
Silver	MG/KG	0.87	4%	0.75	1	2	51	*0.74 U*	0.4175 U	0.98 U	0.64 J	1.4 UJ
Sodium	MG/KG	269	83%	172	3	45	54	*39.2 J*	30.55 J	105 J	91.6 J	93 J
Thallium	MG/KG	1.2	16%	0.7	2	8	51	*0.23 U*	0.115 U	0.16 U	0.24 U	0.17 U
Vanadium	MG/KG	32.7	100%	150	0	54	54	*31*	29.8	22.2	29.3	27.8
Zinc	MG/KG	126	93%	110	3	50	54	*72.1*	75.85	102	**115**	57.9

Notes:
Italicized data represents duplicate pair; average of both samples, presented to right, is compared to TAGM.
Shaded cells with bolded text indicates TAGM value exceeded.

TABLE C-2
GROUNDWATER BACKGROUND DATA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

4/20/01

									MW-35		MW-35		MW11-1		MW13-1		MW13-6	
STUDY ID:									3Q93		RI PHASE1		ESI		ESI		ESI	
LOC ID:									MW-35		MW-35		MW11-1		MW13-1		MW13-6	
QC CODE:									SA		SA		SA		SA		SA	
SAMP. DETH TOP:									NONE		NONE		NONE		NONE		NONE	
SAMP. DEPTH BOT:									NONE		NONE		NONE		NONE		NONE	
MATRIX:									GROUNDW		GROUNDW		GROUNDW		GROUNDW		GROUNDW	
SAMP ID:	UNIT		FREQUENCY OF	CRITERIA	TYPE OF	NUMBER OF	NUMBER OF	NUMBER OF	MW35OB3Q		MW-35GW		MW11-1-1		MW13-1-1		MW13-6-1	
PARAMETER	UNIT	MAXIMUM	DETECTION	VALUE	CRITERIA	EXCEEDENCES	DETECTS	ANALYSES	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q
Aluminum	UG/L	42400	87%	50	MCL	25	27	31	**207**		**7550**	J	**53.7**	J	**42400**		**2810**	
Antimony	UG/L	52.7	13%	3	GA	3	4	31	16.8	U	55.5	U	21.4	U	**33.9**	J	**52.7**	J
Arsenic	UG/L	10	13%	5	MCL	2	4	31	1	B	3.5	U	0.8	U	**9.3**	J	1.4	U
Barium	UG/L	337	94%	1000	GA	0	29	31	97.3	B	103	J	25.2	J	337		34.3	J
Beryllium	UG/L	2.2	13%	4	MCL	0	4	31	0.3	U	1.8	R	0.4	U	2.2	J	0.4	U
Cadmium	UG/L	0	0%	5	GA	0	0	31	2.4	U	2.9	U	2.1	U	2.1	U	2.1	U
Calcium	UG/L	181000	100%			0	31	31	108000		94700		97500		181000		81500	
Chromium	UG/L	69.4	48%	50	GA	1	15	31	3.3	U	15.3	R	2.6	U	**69.4**		6.1	J
Cobalt	UG/L	34.6	45%			0	14	31	2.7	U	19.9	J	4.4	U	34.6	J	4.4	U
Copper	UG/L	32.5	48%	200	GA	0	15	31	2.1	U	14.4	U	3.1	U	23.3	J	3.1	U
Cyanide	UG/L	2.8	3%	200	GA	0	1	31	2.8	B	10	UJ	5	U	5	U	5	U
Iron	UG/L	69400	100%	300	GA	22	31	31	**321**		**10500**		41.4	J	**69400**		**4550**	
Lead	UG/L	34.8	32%	15	MCL	1	10	31	2.8	B	3.3		1.1	J	**34.8**		1.5	J
Magnesium	UG/L	58200	100%			0	31	31	15600		14600		29700		50300		51500	
Manganese	UG/L	1120	97%	50	SEC	22	30	31	23.4		**557**	J	**278**		**1120**		**376**	
Mercury	UG/L	0.06	23%	0.7	GA	0	7	31	0.1	U	0.18	R	0.04	U	0.05	J	0.04	U
Nickel	UG/L	99.8	61%	100	GA	0	19	31	8.3	U	15.9	U	4	U	99.8		8.6	J
Potassium	UG/L	10200	94%			0	29	31	1400	B	4180	J	7100		10100		6780	J
Selenium	UG/L	3.6	19%	10	GA	0	6	31	1.2	B	1.1	J	0.7	U	3.6	J	2.3	J
Silver	UG/L	0.98	6%	50	GA	0	2	31	2.6	U	9	U	4.2	U	4.2	U	4.2	U
Sodium	UG/L	59400	97%	20000	GA	7	30	31	13400		**44100**		4860	J	9350		7880	
Thallium	UG/L	4.7	13%	2	MCL	4	4	31	1.2	U	3.2	U	1.2	U	1.2	U	1.2	U
Vanadium	UG/L	70.8	52%			0	16	31	3	U	30.3	U	3.7	U	70.8		5.9	J
Zinc	UG/L	143	84%	5000	MCL	0	26	31	72.7		58.2		21.4		143		50.6	

GA = NYSDEC Ambient Water Quality Standards for a source of Drinking Water from Groundwater (TOGS 1.1.1)
MCL = Maximum Contaminant Level - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)
SEC = Secondary Drinking Water Regulations - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)

TABLE C-2
GROUNDWATER BACKGROUND DATA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

									MW16-1		MW16-1		MW17-1		MW17-1	
STUDY ID:									RI ROUND1		RI ROUND2		RI ROUND1		RI ROUND2	
LOC ID:									MW16-1		MW16-1		MW17-1		MW17-1	
QC CODE:									SA		SA		SA		SA	
SAMP. DETH TOP:									3.3		731.5		3.4		731.1	
SAMP. DEPTH BOT:									5.3		728.4		7.4		727.1	
MATRIX:									GROUNDW		GROUNDW		GROUNDW		GROUNDW	
SAMP ID:	UNIT		FREQUENCY		TYPE	NUMBER	NUMBER	NUMBER	16101		16152		16108		16171	
PARAMETER	UNIT	MAXIMUM	OF DETECTION	CRITERIA VALUE	OF CRITERIA	OF EXCEEDENCES	OF DETECTS	OF ANALYSES	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q
Aluminum	UG/L	42400	87%	50	MCL	25	27	31	**1850**		143	U	**90.4**		**386**	
Antimony	UG/L	52.7	13%	3	GA	3	4	31	2	U	3	U	2	U	3	U
Arsenic	UG/L	10	13%	5	MCL	2	4	31	2.7	U	4.4	U	2.7	U	4.4	U
Barium	UG/L	337	94%	1000	GA	0	29	31	74.2		48.2	U	85		90.4	U
Beryllium	UG/L	2.2	13%	4	MCL	0	4	31	0.23		0.2	U	0.26		0.2	U
Cadmium	UG/L	0	0%	5	GA	0	0	31	0.3	U	0.6	U	0.3	U	0.6	U
Calcium	UG/L	181000	100%			0	31	31	157000		116000		108000		104000	
Chromium	UG/L	69.4	48%	50	GA	1	15	31	2.7		1	U	1	U	1	U
Cobalt	UG/L	34.6	45%			0	14	31	2.1		1.3	U	1.2	U	2	U
Copper	UG/L	32.5	48%	200	GA	0	15	31	4.9		1.9	U	3.1		1.1	U
Cyanide	UG/L	2.8	3%	200	GA	0	1	31	5	U	5	UJ	5	U	5	UJ
Iron	UG/L	69400	100%	300	GA	22	31	31	**2400**	J	296		119		**572**	J
Lead	UG/L	34.8	32%	15	MCL	1	10	31	1.7	U	1.5	U	1.7	U	1.5	U
Magnesium	UG/L	58200	100%			0	31	31	23300		17600		22600		22900	
Manganese	UG/L	1120	97%	50	SEC	22	30	31	**210**		**64.2**		21.3		9.7	U
Mercury	UG/L	0.06	23%	0.7	GA	0	7	31	0.1	U	0.1	U	0.1	U	0.1	U
Nickel	UG/L	99.8	61%	100	GA	0	19	31	4.7		2.5	U	1.8		2.5	U
Potassium	UG/L	10200	94%			0	29	31	1670		998	U	472		843	U
Selenium	UG/L	3.6	19%	10	GA	0	6	31	2.4	U	4.7	UJ	2.4	U	4.7	UJ
Silver	UG/L	0.98	6%	50	GA	0	2	31	1.3	U	1.5	U	1.3	U	1.5	U
Sodium	UG/L	59400	97%	20000	GA	7	30	31	8750		3870	U	9290		8190	
Thallium	UG/L	4.7	13%	2	MCL	4	4	31	4.2	U	5.9	U	**4.4**		4.1	U
Vanadium	UG/L	70.8	52%			0	16	31	3.3		1.6	U	1.2	U	1.6	U
Zinc	UG/L	143	84%	5000	MCL	0	26	31	15.6	R	5.8	U	2.5	R	14.4	U

GA = NYSDEC Ambient Water Quality Standards for a source of Drinking Water from Groundwater (TOGS 1.1.1)
MCL = Maximum Contaminant Level - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)
SEC = Secondary Drinking Water Regulations - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)

TABLE C-2
GROUNDWATER BACKGROUND DATA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

									MW25-6		MW25-6		MW26-1		MW26-1		MW26-1	
STUDY ID:									RI ROUND1		RI ROUND2		ESI		RI ROUND1		RI ROUND2	
LOC ID:									MW25-6		MW25-6		MW26-1		MW26-1		MW26-1	
QC CODE:									SA		SA		SA		SA		SA	
SAMP. DETH TOP:									NONE		NONE		NONE		NONE		NONE	
SAMP. DEPTH BOT:									NONE		NONE		NONE		NONE		NONE	
MATRIX:									GROUNDW		GROUNDW		GROUNDW		GROUNDW		GROUNDW	
SAMP ID:	UNIT		FREQUENCY OF	CRITERIA	TYPE OF	NUMBER OF	NUMBER OF	NUMBER OF	MW25-6		25008		MW26-1-1		MW26-1		26001	
PARAMETER	UNIT	MAXIMUM	DETECTION	VALUE	CRITERIA	EXCEEDENCES	DETECTS	ANALYSES	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q
Aluminum	UG/L	42400	87%	50	MCL	25	27	31	**162**		**529**		**188**	J	**457**		38.7	
Antimony	UG/L	52.7	13%	3	GA	3	4	31	2.2	U	2.3	U	21.5	U	2.2	U	1.4	
Arsenic	UG/L	10	13%	5	MCL	2	4	31	2.1	U	3.5	U	0.8	U	2.1	U	4	U
Barium	UG/L	337	94%	1000	GA	0	29	31	85.6		72.3		31.9	J	33.2		29.9	
Beryllium	UG/L	2.2	13%	4	MCL	0	4	31	0.27	U	0.13	U	0.4	U	0.27	U	0.1	U
Cadmium	UG/L	0	0%	5	GA	0	0	31	0.3	U	0.32	U	2.1	U	0.3	U	0.3	U
Calcium	UG/L	181000	100%			0	31	31	133000		118000		115000		121000		110000	
Chromium	UG/L	69.4	48%	50	GA	1	15	31	2.2		1.3	U	2.6	U	4.7		0.73	
Cobalt	UG/L	34.6	45%			0	14	31	1.3		1.1	U	4.4	U	1.1		0.9	U
Copper	UG/L	32.5	48%	200	GA	0	15	31	0.99		1.1		3.1	U	5.7		1	U
Cyanide	UG/L	2.8	3%	200	GA	0	1	31	5	U	5	UJ	5	U	5	U	5	U
Iron	UG/L	69400	100%	300	GA	22	31	31	**308**		**623**		286		**867**		58.4	J
Lead	UG/L	34.8	32%	15	MCL	1	10	31	4.4		1.1	U	0.5	U	7.8		1.9	U
Magnesium	UG/L	58200	100%			0	31	31	35900		32900		16700		16600		15500	
Manganese	UG/L	1120	97%	50	SEC	22	30	31	**56**		22		**529**		27.5		2.5	
Mercury	UG/L	0.06	23%	0.7	GA	0	7	31	0.02	U	0.1	U	0.05	J	0.02	U	0.2	U
Nickel	UG/L	99.8	61%	100	GA	0	19	31	2.6		1.7	U	4	U	6.2		1.6	U
Potassium	UG/L	10200	94%			0	29	31	1840	J	1420		10200		3620		3860	J
Selenium	UG/L	3.6	19%	10	GA	0	6	31	3.7	U	3.4	U	0.7	U	3.7	U	3.4	U
Silver	UG/L	0.98	6%	50	GA	0	2	31	0.8	U	1.1	U	4.2	U	0.8	U	1.3	U
Sodium	UG/L	59400	97%	20000	GA	7	30	31	**20400**	J	16500		**30300**		**24600**		**34800**	
Thallium	UG/L	4.7	13%	2	MCL	4	4	31	3	U	3.5	U	1.2	U	**4.3**		4.7	U
Vanadium	UG/L	70.8	52%			0	16	31	1.4		1.2	U	3.7	U	1.3	J	1.1	U
Zinc	UG/L	143	84%	5000	MCL	0	26	31	7.5		2.2		26.7		20.5		3.1	J

GA = NYSDEC Ambient Water Quality Standards for a source of Drinking Water from Groundwater (TOGS 1.1.1)
MCL = Maximum Contaminant Level - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)
SEC = Secondary Drinking Water Regulations - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)

TABLE C-2
GROUNDWATER BACKGROUND DATA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

									MW4-1		MW44A-1		MW44B-1		MW57-1	
STUDY ID:									ESI		ESI		ESI		ESI	
LOC ID:									MW4-1		MW44A-1		MW44B-1		MW57-1	
QC CODE:									SA		SA		SA		SA	
SAMP. DETH TOP:									NONE		NONE		NONE		NONE	
SAMP. DEPTH BOT:									NONE		NONE		NONE		NONE	
MATRIX:									GROUNDW		GROUNDW		GROUNDW		GROUNDW	
SAMP ID:	UNIT		FREQUENCY		TYPE	NUMBER	NUMBER	NUMBER	MW4-1-1		MW44A-1-1		MW44B-1-1		MW57-1-1	
			OF	CRITERIA	OF	OF	OF	OF								
PARAMETER	UNIT	MAXIMUM	DETECTION	VALUE	CRITERIA	EXCEEDENCES	DETECTS	ANALYSES	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q
Aluminum	UG/L	42400	87%	50	MCL	25	27	31	41.9	U	**69**	J	**288**	J	**4200**	
Antimony	UG/L	52.7	13%	3	GA	3	4	31	21.6	U	1.3	U	1.3	U	**44.7**	J
Arsenic	UG/L	10	13%	5	MCL	2	4	31	2.2	J	2	U	2	U	1.4	U
Barium	UG/L	337	94%	1000	GA	0	29	31	19.6	J	102	J	72.6	J	36.5	J
Beryllium	UG/L	2.2	13%	4	MCL	0	4	31	0.4	U	0.1	U	0.1	U	0.4	U
Cadmium	UG/L	0	0%	5	GA	0	0	31	2.1	U	0.2	U	0.2	U	2.1	U
Calcium	UG/L	181000	100%			0	31	31	137000		92200		120000		82000	
Chromium	UG/L	69.4	48%	50	GA	1	15	31	2.6	U	0.4	U	0.4	U	7.7	J
Cobalt	UG/L	34.6	45%			0	14	31	4.6	J	0.5	U	0.91	J	4.4	U
Copper	UG/L	32.5	48%	200	GA	0	15	31	3.1	U	0.5	U	0.5	U	3.1	U
Cyanide	UG/L	2.8	3%	200	GA	0	1	31	5	U	5	U	5	U	5	U
Iron	UG/L	69400	100%	300	GA	22	31	31	**332**		114	J	**666**		**6360**	
Lead	UG/L	34.8	32%	15	MCL	1	10	31	0.5	U	0.9	U	0.9	U	2.1	J
Magnesium	UG/L	58200	100%			0	31	31	57600		19000		31800		11400	
Manganese	UG/L	1120	97%	50	SEC	22	30	31	**346**		18.2		**219**		**245**	
Mercury	UG/L	0.06	23%	0.7	GA	0	7	31	0.04	U	0.04	U	0.04	U	0.04	U
Nickel	UG/L	99.8	61%	100	GA	0	19	31	4	U	0.7	U	0.73	J	8.2	J
Potassium	UG/L	10200	94%			0	29	31	7380		1050	J	2150	J	3860	J
Selenium	UG/L	3.6	19%	10	GA	0	6	31	2.1	J	2.7	U	2.7	U	0.69	U
Silver	UG/L	0.98	6%	50	GA	0	2	31	4.2	U	0.5	U	0.68	J	4.2	U
Sodium	UG/L	59400	97%	20000	GA	7	30	31	11700		2310	J	7190		4080	J
Thallium	UG/L	4.7	13%	2	MCL	4	4	31	1.2	U	1.9	U	**4.7**	J	1.2	U
Vanadium	UG/L	70.8	52%			0	16	31	3.7	U	0.5	U	0.5	U	7.6	J
Zinc	UG/L	143	84%	5000	MCL	0	26	31	19.1	J	3.8	J	2.2	U	57.4	

GA = NYSDEC Ambient Water Quality Standards for a source of Drinking Water from Groundwater (TOGS 1.1.1)
MCL = Maximum Contaminant Level - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)
SEC = Secondary Drinking Water Regulations - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)

TABLE C-2
GROUNDWATER BACKGROUND DATA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

4/20/01

									MW58-1	MW64A-1	MW64B-1	MW64C-9	MW64D-1
STUDY ID:									ESI	ESI	ESI	ESI	ESI
LOC ID:									MW58-1	MW64A-1	MW64B-1	MW64C-9	MW64D-1
QC CODE:									SA	SA	SA	SA	SA
SAMP. DETH TOP:									NONE	NONE	NONE	NONE	NONE
SAMP. DEPTH BOT:									NONE	NONE	NONE	NONE	NONE
MATRIX:									GROUNDW	GROUNDW	GROUNDW	GROUNDW	GROUNDW
SAMP ID:	UNIT		FREQUENCY OF	CRITERIA	TYPE OF	NUMBER OF	NUMBER OF	NUMBER OF	MW58-1-1	MW64A-1-1	MW64B-1-1	MW64C-9-1	MW64D-1-1
PARAMETER	UNIT	MAXIMUM	DETECTION	VALUE	CRITERIA	EXCEEDENCES	DETECTS	ANALYSES	VALUE Q	VALUE Q	VALUE Q	VALUE Q	VALUE Q
Aluminum	UG/L	42400	87%	50	MCL	25	27	31	**440**	**398**	**198** J	38.2 J	**177** J
Antimony	UG/L	52.7	13%	3	GA	3	4	31	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Arsenic	UG/L	10	13%	5	MCL	2	4	31	2 U	2 U	2 U	2 U	2 U
Barium	UG/L	337	94%	1000	GA	0	29	31	71.9 J	42 J	104 J	20.4 J	88.6 J
Beryllium	UG/L	2.2	13%	4	MCL	0	4	31	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Cadmium	UG/L	0	0%	5	GA	0	0	31	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Calcium	UG/L	181000	100%			0	31	31	113000	109000	138000	121000	142000
Chromium	UG/L	69.4	48%	50	GA	1	15	31	0.82 J	0.49 J	0.41 J	0.4 U	0.4 U
Cobalt	UG/L	34.6	45%			0	14	31	0.64 J	0.5 U	1.1 J	0.5 U	0.69 J
Copper	UG/L	32.5	48%	200	GA	0	15	31	1.5 J	0.61 J	1 J	0.55 J	0.5 U
Cyanide	UG/L	2.8	3%	200	GA	0	1	31	5 U	5 U	5 U	5 U	5 U
Iron	UG/L	69400	100%	300	GA	22	31	31	**678**	**773** J	**400**	**681**	**440**
Lead	UG/L	34.8	32%	15	MCL	1	10	31	0.89 U	0.89 U	0.9 U	0.9 U	0.9 U
Magnesium	UG/L	58200	100%			0	31	31	17300	16800	45600	49400	14800
Manganese	UG/L	1120	97%	50	SEC	22	30	31	**84**	28.3	**98.9**	**96**	**223**
Mercury	UG/L	0.06	23%	0.7	GA	0	7	31	0.04 U	0.04 J	0.04 U	0.04 U	0.04 U
Nickel	UG/L	99.8	61%	100	GA	0	19	31	1.6 J	1 J	1.4 J	1.2 J	1.4 J
Potassium	UG/L	10200	94%			0	29	31	1460 J	1790 J	4780 J	1670 J	3340 J
Selenium	UG/L	3.6	19%	10	GA	0	6	31	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U
Silver	UG/L	0.98	6%	50	GA	0	2	31	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	UG/L	59400	97%	20000	GA	7	30	31	4180 J	2180 J	8140	6420	12300
Thallium	UG/L	4.7	13%	2	MCL	4	4	31	1.9 U	1.9 U	1.9 U	1.9 U	**2.2** J
Vanadium	UG/L	70.8	52%			0	16	31	0.81 J	1.3 J	0.73 J	0.61 J	0.69 J
Zinc	UG/L	143	84%	5000	MCL	0	26	31	7.1 J	3.9 J	3.9 J	3.9 J	3.8 J

GA = NYSDEC Ambient Water Quality Standards for a source of Drinking Water from Groundwater (TOGS 1.1.1)
MCL = Maximum Contaminant Level - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)
SEC = Secondary Drinking Water Regulations - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)

TABLE C-2
GROUNDWATER BACKGROUND DATA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

									PT-10		MW24-1		MW45-4		MW60-1	
STUDY ID:									RI PHASE2		ESI		QUARTERL		ESI	
LOC ID:									PT-10		MW24-1		MW45-4		MW60-1	
QC CODE:									SA		SA		SA		SA	
SAMP. DETH TOP:									NONE		NONE		NONE		NONE	
SAMP. DEPTH BOT:									NONE		NONE		NONE		NONE	
MATRIX:									GROUNDW		GROUNDW		GROUNDW		GROUNDW	
SAMP ID:	UNIT		FREQUENCY OF	CRITERIA	TYPE OF	NUMBER OF	NUMBER OF	NUMBER OF	PT10GW1		MW24-1		OB108		MW60-1	
PARAMETER	UNIT	MAXIMUM	DETECTION	VALUE	CRITERIA	EXCEEDENCES	DETECTS	ANALYSES	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q
Aluminum	UG/L	42400	87%	50	MCL	25	27	31	72	U	**19100**		36.8	U	**348**	
Antimony	UG/L	52.7	13%	3	GA	3	4	31	49.5	UJ	21.5	U	2.8	U	1.3	U
Arsenic	UG/L	10	13%	5	MCL	2	4	31	1.4	UJ	**10**		3.6	U	2	U
Barium	UG/L	337	94%	1000	GA	0	29	31	193	J	156	J	23.4		88.7	J
Beryllium	UG/L	2.2	13%	4	MCL	0	4	31	0.89	U	0.89	J	0.1	U	0.1	U
Cadmium	UG/L	0	0%	5	GA	0	0	31	2.8	U	2.1	U	0.4	U	0.2	U
Calcium	UG/L	181000	100%			0	31	31	79100		180000		112000		95100	
Chromium	UG/L	69.4	48%	50	GA	1	15	31	2.7	UJ	29.8		1.3	U	0.56	J
Cobalt	UG/L	34.6	45%			0	14	31	5.4	U	18.7	J	1.4	U	0.5	U
Copper	UG/L	32.5	48%	200	GA	0	15	31	4.7	U	32.5		1.5		0.5	U
Cyanide	UG/L	2.8	3%	200	GA	0	1	31	10	UJ	5	U			5	U
Iron	UG/L	69400	100%	300	GA	22	31	31	85.6	J	**32000**		62.8		**1290**	
Lead	UG/L	34.8	32%	15	MCL	1	10	31	0.79	U	7		2	U	0.9	U
Magnesium	UG/L	58200	100%			0	31	31	34200		39800		24200		31100	
Manganese	UG/L	1120	97%	50	SEC	22	30	31	**124**		**712**		5	J	**377**	
Mercury	UG/L	0.06	23%	0.7	GA	0	7	31	0.09	UJ	0.06	J	0.2	U	0.05	J
Nickel	UG/L	99.8	61%	100	GA	0	19	31	7.4	UJ	41.4		2.2		0.7	U
Potassium	UG/L	10200	94%			0	29	31	2870	J	9220		2180		8760	
Selenium	UG/L	3.6	19%	10	GA	0	6	31	0.99	UJ	2.5	J	3.1	U	2.7	U
Silver	UG/L	0.98	6%	50	GA	0	2	31	5.4	U	4.2	U	0.98		0.5	U
Sodium	UG/L	59400	97%	20000	GA	7	30	31	**41100**		5950		10600		**59400**	
Thallium	UG/L	4.7	13%	2	MCL	4	4	31			1.2	U	4	U	1.9	U
Vanadium	UG/L	70.8	52%			0	16	31	6.7	UJ	30.9	J	1.2	U	1	J
Zinc	UG/L	143	84%	5000	MCL	0	26	31	8.8	J	107		6.8		6.9	J

GA = NYSDEC Ambient Water Quality Standards for a source of Drinking Water from Groundwater (TOGS 1.1.1)
MCL = Maximum Contaminant Level - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)
SEC = Secondary Drinking Water Regulations - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)

TABLE C-2
GROUNDWATER BACKGROUND DATA
Decision Document - SEADs-59 and 71
Seneca Army Depot Activity

									MW62-1		MW63-1		MW67-1		MW70-1	
STUDY ID:									ESI		ESI		ESI		ESI	
LOC ID:									MW62-1		MW63-1		MW67-1		MW70-1	
QC CODE:									SA		SA		SA		SA	
SAMP. DETH TOP:									NONE		NONE		NONE		NONE	
SAMP. DEPTH BOT:									NONE		NONE		NONE		NONE	
MATRIX:									GROUNDW		GROUNDW		GROUNDW		GROUNDW	
SAMP ID:	UNIT		FREQUENCY OF	CRITERIA	TYPE OF	NUMBER OF	NUMBER OF	NUMBER OF	MW62-1		MW63-1		MW67-2		MW70-1	
PARAMETER	UNIT	MAXIMUM	DETECTION	VALUE	CRITERIA	EXCEEDENCES	DETECTS	ANALYSES	VALUE	Q	VALUE	Q	VALUE	Q	VALUE	Q
Aluminum	UG/L	42400	87%	50	MCL	25	27	31	**499**		**747**		**1240**		**88.2**	J
Antimony	UG/L	52.7	13%	3	GA	3	4	31	1.3	U	1.3	U	1.3	U	1.3	U
Arsenic	UG/L	10	13%	5	MCL	2	4	31	2	U	2	U	2	U	2	U
Barium	UG/L	337	94%	1000	GA	0	29	31	68.1	J	72.6	J	100	J	86.5	J
Beryllium	UG/L	2.2	13%	4	MCL	0	4	31	0.1	U	0.1	U	0.1	U	0.1	U
Cadmium	UG/L	0	0%	5	GA	0	0	31	0.2	U	0.2	U	0.2	U	0.2	U
Calcium	UG/L	181000	100%			0	31	31	91700		89400		119000		119000	
Chromium	UG/L	69.4	48%	50	GA	1	15	31	1.4	J	1.1	J	2	J	0.4	U
Cobalt	UG/L	34.6	45%			0	14	31	2.5	J	6.2	J	1.4	J	0.5	U
Copper	UG/L	32.5	48%	200	GA	0	15	31	0.54	J	2.1	J	1.5	J	0.5	U
Cyanide	UG/L	2.8	3%	200	GA	0	1	31	5	UJ	5	U	5	U	5	U
Iron	UG/L	69400	100%	300	GA	22	31	31	**797**	J	**1260**		**2270**		213	
Lead	UG/L	34.8	32%	15	MCL	1	10	31	0.89	U	1.1	J	0.9	U	0.9	U
Magnesium	UG/L	58200	100%			0	31	31	58200		16400		24200		28100	
Manganese	UG/L	1120	97%	50	SEC	22	30	31	**271**		**548**		**153**		**107**	
Mercury	UG/L	0.06	23%	0.7	GA	0	7	31	0.05	J	0.04	U	0.04	U	0.06	J
Nickel	UG/L	99.8	61%	100	GA	0	19	31	3.9	J	9.7	J	2.9	J	1.5	J
Potassium	UG/L	10200	94%			0	29	31	7470	J	3870	J	1870	J	1540	J
Selenium	UG/L	3.6	19%	10	GA	0	6	31	2.7	U	2.7	U	2.7	U	2.7	U
Silver	UG/L	0.98	6%	50	GA	0	2	31	0.5	U	0.5	U	0.5	U	0.5	U
Sodium	UG/L	59400	97%	20000	GA	7	30	31	18100		5710		13700		5220	
Thallium	UG/L	4.7	13%	2	MCL	4	4	31	1.9	U	1.9	U	1.9	U	1.9	U
Vanadium	UG/L	70.8	52%			0	16	31	1.8	J	1.5	J	2.1	J	0.5	U
Zinc	UG/L	143	84%	5000	MCL	0	26	31	4.2	J	7.1	J	6.5	J	3.5	J

GA = NYSDEC Ambient Water Quality Standards for a source of Drinking Water from Groundwater (TOGS 1.1.1)
MCL = Maximum Contaminant Level - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)
SEC = Secondary Drinking Water Regulations - Drinking Water Standards and Health Advisory (EPA 822-B-00-001)

APPENDIX D
Detailed Cost Estimates

- List of Assumptions used in Cost Estimates
- MCACES Cost Estimate for SEAD-59 – Excavation/Off-Site Disposal
- MCACES Cost Estimate for SEAD-71 – Excavation/Off-Site Disposal

Appendix D
Seneca Army Depot Activity
SEAD-59 and 71 Decision Document
Detailed Cost Estimate for Excavation/Off-site Disposal

Introduction

A detailed cost estimate has been developed for excavation and off-site disposal at both SEAD-59 and SEAD-71. The cost estimate was developed using the recommended Removal Action outlined in Section 3.2 of this Decision Document. Quantities used were based on figures presented in Section 3. Costs were based on information from the Micro Computer Aided Cost Engineering System (MCACES, a component of the Tri-Service Automated Cost Engineering System, TRACES), Version 1.2 (copyright 1994-1997). Quotes from area suppliers, generic unit costs, vendor information, conventional cost estimating guides and prior experience were used to supplement this information. The cost estimates presented have been prepared for guidance in project evaluation. The actual costs of the project will depend on true labor and materials costs at the time of construction, actual site conditions, competitive market condition, final project scope, and other variables.

Construction costs include those expenditures required to implement a remedial action. Both direct and indirect costs are considered in the development of construction cost estimates. Direct costs include construction costs or expenditures for equipment, labor, and materials required to implement a remedial action. Indirect costs include those associated with engineering, construction management, and other services necessary to carry out a remedial action. O & M and monitoring costs, which include labor, maintenance materials, and purchased services, have also been estimated.

Costs to remediate soils with concentrations of volatiles, semi-volatile organic compounds, pesticides, and metals exceeding the clean up goals have been estimated for the removal action.

Assumptions

The following assumptions were used to develop the cost estimates for this removal action:

- The contractor(s) will mobilize to the site, clear and grub the areas of work, establish access roads and survey the areas to be remediated. It was estimated that 3 acres of land

at SEAD-59 and 2 acres at SEAD-71 will require light clearing and grubbing. Clearing and grubbing is necessary to perform soil excavation and stockpiling.

- Erosion control (silt fence and haybales) will be installed around excavation areas and stockpile areas. Erosion control is necessary to prevent soil particles from migrating off-site and into drainage swales during construction. The erosion control will be maintained throughout construction.
- A temporary fence will be installed around the sites.
- A surveyor will be on site for approximately 10 days to layout the excavation areas and survey record information.
- In situ volumes of material are based on the areas and proposed excavation depths shown in Figures 3-1 and 3-2 of Section 3. For costs based on a per cubic yard basis, such as excavation and hauling, an expansion factor of 30 percent was used to estimate ex situ volumes for soil. An additional 10% was used to address the uncertainty of the volume estimation. For costs based on weight, a conversion factor of 1.5 tons of moist material per cubic yard was used for estimating purposes. The 30 percent expansion factor was not applied to weight calculations. The volume of material requiring excavation, or soil covering may vary depending on the results of the cleanup verification sampling.
- For SEAD-59, the total in situ volume of soil is estimated to be 18,900 cubic yards in the Fill Area and 4,125 cubic yards in Areas 2, 3, 4, and Others. Using an expansion factor of 30 percent and an additional factor of 10 percent for the uncertainty of the volume estimation, the ex situ volume of soil is estimated to be 27,027 and 5,898 cubic yards, respectively.
- For SEAD-71, the total in-situ volume of soil is estimated to be 861 cubic yards. Using an expansion factor of 30 percent and an additional factor of 10 percent for the uncertainty of the volume estimation, the ex situ volume of soil is estimated to be 1,231 cubic yards.
- Cleanup verification sampling of the soil will be conducted at a frequency of one sample every 2500 square feet (i.e. 50 ft by 50 ft grids in the Fill Area at SEAD-59). For small excavations such as Areas 2, 3, 4, and Others at SEAD-59, five samples will be collected at each site. This frequency will be revised based on the actual cleanup verification work plan.
- Excavated soil will be placed in a stockpile area prior to treatment and/or disposal. The stockpile areas will be lined (and covered) with a 6-mil polyethylene liner. Each pile will consist of 150 cubic yards of soil and will occupy a space of approximately 50 x 50 square feet. Prior to off-site disposal, one composite sample from each pile will be obtained and submitted for Toxicity Characteristic Leaching Procedure (TCLP) analysis.
- TCLP testing for off-site disposal will be conducted at a frequency of one sample every 150 cubic yards. This value will be revised during final design after selection of the off-

site landfill. Material passing the TCLP criteria will be transported and disposed off-site in a Subtitle D Landfill.

- Transportation and disposal costs are based on quotes from Earthwatch Waste Systems, Inc. and Waste Management, Inc. Based on these quotes, disposal of RCRA Hazardous Material (i.e. overpacked drums) at an off-site facility will cost $133 each. In addition, transportation and disposal of non-hazardous soil and debris (i.e. soil which passes the TCLP test and does not require stabilization) in an off-site Subtitle D landfill will cost $31.50 per ton. For cost estimating purposes, it has been assumed that all material from SEAD-59 will not fail the TCLP test and will not require stabilization prior to off-site disposal. For SEAD-71, it was assumed that 3% of the excavated material will fail TCLP based on the soil data.
- Based on the soil data from SEAD-59, it was assumed that 65% of the excavated soil (24,694 tons) will have PAH or metals concentrations above clean up goals and will require off-site disposal. For SEAD-71, it was assumed that all of the excavated soil will require off-site disposal.
- Cost estimates were developed for both sites based on removing geophysical anomalies and visually contaminated soils.

Post-Closure Monitoring

No groundwater monitoring has been included in this estimate at SEAD-59 and SEAD-71.

Operation and Maintenance (O & M)

O&M costs for the vegetative covers are included for this removal action.

Markups and Contingencies

Construction costs include those expenditures required to implement a remedial action. Both direct and indirect costs are considered in the development of construction cost estimates. Direct costs include construction costs or expenditures for equipment, labor, and materials required to implement a remedial action. Indirect costs include those associated with engineering, construction management, and other services necessary to carry out a remedial action.

The following markups were used to develop the detail cost estimates for all the alternatives.

Contractor Costs (cost to owner)

The contractor costs shown below are the costs to the owner for markup on the direct costs to the prime contractor for implementation of the remedial action. The prime contractors' direct costs include all materials, equipment, and labor for management of all subcontractors and field construction work. The prime contractor is typically contracted directly to the owner (COE NE/NY SEDA).

Contractor costs are calculated as a percentage of the running total of the contractors direct costs as:

- 5% for field office support. Field office support includes items such as supervision at the job, site, temporary facilities, temporary material storage, temporary utilities, operation and maintenance of temporary job-site facilities, preparatory work, health and safety supplies and requirements, transportation vehicles, cleanup, and equipment costs not chargeable to a specific task.
- 15% for home office support. Home office support includes items such as management and office staff salary and expense, main office building furniture and equipment, utilities, general communications and travel, supplies, general business insurance, and taxes. It also includes job specific items such as engineering and shop drawings/surveys, insurance (project coverage), schedules & reports, and quality control.
- 10% for profit. Profit provides the contractor with an incentive to perform the work as efficiently as possible. The profit used in the cost estimates is based on the current average profit for contractors in the Syracuse area.
- 4% for bond. The bond rate is based on recommendations from the USACE Engineering Instructions – Construction Cost Estimates (September 1997) for hazardous, toxic and radioactive waste (HTRW) projects.

SEAD-59
EXCAVATION/OFF-SITE DISPOSAL

Designed By: Parsons ES
Estimated By: Parsons ES

Prepared By: Parsons ES

Preparation Date: 03/20/02
Effective Date of Pricing: 10/03/96
Est Construction Time: 120 Days

Sales Tax: 7.0%

PROJECT BREAKDOWN:

The estimate is structured as follows and uses a 2 digit number at each level. The 2 digit numbers for the first 3 title levels are taken from the HTRW Remedial Action Work Breakdown Structure. The 2 digit numbers for the remaining title levels are user defined. The detail items are at LEVEL 6.

LEVEL 1 - WBS Level 1 (Account)
LEVEL 2 - WBS Level 2 (System)
LEVEL 3 - WBS Level 3 (Subsystem)
LEVEL 4 - User Defined (Assembly Category or Other)
LEVEL 5 - User Defined (Assembly or Other)

PROJECT DESCRIPTION:

The following is a summary of the activities that are presently included in Alternative 3.

Off-Site Disposal: Excavate/Off-site Disposal
- Mobilize, site prep, clear/grub, erosion control, and survey
- Excavate soils in Area 1, 2, 3, 4 and Others.
- Screen excavated soils to remove debris, drums, paint cans.
- Treat water by air stripping.
- Dispose of drums in off-site hazardous waste landfill and construction debris in off-site solid waste landfill.
- Dispose soils with concentrations > Cleanup Goals at off site landfill.
- Backfill excavations with excavated soils with concentrations < goals.
- Cover Area 1 with 2' vegetative cover.
- Cover areas south of the road with crushed stone.
- Demobilize

PRODUCTIVITY:

Productivity, as a baseline and as taken from the Unit Price Book (UPB) Database, assumes a non-contaminated working environment with no level of protection productivity reduction factors. When required,

productivity for appropriate activities will be adjusted for this project as follows:

1. Level of Protection A - Productivity ___%
2. Level of Protection B - Productivity ___%
3. Level of Protection C - Productivity ___%
4. Level of Protection D - Productivity 85%.

All activities are conducted in Level of Protection D.

The following daily time breakdown was assumed.

	Level A	Level B	Level C	Level D
Availiable Time (minutes)	480	480	480	480
Non-Productive Time (minutes):				
Safety meetings	20	20	10	10
Suit-up/off	60	60	40	10
Air tank change	160	20	0	0
*Breaks	60	60	40	30
Cleanup/decontamination	20	20	20	20
Productive Time (minutes)	160	300	370	410
Productivity:	160/480 X100%	300/480 X100%	370/480 X100%	410/480 X100%
	33%	63%	77%	85%
Example:				
Normal Production Rate (CY/HR)	250	250	250	250
X Productivity	.33	.63	.77	.85
=Reduced Production Rate(CY/HR)	83	158	193	213
* Break time ranges (minutes)	60-140	60-140	40-140	30-70

The following list are the areas where there is the biggest potential for changes in cost due to uncertainties:

- Quantities of soil over TAGMs could increase based on the results of the

confirmatory sampling done in the excavation.
- The quantities of soil requiring disposal as hazardous waste could increase based on the results of the confirmatory sampling done in the soil piles.

Contractor costs are calculated as a percentage of running total as
5 % for field office support
15 % for home office support
10 % for profit
4 %for bond

Owner's cost are calculated as a percentage of running total as
2 % for design contingency
3 % for escalation
25 % for construction contingency
3.5 % for other costs
8 % for construction management

OTHER GOVERNMENT COSTS:

Other Government Costs consist of:

*Engineering and Design During Construction (EDC)	1.5%
As-Builts	0.5%
Operation and Maintenance (O&M) Manuals	0.5%
Laboratory Quality Assurance	1.0%
Total, use	3.5%

33. Remedial Action

33.01. Mobilization	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
33. Remedial Action									
33.01. Mobilization									
USR AA Mobilization	1.00	EA	0	793	2,500	535	0	3,828	3827.72
33.02. Sampling, & Testing									
33.02.06. Groundwater									
Groundwater - from holding tanks									
HTW AA For Disposal: NYSDEC CLP TCL VOCs, volatile organics , groundwater (Severn Trent Lab 9/98) (Assume 1 sample for each tank)	15.00	EA	0	0	0	0	2,625	2,625	175.00
AFH AA For Disposal: NYSDEC CLP TAL SVOCs modified , groundwater, (Severn Trent Lab, 9/98) (Assume 1 sample per tank)	15.00	EA	0	0	0	0	5,550	5,550	370.00
AFH AA For Disposal: NYSDEC TAL - Inorganics, groundwater (Severn Trent Lab, 9/98) (Assume 1 sample per tank)	15.00	EA	0	0	0	0	2,325	2,325	155.00
33.02.11. Soil									
For disposal; TCLP analysis required for non hazardous landfill disposal. Assuming 1 sample every 150 cy: 23,025 cy x 1.30x 1.1/150 = 220 x 1.2 = 264 samples									
HTW AA For Disposal: TCLP, volatile organics (SW-846 Methods 1311&8240), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy)	264.00	EA	0	0	0	0	31,680	31,680	120.00
AFH AA For Disposal: TCLP-SVOCs (SW-846 Methods 1311 & 8270A), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy)	264.00	EA	0	0	0	0	60,720	60,720	230.00
AFH AA For Disposal: TCLP - Metals (SW-846 Methods 1311 & 6010 & 7470), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy)	264.00	EA	0	0	0	0	31,680	31,680	120.00
AFH AA For Disposal: TCLP - Pesticides (SW-846 Methods 1311 & 8080 7470), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy)	264.00	EA	0	0	0	0	31,680	31,680	120.00

	33.02. Sampling, & Testing	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
	33.02.13. Confirmatory-Soil - All Areas									
HTW AA	Confirmatory: NYSDEC CLP, volatile organics, soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall adn floor or excavation.	156.00	EA	0	0	0	0	27,300	27,300	175.00
AFH AA	Confirmatory: NYSDEC CLP-SVOCs , soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall and floor of excavation.	156.00	EA	0	0	0	0	57,720	57,720	370.00
AFH AA	Confirmatory: NYSDEC CLP TAL - Metals , soil (Severn Trent	156.00	EA	0	0	0	0	24,180	24,180	155.00
AFH AA	Confirmatory: NYSDEC CLP TCL - Pesticides , soil (Severn Trent	156.00	EA	0	0	0	0	27,300	27,300	175.00
	33.03. Site Work									
	33.03.02. Clearing and Grubbing									
AF AA	Clearing, brush w/dozer & brush rake, light brush	3.00	ACR	48	1,298	1,887	0	0	3,185	1061.54
	33.03.08. Survey Remediation Area									
	Survey remediation area									
USR AA	Survey remediation area	10.00	DAY	0	15,000	2,500	2,675	0	20,175	2017.50
	33.03.11. Erosion control									
B MIL AA	Silt Fence: Installation and materials high, polypropylene	16000	LF	3,360	80,000	8,000	25,680	0	113,680	7.11
B HTW AA	Hay bales - stalked	16000	LF	5	2,720	0	17,120	0	19,840	1.24
B MIL AA	Maintain silt fence and remove	16000	LF	107	2,720	0	17,120	0	19,840	1.24
	33.04. Fencing									
MIL AA	Site dml, chain link fence, remove & salvage for reuse	2000.00	LF	103	2,600	0	0	0	2,600	1.30
MIL AA	Fence, CL scty, std FE-6, 6' high, no gates/signs	2000.00	LF	96	2,820	0	39,847	0	42,667	21.33
MIL AA	Fence, CL, set in conc, 6' H, indl, corner post, galv stl, 4" OD	4.00	EA	2	55	9	295	0	358	89.48
MIL AA	Fence, CL, double, 24' W, indl, gates, swing, 6' high	1.00	EA	0	0	0	435	0	435	435.38

		33.05. Wastewater	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
		33.05. Wastewater									
		33.05. 1. Wastewater									
L	MIL AA	Pump, cntfgl,6"D, horiz mtd, horiz splt, sgl stg,1500GPM,50HP	1.00	EA	0	0	0	10,767	0	10,767	10766.88
M	HTW AA	21,000 Gal, Steel, hold tank stationary	4.00	EA	0	0	0	5,264	0	5,264	1316.10
		33.07. Air Stripping									
	HTW AA	HTRW,PTTU,1'dia,14.5'pkng hgt, 30GPM,850CFM,FRP shell	1.00	EA	97	3,257	0	7,009	0	10,265	10265.47
	AFH AA	HTRW,PTTU, >= 12' high, install air strip tower, 1'- 3' diam.	1.00	EA	91	3,035	226	0	0	3,261	3261.05
	HTW AA	HTRW, PT opt, air flow switch (loss of air flow - motor failure)	1.00	EA	0	0	0	512	0	512	511.81
		33.10. Soil Remediation									
		33.10.02. Sitework - Soils Excavating Areas 1,2,3,4, Others Volumes are increased by 30% for expansion and 10% contingency. For weight calculations, the volume is increased by 10% only. All fill, topsoil, and seeding items for soil remediation are included in the Sitework - Soils category.									
	USR AA	Excavate, stockpile, screen soil (volumes used for estimate are	32925	CY	0	0	0	0	658,500	658,500	20.00
	USR AA	Plastic sheeting for ground: 6mil polyethylene liner (1000sf	550000	SF	0	0	0	47,080	0	47,080	0.09
	USR AA	Cover stockpiles w/ plastic sheeting: Plastic sheeting: 6mil polyethylene liner (1000sf / roll; 1 roll = $75)	550000	SF	0	0	0	47,080	0	47,080	0.09
	MIL AA	Loam or topsoil, furnish & place, imported, 6" deep	6240.00	CY	550	16,661	8,674	121,718	0	147,052	23.57
	USR AA	Common fill (6") - Material for Backfill, includes cost of material (bank sand) and delivery (DeWitt, 1999) For this option, excavated material with concentrations of COCs less than Clean up Goals will be used as backfill.	4166.00	TON	0	0	0	19,391	0	19,391	4.65
	AF AA	Fill, spread borrow w/dozer	14802	CY	178	5,329	9,621	0	0	14,950	1.01
	AF	Compaction, steel wheel tandem roller, 5 ton	14802	CY	105	3,108	2,664	0	0	5,773	0.39
	RSM AA	Seeding, athletic field mix, 8#/MSFpush spreader	70.20	MSF	70	1,775	0	3,125	0	4,899	69.79

33. Remedial Action

	33.10. Soil Remediation	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
	33.10.04. Drum Removal									
	Approx. 20 drums in Area 1									
L MIL AA	Excavator for drum removal at Level B	20.00	EA	2	323	445	0	0	768	38.40
L MIL AA	Excavator for drum moving at Level B	20.00	EA	2	323	445	0	0	768	38.40
L MIL AA	Level B breathing unit, suit, overboots, gloves	4.00	EA	0	0	2,000	0	0	2,000	500.00
	33.10.06. Disposal:									
	Disposal and Transportation of drums to hazardous waste landfill; disposal of debris and soil in solid waste landfill. Assuming that 65% of excavated material will exceed TAGM and go off-site.									
HTW AA	HW packaging, overpacks, 18"dia x 34"H, 16ga stl drum, 55gal, DOT 17C	20.00	EA	0	0	0	1,583	0	1,583	79.13
USR AA	Drums/Paint Cans: Transportation of Drums by dedicated van	1.00	EA	0	0	0	0	546	546	545.70
USR AA	Drums/Paint Cans: Disposal of Drums (Price quoted by Waste Management	20.00	EA	0	0	0	2,862	0	2,862	143.11
USR AA	Extra fees for overpack use	20.00	EA	0	0	0	0	800	800	40.00
USR AA	Debris: Transport and Dispose nonhaz waste, bulk solid,	2470.00	TON	0	0	0	0	77,805	77,805	31.50
HTW AA	Soils: Transport and Dispose nonhaz waste, bulk (Earthwatch, 7/00)	22224	TON	0	0	0	0	700,056	700,056	31.50
	33.26. Demobilization									
TOTAL	Decontaminate Equipment	1.00	EA	0	1,321	5,000	2,500	0	8,821	8821.20
TOTAL	Demobilization	1.00	EA	0	528	2,500	500	0	3,528	3528.48
	33.31. Remedial Design									
B HTW AA	Remedial Design Workplan	1.00	EA	0	27,600	0	2,568	0	30,168	30168.00
B HTW AA	Preliminary Design Report	1.00	EA	0	46,000	0	4,280	0	50,280	50280.00
B HTW AA	Pre-final/Final Design Report, Including O&M Plan, S&A Plan, QA Plan, Contingency Plan, Waste	1.00	EA	0	118,000	0	7,490	0	125,490	125490.00
B HTW AA	Remedial Action Workplan, including QA/QC Plan, H&S Plan	1.00	EA	0	47,500	0	2,675	0	50,175	50175.00
B HTW AA	Project Closeout Plan	1.00	EA	0	48,000	0	2,140	0	50,140	50140.00
TOTAL	SEAD-59			4,816	430,766	46,470	392,250	1,740,467	2,609,953	

	QUANTY	UOM	CONTRACT	DES CONT	ESCALATN	CON CONT	OTHER	CON MGMT	TOTAL COST	UNIT COST
33 Remedial Action										
33.01 Mobilization	1.00	EA	5,290	110	160	1,390	240	570	7,760	7761.84
TOTAL Mobilization	1.00	EA	5,290	110	160	1,390	240	570	7,760	7761.84
33.02 Sampling, & Testing										
33.02.06 Groundwater	1.00	EA	14,500	290	440	3,810	670	1,580	21,290	21291.88
33.02.11 Soil	1.00	EA	215,160	4,300	6,580	56,510	9,890	23,400	315,850	315849.81
33.02.13 Confirmatory-Soil	1.00	EA	188,560	3,770	5,770	49,520	8,670	20,500	276,790	276794.42
TOTAL Sampling, & Testi	1.00	EA	418,230	8,360	12,800	109,850	19,220	45,480	613,940	613936.11
33.03 Site Work										
33.03.02 Clearing and Grub	3.00	ACR	4,400	90	130	1,160	200	480	6,460	2152.58
33.03.08 Survey Remediatio	1.00	ACR	27,870	560	850	7,320	1,280	3,030	40,910	40910.82
33.03.11 Erosion control	1.00	LF	211,850	4,240	6,480	55,640	9,740	23,040	310,980	310983.09
TOTAL Site Work	1.00	EA	244,120	4,880	7,470	64,120	11,220	26,540	358,350	358351.66
33.04 Fencing	1.00	EA	63,630	1,270	1,950	16,710	2,920	6,920	93,400	93400.60
33.05 Wastewater										
33.05. 1 Wastewater	1.00	EA	22,150	440	680	5,820	1,020	2,410	32,510	32508.19
TOTAL Wastewater	1.00	EA	22,150	440	680	5,820	1,020	2,410	32,510	32508.19
33.07 Air Stripping	1.00	EA	19,390	390	590	5,090	890	2,110	28,470	28466.90
33.10 Soil Remediation										
33.10.02 Sitework - Soils	1.00	EA	1,302,820	26,060	39,870	342,190	59,880	141,670	1,912,480	1912480.17
33.10.04 Drum Removal	1.00	EA	4,880	100	150	1,280	220	530	7,170	7170.29
33.10.06 Disposal:	1.00	EA	1,082,520	21,650	33,130	284,320	49,760	117,710	1,589,090	1589086.86
TOTAL Soil Remediation	1.00	EA	2,390,230	47,800	73,140	627,790	109,860	259,910	3,508,740	3508737.32
33.26 Demobilization										
33.26.04 Decontaminate Equ	1.00	EA	12,190	240	370	3,200	560	1,330	17,890	17887.61
33.26.06 Demobilization	1.00	EA	4,870	100	150	1,280	220	530	7,160	7155.04
TOTAL Demobilization	1.00	EA	17,060	340	520	4,480	780	1,860	25,040	25042.66

	QUANTY UOM	CONTRACT	DES CONT	ESCALATN	CON CONT	OTHER	CON MGMT	TOTAL COST	UNIT COST
33.31 Remedial Design	1.00 EA	423,050	8,460	12,950	111,110	19,450	46,000	621,020	621019.20
TOTAL Remedial Action	1.00 EA	3,603,130	72,060	110,260	946,360	165,610	391,790	5,289,220	5289224.48

SEAD-71
EXCAVATION/OFF-SITE DISPOSAL

Designed By: Parsons ES
Estimated By: Parsons ES

Prepared By: Parsons ES

Preparation Date: 02/28/02
Effective Date of Pricing: 10/03/96
Est Construction Time: 200 Days

Sales Tax: 7.0%

SUMMARY REPORTS SUMMARY PAGE

DETAILED ESTIMATE DETAIL PAGE

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

PROJECT BREAKDOWN:

The estimate is structured as follows and uses a 2 digit number at each level. The 2 digit numbers for the first 3 title levels are taken from the HTRW Remedial Action Work Breakdown Structure. The 2 digit numbers for the remaining title levels are user defined. The detail items are at LEVEL 6.

LEVEL 1 - WBS Level 1 (Account)
LEVEL 2 - WBS Level 2 (System)
LEVEL 3 - WBS Level 3 (Subsystem)
LEVEL 4 - User Defined (Assembly Category or Other)
LEVEL 5 - User Defined (Assembly or Other)

PROJECT DESCRIPTION:

The following is a summary of the activities that are presently included in Alternative 1.

Off-Site Disposal: Excavate/Off-site Disposal
- Mobilize, site prep, clear/grub, erosion control, and survey
- Excavate and screen out debris.
- Dispose of screened debris.
- Transport soils >TCLP for disposal at off-site haz. waste facility.
- Transport remaining excavated soil to an off-site landfill or to SEAD-59.
- Backfill excavation with clean fill.
- Cover with topsoil and seed.

PRODUCTIVITY:

Productivity, as a baseline and as taken from the Unit Price Book (UPB) Database, assumes a non-contaminated working environment with no level of protection productivity reduction factors. When required, productivity for appropriate activities will be adjusted for this project as follows:

1. Level of Protection A - Productivity ___%
2. Level of Protection B - Productivity ___%
3. Level of Protection C - Productivity ___%
4. Level of Protection D - Productivity 85%.

All activities are conducted in Level of Protection D.

The following daily time breakdown was assumed.

	Level A	Level B	Level C	Level D
Availiable Time (minutes)	480	480	480	480
Non-Productive Time (minutes):				
Safety meetings	20	20	10	10
Suit-up/off	60	60	40	10
Air tank change	160	20	0	0
*Breaks	60	60	40	30
Cleanup/decontamination	20	20	20	20
Productive Time (minutes)	160	300	370	410
Productivity:	160/480 X100%	300/480 X100%	370/480 X100%	410/480 X100%
	33%	63%	77%	85%
Example:				
Normal Production Rate (CY/HR)	250	250	250	250
X Productivity	.33	.63	.77	.85
=Reduced Production Rate(CY/HR)	83	158	193	213
* Break time ranges (minutes)	60-140	60-140	40-140	30-70

The following list are the areas where there is the biggest potential for changes in cost due to uncertainties:

The volume of material requiring stabilization could vary depending on the TCLP test results.

Contractor costs are calculated as a percentage of running total as
- 5 % for field office support
- 15 % for home office support
- 10 % for profit
- 4 %for bond

Owner's cost are calculated as a percentage of running total as
- 2 % for design contingency
- 3 % for escalation
- 25 % for construction contingency
- 3.5 % for other costs
- 8 % for construction management

OTHER GOVERNMENT COSTS:

Other Government Costs consist of:

*Engineering and Design During Construction (EDC)	1.5%
As-Builts	0.5%
Operation and Maintenance (O&M) Manuals	0.5%
Laboratory Quality Assurance	1.0%

Total, use	3.5%

33.01. Mobilization	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
33. Remedial Action									
33.01. Mobilization									
USR AA Mobilization	1.00	EA	0	793	2,500	535	0	3,828	3827.72
33.02. Sampling, & Testing									
33.02.11. Soil									
For Disposal: 8900 cy x 1.40 = 12,460 cy/150 = 83 samples x 1.2 = 100 samples									
HTW AA For Disposal: TCLP, volatile organics (SW-846 Methods 1311&8240), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy)	10.00	EA	0	0	0	0	1,200	1,200	120.00
AFH AA For Disposal: TCLP-SVOCs (SW-846 Methods 1311 & 8270A), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy)	10.00	EA	0	0	0	0	2,300	2,300	230.00
AFH AA For Disposal: TCLP - Metals (SW-846 Methods 1311 & 6010 & 7470), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy)	10.00	EA	0	0	0	0	1,200	1,200	120.00
33.02.12. Confirmatory-Soil									
HTW AA Confirmatory: NYSDEC CLP, volatile organics, soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall adn floor or excavation.	25.00	EA	0	0	0	0	4,375	4,375	175.00
AFH AA Confirmatory: NYSDEC CLP-SVOCs , soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall and floor of excavation.	25.00	EA	0	0	0	0	9,250	9,250	370.00
AFH AA Confirmatory: NYSDEC CLP TAL - Metals , soil (Severn Trent	25.00	EA	0	0	0	0	3,875	3,875	155.00
33.03. Site Work									
33.03.02. Clearing and Grubbing									
AF AA Clearing, brush w/dozer & brush rake, light brush	2.00	ACR	32	865	1,258	0	0	2,123	1061.54
33.03.08. Survey Remediation Area									
Survey remediation area									
USR AA Survey remediation area	10.00	DAY	0	15,000	2,500	2,675	0	20,175	2017.50

33. Remedial Action

			33.03. Site Work	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
			33.03.11. Erosion control									
B	MIL	AA	Silt Fence: Installation and materials high, polypropylene	16000	LF	3,360	80,000	8,000	25,680	0	113,680	7.11
B	HTW	AA	Hay bales - stalked	16000	LF	5	2,720	0	17,120	0	19,840	1.24
B	MIL	AA	Maintain silt fence and remove	16000	LF	107	2,720	0	17,120	0	19,840	1.24
			33.04. Fencing									
	MIL		Fence, CL, double, 24' W, indl, gates, swing, 6' high	1.00	EA	0	0	0	435	0	435	435.38
	MIL		Fence, CL, set in conc, 6' H, indl, corner post, galv stl, 4" OD	4.00	EA	2	55	9	295	0	358	89.48
	MIL		Fence, CL scty, std FE-6, 6' high, no gates/signs	1600.00	LF	77	2,256	0	31,877	0	34,133	21.33
	MIL		Site dml, chain link fence, remove & salvage for reuse	1600.00	LF	83	2,080	0	0	0	2,080	1.30
			33.10. Soil Remediation									
			33.10.02. Sitework - Soils									
			All fill, topsoil, and seeding items for soil remediation are included in the Sitework - Soils.									
L	MIL	AA	Excavate, screen, and stockpile (volumes used for estimate are 30% greater for expansion and 10% greater for contingency)	1231.00	CY	109	0	0	0	24,620	24,620	20.00
	USR	AA	Plastic sheeting for ground: 6mil polyethylene liner (2500 sf per pile	20525	SF	0	0	0	1,757	0	1,757	0.09
	USR	AA	Cover stockpiles w/ plastic sheeting: Plastic sheeting: 6mil polyethylene liner (1000sf / roll; 1 roll = $75)	20525	SF	0	0	0	1,757	0	1,757	0.09
	MIL	AA	Loam or topsoil, furnish & place, imported, 6" deep	354.00	CY	31	945	492	6,905	0	8,342	23.57
	USR	AA	Common fill (6") - Material for Backfill, includes cost of material (bank sand) and delivery (DeWitt 1999)	1015.00	TON	0	0	0	4,724	0	4,724	4.65
	AF	AA	Fill, spread borrow w/dozer	1137.00	CY	14	409	739	0	0	1,148	1.01
	AF		Compaction, steel wheel tandem roller, 5 ton	1137.00	CY	8	239	205	0	0	443	0.39
	RSM	AA	Seeding, athletic field mix, 8#/MSFpush spreader	9.60	MSF	10	243	0	427	0	670	69.79

33. Remedial Action

	33.10. Soil Remediation	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
	33.10.04. Transport to SEAD-59									
AF	Hauling, w/loading, 12 CY truck , 5 mile haul, soil	0.01	CY	0	0	0	0	0	0	2.46
	33.10.06. Disposal Assuming that all soils excavated will go off-site for treatment and/or disposal. Assuming that 3% will fail TCLP, 10% is debris, and the remaining 87% is nonhazardous soil.									
HTW AA	Soils: Transport and Dispose nonhaz waste, bulk (Earthwatch, 7/00)	1235.00	TON	0	0	0	0	38,903	38,903	31.50
HTW AA	Soils: Transport and Dispose hazardous waste, bulk (Earthwatch, 7/00)	28.00	TON	0	0	0	0	3,080	3,080	110.00
USR AA	Debris: Transport and Dispose nonhaz waste, bulk solid, (Earthwatch, 7/00)	142.00	TON	0	0	0	0	4,473	4,473	31.50
	33.26. Demobilization									
TOTAL	Decontaminate Equipment	1.00	EA	0	1,321	5,000	2,500	0	8,821	8821.20
TOTAL	Demobilization	1.00	EA	0	528	2,500	500	0	3,528	3528.48
TOTAL	SEAD-71			3,837	110,174	23,202	114,308	93,276	340,960	

	QUANTY	UOM	CONTRACT	DES CONT	ESCALATN	CON CONT	OTHER	CON MGMT	TOTAL COST	UNIT COST
33 Remedial Action										
33.01 Mobilization	1.00	EA	5,290	110	160	1,390	240	570	7,760	7761.84
TOTAL Mobilization	1.00	EA	5,290	110	160	1,390	240	570	7,760	7761.84
33.02 Sampling, & Testing										
33.02.11 Soil	1.00	EA	6,490	130	200	1,710	300	710	9,530	9530.65
33.02.12 Confirmatory-Soil	1.00	EA	24,170	480	740	6,350	1,110	2,630	35,490	35486.46
TOTAL Sampling, & Testi	1.00	EA	30,670	610	940	8,050	1,410	3,330	45,020	45017.11
33.03 Site Work										
33.03.02 Clearing and Grub	2.00	ACR	2,930	60	90	770	130	320	4,310	2152.58
33.03.08 Survey Remediatio	1.00	ACR	27,870	560	850	7,320	1,280	3,030	40,910	40910.82
33.03.11 Erosion control	1.00	LF	211,850	4,240	6,480	55,640	9,740	23,040	310,980	310983.09
TOTAL Site Work	1.00	EA	242,650	4,850	7,430	63,730	11,150	26,390	356,200	356199.08
33.04 Fencing	1.00	EA	37,010	740	1,130	9,720	1,700	4,020	54,320	54324.09
33.10 Soil Remediation										
33.10.02 Sitework - Soils	1.00	EA	59,870	1,200	1,830	15,720	2,750	6,510	87,880	87884.71
33.10.04 Transport to SEAD	1.00	EA	0	0	0	0	0	0	0	0.02
33.10.06 Disposal	1.00	EA	64,170	1,280	1,960	16,850	2,950	6,980	94,200	94202.37
TOTAL Soil Remediation	1.00	EA	124,040	2,480	3,800	32,580	5,700	13,490	182,090	182087.10
33.26 Demobilization										
33.26.04 Decontaminate Equ	1.00	EA	12,190	240	370	3,200	560	1,330	17,890	17887.61
33.26.06 Demobilization	1.00	EA	4,870	100	150	1,280	220	530	7,160	7155.04
TOTAL Demobilization	1.00	EA	17,060	340	520	4,480	780	1,860	25,040	25042.66
TOTAL Remedial Action	1.00	EA	456,710	9,130	13,980	119,960	20,990	49,660	670,430	670431.89

APPENDIX E
Response to Comments

Response to Comments From
United States Environmental Protection Agency (US EPA)

Subject: Draft Action Memorandum for Removal Actions at SEAD-59 and SEAD-71
Seneca Army Depot Activity, Romulus, NY

Comments Dated: August 3, 2001

Date of Comment Response: April 16, 2002

General Comments:

Comment 1: The proposed time-critical removal action is intended by the Army to be the final action for SEAD-59 and 71. However, a time-critical removal action is usually an interim measure not intended to be the final action at a site. To perform this action as a final action for these sites, a more conservative approach, like using TAGMs as cleanup goals, is indicated. As you know, the establishment of cleanup goals based on back calculations of human health risks is a controversial subject that will require a more careful review and discussion from the regulatory agencies, resulting on potential delays that may adversely affect the nature of your proposal. Please note that these sites will still require a proposed remedial action plan (PRAP) and a record of decision (ROD) even after the action is taken at these sites.

Response: Changes have been made to this Action Memorandum and Decision Document to address concerns regarding the role of this removal action in the overall remediation of the site as well as cleanup goals established for the sites. The Army recognizes that the removal action may not be the final remedy for the sites.

Following the completion of the removal action, the Army will assess remaining contaminant concentrations in both soil and groundwater to determine if additional action is required. The Army recognizes that the CERCLA process will need to be completed prior to implementation of the final remedy. The Army's intent in performing a removal action is not to circumvent the RI/FS process. After completion of the removal action, the Army intends on completing the RI/FS process.

The statement in the Decision Document and Action Memorandum "this removal action is intended to be the final remedy for both sites" has been changed to read "this removal action is intended to remove the source of potential risks to human health, the environment and groundwater quality".

The Army acknowledges that establishment of cleanup goals based on back calculations of human health risk is controversial. The Army has reviewed NYSDEC's Technical and Administrative Guidance Memorandum #4046 – Determination of Soil Cleanup Objectives and Cleanup Levels (January 24, 1994). Based on this review and conversations with NYSDEC, the Army has a better

understanding of this guidance document and its requirements in determining cleanup objectives. The goal of the removal action at SEADs-59 and 71 is to meet the cleanup objectives presented in TAGM 4046. The Army will conduct verification sampling to demonstrate the acceptability of the surrounding soil quality after the excavation of debris and soils. The soil samples will be analyzed and the results compared to the soil cleanup goals presented in Tables 1, 2, 3, and 4 of TAGM 4046. The results of the verification sampling will be used to complete the RI/FS process and to determine if additional action is required.

Comment 2. Site-specific clean-up goals for SEAD-59 and SEAD-71 were developed based on the human health risk assessment using a target noncarcinogenic hazard index of 1 and a cancer risk of 1 E-04. EPA guidance (EPA, 1991a) requires a more conservative basis for the development of site-specific clean-up goals using a target noncarcinogenic hazard index of 1 and a target cancer risk of 1 E-06, even for commercial/industrial land uses. Site-specific cleanup goals should be re-calculated using a target cancer risk of 1 E-O6 in order to be adequately protective of human health.

Response: As stated in the Response above, cleanup goals have been revised based on TAGM 4046, which develops general soil cleanup goals based on contaminant concentrations that are protective of human health and groundwater quality.

Comment 3. The selection of Chemicals of Potential Concern (COPCs) for the human health risk assessment was done solely on the basis of a comparison of average site concentrations to two times the average background concentration for inorganics. Organics were retained if they were detected. EPA guidance (EPA, 1989) recommends screening against risk-based levels to focus the risk assessment on the constituents most likely to cause unacceptable risks. Much unnecessary effort was expended determining the risks to such constituents as essential nutrients. It is recommended that this risk-based screening process be utilized in future risk assessments.

Response: The human health and ecological risk assessments, which had been conducted in order to back calculate site-specific cleanup goals for SEAD-59 and SEAD-71, have been removed from the Decision Document. The Decision Document now presents TAGM 4046 as the goal for the removal action. Therefore, most comments from the EPA regarding these risk assessments will not be addressed in these responses.

Comment 4. The procedures for evaluating lead in the human health risk assessment were not performed correctly. It appears that average concentrations were "screened" against EPA's recommended residential screening value of 400 ppm. However, it is not appropriate to screen using average site concentrations. The maximum site concentrations of lead exceed the screening value.

Therefore, a child's exposure to lead should be evaluated by using the average lead in soil concentrations in the IEUBK lead model (EPA, 1994).

In addition, Page 3-55 cites EPA Risk-Based Remediation Goals (RBRGs) for occupational exposure that are apparently presented in the EPA Adult Lead Model Guidance (EPA, 1996). However, these values could not be verified using that reference. If they were calculated, these calculations should be presented. Similarly, Page 3-55 indicates that a site-specific RBRG of 1250 ppm has been selected for the Seneca Army Depot. Please provide rationale and supporting documentation for selection of RBRG.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 5. The dermal pathway was not evaluated for most compounds in the human health risk assessment with the exception of Aroclor 1254. Various EPA Regions have published guidance on using default absorption factors in these risk calculations. For example, EPA Region IV recommends default absorption factors of 1.0% for organics and 0.1% for inorganics. Please provide an explanation for failure to evaluate this pathway.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 6: No toxicological profiles for the human health were provided for the chemicals of concern selected. Toxicological profiles must be provided for any toxicity values not readily available via IRIS or HEAST.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 7. The future industrial worker should be evaluated for risks associated with ingestion of surface soil. Pages 3-18 and 3-19 indicate that this exposure pathway will be evaluated. Please provide an evaluation of this exposure route for this receptor and present the results within the Decision Document.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 8: There are no conclusions presented for the Ecological Risk Assessment (ERA) section of the Decision Document (Section 3.6). In addition, there is no mention of the results of the ERA in the Recommendations section of the Decision Document (Section 4.0). Hazard quotient values were calculated that present the highest potential and significant potential for expected ecological effects using maximum and minimum concentrations, respectively. As the Decision Document is currently written, it is unclear how these areas of contamination, which clearly pose a high potential for adverse ecological effects, will be addressed. If they will be addressed in the removal action, this fact should be specifically stated in both the ERA and the Recommendations sections.

Response: No response will be provided for this comment because the ecological risk assessment has been removed from the report.

Comment 9. The document describes the procedure that will be followed for the SEAD-59 and SEAD- 71 excavations, but omits discussion of how the excavations will be terminated. For example, will excavations terminate based on visual staining or discoloration of soil? Will the termination depth be based on lack of the debris that is anticipated? Will excavation depth be based on PID readings, or on the professional judgment of the field geologist or technician? The justification for termination of excavation depth must be provided in the text.

Response: Agreed. Generally the excavation limits will be determined based on the visual extent of contamination. Excavation will continue until all debris and visually impacted soils have been removed. The process for determining the termination of excavation depths will be presented in the Removal Action Work Plan. This document will be submitted separately at a later date.

Comment 10: A significant omission in this report is collection of confirmation samples from the excavated areas in both SEAD-59 and SEAD-71. Collection of these samples is required because even if the excavated materials are determined to comply with the cleanup goals, the boundaries (i.e., sides and bottom) of the excavation may not, and "clean" soil would be backfilled into a "dirty" hole. Provide the number of confirmation samples that will be collected from each excavation, including QA/QC samples, and the analytes and methods that will be requested for the samples. Also include procedures for maintaining the excavated soil piles and excavated pits on site while awaiting analytical results of the confirmation samples.

Response: The collection of confirmatory samples for the excavation areas will be required as stated in Appendix E of the Decision Document. The specific number of confirmatory samples that will be collected and the requirements for maintenance of the soil piles will be presented in the Removal Action Work Plan to be submitted.

Comment 11. Review of Figures 3-2 and 4-1 of the July 1998 Phase I RI completed for SEAD-59 and SEAD-71 shows that the locations of completed test pits at these two sites do not correspond well with locations of the anomalies that were delineated by the geophysics, allowing for the possibility that areas of waste and debris at both SEADs have not been evaluated. In addition" in previous excavations, when debris, such as drums, was detected in some of the test pits, excavation was halted and no further excavation was completed. Therefore, a larger volume of debris may be encountered at deeper intervals during the removal action than is anticipated in this Action Memorandum. While this document is not meant to serve as a work plan, a contingency plan should be added in the case that additional debris, or debris that does not fit the description of materials excavated to date (i.e., drums labeled as hazardous waste), is excavated. The contingency plan should also provide procedures to be followed if drums, similar to those already encountered in test trenches, are encountered.

Response: Agreed. Text has been added to state that a contingency plan will be developed as part of the Removal Action Work Plan. The contingency plan will provide details on procedures for handling and disposing of additional debris is encountered.

Comment 12. It would serve well for the document to undergo a general editing process, including a spell check. Numerous words, such as "scenario" and "trespasser" are misspelled throughout the entire document, but also, other grammatical and typographical errors were found. This is a recurrent problem with most of the Army's documents for the Seneca Army Depot.

Response: Agreed. The document will be spell checked and edited before being re-issued.

SPECIFIC COMMENTS

Comment 13. Section 2.1, 3rd ¶, Page 2-1: This paragraph seems outdated. SEDA is not currently used for the purposes stated within this paragraph.

Response: Agreed. The text has been revised.

Comment 14. Section 2.5, Page 2-6: The text in this section indicates that the analytical results of soil gas samples have been included in Appendix A of this document. Appendix A is in fact the June 2001 Decision Document, which contains the soil and groundwater analytical results, but not the soil gas analytical results. Because the results of the soil gas samples are in large part driving the boundaries of removal area at SEAD-59, include this data in the Final Action Memorandum.

Response: Agreed. Soil gas data for SEAD-59 is provided in Figure 2-13 of the Decision Document.

Comment 15. Section 2.5.4.1, Soil Data, Page 2-9 and 2-10: The text that summarizes the impacts to soil at SEAD-59 mentions polynuclear aromatic hydrocarbons (PAHs) and BTEX detections, but omits the fact that 16 metals and six other VOCs were also detected at concentrations exceeding the criteria, and that aldehyde was detected, for which no TAGM value exists. Include the above information in this paragraph.

Response: Agreed. The text has been revised.

Comment 16. Section 2.5.4.1, Groundwater Data, Page 2-10: The first paragraph omits mention of aluminum as a chemical of concern at the site. This compound was originally identified at concentrations exceeding applicable criteria at SEAD-59 in the Draft Final Project Scoping Plan (Parsons, February 1997). In addition, specify that the "one SVOC" that was reported above TAGM values was phenol.

Response: Agreed. The text has been revised as requested.

Comment 17. Section 5.1.2, SEAD-59, Page 5-2: The text indicates that excavated soils will be placed in piles of 150 cubic yards (each) and sampled prior to either backfilling and regrading, disposal in a Subtitle D landfill, or treatment and subsequent disposal. There are several issues associated with this statement:

- The text indicates that disposal soil samples will be analyzed for metals, pesticides, and semivolatile organic compounds (SVOCs). However, volatile organic compounds (VOCs) should also be included in this sampling, because, as noted in multiple background documents, several VOCs, including BTEX compounds, have been detected in samples from this site.

- The number of confirmation samples that will be collected per 150 cubic yard pile should be specified. Similarly, one TCLP sample is required per 150 cubic yard (as indicated in the Decision Document), and this should be added to this section.

- The Decision Document indicates that approximately 11% of the SEAD-59 soils are expected to exceed cleanup goals. Indicate this in Section 5.1.2, as well as the *possibility* that some soils will also exceed the TCLP limits, and include text similar to that in the SEAD- 71 section that outlines treatment and disposal plan for these hazardous wastes.

Response: Agreed. The following changes have been made to the text:

- disposal soil samples will also be analyzed for VOCs;
- one confirmatory sample will be collected per 150 cubic yard pile;
- one TCLP sample will be collected at a frequency of one sample every 150 cubic yards;
- the volume of soil exceeding the revised cleanup goals (revised to 65%) will be added to Section 5.1.2; and
- a statement that there is a possibility that some soils from SEAD-59 will also exceed the TCLP limits has been added.

A confirmatory sampling plan will be provided in the Removal Action Work Plan to be submitted at a later date.

Comment 18. Section 5.1.2, SEAD-59, Page 5-3: There is no information concerning trenching and shoring or dewatering activities which may be required for the removal action that will be carried out at SEAD-71. This information should be provided.

Response: This information will be provided in the Removal Action Work Plan.

Comment 19. Section 5.1.2, SEAD-71, Page 5-3: In addition to the applicable items in Specific Comment #5, there is a discrepancy in the estimated excavation volume for this SEAD. Figure 5-2 estimates the total excavated volume as 871 cubic yards. However, the text on Page 5-2 indicates that the excavated volume of soil is much larger than that. Based on Parson's assessment that 3% of the excavated soils from SEAD-71 would equal 275 cubic yards, the total excavated volume would be 9166 cubic yards. Please correct this discrepancy either in the text or on Figure 5-2, or both.

Response: Agreed. The text has been corrected indicating that approximately 3%, or 26 cy, are expected to exceed TCLP limits.

Comment 20. Section 5.1.7, Page 5-4: Please provide specific information regarding this off site treatment option. What kind of treatment technology would be used, duration of treatment, long-term effectiveness and permanence, residual toxicity, etc.?

Response: This information will be provided in the Removal Action Work Plan.

Comment 21. Section 5.2, Page 5-9: Please note that TAGMs are "To Be Considered" guidelines.

Response: Agreed. The text has been revised.

Comment 22. Section 5.2.3, Page 5-15: The reference for the OSHA standard for occupational noise exposure should be changed to 29 CFR 1910.95. It is incorrectly listed as 29 CFR 1910.50.

Response: Agreed. The text has been revised.

Comment 23. Figure 5-1: Revise the line types used on this figure to better distinguish the " Area to be Remediated" from soil gas concentrations of 20 ppm or greater. These two lines appear the same on a black-and-white copy.

Response: Agreed. The figure has been revised.

Comment 24 Figure 5-2: The location of test pit TP71 -1 has been omitted from this figure. Please include this item, as well as the estimated excavation depths of excavation Areas A through E.

Response: Agreed. The figure has been revised.

Comment 25. Section 5.4, Page 5-17: Please note that a public notice for time-critical removal is required within 60 days of the action start date.

Response: Agreed. The text has been revised.

Comment 26. Decision Document, Section 3.0 Page 3-1: This section contains a reference to Figure 1-2. There is no Figure 1-2 found in either the Action Memorandum section or the Decision Document section of this document. Please verify that the appropriate reference is provided.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 27. Decision Document, Section 3.2, Page 3-3: The data usability criteria are referenced in this section. Additional discussion pertaining to data usability was described as having been included in other reports which pertain to the Seneca Army Depot Activity. This document should contain information pertaining to specifics of data validation and usability which apply to SEAD-59 and SEAD-71.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 28 Decision Document, Section 3.3.5.1, Page 3-18: The document (USEPA, 1993A) referenced in this section could not be located in order to verify the exposure parameters used for RME and CT evaluations. Please confirm the exact title and date for this document.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 29. Decision Document, Section 3.5.3, Page 3-54: The reference to the final lead contamination rule is cited as "40 CFR 475". The correct citation is "40 CFR 745". Please correct this error throughout the text.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 30. Decision Document, Table 3.4-1, Toxicity Values: The following specific comments refer to the toxicity values listed in Table 3.4-1:

- The oral cancer slope factor listed for benzene could not be verified.
- The inhalation RFD listed for methyl chloride is "NA." However, there *is* an inhalation RFC for methyl chloride listed in IRIS. Please verify that the most current information was referenced for generation of the toxicity value table.
- There is no oral RFD listed for trichloroethene, yet the reference indicates that one was provided by EPA. Please verify that the most current information has been utilized for generation of the toxicity value table.
- The oral RFD values listed for 2-methylnaphthalene and naphthalene could not be verified.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 31. Decision Document, Table 3.3-1: Please confirm that references provided in the footnotes to this table are correct. The Exposure Factors Handbook Update should be consistently referenced as an EPA, 1997 document. References found under the Future Day Care Center Worker, Child Trespasser and Site Worker list the document as a 1996 publication.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 32. Decision Document, Table 3.3-1: The ingestion rate for the Future Day Care Center Worker is referenced to the EPA Dermal Exposure Assessment document. Please verify the appropriate reference for this exposure parameter.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 33. Decision Document, Table 3.3-2: The average PMIO concentration from measurements that were used in the calculations of risk from inhalation of airborne particulate could not be verified. The measured PM 10 concentration of 17 micrograms per cubic meter of air used in Appendices A and B could not be verified.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 34. Decision Document, Table 3.5-3: The residential lifetime cancer risk from dermal contact to groundwater should be 2E-05. Please verify that the appropriate number of significant figures is utilized.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 35. Decision Document, Table 3.5-4: The residential lifetime cancer risk under the CTC scenario should be 3E-04 for the ingestion of soil pathway. Please verify that the correct figures are utilized.

Response: No response will be provided for this comment because the human health risk assessment has been removed from the report.

Comment 36. Decision Document, Section 3.6.1, Page 3-60: This section presents the objectives and an overview of the ERA. The last sentence of this section discusses how HQ values between 1 and 10 are interpreted as having some potential for adverse effects, HQ values between 10 and 100 indicate a significant potential for adverse effects and HQ values greater than 100 indicate adverse effects can be expected. It should be stated in this section whether this is a general rule that was determined by the cleanup team, or whether this information was obtained from the literature.

Response: No response will be provided for this comment because the ecological risk assessment has been removed from the report.

Comment 37. Decision Document, Section 3.6.2.1, Page 3-60: This section discusses the identification of ecological COPCs. The second sentence of this section states that screening analyses designed to reduce the list of COPCs were not performed for this ERA. It is unclear why a screening-level analysis was not performed. A screening-level ecological risk assessment can greatly reduce the list of COPCs that needs to be evaluated in a baseline risk assessment saving significant amounts of time and resources. Justification should be provided regarding why a screening-level analysis was not performed.

Response: No response will be provided for this comment because the ecological risk assessment has been removed from the report.

Comment 38. Decision Document, Section 3.6.2.4, Page 3-64: This section discusses ecological assessment endpoints. It is stated in the third full sentence on Page 3-64 that mechanisms of toxicity are evaluated conceptually in the analysis plan in Section 3.6.2.3.2. However, Section 3.6.2.3 .2 actually discusses fate and transport, not mechanisms of toxicity. This discrepancy should be addressed.

Response: No response will be provided for this comment because the ecological risk assessment has been removed from the report.

Comment 39. Decision Document, Section 3.6.2.6, Page 3-71: This section discusses the analysis plan for the ERA. It is stated in this section that the analysis plan includes measures of effect, measures of exposure, and measures of ecosystem and receptor characteristics. A citation should be provided for this information since this is not the approach taken in the *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (EPA, 1997b).

Response: No response will be provided for this comment because the ecological risk assessment has been removed from the report.

Comment 40. Decision Document, Section 3.6.4.1, Page 3-94: The table presented on page 3-94 provides all of the NOAEL HQ values greater than one for constituents in shallow soil at SEAD-59. It is unclear why pyrene is included in this table since none of the HQ values calculated for pyrene are greater than one. Data for pyrene should be removed from this table.

Response: No response will be provided for this comment because the ecological risk assessment has been removed from the report.

Comment 41. Decision Document, Tables 3.6-6a and 3.6-6B and tables on Pages 3-94 and 3-97: All of these tables require legends, because the dashes or the bolded numbers signify are undefined. Please revise to include a legend.

Response: No response will be provided for this comment because the ecological risk assessment has been removed from the report.

Comment 42. Decision Document, Appendix E, Page E-2: This page is missing from the document.

Response: The page has been added.

Comment 43. Decision Document, Addendix E, Page E-3: The text indicates that some soil from SEAD-59 is expected to have Aroclor-1254 concentrations exceeding cleanup goals. The basis for this statement is not clear, because Aroclor-1254 was not detected in soil samples at concentrations exceeding the criteria. Please evaluate and modify, if required.

Response: Agreed. Aroclor-1254 has been removed from the text.

Comment 44. Decision Document, Operation and Maintenance, Page E-3: While the selection of the removal action for remediation of SEADs 59 and 71 should not entail major O&M costs, minor costs such as the maintenance of the vegetative cover at each SEAD should be included in this Cost Estimate.

Response: Agreed. O&M costs have been added for maintenance of the vegetative cover as necessary.

Response to Comments from New York State Department of Environmental Conservation
Division of Environmental Remediation

Subject: Draft Action Memorandum Fill Area West of Building 135 (SEAD-59)
and the Alleged Paint Disposal Area (SEAD-71)
Seneca Army Depot, Site ID No. 850006

Comments Dated: July 31, 2001

Date of Comment Response: April 16, 2002

General Comments:

This is in reference to the above stated document dated June 2001 that was received on July 27, 2001. You have not responded to the Department's April 19, 2001 letter which outlines several concerns that have not been addressed in this draft.

As requested in the Department's Apri119, 2001 letter the NYSDEC has yet to receive a response to state comments made on October 2, 1998 on the Draft Phase 1 Remedial Investigation. Without a satisfactory response to these comments, NYSDEC cannot be in agreement that this time critical removal action proposal is appropriate. While the Army's desire to remove environmental threats from this site is laudable, we suggest that a response to outstanding concerns will facilitate agreement between the agencies on the work proposed.

The Army appears to confuse the purpose of a removal action with those of a remedial response. A removal action is taken to eliminate a substantial, imminent threat at a site while a more complete and thorough study and analysis (i.e. Rl/FS) is taken to complete the entire remedial response at a site. The statement "this removal action is intended to be the final remedy for both sites," that was made in your April 11, 2001 letter is again repeated in this draft after the Department stated in our April 19, 2001 that the statement is premature. Regardless of a removal action, only a completed remedial investigation/feasibility study shall determine whether further remediation is necessary. Therefore, the statement should be removed from the text.

As stipulated in the Department's April 19, 2001 letter, "your proposal for developing site cleanup goals based on the reasonable maximum exposure (RME) is unacceptable for it would not recognize any synergistic effects." The cleanup goals presented in this document on Table 5.3-1 are based on RME and are therefore unacceptable. As stated in our letter, the proposed cleanup goals should be developed based on TAGM 4046. The Department finds it a quandary that the Army uses TAGM 4046 as a means to justify the declaration of a Time Critical Removal Action however the draft never recognizes TAGM 4046 as a Chemical -Specific ARAR in Section 5.2.1 or a To Be Considered (TBC). Reconciliation is necessary. Again, we point out that the Army's intent to develop site cleanup goals based solely upon human health risk calculations is in conflict with state regulation 6 NYCRR Part 375.

In Section 1.2, purpose, Scope and Objectives, the Army states that this "time critical removal action, which will be completed as a result or this Action Memorandum, is intended to incorporate the necessary measure for removal site closeout." Presented later in the document, the Army proposes to install four additional monitoring wells at SEAD 59 and an unspecified amount of monitoring wells at SEAD 71 with site groundwater monitoring on a semi-annual basis, which is to be reviewed after five years. In addition, the Army proposes to apply deed restrictions to ensure that the future land use remains as Planned Industrial Development. As discussed above, the Army appears to confuse the purpose of a removal action with those of a remedial response. The need and extent of items such as additional monitoring wells, groundwater monitoring plans, and deed restrictions will be developed through completion of the RI/FS process. It appears inappropriate to propose these actions as a removal action, and much more so in a proposed "time critical removal action."

Response:

NYSDEC has expressed several concerns regarding unresolved comments, the use of a removal action as a final remedy at SEADs-59 and 71 and cleanup goals developed outside of TAGM 4046. The Army's responses are as follows:

Outstanding Comments

Regarding outstanding responses to comments, the Army has recently submitted responses to comments from NYSDEC dated October 2, 1998 on the Draft Phase I RI. These responses were submitted on November 7, 2001.

Removal Action as Final Remedy

Several changes have been made to this Action Memorandum and Decision Document to address NYSDEC's concerns regarding the role of this removal action in the overall remediation of the site as well as cleanup goals established for the site. The Army recognizes that the removal action may not be the final remedy for the site.

Following the completion of the removal action, the Army will assess remaining contaminant concentrations in both soil and groundwater to determine if additional action is required. The Army recognizes that the CERCLA process will need to be completed prior to implementation of the final remedy. The Army's intent in performing a removal action is not to circumvent the RI/FS process. Please note that a Phase I RI has already been completed and an evaluation of additional required remedial measures, if any, will be completed once the removal action is complete. After completion of the removal action, the Army intends on completing the RI/FS process.

The statement "this removal action is intended to be the final remedy for both sites" has been changed to read "this removal action is intended to remove the source of potential risks to human health, the environment and groundwater quality". The revised text will state that further actions to address

contaminated groundwater, if any, will be evaluated.

Cleanup Goals

The Army acknowledges NYSDEC's rejection of cleanup goals that are based solely on human health risk calculations. The Army has reviewed NYSDEC's Technical and Administrative Guidance Memorandum #4046 – Determination of Soil Cleanup Objectives and Cleanup Levels (January 24, 1994). Based on this review and conversations with NYSDEC, the Army has a better understanding of this guidance document and its requirements in determining cleanup objectives. The goal of the removal action at SEADs-59 and 71 is to meet the cleanup objectives presented in TAGM 4046. The Army will conduct verification sampling to demonstrate the acceptability of the surrounding soil quality after the excavation of debris and soils. The soil samples will be analyzed and the results compared to the soil cleanup goals presented in Tables 1, 2, 3, and 4 of TAGM 4046. The results of the verification sampling will be used to complete the RI/FS process and to determine if additional action is required.

The Army recognizes that NYSDEC feels it is premature to incorporate a discussion of land use controls in the Action Memorandum and Decision Documents. Therefore, the actual role of land use controls (at SEADs-59 and 71) will be presented in future documents.

In addition, the discussion of additional monitoring wells and the groundwater monitoring plan has been removed from the Action Memorandum and Decision Document. A groundwater monitoring program will be developed during the completion of the RI/FS process after completion of the removal action.

Specific Comments on Draft Action Memorandum:

Comment 1. Page TOC-8. List of Acronyms: TAGM is an acronym for Technical and Administrative Guidance Memorandum not "Chemical and Administrative Guidance Memorandum."

Response: Agreed. The text has been revised.

Comment 2. Page 1-4. Section 1.4. Site Contacts: The NYSDEC project manager's address has changed. Please replace with the following:

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Eastern Remedial Action
11 th Floor, 625 Broadway
Albany. NY 12233-7015

Response: Agreed. The text has been revised.

Comment 3. Page 3-5 Section 3.4, Additional Justification for Removal Action: It states that "the uncertainty of the contents of the buried items that may remain in the disposal area and at geophysical anomalies and contamination in soils and groundwater are considered justification for performing a removal action at both sites." Two sentences later it states that "goals for allowable concentrations will be developed, based upon existing conditions, and will be used as the basis for returning soil, segregated from the buried items, to the fill area and areas south of the road." Please clarify how the Army plans on developing cleanup goals based on existing conditions when the contents of the drums are unknown.

Response: As stated above, the cleanup goals for this removal action are those presented in NYSDEC's TAGM 4046. Statements regarding the development of goals have been removed from the text.

Comment 4. Pages 5-1-2, Section 5.1.2, Proposed Action Description: The excavated soils should be piled so that surface soils and bottom soils are kept separate. The statement that "it is assumed that NYCRR Part 360 will no longer apply because the fill area is being removed" is false. If the Army desires to backfill the "soils with concentrations of metals, pesticides, and SVOCs below the cleanup goals" that were developed based on human health risk calculations yet exhibit residual contamination, then NYCRR Part 360 may be applicable as the contaminated soil may be considered a solid waste. Please note that no backfilling should occur without the prior written approval from the NYSDEC.

Response: In general, only those soils that pose no risk to human health or groundwater quality based on site-specific exposures will be used as backfill. The goal is to only backfill soils which meet the requirements of TAGM 4046. The Army acknowledges that NYSDEC requires prior approval before backfilling.

Comment 5. Page 5-3, Section 5.1.3, Contribution to Remedial Performance: The statement "this work should eliminate the potential for future remedial actions" should be removed from the text. See General Comments.

Response: Agreed. See General Response.

Specific Comments on Draft Decision Document:

Comment 6. The Draft Decision Document, which supports the Draft Action Memorandum repeats much of what is stated in the Draft Action Memorandum, section for section. Therefore the above said comments are applicable here.

Response: Agreed. The responses will be applied to both documents.

Comment 7. Page TOC-8, Abbreviations and Acronyms: Please correct each for micrograms per kilogram and micrograms per liter.

Response: Agreed. The text has been revised.

Comment 8. Page E-2, Assumptions: The first bulleted item states that "clearing and grubbing is necessary to perform soil capping, soil excavation, sediment excavation, and stockpiling." Nowhere in the document does it reference sediments, however the description of SEAD 59 includes drainage swales (that are not depicted in any of the site figures). Please reconcile.

Response: Agreed. The statement was inadvertent. The first bulleted item will be revised to state that "clearing and grubbing is necessary to perform soil capping, soil excavation, and stockpiling".

Comment 9. Page E-3, Assumptions: In the second to last bulleted item, it states that "based on the soil data from SEAD 59, it was assumed that 11% of the excavated soil will have PAH, Aroclor-1254, or metals concentrations above Risk Based Clean up Goals." Nowhere in the document does it indicate that PCBs were detected at elevated concentrations nor does it state that soils with PCBs above the cleanup goals will be disposed off-site. Please reconcile.

Response: Agreed. Aroclor-1254 has been removed from the referenced sentence on page E-3 since PCBs are not present at the site at elevated concentrations.

General Comment: Although your letter of April 11, 2001 states that a public meeting will be scheduled when the agency comments are received on the above said document, the Department suggests that the Army contact the regulatory agencies to discuss the proposal and its appropriateness.

Response: Agreed. The Army will contact the regulatory agencies to discuss the referenced proposal.

RESPONSE TO COMMENTS
from
State of New York State Department of Health

Draft Action Memorandum
Fill Area West of Building 135 (SEAD-59) and the Alleged Paint Disposal Area (SEAD-71)
Seneca Army Depot, Site ID No. 850006

Comments Dated August 1, 2001
Comments by Daniel Geraghty

Date of Comment Response: April 16, 2002

Comment by NYSDOH: I have reviewed the draft Action Memorandum for Removal Actions at SWMUs SEAD-59 and SEAD- 71 of the Seneca Army Depot located in Romulus, Seneca County.

In letters to your agency dated September 4, 1998 and March 23, 1999, the New York State Department of Health expressed the opinion that the full extent of contamination at these sites had not been defined. In the March 23, 1999 letter I suggest that a non-time critical removal action be delayed until the question of extent has been answered. However, with the increasing presence of people on the base due to reuse activities I feel it is appropriate at this time to proceed with removal of the known contamination. As always, the NYSDOH supports efforts to reduce or eliminate exposure to environmental contaminants.

However, the final remedy for the site will be selected after completion of the interim remedial measure (IRM) and an evaluation of the remaining contamination. Upon completion of the IRM a final remedy will be selected after a feasibility study that takes into consideration factors such as technical practicality, cost, permanence, community acceptance and effectiveness of the remedy against potential future uses of the site and compliance to New York State standards, criteria, and guidelines.

Since the stated focus of this interim remedial measure is the removal of grossly contaminated material such as drums, paint cans, and other containers we consider the soil chemical concentrations listed in Table 4.3-1 not to be relevant for this action.

Due to the volume of soils to be excavated and the proximity to working areas of the depot it will be necessary to closely follow the guidance found in the enclosed community air monitoring plan (CAMP). Please have the Army forward a copy of the interim remedial project health and safety plan including the CAMP for my review.

Response: Several changes have been made to the draft Action Memorandum/Decision Document to address NYSDEC's concern regarding the role of this removal action in the overall remediation of the site as well as cleanup goals established for the sites. The Army recognizes that the removal action may not be the final remedy for the site. Following completion of the removal action, the Army will assess the

remaining contaminant concentrations in both soil and groundwater to determine if additional action is required. The Army recognizes that the CERCLA process will need to be completed prior to implementation of the final remedy. After completion of the removal action, the Army intends on completing the RI/FS process.

The Army will conduct verification sampling to demonstrate the acceptability of the surrounding soil quality after the excavation of the debris and soils. The soil samples will be analyzed and the results compared to the soil cleanup goals presented in Tables 1, 2, 3, and 4 of NYSDEC's TAGM #4046. The results of the verification sampling will be used to complete the RI/FS process and to determine if additional action is required.

The attached CAMP will be included in the Removal Action Work Plan.

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

Subject: Final Action Memorandum for Removal Actions at SWMUs SEAD-59 and SEAD-71
Seneca Army Depot
Romulus, New York

Comments Dated: May 30, 2002

Date of Comment Response: June 27, 2002

Army's Response to Comments:

The Army states that they "acknowledge that NYSDEC requires prior approval before backfilling," however the text was not revised to reflect this. Please revise accordingly.

Response: Agreed. The referenced statement has been added to the document.

General Comments:

Comment 1: It is unclear why this document is labeled a "Final" document since the State has not received a revised "Draft Final" prior to the submission of this document. However, regardless of this document being titled "Final", the document will require revision to address comments detailed below before the state can provide concurrence.

Response 1: Acknowledged. Revisions will be made to the document based on comments from NYSDEC. The revised document will be considered "Final".

Comment 2: The title of this document should denote that it is proposing time-critical removal actions, not simply removal actions.

Response 2: Agreed. The title of the document has been modified to incorporate the phrase "time-critical."

Comment 3: Public participation during the remedial process at inactive hazardous waste sites is valuable and necessary. Although it is understood that public participation in the form of public meetings is strictly not required prior to the initiation of field work for a Time-Critical Removal Action, it is questionable whether current circumstances at these sites warrant elimination of this important aspect of the remedial process prior to executing this planned effort. While a desire to remove environmental contamination on this property as rapidly as possible is laudable, it is not clear what information on the environmental condition of this property has been newly discovered which demands a course of action that does not allow for some degree of public participation at this point.

Because of our understanding that the data which is driving these actions is several years old, a delay of several additional weeks to allow for public participation in the process seems acceptable.

Response 3: The public was briefed of the proposed time-critical removal actions during a Restoration Advisory Board Meeting that was held on July 17, 2001. There has been no significant information identified pertinent to the environmental condition of the sites since the public briefing was held.

The Army needs to move forward expeditiously with the proposed actions to lessen, and hopefully eliminate, potential threats to the environment and surrounding populations from sources of contamination that have been identified and disclosed to all parties. Successful completion of the removal actions will also provide valuable data that may be used to complete the required remedial investigations at the sites.

Comment 4: To remain consistent with the NCP and the Army's declaration of a TCRA, the Army should follow NCP 300.415 (m)(2), which calls for the publishing of a notice of availability, which could note that this document will be discussed at the RAB meeting, a public comment period, and a written response to comments. A public presentation might be helpful as well (see General Comment #2). The Department requests a copy of the publishing notice of availability, when it is made available.

Response 4: See response to General Comment 3.

Comment 5: Perhaps it would be more expedient for the Army to perform Phase II of the RI (i.e., completion of the groundwater investigation and sediment and surface water sampling) while mobilized for the removal action.

Response 5: The Army plans to install three additional groundwater monitoring wells at the sites during the performance of the removal actions. Groundwater, sediment, and surface water sampling will be performed as a separate effort following the removal actions, as required. As stated in the previous response letters, the Army will assess the remaining contaminant concentrations following the removal actions to determine if additional action or investigation is required at the sites.

Specific Comments – Action Memorandum:

Comment 1: Page 2-1, Section 2.1, Base Description and History: Please revise the statement "Closure of the Depot was scheduled for September 30, 2001," to provide the actual closure date.

Response 1: Agreed. The text has been revised to state that termination of the military presence at the Depot was in July 2000.

Comment 2: Page 2-9, Section 2.5.4, Summary of Affected Media: For Groundwater Data, the document should indicate that the investigation is incomplete and therefore the groundwater data is limited. The current text indicates that the groundwater has been fully investigated and the statement that "(G)roundwater at SEAD-71 has not been significantly impacted," is not fully supported.

Response 2: Agreed. The text in the Action Memorandum and the Decision Document has been revised to state that one round of groundwater sampling was conducted at the sites during the ESI field program in 1994. The sampling procedure used at that time was not the EPA Region II low-flow groundwater sampling method and therefore the results may not be representative of the groundwater at the sites due to turbidity in the groundwater samples.

Please see the response to General Comment No. 5 for additional information on future groundwater investigation.

Comment 3: Page 2-11, Section 2.7, Potential for Continued State/Local Response: Clarification of the term "Response" is requested. The "Response" in the title is interpreted as meaning a comment but, in reading the paragraph, it is interpreted that the first sentence "response" means an action by the state/local government or persons. In the last sentence it seems to refer to comments, yet the sentence is contradictory to the first if the meanings of response are the same. Furthermore, is this section referring to *Section 2.6* and therefore is considered a "continued" state/local response?

Response 3: Agreed. The first sentence in the paragraph has been removed. The paragraph now discusses the opportunity for state and local parties to comment.

Comment 4: Page 3-2, Section 3.2, Statutory Authority: The statement that "(S)ince less than 6 months may pass before this removal action begins, this removal action is considered a voluntary, time critical removal action," is contrary to the 2 preceding sentences. A "voluntary, time critical removal action" is not defined in this document nor in the NCP. Please reconcile.

Response 4: Agreed. The final sentence has been revised to state, "Since the removal action should be conducted in less than 6 months, this removal action is considered a time-critical removal action.

Comment 5: Page 5-1, Section 5.1, Proposed Action: It is understood that excavation limits will be based on the visual extent of contamination of both debris and visually contaminated soils. However, it is not understood what "Cleanup verification sampling of soil" means, if the excavation is based on the visual extent. If the verification sampling of soil is to be compared to TAGM 4046 cleanup goals,

then it should be stated as such with the parameters to be tested for listed in the document. In addition, the NYSDOH requests all post-excavation soil samples should be discrete samples and not composite samples.

Response 5: The Army has provided a general plan for the proposed confirmational sampling and analysis in the Action Memorandum (Section 5.1.1) and in the Decision Document (Section 3.3). The plan provides information about the frequency of the sampling, general location of the samples, and the proposed analyses.

In addition, the Army has prepared a Confirmatory Sampling Plan, which has been included in the Action Memorandum/Decision Document in Appendix **X**. This Plan provides more specific details of the proposed confirmational sampling and analysis. Confirmational soil samples will be collected as discrete samples as stated in the Confirmatory Sampling Plan.

Comment 6: Page 5-1, Section 5.1.1, Proposed Action Description: Prior to any backfilling, the Army should send results of confirmatory samples to the regulatory agencies for approval of this material as backfill.

Response 6: Agreed. The Army will provide the results of confirmatory samples to NYSDEC and the EPA for approval of this material as backfill.

Comment 7: Page 5-3, Section 5.1.6, Post-Removal Site Control Activities: The statement that "The Depot is fenced to limit access," is unclear. In Section 3.1, Threats to Public Health or Welfare or the Environment, it states that a TCRA is proposed at both these sites "because of the increased potential for exposure of workers and other re-users now present at the Depot." It is unclear how the Depot fence, which currently does not limit the access of on-site workers and re-users, would serve as a post-removal site control activity to these potentially threatened receptors. Please reconcile.

Response 7: Agreed. The sentence in Section 5.1.6 has been changed to state that there will be no post-removal site control activities.

Comment 8: The document states that "...soils which pose no risk to human health or groundwater quality are to be used as backfill." What criteria will be used to determine risk? Clarification is needed.

Response 8: Agreed. Excavated soil that is not found to contain concentrations of contaminants in excess of NYSDEC TAGM# 4046 criteria will be used as backfill. The text has been revised.

Specific Comments – Decision Document:

Comment 1: Please revise the statement on page 1-4 of the Decision Document regarding that there is unrestricted access to the sites. It is our understanding that this statement is not true due to heightened security measures recently instituted.

Response 1: Disagree. Although security guards are now posted at the entrance to the Depot, visitors and workers may access the Depot as necessary. Workers in those portions of the Depot that have been released to the public and private sectors for reuse under the BRAC process may have access to SEAD-59 and SEAD-71 because both sites are not fenced. The text has been revised to state that there are security guards at the Depot. However, access to the two sites by workers and visitors on site is unrestricted.

Comment 2: A majority of these comments are relevant for both SEAD-59 and SEAD-71, please ensure consistency of approaches taken for both SEADs in both the Action Memorandum and the Decision Document.

Response 2: Acknowledged.

APPENDIX F
Confirmatory Sampling Plan

Confirmatory Sampling
Time-Critical Removal Actions at SEADs 59 & 71

1. Introduction

Confirmatory soil sampling will be conducted at each site where excavations are performed. The goal of the confirmatory sampling is to provide data that verifies that the identified contamination has been removed, and that concentrations of contaminants remaining at the subject site comply with documented cleanup objectives established by the Army. If the results obtained from the analysis of confirmatory soil samples verify that the Army's cleanup objectives have been obtained, no further excavation will be conducted at the subject site. If the analytical results for the confirmatory samples do not verify that the Army's cleanup objectives have been obtained, further excavation may be conducted until such verification is provided.

2. Equipment and Supplies

The following equipment and supplies will be required to complete the confirmatory sampling.

- Field Book and Project Plans
- Sample Labels
- Shipping Labels
- Sample Records
- Shipping Forms
- Chain-of-Custody Forms
- Camera
- Photo-ionization Detector
- Personal Protective Equipment in accordance with the Health and Safety Plan
- Marker stakes, flagging and paint
- Tape Measures
- Decontamination Supplies
- Inert (e.g., stainless steel or Teflon®) sampling equipment
- Hand Auger
- Mixing Bowls
- Pre-cleaned Sample Bottles
- Plastic Sheeting
- Shipping Tape
- Ice Chests and Ice (for sample transport)

3. Number, Frequency and Location of Confirmatory Sampling

In general, confirmatory soil samples will be collected from the base and sidewalls of each excavation, except in the circumstance where the depth of the excavation measures 12 inches or less. In situations where the sidewalls of an excavation are 12 inches or less in depth, sidewall samples will not be collected, but will be replaced by confirmatory samples that are collected from the ground surface outside the perimeter of the excavation. Confirmatory samples will also be collected from locations beneath and around every aboveground soil pile or berm structure that is removed. Confirmatory samples will not be collected in areas where only inert surface debris such as concrete or scrap metal is removed.

At least one discrete sample will be collected from each face of an open excavation that is 12 inches in depth or greater. Thus, a minimum of five confirmatory samples (i.e., one base, and four sidewall samples) will be collected at each excavation. Confirmatory samples will be collected at a rate of at least one per every 2,500 square feet of surface area.

For excavations where the depth of the excavation is less than or equal to one foot below grade, confirmatory samples will be collected from the perimeter of the excavation at a rate of no less than one sample per every 100 linear feet of length on each edge of the excavation. A minimum of one sample will be collected along each edge of the excavation. Additionally, at least one sample will be collected from the base of the excavation, and additional samples will be collected from the base of the excavation at a rate of at least one per every additional 2,500 square feet or less of bottom area.

Locations of confirmatory sampling will be biased towards areas that are most likely to be contaminated. Visual and olfactory sensing and use of portable field monitoring devices (e.g., photo-ionization detectors) should be used, within the bounds of the site-specific health and safety plan and good operating procedures, to assist in the selection of confirmatory sampling locations.

Additional confirmatory samples may be collected and analyzed based on results of field screening and observations, or based on professional judgment.

4. Site-Specific Confirmatory Sampling Details

SEAD-59

Confirmatory sampling proposed for SEAD-59 is anticipated to conform to the general specifications provided above for excavations, increased as necessary to address site-specific field observations and findings. Based on this specification, it is currently anticipated that a minimum of 162 confirmatory samples will be collected from the proposed areas of the excavation and perimeter. Inert surface debris will be removed from several areas of geophysical anomalies particularly south of the unnamed dirt road. For these locations, no confirmatory samples will be collected. Each of the

proposed SEAD-59 confirmatory samples will be analyzed for Target Compound List (TCL) VOCs (EPA SW-846 Method 8260B), TCL SVOCs (EPA SW-846 Method 8270C), pesticides (EPA SW-846 Method 8081), and Target Analyte List (TAL) metals by EPA Method 6010.

SEAD-71

Confirmatory sampling proposed for SEAD-71 is anticipated to conform to the general specifications provided above for excavations, increased as necessary to address site-specific field observations and findings. Based on this specification, it is currently anticipated that 37 confirmatory samples will be collected from the proposed area of the excavation and its perimeter. Each of the proposed SEAD-71 confirmatory samples will be analyzed for Target Compound List (TCL) VOCs (EPA SW-846 Method 8260B), TCL SVOCs (EPA SW-846 Method 8270C), and Target Analyte List (TAL) metals by EPA Method 6010.

5. Sampling Method

Once the excavation is complete, a drawing of the completed excavation will be prepared and necessary measurements shall be recorded in the field notes. Specific measurements collected will include the length, width, and depth (if subsurface excavation) of the excavation. The depth of the excavation will be reported at each corner, and at intermediate locations that are no further than 100 feet apart. These measurements will be used to document that sufficient samples have been collected from the excavation to reasonably assess whether residual contamination remains in the area of the excavation.

Once the drawing of the excavation is prepared, all proposed sampling locations will be marked and labeled and information describing the location of each proposed sampling location will be transcribed into the field notes and onto site maps. Each sampling location must be uniquely identified with a sample location.

Confirmatory samples will be collected from a depth of not less than one-inch below the excavation's surface and not more than six inches below the excavation's surface. The one-inch minimum is recommended to ensure that soils exposed directly to the atmosphere, which could result in the off-gassing of volatile organic or inorganic (e.g., sulfide or cyanide) compounds and a decreased level of volatile content over time, are not collected and used for the volatile compound analyses. The depth from which confirmatory samples are obtained will be recorded in the field notes at the time of collection.

At the time of their collection, confirmatory soil samples will be visually described for:

1. soil type,
2. color,
3. moisture content,
4. texture,
5. grain size and shape,
6. consistency,
7. visible evidence of staining or discoloration, and
8. any other observations (e.g., odors).

All data collected at the time of sample collection will be transcribed into the field records. The identity of the sampler, the date and time of sample collection, the location of the sample collection (i.e., location id), the identity of the sample (i.e., sample number), a description of the sampling method (e.g., auger, trowel, spade, homogenized, etc.) used, the number of sample containers collected, and the intended analysis that will be completed will be recorded.

All sampling will be completed using decontaminated, inert (e.g., stainless steel, Teflon®, etc.) sampling equipment. Selected sampling equipment may be used for all collection activities conducted at one location (e.g., the sample and its duplicate for all required analyses) during one contiguous time period; however, once the equipment has been used at one location, it can not be used at another location until it has been thoroughly decontaminated per prescribed procedures.

Samples collected for volatile compound analyses (e.g., volatile organic compounds or cyanide) will be collected first and will be transferred directly from the ground to the appropriate sample container (e.g., EnCore™). Samples for volatile compound analyses will not be homogenized. Samples collected for non-volatile analyses (e.g., semivolatile organic compounds, pesticides, metals, nitrate, TOC, TPH) should be collected and transferred to an inert mixing bowl and homogenized prior to being placed into their final sample bottles.

6. Recommended Sampling Order

A recommended order for sample collection is provided below:

<u>Collected without homogenization</u>
Volatile Organic Compound

<u>Collected, homogenized, and split into required bottles</u>
Semivolatile Organic Compounds
Pesticides
Metals