U.S. ARMY ENGINEER DIVISION
HUNTSVILLE, ALABAMA

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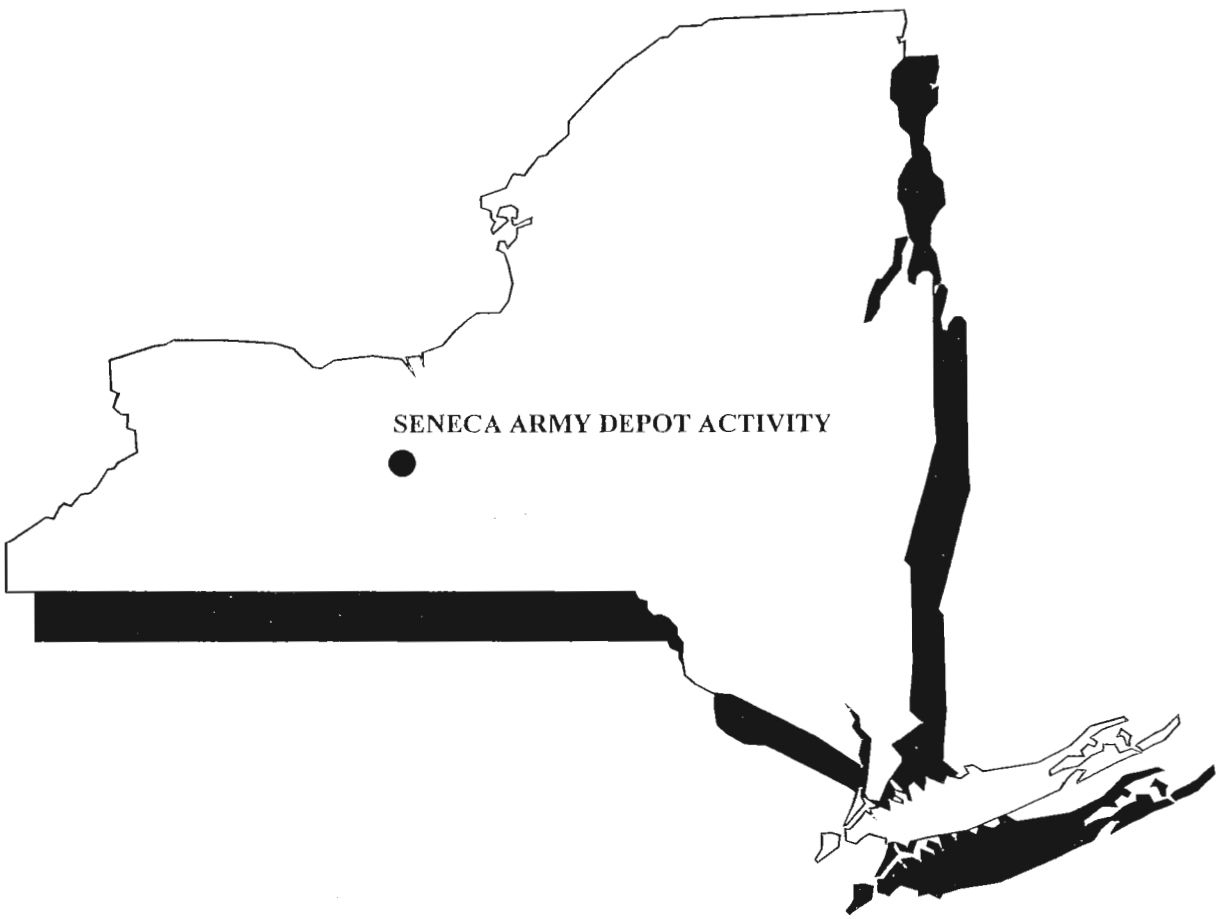

FINAL

ACTION MEMORANDUM FOR REMOVAL ACTION AT SWMU SEAD-11 SENECA ARMY DEPOT ACTIVITY

PARSONS

CONTRACT NO. DACA87-95-D-0031
TASK ORDER S OF DELIVERY ORDER 18

PARSONS

100 Summer Street, 8th Floor • Boston, Massachusetts 02110 • (617) 457-7900 • Fax: (617) 457-7979 • www.parsons.com

June 10, 2004

Mr. Scott Bradley
U.S. Army Corps of Engineers
Engineering and Support Center, Huntsville
Attn: CEHNC-FS-IS
4820 University Square
Huntsville, AL 35816-1822

Subject: **Submittal of Electronic Versions of Revised Final Action Memorandum for Removal Action at SWMU SEAD-11, Seneca Army Depot Activity**

Dear Mr. Bradley:

Parsons Engineering Science, Inc. (Parsons) is pleased to submit a updated CD containing the electronic version of the Final Action Memorandum for Removal Action at SWMU SEAD-11 at the Seneca Army Depot Activity located in Romulus, New York. Bound copies of this document were submitted on April 10, 2003. This electronic version supercedes the CD distributed on June 7, 2004.

Since the Final Action Memorandum was submitted, NYSDEC approved the removal action based on the agreement with the Army and referenced three important factors of this agreement in a letter dated January 26, 2004. The Army's response to these factors has been included in Appendix C (Response to Agency Comments) as part of the electronic version of the Final Action Memorandum. All references to cleanup goals at SEAD-11 have been revised in accordance with NYSDEC's January 26, 2004 letter.

The work was performed in accordance with the Scope of Work (SOW) for Delivery Order 18 to the Parsons Contract DACA87-95-D-0031.

Should you have any questions, please do not hesitate to call me at (617) 457-7905 to discuss them.

Sincerely,

Todd Heino, P.E.
Program Manager

Enclosures

cc: S. Absolom, SEDA
J. Fallo, USACE
C. Boes, AEC
K. Hoddinott, USACHPPM

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June 10, 2004

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Subject: **Submittal of Electronic Versions of Revised Final Action Memorandum for Removal Action at SWMU SEAD-11, Seneca Army Depot Activity**

Dear Mr. Vazquez / Mr. White:

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Todd Heino, P.E.
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Enclosures

cc: S. Bradley, USACE
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J. Fallo, USACE
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REVISED FINAL ACTION MEMORANDUM FOR REMOVAL ACTION AT SEAD-11 SENECA ARMY DEPOT ACTIVITY

Prepared for:

Seneca Army Depot Activity
Romulus, New York

Prepared by:

Parsons
Boston, Massachusetts

Contract No. DACA87-95-D-0031
Delivery Order 18
734543

JUNE 2004

FINAL ACTION MEMORANDUM
TABLE OF CONTENTS

APPENDICES

FIGURES

TABLES

LIST OF ACRONYMS

ABS	Absorption Fraction
AET	Actual Evapotranspiration
AMC	U.S. Army Material Command
AOC	Area of Concern
AQCR	Genesee-Finger Lakes Air Quality Control Region
ARAR	Applicable or Relevant and Appropriate Requirements
ASP	Analytical Services Protocol
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
AW	Drilling Rod Size
ATSDR	Agency for Toxic Substances and Disease Registry
AWQC	Ambient Water Quality Criteria
B	Boring
BAF	Bioaccumulation Factor
BALAT	Benthic Aquatic Life Acute Toxicity Criteria
BALCT	Benthic Aquatic Life Chronic Toxicity Criteria
BCF	Bioconcentration Factor
BDL	Below Detection Limit
bls	below land surface
BOD	Biological Oxygen Demand
BRA	Baseline Risk Assessment
BRAC	Base Realignment and Closure
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
C	Carcinogenic Risk
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CLP	Contract Laboratory Program
cm	Centimeters
cm/sec	Centimeters per second
CME	Central Mine Equipment

COC	Chemical of Concern
COD	Chemical Oxygen Demand
COPC	Chemical of Potential Concern
CRAVE	USEPA Carcinogen Risk Assessment Verification Endeavor
CRT	Cathode Ray Tube
CSM	Conceptual Site Model
CT	Central Tendency
CV	Coefficient of Variance
DA	Department of the Army
DO	Disolved Oxygen
DOD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
DWQS	Drinking Water Quality Standard
Eh	Oxidation Reduction Potential
EEC	Expected Exposure Point Concentration
EF	Exposure Factors
EIS	Environmental Impact Statement
EM	Electromagnetic
EPA	Environmental Protection Agency
EPM	Equivalent Porous Media
EPT	Ephemeroptera, Plecoptera and Tricoptera
EQ	Ecological Quotient
ERA	Ecological Risk Assessment
ERQ	Ecological Risk Quotient
ES	Engineering-Science, Inc.
ESE	Environmental Science and Engineering
ESF	Environmental Science and Forestry
ESI	Expanded Site Inspection
FDA	Food and Drug Administration
FI	Fraction Ingested
FMP	Forest Management Plan

FS	Feasibility Study
ft	Feet
ft/day	Feet per day
ft/ft	Feet per foot
ft/sec	Feet per second
ft/yr	Feet per year
FWMP	Fish and Wildlife Management Plan
FWIA	Fish and Wildlife Impact Analysis
g	gram
GAE	Geophysical anomaly excavations
GC	Gas chromatograph
GC/MS	Gas chromatograph/Mass spectrum
gpm	Gallons per minute
GPR	Ground penetrating radar
GSSI	Geophysical Survey Systems, Inc.
HEAST	Health Effects Assessment Summary Tables
HHB	Human Health Bioaccumulation Criteria
HI	Hazard Index
HSDB	Hazardous Substances Data Bank
I	Infiltration
ICF	ICF Technology, Incorporated
IR	Ingestion Rate
IRIS	Integrated Risk Information System
IRP	Installation Restoration Program
LEL	Lowest Effect Level
LOAEL	Lowest Observed Adverse Effect Level
LOT	Limit of Tolerance
LRA	Local Redevelopment Authority
L/min	Liters per minute
m	meter

MCPA	4-Chloro-2-Methylphenoxy acetic acid
MCRW	Microwell
MCPP	4-Chloro-2-Methylphenoxy-2-propionic acid
mg/kg	Milligrams per kilogram
mg/L	Micrograms per liter
mg/m^3	milligrams/cubic meter
MHz	Megahertz
MIE	Monitoring Instruments for the Environment, Inc.
mi	mile
ml	milliliter
ML	Inorganic Silt
mL/g	milliliter per gram
mmHg	Millimeters Mercury
MRD	Missouri River Division
m/s	meter per second
MSL	Mean sea level
MW	Monitor Well
NAVA	North American Vertical Datum
NBS	National Bureau of Standards
Nc	Noncarcinogenic
NCP	National Contingency Plan
NOAA	National Oceanic Atmospheric Administration
NOAEL	No Observed Adverse Effect Level
NO_2/N	Nitrite-Nitrogen
NO_3/N	Nitrate-Nitrogen
NPL	National Priority List
NRMP	National Resources Management Plan
NSF	National Sanitation Foundation
NTU	Nephelometric turbidity units
NW	Drilling Rod Designation
NWI	National Wildlife Institute
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation

NYSDOH	New York State Department of Health
OB	Open Burning
ODAST	One Dimensional Analytical Solute Transport
OU	Operational Unit
OV	Specific Ovid Quadrangle
OVM	Organic Vapor Meter
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated Biphenyls
PDM	Miniature Real-time Aerosol Monitor Model
PERC	Percolation
PET	Potential Evapotranspiration
PID	Photoionization detector
ppm	parts per million
ppmv	Part Per Million Per Volume
PR	Percent Recovery
PSCR	Preliminary Site Characterization Report
Psi	Pounds per square inch
PT	Monitoring Well
PVC	Polyvinyl Chloride
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RF	Response Factor
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
RPD	Relative Percent Difference
RQD	Rock Quality Designation

SAF	Society of American Foresters
SARA	Superfund Amendments and Reauthorization Act
SB	Soil Boring
SCS	Soil Conservation Service
SD	Sediment
SDEF	Standard Default Exposure Factors
SDG	Sample Delivery Group
SEAD	Seneca Army Depot (*archaic*)
SEDA	Seneca Army Depot Activity
Sec	Seconds
SF	Slope Factor
SFF	Site Foraging Factor
SI	Site Investigation
SIPT	Seismic Interpretation Program Terminal
SIR	Subsurface Interface
SKC	Supplier of Air Sampling Equipment
SOP	Standard Operating Procedures
SOW	Scope of Work
SQL	Sample Quantitator Limits
ST	Soil Moisture
STF	Soil Transport and Fate
SUNY-ESF	State University of NY College of Environmental Science and Forestry
SVOCs	Semi-Volatile Organic Compounds
SW	Sediment and surface water sample station
SWMU	Solid Waste Management Unit
TAGM	New York State Technical And Administrative Guidance Memorandum
TAL	Target Analyte List
TCE	Trichloroethylene
TCL	Target Compound List
TEC	Toxicological Endpoint Concentration
TEF	Toxicity Equivalency Factor
TES	Target Environmental Services, Inc.
TIC	Tentatively Identified Compound

TKN	Total Kjeldahl Nitrogen
TOC	Total Organic Carbon
TOX	Total Organic Halogens
TP	Test Pit
TPH	Total Petroleum Hydrocarbons
TRPH	Total Recovered Petroleum Hydrocarbons
TRV	Toxicity Reference Value
TS	Total Solids
ug/g	Micrograms per gram
ug/wp	Micrograms per wipe
ug/kg	Micrograms per kilogram
UCL	Upper Confidence Limit
URF	Unit Risk Factor
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
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UV/VIS	Ultraviolet/Visible
UXB	Unexploded Ordinance Clearance Subcontractor
UXO	Unexploded Ordinance
VLF-EM	Very Low Frequency Electromagnetic
VOA	Volatile Organic Analyte
VOC	Volatile Organic Compound
Vs	Volt Second

1.0 INTRODUCTION

1.1 EXECUTIVE SUMMARY

An Expanded Site Inspection (ESI) and Additional Sampling Program have been performed at SEAD-11, the Construction Debris Landfill, at the Seneca Army Depot Activity (SEDA or the Depot) in Romulus, New York. This Action Memorandum presents the proposed plan for conducting a non-time critical removal action at SEAD-11 to address contaminants that have been identified in the soil that represent a potential threat to the environment and neighboring populations. This removal action is considered non-time critical. The removal action was originally planned as a time critical removal action. However, since potential reuse of neighboring areas has been slower than originally anticipated, a non-time critical removal action is more appropriate. The presence of drums and other containers and the uncertainty of their contents is justification for a removal action at the site.

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 non-time critical removal action at SEAD-11 is to remove an identified source of residual chemical materials in the soil to eliminate or at least lessen the magnitude of the potential threat that it represents to surrounding populations and the environment. At this site, the soil cleanup goals for VOCs, SVOCs (except carcinogenic PAHs), pesticides, and PCBs are the New York State Department of Environmental Conservation's (NYSDEC's) Technical and Administrative Guidance Memorandum (TAGM) #4046 values; the cleanup goal for carcinogenic PAHs are based on a 10 ppm benzo(a)pyrene toxicity equivalent, calculated according to NYSDEC guidance sent to the Army in a letter dated January 26, 2004. The soil cleanup goals for metals are based on the 95th percentile of SEDA site background data. The metals cleanup goals are presented in **Appendix D**.

The test pitting investigation conducted at SEAD-11 has confirmed the presence of 55-gallon drums and other containers at the landfill. 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 landfill area at geophysical anomalies is considered justification for performing a removal action at SEAD-11. While removal of drums and other containers is the focus of the planned removal action for SEAD-11, the potential for contamination to be present in the soils that surround these items will also be addressed by this action. In addition, the removal action would address the potential source of tetrachlorothene, trichloroethene, and metals detected in the groundwater downgradient of the landfill.

This Action Memorandum 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. Based upon the results of these investigations, it is recommended that the soil and debris at the site be removed, segregated, and disposed of at an off site permitted waste landfill. This removal action is intended to remove the contaminated source materials at SEAD-11. The Army recognizes that further actions to address residually contaminated groundwater and soil, if any, will be evaluated following the removal action during completion of the RI/FS process.

For SEAD-11, it is recommended that 36,300 cubic yards of soil and debris material, assumed to be the source of geophysical anomalies, be removed from the landfill. Drums and construction debris would be screened out and disposed of off-site. The excavated soil exceeding the soil cleanup goals would be transported to, and disposed of at an off-site facility. The extent of the area requiring excavation will be confirmed via sampling and analysis, and once completed, the excavations will be refilled with excavated soil with concentrations less than the soil clean up goals and re-contoured to match the existing terrain characteristics.

1.2 PURPOSE, SCOPE, AND OBJECTIVES

This Action Memorandum has been prepared for the Construction Debris Landfill (SEAD-11) at the Seneca Army Depot Activity (SEDA) by Parsons in support of the proposed non-time critical removal action at SEAD-11. 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 non-time critical removal action at SEAD-11. 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 volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals to groundwater from contaminated soils. A Decision Document was prepared to evaluate the various remedial options for the site, and to select the best option. The Decision Document is included as **Appendix A**.

This report is supported by the *Project Scoping Plan for Performing a CERCLA Remedial Investigation / Feasibility Study at SEAD-11, 64A and 64D,* which is based on the findings in the *ESI Report for Three Moderately High Priority SWMUs* (Parsons ES, 1995b). Activities conducted as part of the ESI 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) construction and sampling of overburden groundwater monitoring wells, (5) soil gas surveying, and (6) soil and groundwater sampling and laboratory analyses.

1.3 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 Army has been delegated the response authority for Army sites, whether or not the sites are on the National Priorities List (NPL) of the U.S. Environmental Protection Agency (EPA). 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. SEAD-11 is a SWMU that is part of the Seneca Army Depot that is listed on the NPL.

1.4 SITE CONTACTS

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2.0 SITE CHARACTERIZATION

2.1 BASE DESCRIPTION AND HISTORY

This section provides a brief overview of SEDA and the conditions at the Construction Debris Landfill (SEAD-11). The site was 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 *Project Scoping Plan for Performing a CERCLA Remedial Investigation / Feasibility Study at SEAD-11, 64A and 64D*, which is based on the findings in the *ESI Report for Three Moderately High Priority SWMUs* (Parsons ES, 1995b).

The SEDA facility is situated on the western flank of a topographic high between Cayuga and Seneca lakes in the Finger Lakes region of central New York. 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 post generally consists of an elongated central area formerly used 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 base was expanded to encompass a 1,524-meter airstrip, formerly the Sampson Air Force Base.

SEAD-11 is located in the southwestern portion of SEDA as shown in **Figure 2-1**. It is characterized by an area of elevated topography that defines the landfill's general shape. The landfill, which covers approximately four acres (590 feet by 300 feet), is currently abandoned and the surface is vegetated with grasses and weeds (**Figure 2-2**). There are no developed portions of the site. The site is bound to the east by SEDA railroad tracks beyond which is an upward sloping field with grass and low brush. South of the site is dense low brush. West of the site is an open grass field that ends at the fenced SEDA boundary. Indian Creek is located approximately 700 feet west of the "toe" of the landfill. The site is bounded to the north by Indian Creek Road beyond which is an open grass field which gives way to trees and low brush several hundred feet from the road.

The relief of the landfill is well defined on the generally west-sloping regional topography in the area. On the landfill surface the topography slopes mostly to the northwest. The apparent thicker fill in the southern and western portions of the landfill results in steep scarps on the south and southwestern sides of the landfill and more gently sloping hills on the north and northwestern sides. While the majority of the landfill surface is grass-covered, the southern perimeter of the landfill is

vegetated with deciduous trees. Assorted construction debris including metal and scrap wood and several empty 55-gallon drums were observed on the southern and southwestern edges of the landfill.

2.2 SITE-SPECIFIC GEOLOGY

Based on the results of the ESI program, till and calcareous black shale are the two major geologic materials present at the site. To the immediate east of the Construction Debris Landfill (at MW11-3) the till is thicker compared to other areas on the site. The till is light brown and composed of silt and clay, and some black shale fragments, however, larger shale fragments (rip-up clasts) were observed at many locations near the till weathered shale contact. Some fine sand lenses were also observed. Weathered (oxidized) lenses were noted in the upper portions of the till.

Competent, calcareous black shale was encountered at depths between approximately 9 and 14 feet below the ground surface. The elevations of the competent bedrock determined during the drilling and seismic programs indicate that the bedrock surface slopes to the west mimicking the land surface. The upper portion of the shale had a weathered zone that was from 1 to 3 feet thick.

2.3 SITE-SPECIFIC HYDROLOGY AND HYDROGEOLOGY

SEAD-11 is defined by the limits of the landfill and characterized by an area of elevated topography. Surface water flow from precipitation events is controlled by local topography. The west-trending topographic gradient is relatively steep and uniform in the areas north and south of the landfill, but the gradient becomes less steep and somewhat irregular beyond the "toe" of the landfill. Based on the topographic expression, surface water flow on most of the landfill surface is to the north-northwest and it is likely to be captured by the east-west trending swale located on the south side of Indian Creek Road. The swale drains west toward the SEDA boundary. Some surface water likely drains off of the landfill "toe" where it collects in a relatively flat area and eventually drains either to the north into the swale along Indian Creek Road or to the south in a relatively straight drainage swale which is covered by vegetation. An elongated topographically low area that abuts the southeastern corner of the landfill collects surface water, which drains from the eastern portion of the site, between the landfill and the SEDA railroad tracks. No wetlands are present within SEAD-11.

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 in further detail land uses and environments of this region. 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 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 (DA) 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 is 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-11 will be used for conservation and recreation. At the time when the SEDA facility is relinquished by the Army, the Army will ensure that the site can be used for the intended purpose.

2.5 CONTAMINATION ASSESSMENT

Geophysical surveys and four test pits were performed during the ESI to identify burial sites at SEAD-11. Four monitoring wells were installed. Soil (surface, subsurface), soil gas, and groundwater were collected and analyzed as part of the investigations (see Attachment A of the Decision Document). The results are presented in the *ESI Report for Three Moderately High Priority SWMUs* (Parsons ES, 1995b). The following sections summarize the nature and extent of contamination identified at these sites.

Test pits were excavated as part of an Additional Sampling Program conducted in October 2000 to investigate the geophysical anomalies detected during the ESI. Ten test pits were excavated and three additional monitoring wells were installed during the field program. Two rounds of groundwater sampling were conducted in November 2000 and February 2001.

2.5.1 Geophysics

Seismic profiles detected 4 to 17 feet of till [1,100 to 5,400 feet per second (ft/s)] overlying bedrock (11,500 to 13,100 ft/s). In particular, the till material includes loose, unsaturated till (1,100 to 1,300 ft/s); compact unsaturated till (2,400 ft/s); and saturated till (5,000 to 5,400 ft/s). A review of the relative elevation of bedrock demonstrates that the bedrock surface slopes to the west following the slope of the surface topography.

An electromagnetic survey was performed at SEAD-11 during the ESI. The extent of the construction debris landfill is clearly shown as the roughly circular zone of low conductivity values occupying the central portion of the EM grid (see Attachment A of the Decision Document). The landfill can be divided into two parts on the basis of the EM survey: the northeastern one-half of the landfill generally shows higher in-phase values than the southwestern portion. Since the in-phase response is particularly sensitive to ferrous material, it is inferred that the northeastern portion of the landfill has a higher concentration of buried metallic debris. A number of small isolated metallic objects were detected by the in-phase response beyond the limits of the landfill. The Army does not

believe that these small isolated metallic objects represent additional areas of fill. Most likely, these materials were dropped during the filling process. During the removal action, the Army will investigate a representative number of these anomalies to determine if additional action is required.

A lineament in the apparent conductivity and in-phase response was detected along the south side of the roadway. This feature may be caused by buried utilities.

The extent of the landfill as determined by the GPR survey is identical to that established by the EM survey.

2.5.2 Test Pitting Program

A total of 14 test pits were excavated in SEAD-11 to characterize the types of geophysical anomalies present within the landfill. As predicted by the EM in-phase response, much of the excavated material was metallic debris, including various scrap metal, metallic rods, and metallic webbing. In addition, crushed 55-gallon drums and other metal containers were found in the landfill. Although abundant metallic material was encountered, the dominant type of fill was nonmetallic, including soil, large concrete slabs and fragments, and asphalt. The predominant fill materials were construction debris (concrete, glass, and nails), dark brown soil, gravel, and boulders.

2.5.3 Summary of Affected Media

The ESI report (Parsons, 1995) indicated a release at SEAD-11 of VOCs, SVOCs, and metals into the soil and potentially groundwater, which may pose a threat to human and environmental receptors.

Soil Data

The results of the ESI and Additional Sampling Program indicate that impacts to the surface and subsurface soil have occurred at this site. Soil at the site has been primarily impacted by VOCs, SVOCs and metals. Other constituents that were detected, but are considered less significant, include pesticides, polychlorinated biphenyls (PCBs), herbicides, nitroaromatics, and nitrate/nitrite nitrogen. These constituents are not considered to be significant because they are either present at low concentrations and/or only a small number of samples exceed or slightly exceed their respective soil cleanup goals. At this site, the soil cleanup goals for VOCs, SVOCs (except

carcinogenic PAHs), pesticides, and PCBs are the TAGM #4046 values; the cleanup goal for carcinogenic PAHs are based on a 10 ppm benzo(a)pyrene toxicity equivalent, calculated according to NYSDEC guidance sent to the Army in a letter dated January 26, 2004. The soil cleanup goals for metals are based on the 95th percentile of SEDA site background data. The metals cleanup goals are presented in **Appendix D**.

Two areas in the landfill area were identified where elevated concentrations of VOCs (greater than 2.0 parts per million per volume [ppmV]) in soil gas were detected, including: vinyl chloride, 1,2-dichloroethene, trichloroethene, toluene, and ethylbenzene (**Figure 2-3**). The first area is located in the center of SEAD-11 and is associated with soil gas sampling points SG2-3, SG3-2, SG3-3 and SG-X. The second area is located west of this area and associated with sample SG2-1. The second area appears to be isolated from the first area.

Soil analytical results showed that two VOCs, acetone and trichloroethene (TCE), were detected at concentrations above their respective TAGM criteria. TCE concentrations in surface and subsurface soils are presented in **Figures 2-4** and **2-5**. A total of 16 SVOCs were found at concentrations above TAGM in the soil samples analyzed.

Of the 24 metals reported in the soil samples analyzed, 23 of these were found in one or more samples at concentrations above the associated TAGM values. **Figures 2-6** and **2-7** show the concentrations of lead in surface and subsurface soils.

Groundwater Data

Groundwater at the site appears to have been impacted by VOCs and metals. Tetrachloroethene and trichloroethene were detected in groundwater samples at concentrations below their respective NYS Class GA standard. The results of the groundwater sampling program at SEAD-11 indicate that aluminum, antimony, iron, manganese, sodium, and thallium were present in individual wells at concentrations above the TAGM values. No SVOCs, pesticides and PCBs, herbicides, nitrate/nitrite, and nitroaromatics were above TAGMs.

2.6 STATE AND LOCAL ACTIONS TO DATE

There have been no related state or local actions to date at the SEAD-11. 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

There are no known plans for state or local response at the site. 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.

3.0 THREATS TO PUBLIC HEALTH, WELFARE OR THE ENVIRONMENT; 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

The contamination at SEAD-11 poses a threat to public health or welfare through several mechanisms. Investigations of SEAD-11 indicate that soils at this site pose a potential threat to human health and the environment through soil ingestion or dermal contact, and through continued leaching to the groundwater that passes through the site.

3.2 THREATS TO THE ENVIRONMENT

The threats to the environment posed by the site have not been quantified. This will be done during the RI/FS following completion of the removal action. There is the potential for terrestrial biota to be exposed to contaminants at the site. In addition, surface water contamination from site runoff or groundwater contamination may pose a threat to aquatic life.

3.3 STATUTORY AUTHORITY

SEAD-11 is a SWMU that is part of the entire Depot, which is listed on the NPL. 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 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. This removal action is considered a non-time critical removal action.

3.4 ADDITIONAL JUSTIFICATION FOR REMOVAL ACTION

The test pitting investigation has confirmed the presence of 55-gallon drums and other containers at SEAD-11. 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 landfill area and contamination in soil and groundwater are considered justification for performing a removal action at SEAD-11. While removal of drums and other containers is the focus of the planned removal action, the potential for contamination of soil and groundwater that surrounds these items will also be addressed by this action. Cleanup goals at SEAD-11 will be to meet the TAGM #4046 recommended soil cleanup objectives for metals, presented in **Appendix D,** which are based on the 95th percentile of SEDA site background data. The cleanup goals for carcinogenic PAHs are based on a 10 ppm benzo(a)pyrene toxicity equivalent, calculated according to NYSDEC guidance sent to the Army in a letter dated January 26, 2004. Cleanup goals for all other parameters are as listed in TAGM #4046.

4.0 ENDANGERMENT DETERMINATION

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

5.0 PROPOSED ACTIONS AND ESTIMATED COSTS

5.1 PROPOSED ACTION

5.1.1 General Statement of the Removal Action Objectives

The establishment of action objectives and site-specific considerations forms a basis for identifying and selecting appropriate action alternatives. Action objectives must:

- Protect human health and the environment, and
- Address contaminants of concern, exposure routes, and receptors.

The primary objective for the proposed action at SEAD-11 is to eliminate an identified source of residual chemical materials within the landfill. Applicable or relevant and appropriate requirements (ARARs) establish cleanup standards that can be used to define action objectives. The primary ARAR that will be used to meet the removal action objective at SEAD-11 is the NYSDEC TAGM #4046 recommended soil cleanup objectives. The table in **Appendix D** provides the metal cleanup goals, which are based on the 95th percentile of SEDA site background data. Cleanup goals for carcinogenic PAHs are based on a 10 ppm benzo(a)pyrene toxicity equivalent, calculated according to NYSDEC guidance sent to the Army in a letter dated January 26, 2004. Cleanup goals for all other parameters are as listed in TAGM #4046.

5.1.2 Proposed Action Description

Work Plan

Prior to beginning the non-time critical removal action, a removal action work plan will be provided to the agencies for review. This plan will be prepared in accordance with EPA guidance documents [Guidance for the Data Quality Objectives Process (QA/G-4), (EPA 2000); EPA Requirements for Quality Assurance Project Plans (QAPP) (QA/R-5), (EPA 2001); Guidance for Data Quality Assessment: Practical Methods for Data Analysis (QA/G-9), (EPA 2000)]. The work plan will provide detailed information on methods and procedures including, but not limited to, the following:

- Soil stockpile maintenance and sampling procedures;
- Dust control;

- Erosion and sedimentation controls;
- Confirmatory sampling;
- Drum handling;
- Asbestos handling;
- Disposal of waste and water; and
- Procedures for determining clean soil and contaminated soil.

Site Preparation

Once the work plan has 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.

Excavation Activity

The removal action at SEAD-11 would involve the excavation of the entire landfill. All contaminated filled material will be excavated until native soil is encountered. Native material will be free of materials with waste and rubbish and can be defined by the characteristics of boring samples collected outside of the affected area at SEAD-11. During excavation, the physical description of material believed to be native material will be compared to the descriptions from borings located outside of the filled areas.

The total volume to be excavated is approximately 36,300 cubic yards of soil (**Figure 5-1**). Drums and construction debris will be screened out and disposed off-site. Maximum areas to be excavated will be shown on an excavation drawing to be prepared. Excavation areas will be located based on subsurface and surface soil concentrations. Confirmatory sampling will be conducted in accordance with the procedure described in **Appendix B**. Any additional soil or sediment found due to confirmatory sampling that exceeds project requirements will be removed and confirmatory sampling will be repeated. If soils exceeding the site cleanup goals remain following all excavation, NYCRR Part 360 regulations may be applicable.

Materials Handling

Following excavation, soils will be placed in temporary, lined stockpiles for testing to ensure that they comply with the cleanup objectives for SEAD-11. Clean soil, which is potentially useable as backfill, will be stockpiled separate from soils most likely to not be suitable for backfill. Intact drums will be stockpiled separate from soils. Stockpiles will be covered with flexible polyethylene cover material overnight and prior to significant rain events. Soils exceeding the cleanup goals will be disposed of at an offsite facility. These soils will also be analyzed for the Toxicity Characteristic Leaching Procedure (TCLP) limits required for landfill disposal. The soils exceeding TCLP limits may be stabilized on-site or off-site as needed prior to disposal off site in accordance with applicable rules and regulations. Soils transported off-site would be managed at a Subtitle D, solid waste industrial landfill.

Small tree stumps and other vegetation not free of soil will be fed through a small grinder prior to being placed in transport trucks. Vegetation free of soil will be chipped and used for erosion control at the site.

The primary method of removing drums and debris from the site will likely be a backhoe equipped with a hydraulic grappler. Non-sparking drum slings and drum lifters compatible with the backhoe may also be used to remove the drums. Debris will be handled on a case-by-case basis depending on its size and weight.

Intact drums that likely will not tolerate significant manipulation will be removed and placed directly into an overpack or salvage drum. Any deteriorated drums containing liquids will have the liquids removed using an explosion-proof electric pump as warranted. Any drums with evidence of internal pressure will be isolated as best as reasonably possible in the excavation and overpacked separately from other drums.

As needed, drums will be opened and sampled at a centralized, underlined location most likely using a remote drum drill. Contents will be sampled with a drum thief or following removal of the drum top. If drum contents cannot be determined in advance, Level B personal protection will be implemented as a safety precaution.

Drums will be transferred to a temporary drum staging area and placed in two rows separated so each drum is readily accessible. The drum staging area will be bermed and underlined to contain drum

contents in case of a spill or leak. Drums will be labeled and inventoried within the staging area and removed from Seneca as soon as reasonably possible following excavation and sampling.

If asbestos were encountered, affected materials would be stockpiled separately. These materials would be disposed of in an appropriate facility. Asbestos containing materials would be removed, handled, transported, and disposed in accordance with the ARARs listed in **Section 5.2**.

Groundwater that needs to be removed from the excavation area in order to allow excavation to proceed will be managed and disposed off-site at an approved treatment facility in accordance with the construction contractor's construction water management plan. Depending on the volume of water generated during excavation activities, the water will most likely be either:

- Treated on site prior to discharge to a storm drain or drainage ditch in accordance with applicable discharge requirements; or
- Transported off site for treatment and disposal in accordance with applicable rules and regulations.

The construction contractor shall submit for Engineers' review and approval a construction water management plan, a minimum of five working days prior to the commencement of site work. The selected treatment method and/or in-place system must meet discharge requirements of the offsite permitted treatment facility. Various options exist depending on available hydraulic and treatment capacity. These options include the Seneca County Sewer District No. 2 treatment facility located at the east-central portion of Seneca, a treatment facility that is part of the KidsPeace project just north of Seneca, a site-specific temporary treatment system that would need to be separately permitted through the NYSDEC Division of Water, or a permitted, private offsite facility. The construction contractor will provide to the Engineer the location where the groundwater will be released and the extent of water pretreatment to be provided prior to release.

The construction contractor shall also submit for Engineers' review and approval an erosion and sedimentation plan, a minimum of five working days prior to the commencement of site work.

Excavated soils with concentrations below the TAGM 4046 cleanup objectives will be backfilled into the former landfill area, pending approval from the NYSDEC and EPA. The portion of the site affected by the removal action will be regraded with topsoil as needed and seeded to provide a

long-term vegetative surface. It is assumed that NYCRR Part 360 will no longer apply because soils with concentrations exceeding the cleanup goals will be removed.

Air Monitoring

Worker Space Air Monitoring - Air monitoring will be conducted with a photoionization detector (PID) during all field activities. The PID will be used to monitor for VOCs in the breathing zone and in boreholes, and to screen samples for analysis. PID readings will be recorded in the field book and on the boring log during drilling activities.

If VOCs are detected in the breathing zone with the PID, then precautions detailed in the Health and Safety Plan will be followed.

The PID will be a Photovac MicroTip HL-2000 (or equivalent) equipped with a 10.6 eV lamp. The Photovac MicroTip is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for roughly 54 percent to 73 percent of the VOCs on the NYSDEC Analytical Services Protocol (ASP) Target Compound List. The detailed procedure for the PID operation is included in the Health and Safety Plan.

Calibration will be performed at the beginning and end of each day of use with a standard calibration gas of a concentration within the expected range of use in accordance with Manufacturer's Calibration Specifications. The calibration gas which is most often used has an approximate concentration of 100 ppm of isobutylene. If abnormal or erratic readings are observed, additional calibration will be required. All calibration data will be recorded in field notebooks and on calibration log sheets to be maintained on-site. A battery check will be completed at the beginning and end of each working to ensure proper voltage.

Site Perimeter Air Monitoring - Real-time air monitoring for volatile compounds at the perimeter of the exclusion zone will be conducted that conforms to the NYSDOH Community Air Monitoring Plan. If particulates become a concern at this site, possibly during excavation activities, this community air monitoring plan will be modified accordingly. Contaminants on site are not anticipated to pose a problem as particulates because of the moisture content of the soil and the effectiveness of spraying water for dust control.

Volatile organic compounds will be monitored at the downwind perimeter of the exclusion zone

daily continuously during excavation activities. If total organic vapor levels exceed 5 ppm above background based on 15-minute average concentrations, excavation activities must be halted and monitoring continued under the provisions of the Vapor Emission Response Plan (see below). All air monitoring readings must be recorded and be available for USEPA, NYSDEC and NYSDOH personnel to review.

If particulate levels become a concern, the following protocol will be followed. Particulates shall be continuously monitored downwind of the exclusion zone with a portable particulate monitor that would have an alarm set at 150 $\mu g/m^3$. If downwind particulate levels, integrated over a period of 15 minutes, exceed 150 $\mu g/m^3$, then particulate levels upwind of the survey or work site would be measured. If the downwind particulate level is more than 100 $\mu g/m^3$ greater than the upwind particulate level, then excavation activities must be stopped and corrective action taken. Ensure that downwind readings are not elevated by diesel emissions from heavy equipment. All readings must be recorded and be available for EPA, NYSDEC and NYSDOH personnel to review. These action levels can be modified if particulates are specifically characterized and identified.

Vapor Emission Response Plan - If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the Exclusion Zone, excavation activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, excavation activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the Exclusion Zone, activities can resume provided:

- The organic vapor level 200 ft. downwind of the Exclusion Zone or half the distance to the nearest receptor, whichever is less, but in no case less than 20 feet, is below 5 ppm over background based on 15-minute averages, and
- More frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.

If the organic vapor level is above 25 ppm at the perimeter of the Exclusion Zone work activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest receptor at levels exceeding those specified in the this section.

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the Survey Site or half the distance to the nearest receptor, whichever is less, all work activities must be temporarily halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest receptor from the Exclusion Zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone). If either of the following criteria are exceeded in the 20-foot zone, then the Major Vapor Emission Response Plan (below) shall automatically be implemented:

- Organic vapor levels approaching 5 ppm above background for a period of more than 30 minutes.
- Organic vapor levels greater than 25 ppm above background for any time period.

Major Vapor Emission Response Plan -Upon activation, the following activities will be undertaken:

1. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.
2. Air monitoring will be conducted within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.
3. Emergency contacts will go into effect as appropriate.

Site Restoration

The site will be regraded using topsoil as needed and seeded for long-term vegetative cover.

5.1.3 Contribution to Remedial Performance

The purpose of this action is to remove the source of VOCs, SVOC and metal contamination at the site and thereby reduce the potential for further contamination of soils and groundwater.

Because the impetus for the removal action at the site is the presence of drums and other containers, and due to the uncertain nature of the contents, 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 analysis.

5.1.4 Engineering Evaluation/Cost Analysis

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

5.1.5 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.

5.1.6 Institutional Controls

The requirement for institutional controls will be addressed as part of the overall remedial action during the RI/FS process following completion of the removal action.

5.1.7 Off-Site Disposal Policy

It is anticipated that some of the soil generated during the removal action at SEAD-11 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).

5.1.8 Post-Removal Site Control Activities

The depot is fenced to limit access.

5.1.9 QA/QC Plan

The remedial contractor will be required to develop a QA/QC plan that will be submitted to the appropriate agencies 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 removal action is conducted in accordance with the specifications.

Additional construction QA/QC will be provided by a third-party oversight contractor. The oversight contractor will be responsible for monitoring the removal action activities, including taking confirmation soil samples. Procedures associated with confirmation samples are provided in **Appendix B** of the Action Memorandum. Confirmation samples will be collected from the bottom of the excavation at a rate of one per 900 square feet (30-foot by 30-foot grid on average) and one sample from each sidewall. Additional sidewall confirmation samples will be collected for each additional 30 linear feet of excavation sidewall. Confirmation samples will be submitted for laboratory analysis for TAL metals, TCL VOCs, TCL PAHs, and nitroaromatics. In addition, 25 percent of the confirmation samples will also be analyzed for TCL pesticides based on locations where these pesticides were detected previously. If analytical results indicate that soils remaining in place exceed the soil cleanup goals developed for the site, the excavation will be extended in that area and the wall or bottom of the extended excavation will be sampled. These steps will be repeated until analytical results indicate that the soil cleanup goals have been achieved. Confirmation sample results will be analyzed using EPA-approved methods and validated using the current USEPA Region II validation protocols described in **Appendix B**.

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 40 CFR 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, and 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)
- Atomic Energy Act, Standards for Protection Against Radiation (10 CFR 20 subpart D)
- Clean Water Act, Water Quality Criteria (Section 304) (May 1, 1987 - Gold Book)
- Clean Air Act, Standards for Radionuclides (40 CFR 61.22 and .102)
- Emission Standards for Asbestos (40 CFR Part 61, Subpart M)
- 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 that 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): Anti-degradation Policy. Establishes standards to prevent a body of water that 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 post-closure 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.

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 that 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 requires 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).

- OSHA Asbestos Standards (29 CFR, Part 1926.1101)

- Asbestos regulations for sampling, analysis, assessment, remedial actions, operations and maintenance, plans, etc. (40 CFR, Part 763).

- 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 Publicly - 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, Surface water, 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 post-closure), 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.

- Toxic Substance Control Act. This act was created in 1976 to regulate the manufacture, distribution, use, and disposal of regulated substances including asbestos.

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 PROJECT SCHEDULE

The total duration for the removal action after regulatory approval is approximately 3 months following construction mobilization.

5.4 ESTIMATED COSTS

The estimated total project cost of $5.9 million is based upon a preliminary estimate provided by Parsons, using the TRACES/MCACES for Windows v1.2 software (**Table 5.4 -1**).

6.0 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.

7.0 OUTSTANDING POLICY ISSUES

This section is not applicable to this removal action since the lead agency for the site is the Army, and not the EPA, NYSDEC, or NYSDOH.

8.0 ENFORCEMENT

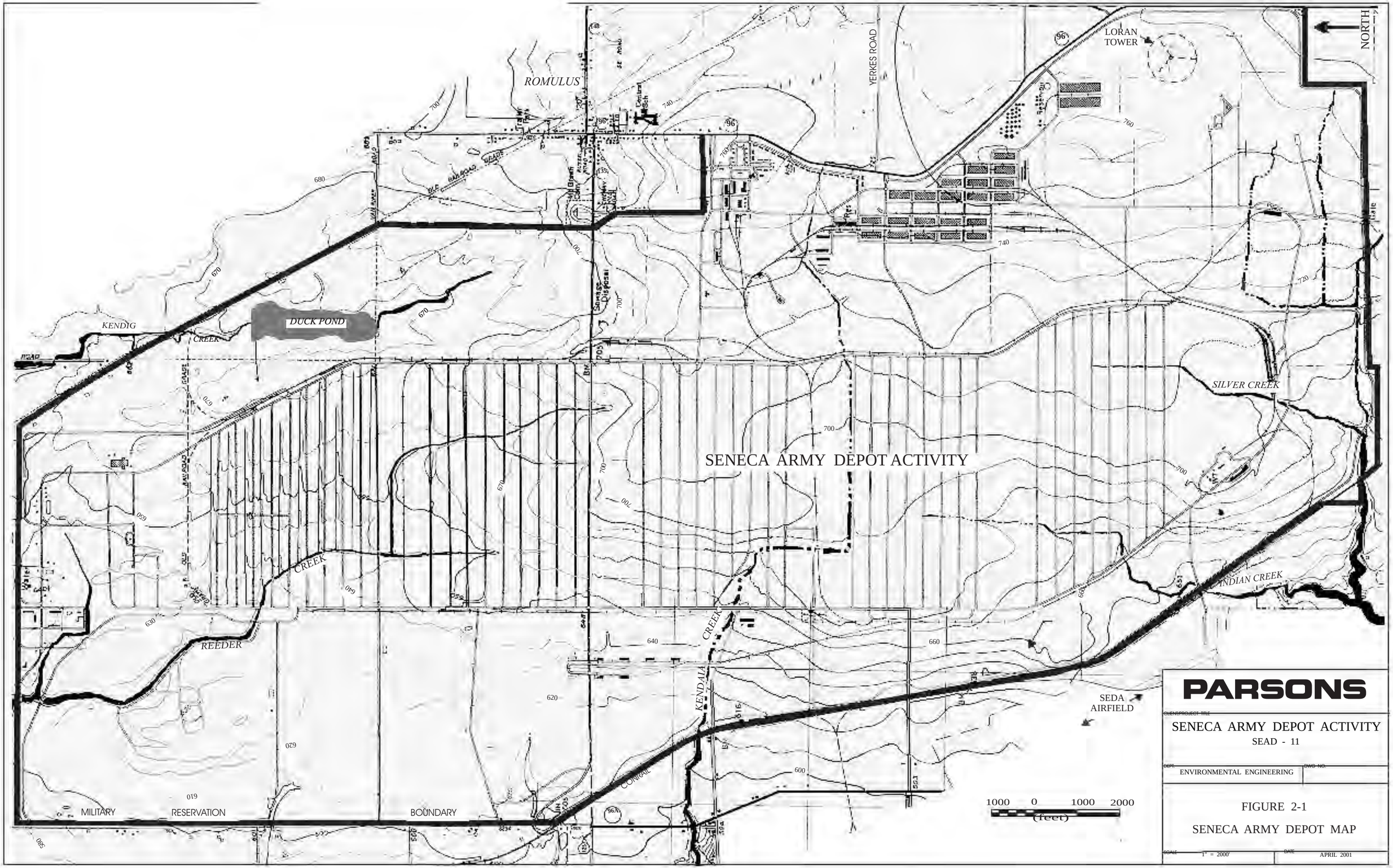
This section is not applicable to this removal action since the lead agency, the Army is the Principal Responsible Party for this site, and is taking responsibility for the removal action.

9.0 RECOMMENDATION

The non-time critical removal action recommended for SEAD-11 is excavation of the entire landfill; segregation and off-site disposal of the debris and soil that exceeds the SEAD-11 cleanup objectives; and backfilling of the excavated soils if constituents present are below the cleanup objectives. The site will be regraded using topsoil as needed and seeded for vegetative growth.

This Action Memorandum represents the selected removal action for SEAD-11 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.

The remedial technology recommended for treatment of the soils with VOCs, SVOCs, and metals is excavation with on site or off-site stabilization (as needed) and landfill disposal. Stabilization, coupled with secondary soil and water treatment units (if necessary), has been proven effective in reducing the toxicity and mobility of contaminants in soil media.



PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

SEAD - 11

DEPT. ENVIRONMENTAL ENGINEERING

DWG NO.

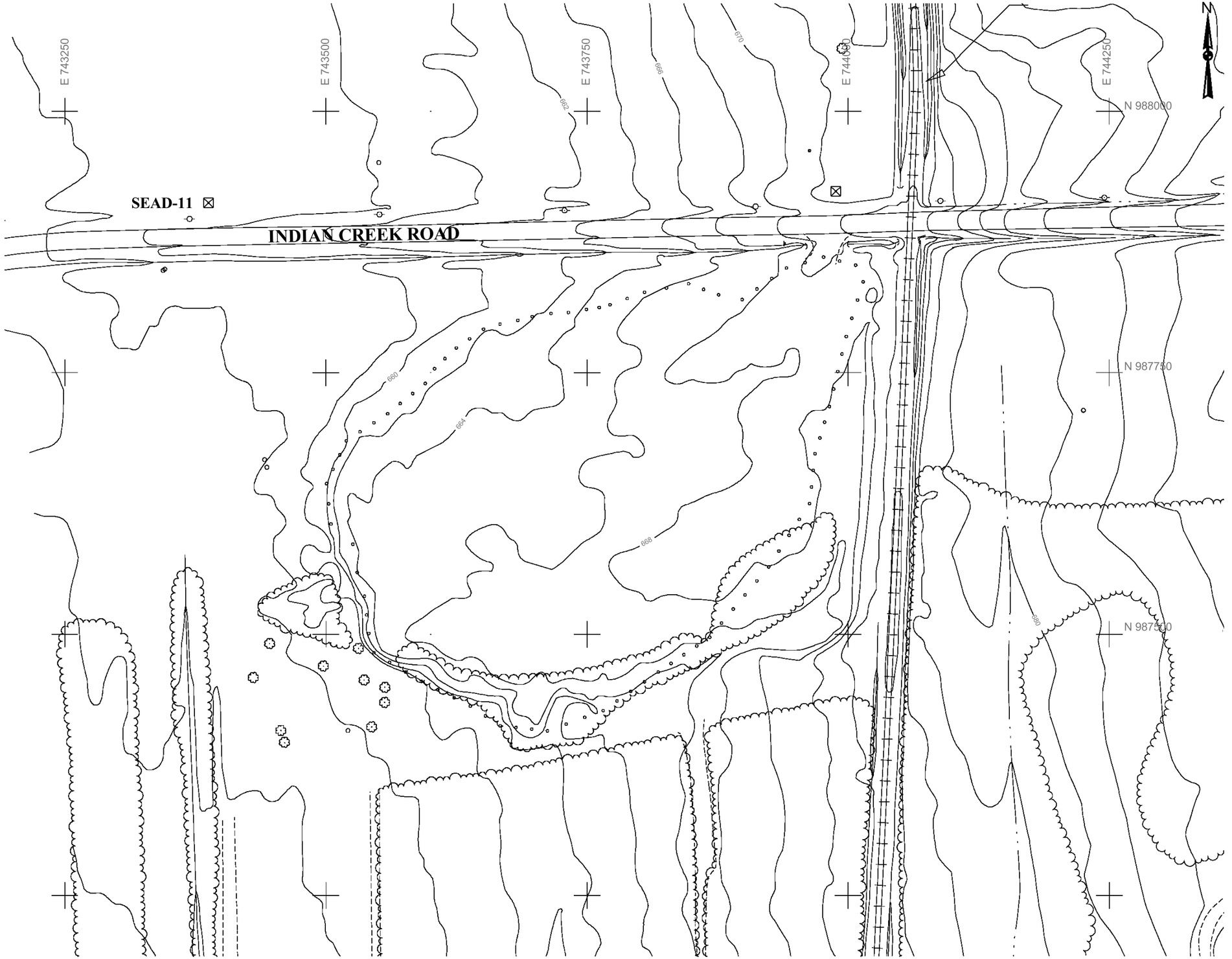
FIGURE 2-1

SENECA ARMY DEPOT MAP

SCALE 1" = 2000'

DATE APRIL 2001

R:\PROJECT-GRAPHICS\SENECA\BASEMAP\FINBASE.CDR(CVM)

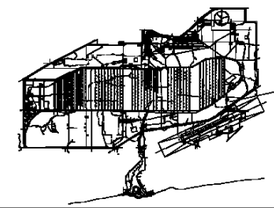


LEGEND

- RAILROAD TRACK
- EDGE OF WATER
- PROPERTY LINE
- ROAD
- FENCE
- CONTOUR ELEVATION
- TREELINE
- SURVEY MONUMENT
- UTILITY POLE
- DECIDUOUS TREE
- LANDFILL EXTENT
- EXISTING MONITORING WELL AND DESIGNATION
- EXISTING TEST PIT AND DESIGNATION

80 0 80 Feet

KEY PLAN



PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-11 ACTION MEMORANDUM

FIGURE 2-2

SEAD-11
SITE PLAN

JOB NUMBER: 734543-01000

DATE: APRIL 2003

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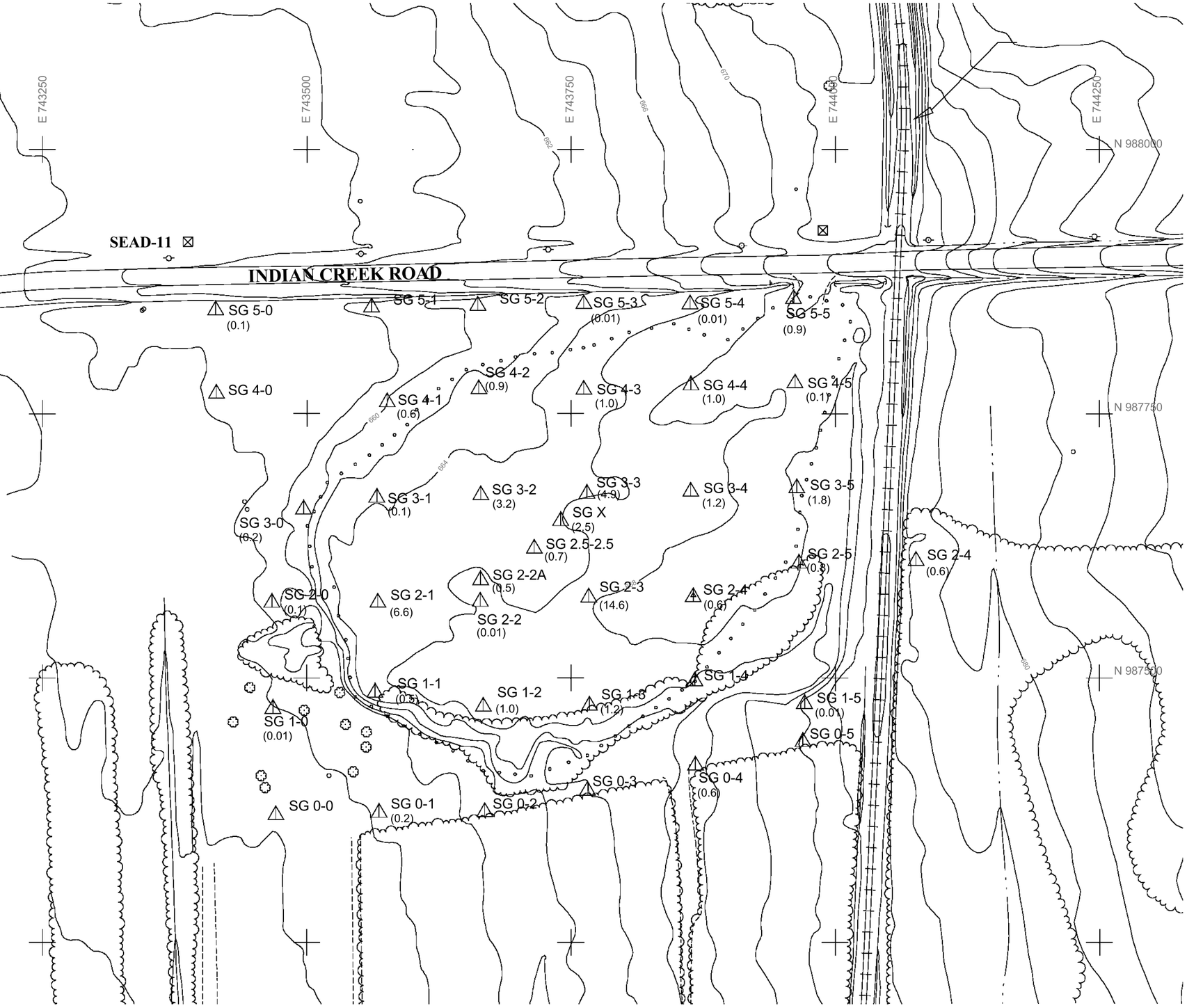


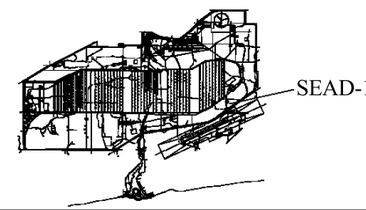
LEGEND

- RAILROAD TRACK
- EDGE OF WATER
- PROPERTY LINE
- ROAD
- FENCE
- 680 CONTOUR ELEVATION
- TREELINE
- SURVEY MONUMENT
- UTILITY POLE
- DECIDUOUS TREE
- LANDFILL EXTENT

△ SOIL GAS POINT
SG 2-1 (0.2) SOIL GAS ID
CONCENTRATION
parts per million volume (ppm V) of trichloroethene

100 0 100 Feet

KEY PLAN



PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-11 ACTION MEMORANDUM

FIGURE 2-3

SEAD-11
SOIL GAS SURVEY RESULTS

JOB NUMBER: 734543-01000 | DATE: APRIL 2003

o:\seneca\sead-11\sead11.apr

TP11-5
21 J

TP11-8
4000

TP11-11

TP11-12
16000

TP11-1
410

TP11-9
12000

TP11-13
40000

TP11-6
3600

TP11-14
130

TP11-2
13

TP11-3
69

TP11-4
40

TP11-7
77

TP11-10
610 J

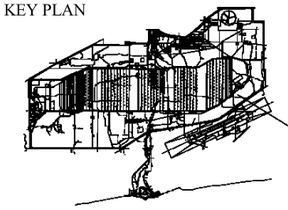
LEGEND

- PAVED ROAD
- 680 GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- TEST PIT LOCATION WITH TCE CONCENTRATION (UG/KG)

NOTE:
-THE TAGM VALUE FOR TCE IS 700UG/KG

100 0 100 Feet

KEY PLAN



SEAD-11
Area of
Study

PARSONS

SENECA ARMY DEPOT ACTIVITY

ACTION MEMORANDUM
SEAD-11

FIGURE 2-4

TCE CONCENTRATIONS
IN SURFACE SOILS

JOB NUMBER: 734543-01001

DATE: APRIL 2003

o:\seneca\sead11\dec doc.apr

TP11-5
21 J

TP11-8
4000

TP11-11

TP11-12
16000

TP11-1
410

TP11-9
12000

TP11-13
40000

TP11-6
3600

TP11-14
130

TP11-2
13

TP11-3
69

TP11-4
40

TP11-7
77

TP11-10
610 J

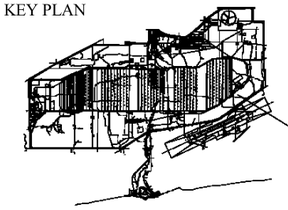
LEGEND

- PAVED ROAD
- 680 GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- TEST PIT LOCATION WITH TCE CONCENTRATION (UG/KG)

NOTE:
-THE TAGM VALUE FOR TCE IS 700UG/KG

100 0 100 Feet

KEY PLAN



SEAD-11
Area of
Study

PARSONS

SENECA ARMY DEPOT ACTIVITY

ACTION MEMORANDUM
SEAD-11

FIGURE 2-5

TCE CONCENTRATIONS
IN SURFACE SOILS

JOB NUMBER: 734543-01001

DATE: APRIL 2003

o:\seneca\sead11\dec doc.apr

TP11-12
7210 J

TP11-11

TP11-5
200 J

TP11-8
2960 J

TP11-1
4050

TP11-9
1140 J

TP11-13
1180 J

TP11-6
1150 J

TP11-14
373 J

TP11-2
84

TP11-3

TP11-4

TP11-7
1160 J

TP11-10
2440 J

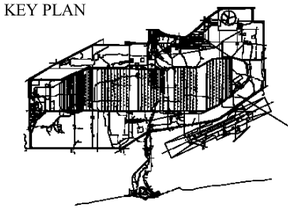
LEGEND

- PAVED ROAD
- 680 GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- TEST PIT LOCATION WITH LEAD CONCENTRATION (MG/KG)

NOTE:
-THE SITE BACKGROUND VALUE FOR LEAD IS 24.8 MG/KG

100 0 100 Feet

KEY PLAN



SEAD-11
Area of
Study

PARSONS

SENECA ARMY DEPOT ACTIVITY

ACTION MEMORANDUM
SEAD-11

FIGURE 2-6
LEAD CONCENTRATIONS
IN SURFACE SOILS

JOB NUMBER: 734543-01001

DATE: APRIL 2003

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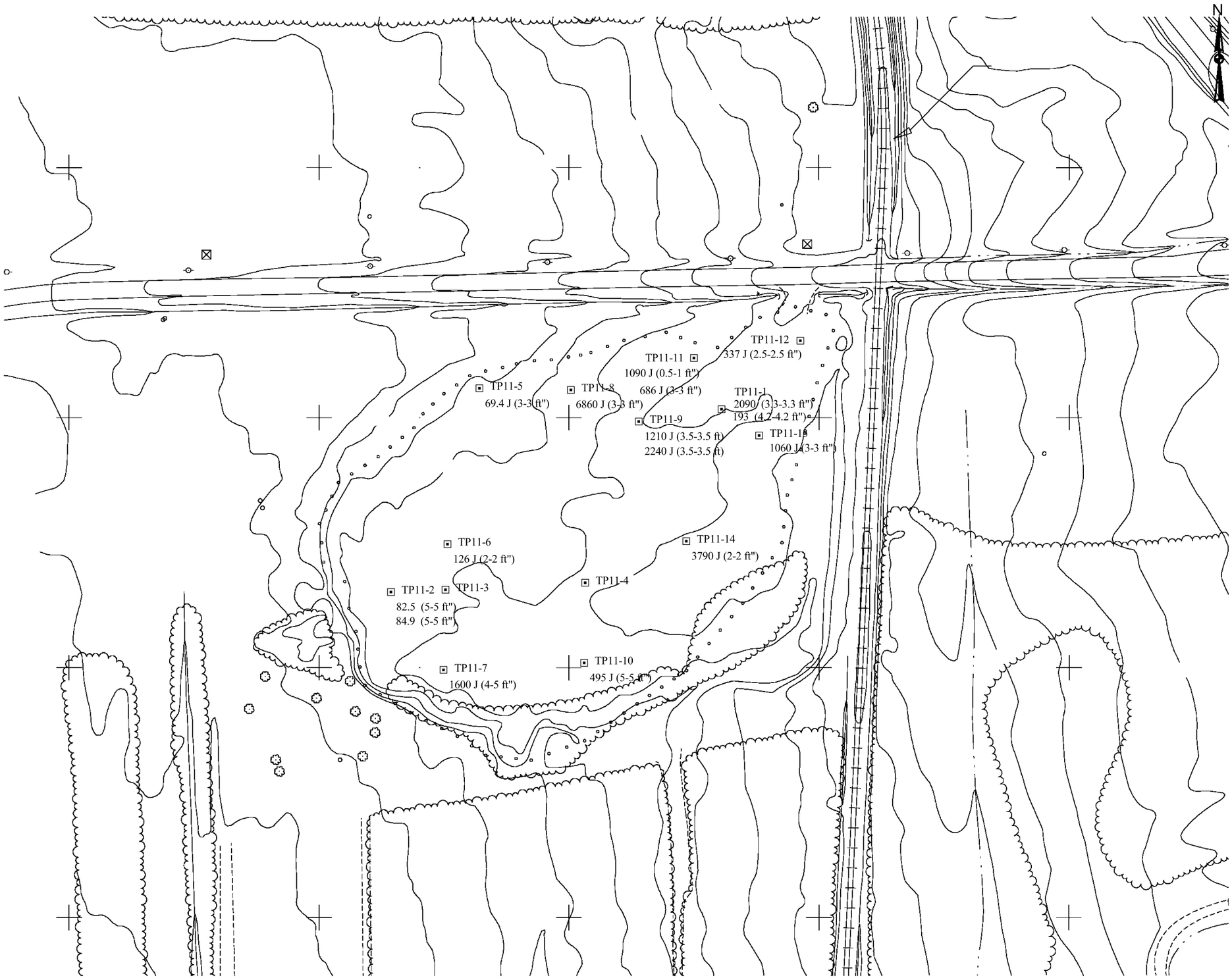


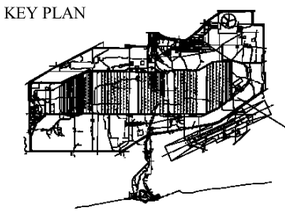
LEGEND

- PAVED ROAD
- 680 — GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- TEST PIT LOCATION WITH LEAD CONCENTRATION (MG/KG) WITH SAMPLE DEPTH INTERVAL

NOTE:
-THE SITE BACKGROUND VALUE FOR LEAD IS 24.8 MG/KG

80 0 80 Feet

KEY PLAN



PARSONS

SENECA ARMY DEPOT ACTIVITY

ACTION MEMORANDUM
SEAD-11

FIGURE 2-7
LEAD CONCENTRATIONS
IN SUBSURFACE SOILS

JOB NUMBER: 734543-01001

DATE: APRIL 2003

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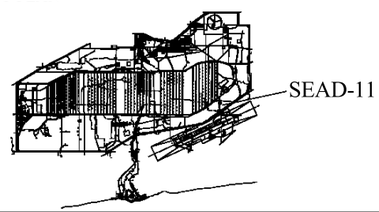
LEGEND

- RAILROAD TRACK
- EDGE OF WATER
- PROPERTY LINE
- ROAD
- FENCE
- 680 CONTOUR ELEVATION
- TREELINE
- SURVEY MONUMENT
- UTILITY POLE
- DECIDUOUS TREE
- LANDFILL EXTENT
- MONITORING WELL
- SURVEY MONUMENT
- TEST PIT

100 0 100 Feet

KEY PLAN



PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-11 ACTION MEMORANDUM

FIGURE 5-1

SEAD-11
PROPOSED REMOVAL ACTION

JOB NUMBER: 734543-01000 | DATE: APRIL 2003

o:\seneca\sead-11\sead11.apr

Table 5.4-1
Cost Estimate for Excavation/Off-Site Disposal at SEAD-11
SEAD-11 Action Memorandum
Seneca Army Depot Activity

	Recommended Removal Action Excavation/Off-Site Disposal
Cost to Prime	$4,127,568
Cost to Owner	$5,698,960
Annual O&M Costs	$10,000
Present Worth O&M Costs (30 years)	$172,920
Total Evaluated Price	$5,871,880

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 O&M Costs are costs that will occur yearly due to activities such as maintenance and monitoring of the 2-foot vegetative cover.
4. Present Worth Cost is based on a 4% interest rate over 30 years.
5. Total Evaluated Price is the sum of the Project Cost and Present Worth Cost.

REVISED FINAL DECISION DOCUMENT FOR A NON-TIME CRITICAL REMOVAL ACTION AT SEAD-11 SENECA ARMY DEPOT ACTIVITY

Prepared for:

Seneca Army Depot Activity
Romulus, New York

Prepared by:

Parsons
Boston, Massachusetts

Contract No. DACA87-95-D-0031
Delivery Order 18
734543 June 2004

Final Decision Document – SEAD-11
TABLE OF CONTENTS

FIGURES

TABLES

ATTACHMENTS

ABBREVIATIONS AND ACRONYMS

AM	Action memorandum
AOC	Area of Concern
ARAR	Applicable or relevant and appropriate requirements
AQCR	Air Quality Control Region
ASP	Analytical Services Protocol
B	Soil Boring Designation
bgl	Below ground level
BRAC	Base Realignment Closure
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
cm/sec	Centimeter per second
CWA	Clean Water Act
DCE	Dichloroethene
DOD	Department of Defense
DOT	Department of Transportation
ECL	Environmental Conservation Law
EE/CA	Engineering evaluation/cost analysis
EM	Electromagnetic
EPA	United States Environmental Protection Agency
ES	Engineering-Science, Inc
ESI	Expanded Site Inspection
FPPA	Farmland Protection Policy Act
FS	Feasibility Study
ft/day	Feet per day
ft/sec	Feet per second
GC	Gas chromatograph
gpm	Gallons per minute
GPR	Ground Penetrating Radar
IRP	Installation restoration program
m	meter
m/s	meter per second
MAIN	Parsons-Main, Inc.
MCL	Maximum Contaminant Level
MCPP	(±)-2-(4-chloro-2-methylphenoxy)-propanoic acid
µg/kg	micrograms per kilogram
µg/L	micrograms per liter

ABBREVIATIONS AND ACRONYMS - Continued

mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ML	Non Plastic or Low Plasticity Fines Low Liquid Limit
MW	Monitoring well
MSL	Mean Sea Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
O&M	Operations and maintenance
OSHA	Occupational Safety and Health Administration
OVM	Organic Vapor Meter
PA	Preliminary assessment
PAH	Polynuclear aromatic hydrocarbon
PA/SI	Preliminary assessment/site investigation
PCB	Polychlorinated biphenyl
PID	Photo Ionization Detector
PM	Particulate Matter
ppm	Part Per Million
ppmv	Part Per Million by Volume
ppmw	Part Per Million by Weight
POTW	Publicly-Owned Treatment Works
PSCR	Preliminary Site Characterization Report
PT	Monitoring well designation
RCRA	Resource Conservation and Recovery Act
RETEC	Remediation Technologies Incorporated
RI	Remedial investigation
RI/FS	Remedial investigation/feasibility study
ROD	Record of Decision
RQD	Rock quality designation
SB	Soil boring
SCG	Standards, Criteria, or Guidelines
SCS	Soil Conservation Service
SDWA	Safe Drinking Water Act

ABBREVIATIONS AND ACRONYMS - Continued

SEDA	Seneca Army Depot Activity
SEAD	Seneca Army Depot
SCG	New York State Standards, Criteria, and Guidelines
SG	Soil gas survey designation
SI	Site investigation
SIP	State Implementation Plan
SOV	Soil organic vapor
SPDES	State Pollutant Discharge Elimination System
SVE	Soil vapor extraction
SVOC	Semi-volatile Organic Compounds
SWMU	Solid Waste Management Unit
TAGM	Technical and Guidance Memorandum
TARGET	Target Environmental, Inc.
TBC	To be considered
TCE	Trichloroethene
TP	Test pit
TPH	Total petroleum hydrocarbons
UCL	Upper Confidence Limit
USACE	U.S. Army Corps of Engineers
USAEHA	U.S. Army Environmental Hygiene Agency
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USDA	U.S. Department of Agriculture
USGS	U.S. Geologic Survey
UST	Underground storage tank
VOA	Volatile organic analysis
VOC	Volatile organic compounds
Vs	Volt-second

1.0 INTRODUCTION

1.1 EXECUTIVE SUMMARY

An Expanded Site Inspection (ESI) and Additional Sampling Program have been performed at SEAD-11, the Construction Debris Landfill, at the Seneca Army Depot Activity (SEDA) in Romulus, NY. This decision document presents the proposed plan for conducting a non-time critical removal action at SEAD-11 to address contaminants that have been identified in the soil that represent a potential threat to the environment and neighboring populations. This removal action is considered non-time critical removal action. Originally, the Army planned on conducting a time critical removal action. However, transfer of adjoining property to re-users has occurred more slowly than initially planned. The presence of drums and other containers and the uncertainty of their contents is justification for a removal action at the site.

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 non-time critical removal action at SEAD-11 is to remove an identified source of residual chemical materials in the soil to eliminate or at least lessen the magnitude of the potential threat that it represents to surrounding populations and the environment. At this site, the soil cleanup goals for VOCs, SVOCs (except carcinogenic PAHs), pesticides, and PCBs are the New York State Department of Environmental Conservation's (NYSDEC's) Technical and Administrative Guidance Memorandum (TAGM) #4046 values; the cleanup goal for carcinogenic PAHs are based on a 10 ppm benzo(a)pyrene toxicity equivalent, calculated according to NYSDEC guidance sent to the Army in a letter dated January 26, 2004. The soil cleanup goals for metals are based on the 95th percentile of SEDA site background data. The metals cleanup goals are presented in **Appendix D**.

The test pitting investigation conducted at SEAD-11 has confirmed the presence of 55-gallon drums and other containers at the landfill. 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 landfill area at geophysical anomalies and the contamination in soils and groundwater are considered justification for performing a removal action at SEAD-11. While removal of drums and other containers is the focus of the planned removal action for SEAD-11, the potential for contamination to be present in the soil and groundwater that surround these items will also be addressed by this action. In addition, the removal action would address the potential source of tetrachloroethene, trichloroethene, and metals detected in the groundwater downgradient of the landfill.

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. Based upon the results of these investigations, it is recommended that the soil and debris at the site be removed, segregated, and managed at an off site permitted 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. Further actions to address residual contamination in the soil and groundwater, if any, will be evaluated following the removal action during the completion of the RI/FS process.

For SEAD-11, it is recommended that 36,300 cubic yards of soil and debris material, assumed to be the source of geophysical anomalies, be removed from the landfill. Drums and construction debris will be screened out and disposed off-site. The excavated soil exceeding the soil cleanup goals may be stabilized (as needed), transported, and disposed at a permitted off-site facility. The extent of the area requiring excavation will be confirmed via sampling and analysis, and once completed, the excavation will be refilled with excavated soil with concentrations less than the soil clean up objectives, regraded with topsoil as needed, and seeded for vegetative cover.

1.2 OBJECTIVE OF THIS DOCUMENT

The Seneca Army Depot Activity (SEDA) has formerly been used for 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 also established in support of the depot mission. Waste management was integrated with the SEDA management mission.

Management waste materials produced from these operations has been in accordance with the requirements of the Resource Conservation Recovery Act (RCRA). As part of the requirements of RCRA, the Depot identified a total of 72 Solid Waste Management Units (SWMUs). 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 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 New York State Department of Environmental Conservation (NYSDEC) negotiated and finalized a Federal Facility Agreement (FFA) 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 five groups (i.e., No Further Action, High Priority, Moderate Priority, Moderately Low Priority, and Low Priority SWMUs). Subsequent to the US 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 Department of Defense's Base Realignment and Closure (BRAC) process. With SEDA's inclusion on the BRAC list, the US 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 US Army to finalize decisions and actions for SWMUs, regardless of ranking, so that these sites may be released for non-military use.

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 New York State Department of Environmental Conservation (NYSDEC), the U.S. Environmental Protection Agency, Region II (EPA), and the IAG.

This document focuses on one of the SWMUs, the Construction Debris Landfill (SEAD-11). SEAD-11 was classified as Moderately High Priority. SEAD-11 was evaluated in this document in order to present the selected non-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 National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The data used for the evaluation was obtained through sampling performed through an Expanded Site Inspection (ESI) and an Additional Sampling Program. Based upon the results of the Expanded Site Inspection and Additional Sampling Program, it is recommended that the soils and debris at the site be removed, segregated, and disposed of at an off-site permitted waste landfill.

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. 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 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.

The goal of this document with respect to SEAD-11 is to:

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

Additional information clarifying and substantiating recommendations pertinent to SEAD-11 is provided in the following sections of this Report.

1.3 HISTORIC OVERVIEW

The Seneca Army Depot Activity (SEDA) lies between Cayuga and Seneca Lakes in New York's Finger Lake 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.

Activities conducted at SEDA use chemical materials, and generate wastes that contain hazardous materials. The generation, storage, treatment, shipment, and disposal of hazardous wastes are regulated under the Resource Conservation and Recovery Act – 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 US Army, the New York State Department of Environmental Conservation (NYSDEC), and the US Environmental Protections Agency (EPA). Initially, environmental investigations were conducted under the Department of Defense's (DoD's) Installation Restoration Program (IRP) but subsequently these programs were performed under the Comprehensive Environmental Response, Compensation, and Liability Act – 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 ground water, soil, sediment and surface water collected and characterized. On July 14, 1989, the US EPA proposed SEDA for inclusion on the National Priority List (NPL) based on a hazard ranking score of 37.3. Supporting its recommendation for listing, the US 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-11236 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 Base Realignment and Closure (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 was retained to prepare an Environmental Baseline Survey 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 condition 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 SEAD-11 is as a conservation and recreation area.

1.5 SOLID WASTE MANAGEMENT UNIT CLASSIFICATION

As mandated by the EPA Region II and by NYSDEC, the U.S. Army Corps of Engineers 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.

A total of 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.

2.0 SITE CHARACTERIZATION

2.1 BASE DESCRIPTION AND HISTORY

This section provides a brief overview of SEDA and the conditions at the Construction Debris Landfill (SEAD-11). The site was 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 *Project Scoping Plan for Performing a CERCLA Remedial Investigation / Feasibility Study at SEAD-11, 64A and 64D* as well as the *ESI Report for Three Moderately High Priority SWMUs* (Parsons ES, 1995b).

SEAD-11 is located in the southwestern portion of SEDA as shown in **Figure 2-1**. It is characterized by an area of elevated topography that defines the landfill's general shape. The landfill, which covers approximately four acres (590 feet by 300 feet), is currently abandoned and the surface is vegetated with grasses and weeds. There are no developed portions of the site. The site is bound to the east by SEDA railroad tracks beyond which is an upward sloping field with grass and low brush. South of the site is dense low brush. West of the site is an open grass field that ends at the fenced SEDA boundary. Indian Creek is located approximately 700 feet west of the "toe" of the landfill. The site is bounded to the north by Indian Creek Road beyond which is an open grass field which gives way to trees and low brush several hundred feet from the road.

The relief of the landfill is well defined on the generally west-sloping regional topography in the area. On the landfill surface the topography slopes mostly to the northwest. The apparent thicker fill in the southern and western portions of the landfill results in steep scarps on the south and southwestern sides of the landfill and more gently sloping hills on the north and northwestern sides. While the majority of the landfill surface is grass-covered, the southern perimeter of the landfill is vegetated with deciduous trees. Assorted construction debris including metal and scrap wood and several empty 55-gallon drums were observed on the southern and southwestern edges of the landfill.

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 2-2** shows the regional geology of Seneca County. In the vicinity of SEDA, Devonian age (385 million years bp) rocks of the Hamilton group are monoclinally folded and dip gently to the south (**Figure 2-3**). 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 is 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 2-4** 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^{o} E, N 30^{o} W, and N 20^{o} 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 bp) glacial till deposits overlie the shales. **Figure 2-5**, 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 2-6** 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 A.J., 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 toward 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 the wells were drilled through. 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 depth of these wells was 36 feet. The geologic material that 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^{o}E, N30^{o}W, and N20^{o}E are present within this unit (Mozola, 1952). 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 2.2-1 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 drains into Reeder Creek. The northeastern portion of the depot, which includes a marshy area called the Duck Ponds, drains into Kendaia Creek and then flows north into the Cayuga-Seneca Canal and 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, Inc. using Darcy's law, between PT-17 and PT-18 is 2.2 x 10^{-7} ft/sec, 1.9 x 10^{-2} ft/day or, 6.9 feet per year (ft/yr) based on a hydraulic conductivity of 3.3 x 10^{-5} cm/sec (9.33 x 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 5.0x10^{-1} ft/day (1.8x10^{-4} cm/sec). The hydraulic conductivities ranged from 2.02 x 10^{-2} ft/day (7.06x10^{-6} cm/sec) to 1.47 ft/day (5.19x10^{-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 2.8x10^{-1} ft/day (9.9x10^{-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 U.S. Army Environmental Hygiene Agency (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 1.01x10^{-3} ft/day (3.56x10^{-7} cm/sec). The typical range for glacial tills, described by Freeze and Cherry (1979), is between 3x10^{-1} ft/day (1x10^{-4} cm/sec) and 3x10^{-7} ft/day (1x10^{-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 2-7**.

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 2-8**). This precipitation is derived principally from cyclonic storms, which pass from the interior of the county through the St. Lawrence Valley. Lakes Seneca, Cayuga and Ontario 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 most 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 isopleths 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 Genesee-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 army 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 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 in further detail land uses and environments of this region. 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 is 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 total area of SEDA is 10,587 acres, of which 8,382 are designated storage areas for ammunition, storage and warehouse, and open storage and warehouse. Land use at the depot is controlled by the facility mission. 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.

Land use is divided into three categories at the depot. The Main Post accounts for 9,832 acres and consists of an exclusion area containing partially buried, reinforced concrete igloos, general storage magazines, and warehouses. The cantonment areas of the facility consist of the North and South Posts. The North Post, at the north end of the Main Post, includes troop housing, troop support, and community services. The South Post is located in the southeast portion of the facility near Route 96 and is a developed area containing warehouses, administration buildings, quarters, and community services.

The intended land use plan for SEAD-11 is as a conservation and recreation area as shown in **Figure 2-9**. 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

Based on the results of the ESI program, till and calcareous black shale are the two major geologic materials present at the site. To the immediate east of the Construction Debris Landfill (at MW11-3) the till is thicker compared to other areas on the site. The till is light brown and composed of silt and clay, and some black shale fragments, however, larger shale fragments (rip-up clasts) were observed at many locations near the till weathered shale contact. Some fine sand lenses were also observed. Weathered (oxidized) lenses were noted in the upper portions of the till.

Competent, calcareous black shale was encountered at depths between approximately 9 and 14 feet below the ground surface. The elevations of the competent bedrock determined during the drilling and seismic programs indicate that the bedrock surface slopes to the west mimicking the land surface. The upper portion of the shale had a weathered zone that was from 1 to 3 feet thick.

2.6 SITE-SPECIFIC HYDROLOGY AND HYDROGEOLOGY

Surface water flow from precipitation events is controlled by local topography. The west-trending topographic gradient is relatively steep and uniform in the areas north and south of the landfill, but the gradient becomes less steep and somewhat irregular beyond the "toe" of the landfill. Based on the topographic expression, surface water flow on most of the landfill surface is to the north-northwest and it is likely to be captured by the east-west trending swale located on the south side of Indian Creek Road. The swale drains west toward the SEDA boundary. Some surface water likely drains off of the landfill "toe" where it collects in a relatively flat area and eventually drains either to the north into the swale along Indian Creek Road or to the south in a relatively straight drainage swale which is covered by vegetation. An elongated topographically low area that abuts the southeastern corner of the landfill collects surface water, which drains from the eastern portion of the site, between the landfill and the SEDA railroad tracks.

Based upon the monitoring well data, the groundwater flow direction in the till/weathered shale aquifer is generally towards the west (**Figure 2-10**). It is likely that the landfill is responsible for the slight westward bulge in the groundwater contours (i.e., semi-radial flow) near the "toe" of the landfill, although the array of wells does not allow a more detailed portrayal of the flow patterns.

2.7 CONTAMINATION ASSESSMENT

Geophysical surveys and four test pits were performed during the ESI to identify burial sites at SEAD-11. Four monitoring wells were installed. Soil (surface, subsurface), soil gas, and groundwater were collected and analyzed as part of the investigation (**Figure 2-11**). The results are presented in the *ESI Report for Three Moderately High Priority SWMUs* (Parsons ES, 1995b).

Test pits were excavated as part of an Additional Sampling Program conducted in October 2000 to investigate the geophysical anomalies detected during the ESI. Ten test pits were excavated and three additional monitoring wells were installed during the field program. Two rounds of groundwater sampling were conducted in November 2000 and February 2001.

The following sections summarize the nature and extent of contamination identified at this site.

2.7.1 Geophysics: Seismic Survey

Four seismic refraction profiles, each 115 feet long, were performed as part of the geophysical investigations for the ESI at the locations shown in **Figure 2-12**. The results of the seismic refraction survey conducted in SEAD-11 are shown in **Table 2.7-1**. The seismic profiles detected 4 to 17 feet of till (1,100 to 5,400 feet per second) overlying bedrock (11,500 to 13,100 ft/s). In particular, the till material includes loose, unsaturated till (1,100 to 1,300 ft/s); compact unsaturated till (2,400 ft/s); and saturated till (5,000 to 5,400 ft/s).

Saturated till was detected only beneath profile P4. At the locations of the other profiles, either saturated till was not present or the saturated layer was too thin to be detected by the seismic refraction method. Profile P2 suggests that a layer of compact, unsaturated till is present at a depth of 4 to 5 feet. A review of the relative elevation of bedrock demonstrates that the bedrock surface slopes to the west following the slope of the surface topography.

2.7.2 Geophysics: EM-31 Survey

An electromagnetic survey (EM-31) was performed at SEAD-11 during the ESI along the transects shown in **Figure 2-12**. **Figure 2-13** shows the apparent conductivity measured by the EM-31 survey at SEAD-11. The extent of the construction debris landfill is clearly shown as the roughly circular zone of low conductivity values occupying the central portion of the EM grid. Negative apparent conductivities have been grouped together and represented by the lowest conductivity range shown in the figure. The measured apparent conductivities over the landfill are predominantly negative. The minimum conductivity was -94 millisiemens per meter (mS/m). It is worth noting that negative conductivities are a physical impossibility. The Geonics EM-31 is calibrated to measure apparent conductivity under certain limiting conditions, including the assumption of a horizontally-layered earth model. Many of these assumptions are violated at the construction debris landfill due to the presence of metallic debris within the fill layer. The manner in which the EM-31 signal interacts with subsurface metallic debris results in negative conductivity values being calculated by the instrument's software. Actually, the quantity that is measured is proportional to the quadrature, or out-of-phase, component of the EM field.

The EM grid was extended beyond the limits of the landfill to define background apparent conductivities of the subsurface. A substantial change in the electrical properties of the soil was observed across the site. The apparent conductivity increases by about 6 mS/m from south to north across the EM grid. The higher conductivities in the northern portion of the site could be attributed to several factors, such as increased clay content in the soil or a higher concentration of dissolved

solids in the groundwater or soil moisture. Since the most conductive area was located along the roadway, road salt should be considered a possible explanation for the increase in the apparent conductivity.

The in-phase response of the EM-31 survey is shown in **Figure 2-14**. The extent of the landfill is again clearly defined by the chaotic response occupying the main portion of the surveyed area. The landfill can be divided into two parts on the basis of the in-phase response: the northeastern one-half of the landfill generally shows higher in-phase values than the southwestern portion. Since the in-phase response is particularly sensitive to ferrous material, it is inferred that the northeastern portion of the landfill has a higher concentration of buried metallic debris. A number of small isolated metallic objects were detected by the in-phase response beyond the limits of the landfill. A lineament in the apparent conductivity and in-phase response was detected along the south side of the roadway. This feature may be caused by buried utilities.

2.7.3 Geophysics: GPR Survey

A GPR survey was conducted at SEAD-11 during the ESI along the transects shown in **Figure 2-12** to confirm the extent of the construction debris landfill at SEAD-11. **Figure 2-15** shows a typical radar record acquired over the boundary of the landfill. The left side of the record shows the chaotic response and multiple overlapping anomalies caused by buried debris. The right side of the record shows the relatively uniform and homogeneous response of undisturbed soil. The boundary of the landfill is generally marked by a sharp contact on the GPR records. The extent of the landfill as determined by the GPR survey is identical to that established by the EM-31 survey.

In the previous section, it was noted that the baseline conductivity of the subsurface increases towards the north within the study area. This change was also observed in the GPR records. The records acquired beyond the limits of the landfill along the northern and western portions of the grid exhibit weak, near-surface reflections. This is attributed to greater attenuation of radar waves travelling through more conductive soil. The GPR records acquired in the southern portion of the site show strong subsurface reflections and banding across much of the time window of the records. The deeper penetration and stronger reflections are caused by the enhanced propagation of radar signals in more resistive overburden.

2.7.4 Test Pitting Program for the ESI

Four test pits were excavated in SEAD-11 to characterize the types of geophysical anomalies present within the landfill (**Figure 2-11**). The test pit logs are presented in **Attachment D.** The GPR and EM conductivity surveys detected dense concentrations of overlapping anomalies throughout the landfill. The in-phase component of SEAD-11 delineated a zone of enhanced response in the northeast portion of the landfill. Since the in-phase response is sensitive to ferrous material, it was inferred that the northeastern portion of the landfill has a higher concentration of buried metallic debris.

As predicted by the in-phase response, much of the excavated material was metallic debris, including

various scrap metal, metallic rods, and metallic webbing. Although abundant metallic material was encountered, the dominant type of fill was nonmetallic, including soil, large concrete slabs and fragments, and asphalt. The predominant fill materials were construction debris (concrete, glass, and nails) dark brown soil, gravel, and boulders.

2.7.5 Test Pitting Program for the Additional Sampling Program

Ten test pits, TP11-5 through TP11-14, were excavated in SEAD-11 as part of the Additional Sampling Program to further characterize the types of geophysical anomalies detected by the GPR and EM conductivity surveys and to locate the source of volatiles detected during the soil gas survey. **Figure 2-11** shows the locations of the test pits. The GPR, EM survey, and soil gas survey were conducted during the ESI field program. The following list describes the material found in each test pit:

- Test pit TP11-5: Sheet metal edging, roofing material, asphalt, asbestos building material, tar, and pea stone was found in the test pit.

- Test pit TP11-6: The anomaly at this location were 4 to 5-foot round cylindrical metal pieces. In addition brick, other metal debris, wire, and household trash were found in the test pit.

- Test pit TP11-7: The anomaly at this location was an old washing machine filled with blue material. This material was sampled.

- Test pit TP11-8: Auto parts, a crushed container, and wire were found at this location.

- Test pit TP11-9: A crushed 55-gallon drum, stainless steel 35-gallon drum, bottles, bricks, wire, and rotted wood were excavated. One sample was collected from below each of the drums.

- Test pit TP11-10: Ash, household trash, drywall, bottles, steel piping, and sheet metal were excavated.

- Test pit TP11-11: Four bomb tail assemblies to 260-pound bombs were excavated along with bricks, fasteners, nuts, bolts, and a crushed metal container. A soil sample was collected from underneath the crushed container. The tail assemblies were inspected by ordnance experts, and it was determined that these components do not represent a safety risk.

- Test pit TP11-12: Ash, household trash, piping, and asbestos building material were excavated.

- Test pit TP11-13: A crushed 55-gallon drum and two empty 37 mm shell casing were excavated. One soil sample was collected from below the 55-gallon drum.

- Test pit TP11-14: Chain link fencing, a crushed galvanized steel trash can, and metal piping were found. One soil sample was collected from below the trash can.

The field personnel also walked the site and found nine 55-gallon drums at the southern edge of the landfill approximately 165 feet east of monitoring well MW11-7. The drums were partially buried. One drum was labeled "ANTI-FREEZE TYPE I" and another was labeled "TRICHLOROETHYLENE, TECHNICAL".

2.7.6 Soil Gas Survey

Soil gas samples were collected as part of the ESI at 31 of 39 sample locations on a grid pattern as shown in **Figure 2-16**. Two areas in the landfill area were identified where elevated concentrations of VOCs in soil gas were detected, including: vinyl chloride, 1,2-dichloroethene, trichloroethene, toluene, and ethylbenzene (**Table 2.7-2**). The first area is located in the center of SEAD-11 and is associated with soil gas sampling points SG2-3, SG3-2, SG3-3 and SG-X. The second area is located west of this area and associated with sample SG2-1. The second area appears to be isolated from the first area. Both areas are approximately 100 feet apart in the southwestern portion of the landfill. Two test pits (TP11-4 and TP11-3) were excavated at soil gas sample points SG2-3 and SG2-1. The excavations uncovered mostly building materials including concrete blocks, wire, pipe, glass, and plastic in a clayey sand and gravel matrix. Neither excavation uncovered any material that could be pinpointed as a source for the volatiles detected at these locations.

2.7.7 Summary of Affected Media

Soils

Fifteen soils samples were collected from one soil boring (SB11-3) and four test pits during the ESI. Soil boring SB11-3 is located east and upgradient of the Construction Landfill. Monitoring well MW11-1 was installed at this location. The soil samples were analyzed for TCL VOCs, SVOCs, pesticides/PCBs, explosives, herbicides, TAL metals and cyanide, nitrates, and Total Recoverable Petroleum Hydrocarbons.

A total of 22 soil samples were collected from the test pits excavated during the Additional Sampling Program. Two soil samples were collected from each test pit. One surface soil sample was collected and one soil sample was collected at the depth having the highest reading on the Photoionization Detector. In some test pits, a soil sample was collected from underneath a drum or container. The soil samples were analyzed for VOCs and TAL metals.

Table A-1 in **Attachment A** presents the results of the chemical analyses for soil at SEAD-11 from both field programs. Summary statistics for the soil samples are presented in **Table 2.7-3**.

A total of ten VOCs were found in the surface and subsurface soil samples collected at SEAD-11.

Of the ten compounds detected, two compounds (acetone and trichloroethene) were detected at concentrations above TAGM in the soil samples analyzed (**Table 2.7-3**). Acetone was found in three soil samples above the TAGM of 200 ug/kg. The maximum concentration of 3200 ug/kg was detected in the sample from TP11-13 at a depth of three feet. Trichloroethene (TCE) was found in 14 soil samples at concentrations above the TAGM of 700 ug/kg. The maximum concentration of 42,000 ug/kg was found in test pit TP11-13 at a depth of three feet. This soil sample was collected from beneath a crushed 55-gallon drum found in the test pit. The second highest concentration of TCE (40,000 ug/kg) was detected in the surface soil sample also collected from TP11-13. A concentration of 28,000 ug/kg of TCE was detected in the soil sample from TP11-9. This soil sample was collected from below a 35-gallon drum at a depth of 3.5 feet. DCE was also detected in this soil sample at a concentration of 2200 ug/kg. TCE was detected at a concentration of 16,000 ug/kg in the soil sample from TP11-12. This test pit contained ash, household trash, piping, and asbestos building material. TCE in surface and subsurface soils are presented in **Figures 2-17 and 2-18**.

A total of 19 SVOCs were detected in the soil samples from SEAD-11. Sixteen SVOCs were found at concentrations above associated TAGM values (**Table 2.7-3**). The compounds benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and dibenz(a,h)anthracene had the largest number of exceedences. The maximum concentrations of most of the compounds listed above were from TP11-2 (5’ depth).

Ten pesticides and no PCBs were detected in the soil samples collected during the ESI. One compound, 4,4-DDT, was detected at concentrations exceeding the TAGM value of 2,100 ug/kg. The maximum concentration of 4,300 ug/kg was found in surface soil from TP11-3. The other exceedance (2,400 ug/kg) was also detected in TP11-3 (2-4’).

Five explosives were detected in the soils at SEAD-11.

Three herbicides were detected in the soil samples collected during the ESI. None of the compounds were detected at concentrations above associated TAGM values.

Of the 24 metals detected in the soil samples analyzed from the ESI and Additional Sampling Program, 23 of these were found in one or more samples at concentrations above the associated TAGM values. Of particular note are the metals antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, mercury, nickel, silver, sodium, thallium, and zinc, where a significant percent of the samples exceed the TAGM value. **Figures 2-19 and 2-20** show the concentrations of lead in the surface and subsurface soils at SEAD-11.

Groundwater

A total of seven groundwater monitoring wells were installed at SEAD-11. Four monitoring wells, MW11-1, MW11-2, MW11-3, and MW11-4, were installed during the ESI field program and three additional overburden monitoring wells, MW11-5 through MW11-7, were installed during the Additional Sampling program in October 2000. Three rounds of groundwater sampling

have been conducted to date at SEAD-11. One round was conducted for the ESI in late 1993 and early 1994. Two rounds were conducted for the Additional Sampling Program in November 2000 and February 2001. Monitoring wells MW11-1, MW11-2, MW11-3, and MW11-4 were sampled three times. The remaining wells were sampled twice.

The groundwater samples were analyzed for TCL VOCs (Method 524.2 for Round 2), SVOCs, pesticides/PCBs, explosives, TAL metals according to NYSDEC CLP SOW, cyanide, pH, and nitrate/nitrogen by EPA Method 353.2.

The discussion below will focus on the more recent groundwater data collected from the wells during the Additional Sampling Program (November 2000 and February 2001) because this data depicts the most recent groundwater conditions at SEAD-11, and represents a larger database since several of the wells were not installed for the ESI. Furthermore, the low-flow groundwater sampling method was implemented during the Additional Sampling Program and resulted in low turbidity groundwater samples, which are more representative of the groundwater at the site.

Groundwater results were compared to the lowest value from the following criteria: New York State Class GA standards, Federal Drinking Water Standards Maximum Contaminant Levels (MCLs) and secondary MCLs.

Summary statistics for the groundwater analyses are shown in **Table 2.7-4** and **Table 2.7-5**. The table of the results of the chemical analyses for the groundwater from the ESI and the Additional Sampling Program are presented in **Attachment A**.

Groundwater Sampling Round 1 – November 2000

Two volatile organic compounds were detected in three of the seven monitoring wells sampled at the site. Tetrachloroethene was detected in two groundwater samples from MW11-6 and MW11-7 at concentrations of 2 μg/L and 0.4 μg/L (estimated), respectively. Both concentrations are below the NYS Class GA standard of 5 μg/L. Trichloroethene was detected in the groundwater samples from MW11-3 and MW11-6 at concentrations of 0.7 μg/L (estimated) and 2 μg/L, respectively. Both concentrations are below the NYS Class GA standard of 5 μg/L.

Five SVOCs were detected in the seven monitoring wells sampled at the site during the Additional Sampling Program. 2,4,5-Trichlorophenol, 2,4,6-trichlorophenol, butylbenylphthalate, dimethylphthalate, and pyrene were the SVOCs detected. There are no associated NYS Class GA standards for these compounds.
One pesticide was found in the groundwater samples collected from SEAD-11. 4,4-DDT was detected in the groundwater sample from MW11-6 at a concentration of .006 μg/L (estimated). The NYS GA standard for 4,4-DDT is 0.2 μg/L.

No nitroaromatic compounds were detected in the groundwater samples collected from the seven monitoring wells sampled at SEAD-11.

Fifteen metals were detected in the seven monitoring wells sampled at SEAD-11.

Five metals were found at concentrations that exceeded their respective NYS Class GA or EPA MCL standard. Aluminum was detected in five monitoring wells at concentrations above the EPA Secondary MCL. The maximum concentration of 184 μg/L (estimated) was detected in groundwater from MW11-5. Antimony was detected in one sample at a concentration that exceeds the NYS GA standard of 3 μg/L. Iron, with a maximum concentration of 302 μg/L in MW11-5, exceeded the GA standard in one of the seven wells sampled on-site. Manganese was detected at a maximum concentration of 772 μg/L in monitoring well MW11-7, which exceeded the EPA Secondary MCL of 50 μg/L. Sodium was detected in groundwater from three monitoring wells at concentrations above the NYS GA standard of 20,000 μg/L. The maximum concentration of sodium of 36,800 μg/L was detected in groundwater from MW11-2.

Comparison of groundwater collected from SEAD-11 to the site background groundwater (**Table B-2, Attachment B**) indicates that the average concentrations of aluminum (2,730 μg/L), antimony (8.2 μg/L), iron (4,480 μg/L), and sodium (14,600 μg/L) from the site background were higher than the maximum concentrations found at SEAD-11.

Groundwater Sampling Round 2 – February 2001

Two volatile organic compounds were detected in three of the seven monitoring wells sampled at the site. Tetrachloroethene was detected in two groundwater samples from MW11-6 and MW11-7 at concentrations of 2 μg/L and 0.42 μg/L (estimated), respectively. Both concentrations are below the NYS Class GA standard of 5 μg/L. Trichloroethene was detected in the groundwater samples from MW11-4 and MW11-6 at concentrations of 0.64 μg/L (estimated) and 2 μg/L, respectively. Both concentrations are below the NYS Class GA standard of 5 μg/L.

One SVOC was detected in the seven monitoring wells sampled at the site during the Additional Sampling Program. Di-n-octylphthalate was detected in groundwater samples from MW11-2 (.072 μg/L, estimated) and MW11-6 (0.062 μg/L, estimated).

No pesticides or PCBs were found in the groundwater samples collected from SEAD-11 during Round 2.

No nitroaromatic compounds were detected in the groundwater samples collected from the seven monitoring wells sampled at SEAD-11.

Fifteen metals were detected in the seven monitoring wells sampled at SEAD-11. Five metals were found at concentrations that exceeded their respective NYS Class GA or EPA MCL standard. Aluminum was detected in five monitoring wells at concentrations above the EPA Secondary MCL. The maximum concentration of 284 μg/L (estimated) was detected in groundwater from MW11-5. Iron, with a maximum concentration of 533 μg/L in MW11-5, exceeded the GA

standard in one of the seven wells sampled on-site. Manganese was detected at a maximum concentration of 294 μg/L in monitoring well MW11-7, which exceeded the EPA Secondary MCL of 50 μg/L. Sodium was detected in groundwater from two monitoring wells at concentrations above the NYS GA standard of 20,000 μg/L. The maximum concentration of sodium of 28,900 μg/L was detected in groundwater from MW11-5. Thallium was detected in groundwater from four monitoring wells at concentrations above the EPA MCL of 2 μg/L. The maximum concentration of sodium of 4.2 μg/L was detected in groundwater from MW11-6.

Comparison of groundwater collected from SEAD-11 to the site background groundwater (**Table B-2, Attachment B**) indicates that the average concentrations of aluminum (2,730 μg/L) and iron (4,480 μg/L) from site background were higher than the maximum concentrations found at SEAD-11.

3.0 RECOMMENDATION

This section presents the recommendation of the Army for SEAD-11, which is located in the area of SEDA designated for future use as a Conservation and Recreation Area. The Army recommends that a non-time critical removal action be conducted at this site. Drums and debris will be segregated from the excavated soils and disposed of off site. The excavated soils will be subject to confirmatory sampling prior to being disposed of off site or being backfilled on the site. Any groundwater generated during the removal action will also be characterized as required to determine the proper method for treatment and discharge.

3.1 REMEDIATION GOALS

The goal of the proposed non-time critical removal action at SEAD-11 is to remove an identified source of residual chemical materials in the soil to eliminate or at least lessen the magnitude of the potential threat that it represents to surrounding populations and the environment. At this site, the soil cleanup goals for VOCs, SVOCs (except carcinogenic PAHs), pesticides, and PCBs are the NYSDEC's TAGM #4046 values; the cleanup goal for carcinogenic PAHs are based on a 10 ppm benzo(a)pyrene toxicity equivalent, calculated according to NYSDEC guidance sent to the Army in a letter dated January 26, 2004. The soil cleanup goals for metals are based on the 95th percentile of SEDA site background data. The metals cleanup goals are presented in **Appendix D**.

3.2 RECOMMENDED REMOVAL ACTION

3.2.1 General

The removal action at SEAD-11 would involve the excavation of the entire landfill. The total volume to be excavated is approximately 36,300 cubic yards of soil (**Figure 3-1**). Drums and construction debris will be screened out and disposed off site. The site will then be regraded using topsoil as needed and seeded for long-term grass cover.

3.2.2 Excavation

Excavated soil will be deposited onto temporary, underlined stockpiles. Clean soil potentially useable as backfill will be stockpiled separate from soil most likely not suitable for backfill. Intact drums will be stockpiled separate from soil. Stockpiles will be covered overnight and prior

to significant rain events with flexible polyethylene cover material. Soil ready for offsite disposal will be placed into transport trucks to be brought to the site. The construction contractor will be responsible for water management such that soil meets moisture content requirements for the disposal facility.

Maximum areas to be excavated will be shown on an excavation drawing to be prepared. Excavation areas will be located based on subsurface soil and surface soil concentrations.

Soil will be excavated to depths based on available investigation results. Confirmatory sampling will be conducted in accordance with the procedure described in **Appendix B** of the Action Memorandum. Any additional soil found due to confirmatory sampling that exceeds project requirements will be removed and confirmatory sampling will be repeated.

Small tree stumps and other vegetation not free of soil will be fed through a small grinder prior to being placed in transport trucks. Vegetation free of soil will be chipped and used for erosion control at the site.

Groundwater that needs to be removed from the excavation area in order to allow excavation to proceed will be managed and disposed offsite at an approved treatment facility in accordance with the construction contractor's construction water management plan.

3.2.3 Drum and Asbestos Handling

The primary method of removing drums and debris from the site will likely be a backhoe equipped with a hydraulic grappler. Non-sparking drum slings and drum lifters compatible with the backhoe may also be used to remove the drums. Debris will be handled on a case-by-case basis depending on its size and weight.

Intact drums that likely will not tolerate significant manipulation will be removed and placed directly into an overpack or salvage drum. Any deteriorated drums containing liquids will have the liquids removed using an explosion-proof electric pump as warranted. Any drums with evidence of internal pressure will be isolated as best as reasonably possible in the excavation and overpacked separately from other drums.

As needed, drums will be opened and sampled at a centralized, underlined location most likely using a remote drum drill. Contents will be sampled with a drum thief or following removal of the drum

top. If drum contents cannot be determined in advance, Level B personal protection will be implemented as a safety precaution.

Drums will be transferred to a temporary drum staging area and placed in two rows separated so each drum is readily accessible. The drum staging area will be bermed and underlined to contain drum contents in case of a spill or leak. Drums will be labeled and inventoried within the staging area and removed from Seneca as soon as reasonably possible following excavation and sampling.

If asbestos is encountered during excavation, it will be removed, managed, transported, and disposed in accordance with all applicable regulations.

3.2.4 Disposal and Site Restoration

Soils with concentration of metals, VOCs, SVOCs and other compounds exceeding the clean up goals may be stabilized (as needed) and managed at a permitted offsite facility. These soils will also be analyzed for the Toxicity Characteristic Leaching Procedure (TCLP) limits required for landfill disposal. The soils exceeding TCLP limits may be treated on site or off site as needed. Soils exceeding the SEAD-11 soil cleanup objectives will be transported to an off-site, Subtitle D, permitted solid waste landfill for disposal.

Soils with concentrations of metals and other compounds below the cleanup goals will be backfilled into the former landfill area. The site will be regraded using topsoil as needed and seeded for long-term grass cover. NYCRR Part 360 Regulations may only apply if soils remain that do not meet the cleanup objectives.

3.2.5 Air Monitoring

Air monitoring will be conducted with a photo-ionization detector (PID) during all field activities. The PID will be used to monitor for VOCs in the breathing zone and in excavations, and to screen samples for analysis. PID readings will be recorded in the field book.

If VOCs are detected in the breathing zone with the PID, then precautions detailed in the Health and Safety Plan will be followed.

The PID will be a Photovac MicroTip HL-2000 (or equivalent) equipped with a 10.6 eV lamp. The Photovac MicroTip is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for roughly 54 percent to 73 percent of the VOCs

on the NYSDEC Analytical Services Protocol (ASP) Target Compound List. The detailed procedure for the PID operation is included in the Health and Safety Plan.

Calibration will be performed at the beginning and end of each day of use with a standard calibration gas of a concentration within the expected range of use in accordance with Manufacturer's Calibration Specifications. The calibration gas which is most often used has an approximate concentration of 100 ppm of isobutylene. If abnormal or erratic readings are observed, additional calibration will be required. All calibration data will be recorded in field notebooks and on calibration log sheets to be maintained on-site. A battery check will be completed at the beginning and end of each working to ensure proper voltage.

Site Perimeter Air Monitoring - Real-time air monitoring for volatile compounds at the perimeter of the exclusion zone will be conducted that conforms to the NYSDOH Community Air Monitoring Plan. If particulates become a concern at this site, possibly during excavation activities, this community air monitoring plan will be modified accordingly. Contaminants on site are not anticipated to pose a problem as particulates because of the moisture content of the soil and the effectiveness of spraying water for dust control.

Volatile organic compounds will be monitored at the downwind perimeter of the exclusion zone daily continuously during excavation activities. If total organic vapor levels exceed 5 ppm above background based on 15-minute average concentrations, excavation activities must be halted and monitoring continued under the provisions of the Vapor Emission Response Plan (see below). All air monitoring readings must be recorded and be available for EPA, NYSDEC and NYSDOH personnel to review.

If particulate levels become a concern, the following protocol will be followed. Particulates shall be continuously monitored downwind of the exclusion zone with a portable particulate monitor that would have an alarm set at 150 $\mu g/m^3$. If downwind particulate levels, integrated over a period of 15 minutes, exceed 150 $\mu g/m^3$, then particulate levels upwind of the survey or work site would be measured. If the downwind particulate level is more than 100 $\mu g/m^3$ greater than the upwind particulate level, then excavation activities must be stopped and corrective action taken. Ensure that downwind readings are not elevated by diesel emissions from heavy equipment. All readings must be recorded and be available for EPA, NYSDEC and NYSDOH personnel to review. These action levels can be modified if particulates are specifically characterized and identified.

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the Exclusion Zone, excavation activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, excavation activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the Exclusion Zone, activities can resume provided:

- The organic vapor level 200 ft. downwind of the Exclusion Zone or half the distance to the nearest receptor, whichever is less, but in no case less than 20 feet, is below 5 ppm over background based on 15-minute averages, and

- More frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.

If the organic vapor level is above 25 ppm at the perimeter of the Exclusion Zone work activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest receptor at levels exceeding those specified in the this section.

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the Survey Site or half the distance to the nearest receptor, whichever is less, all work activities must be temporarily halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest receptor from the Exclusion Zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If either of the following criteria are exceeded in the 20-foot zone, then the Major Vapor Emission Response Plan (below) shall automatically be implemented:

- Organic vapor levels approaching 5 ppm above background for a period of more than 30 minutes.

- Organic vapor levels greater than 25 ppm above background for any time period.

Upon activation, the following activities will be undertaken:

1. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.

2. Air monitoring will be conducted within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

3. Emergency contacts will go into effect as appropriate.

3.3 JUSTIFICATION

A non-time critical removal action at SEAD-11 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 the 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. 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 non-time critical removal action at SEAD-11 is to eliminate and contain an identified source of residual chemical materials in the 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.

3.4 POST-REMOVAL VERIFICATION SAMPLING

Verification of the acceptability of the surrounding soil quality will be demonstrated and documented by collecting and analyzing samples that will be analyzed for TCL VOCs, TCL PAHs, TCL pesticides, nitroaromatics, and TAL metals as specified in **Appendix B** of the Action Memorandum. Analytical results produced from the analysis of samples will be compared to soil cleanup objectives applied to this site. If the results from the confirmatory sampling indicate no additional excavation is warranted, excavation will be terminated, and the effected area will be

backfilled (as needed if contaminated soil is excavated), regraded, and seeded. If the analytical results indicate that additional soil should be removed, the excavation area will be expanded.

Confirmation samples will be collected from the bottom of the excavation at a rate of one per 900 square feet (30-foot by 30-foot grid on average) and one sample from each sidewall. Additional sidewall confirmation samples will be collected for each additional 30 linear feet of excavation sidewall. Confirmation samples will be submitted for laboratory analysis for TAL metals, TCL VOCs, nitroaromatics, and TCL PAHs. In addition, 25 percent of the confirmation samples will also be analyzed for TCL pesticides based on locations where these pesticides were detected previously. If analytical results indicate that soils remaining in place exceed the soil cleanup goals developed for the site, the excavation would be extended in that area and the wall or bottom of the extended excavation will be sampled. These steps would be repeated until analytical results indicate that the soil cleanup goals have been achieved. EPA-approved analytical methods will be implemented, and current EPA Region II data validation protocols will be used to validate confirmation sample results.

3.5 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 $5.9 million. Annual costs associated with this removal action include groundwater monitoring for five years. **Table 3.5-1** provides the cost breakdown, with cost backup and assumptions provided in **Attachment C** of this Decision Document.

PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT
SEAD-11

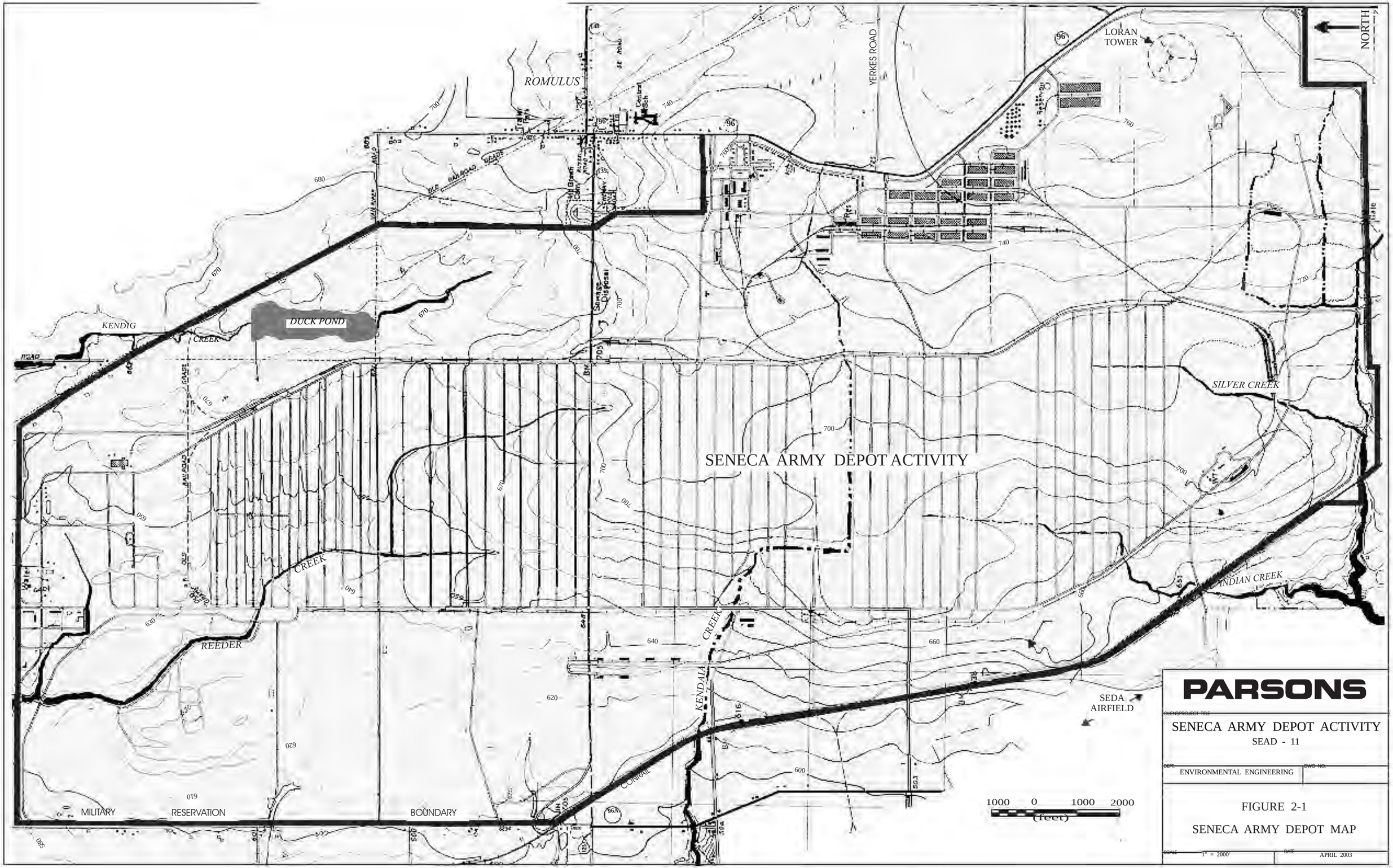
DEPT.	DWG NO.
ENVIRONMENTAL ENGINEERING	736703-01000

FIGURE 1-1

LOCATION MAP

SCALE	DATE
1"= 8 MILES APPROX.	APRIL 2003

R:\PROJECT-GRAPHICS\SENECA\LOCMP1-1.CDR(CLD)



PARSONS

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
SEAD - 11

DEPT. ENVIRONMENTAL ENGINEERING

DWG NO.

FIGURE 2-1

SENECA ARMY DEPOT MAP

SCALE 1" = 2000'

DATE APRIL 2003

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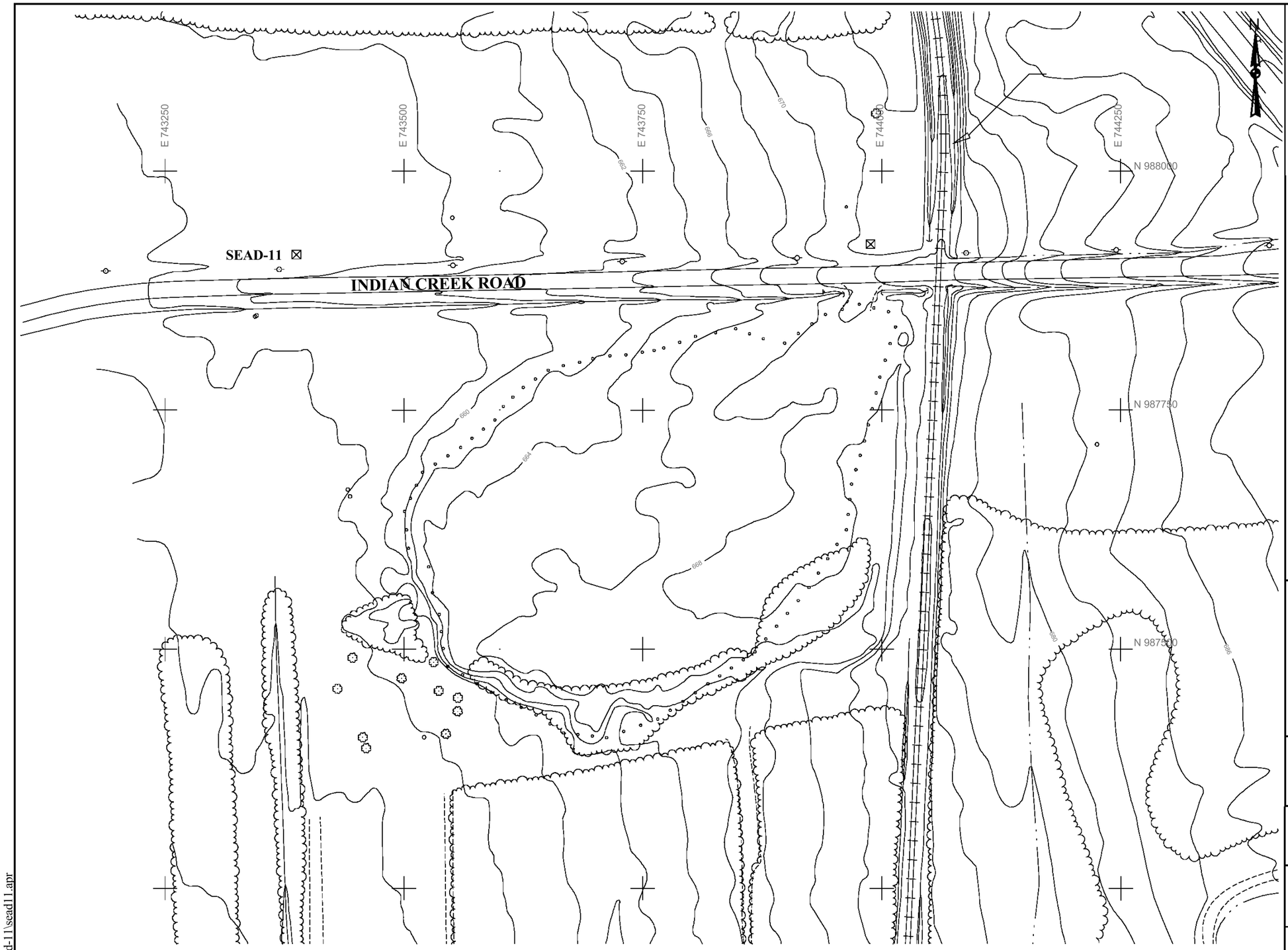
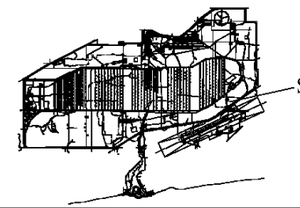


LEGEND

- RAILROAD TRACK
- EDGE OF WATER
- PROPERTY LINE
- ROAD
- FENCE
- 680 CONTOUR ELEVATION
- TREELINE
- SURVEY MONUMENT
- UTILITY POLE
- DECIDUOUS TREE
- LANDFILL EXTENT
- EXISTING MONITORING WELL AND DESIGNATION
- EXISTING TEST PIT AND DESIGNATION

100 0 100 Feet

KEY PLAN



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SENECA ARMY DEPOT ACTIVITY
SEAD-11 DECISION DOCUMENT

FIGURE 2-2

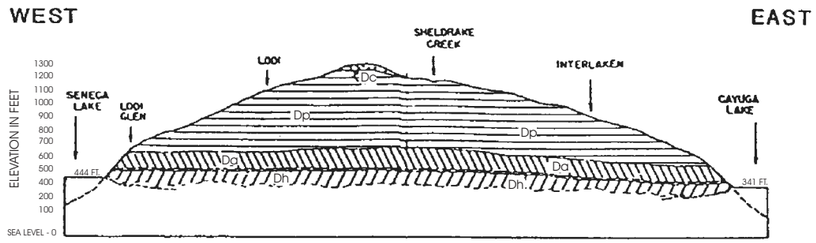
SEAD-11
SITE PLAN

JOB NUMBER: 734543-01000

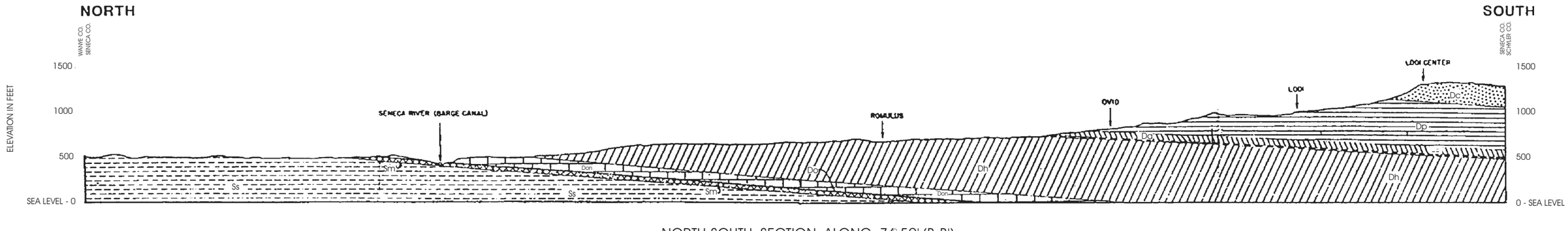
DATE: APRIL 2003

o:\seneca\sead-11\sead11.apr

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



EAST-WEST SECTION ALONG A- A'



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

LEGEND

	Dc	WISCOY SHALE NUNDA SANDSTONE WEST HILL FORMATION GRIMES SANDSTONE	DEVONIAN
UPPER DEVONIAN	Dp	HATCH SHALE CASHAQUA SHALE	
GENESEE GROUP	Da	WEST RIVER SHALE GENESEO SHALE	
		TULLY LIMESTONE	
MIDDLE DEVONIAN	Dh	HAMILTON GROUP: MOSCOW SHALE LUDLOWVILLE SHALE SKANEATELES SHALE MARCELLUS SHALE	
MIDDLE OR LOWER DEVONIAN	Don	ONONDAGA LIMESTONE	
LOWER DEVONIAN	Do	ORISKANY SANDSTONE	
SILURIAN (UPPER)	Sm	MANLIUS AND RONDOUT LIMESTONES AND COBLESKILL DOLOMITE	SILURIAN
	Ss	SALINA FORMATION INCLUDING BERTIE LIMESTONE MEMBER AND CAMILLUSSHALE MEMBER	

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 - SEAD-11

DEPT. ENVIRONMENTAL ENGINEERING
DWG NO. 7341516-01001

FIGURE 2-3

REGIONAL GEOLOGIC CROSS SECTIONS

SCALE AS NOTED
DATE APRIL 2003

PALEOZOIC

Middle Ordovician

TRENTON GROUP
100-300 ft. (30-90 m.)

Utica Shale.

Upper Ordovician

LORRAINE GROUP
700-900 FT. (210-270 m.)

Oswega Sandstone.
Pulaski and Whetstone Gulf Formations-siltstoen, shale.

Lower Silurian

MEDINA GROUP AND QUEENSTON FORMATION
0-900 FT. (0-270 m.)

Medina Group: Grimb sy Formation-sandstone, shale.
Queenston Formation-shale, siltstone.
Undifferentiated Medina Group and Queenston

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.

Upper Silurian

LOCKPORT GROUP
80-175 FT (25-55 m.)

Oak Orchard and Penfield Dolostones, both replaced eastwardly by Scononda Formation-limestone, dolostone.

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. Syracuse Formation-dolostone, shale, gypsum,

Lower Devonian

HELDERBERG GROUP
0-200 ft. (0-60 m.)

Coeymans and Manlius Limestones; Rondout Dolostone.

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.

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 Limestone and Union Springs Shale Members. Panther Mountain Formation-shale, siltstone, sandstone.

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.

Upper Devonian

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.

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

JAVA GROUP
300-700 FT (90-210 m.)

Wiscoy Formation-sandstone, shale; Hanover and pipe creek shales.

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,

CONNEAUT GROUP
600-1000 ft. (180-300 m.)

Germania Formation-shale, sandstone; Whiteville Formation-shale, sandstone; Hinsdale Sandstone; Wellsville Formation-shale, sandstone; Cuba Sandstone.

MESOZOIC

Lower Cretaceous

MESOZOIC INTRUSIVES

Kimberlite and alnoite dikes and diatremes

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 parallel, tightly sealed, trending N.
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 parallel, 2 to 20 inches apart, well
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, slatelike, 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

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PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT - SEAD- 11

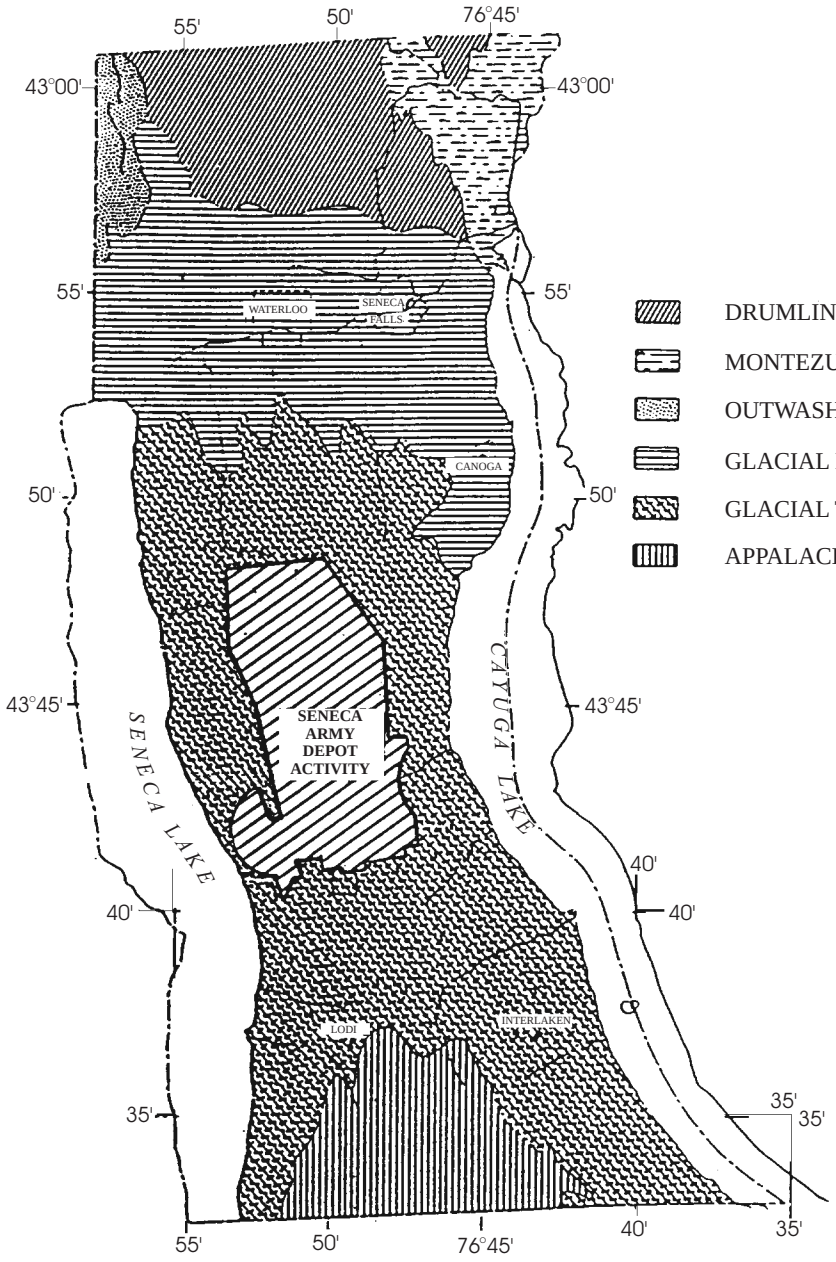
DEPT. ENVIRONMENTAL ENGINEERING
DWG NO. 734516-01001

FIGURE 2-4

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

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CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT- SEAD 11

DEPT. ENVIRONMENTAL ENGINEERING

DWG NO. 734516-01001

FIGURE 2-5

PHYSIOGRAPHIC MAP OF SENECA COUNTY

SCALE 1" = 5 MILES

DATE APRIL 2001

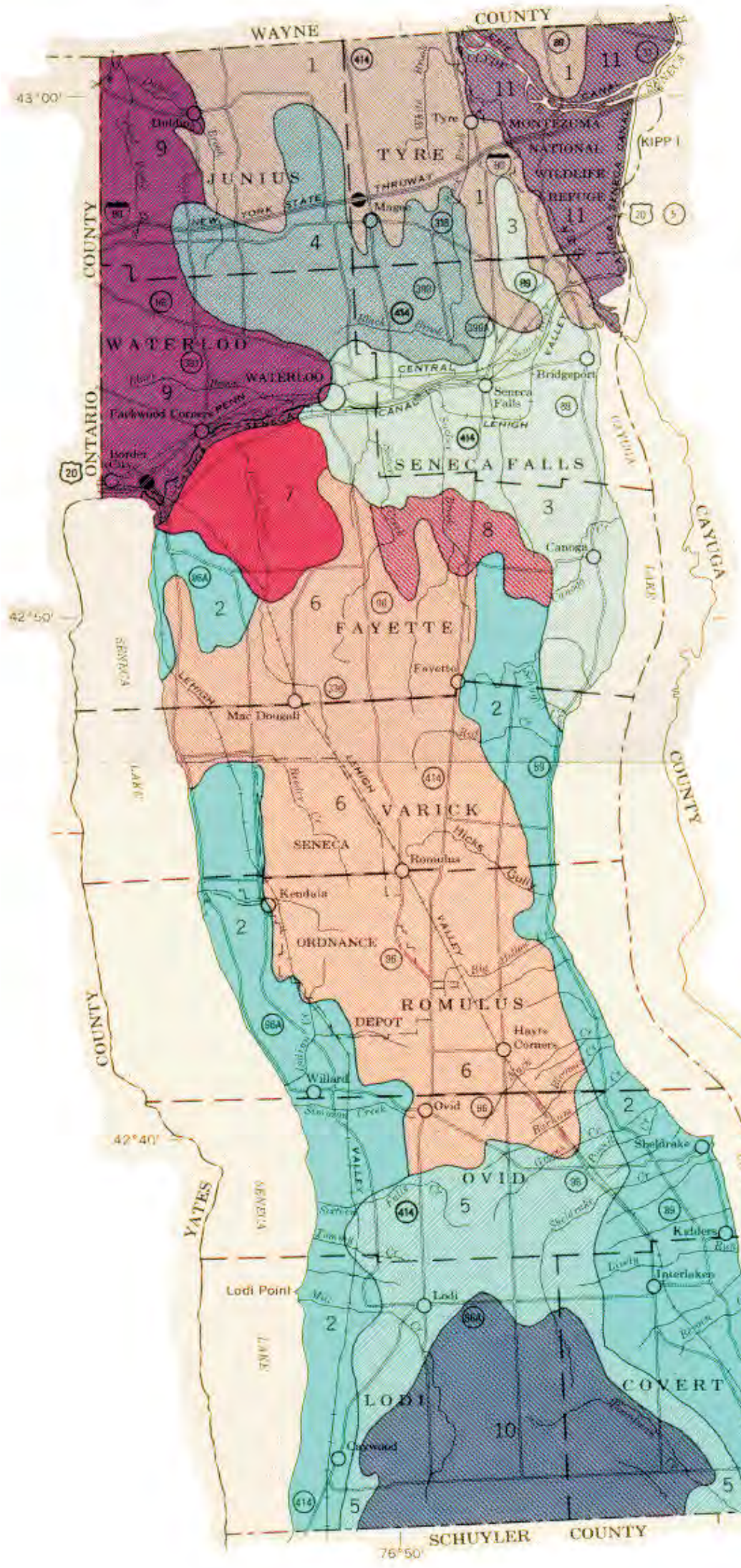
GRAPHICS\SENECA\PHYSIO.CDR(CVM)

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

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SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT - SEAD-11

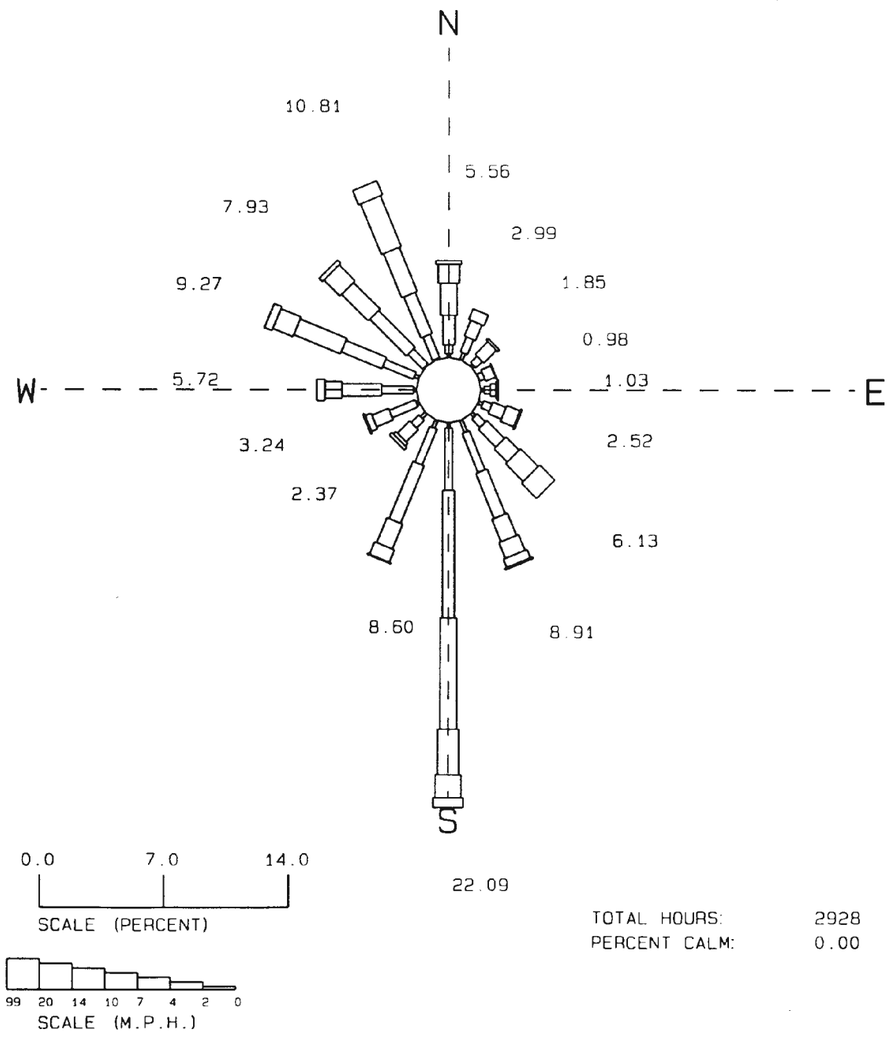
DEPT. ENVIRONMENTAL ENGINEERING | DWG NO. 734516-01001

FIGURE 2-6

GENERAL SOIL MAP
SENECA COUNTY, NEW YORK

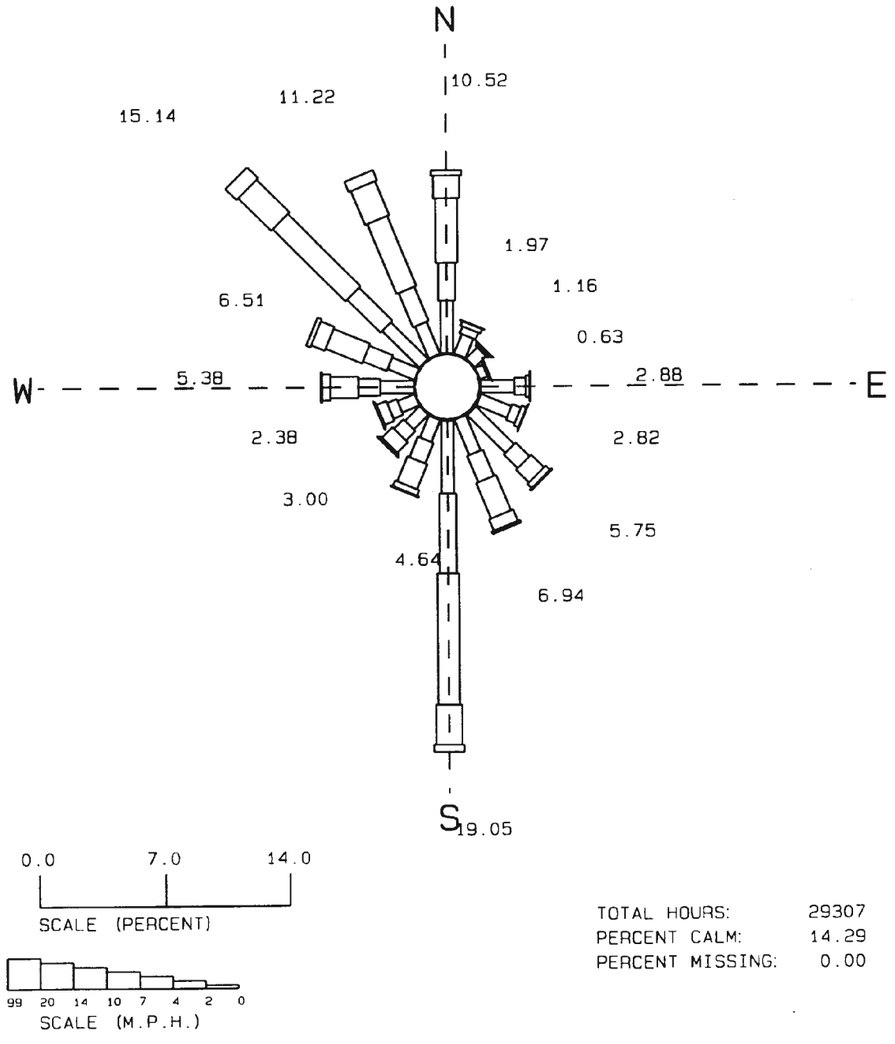
SCALE 1" = 2000' | DATE APRIL 2001

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



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

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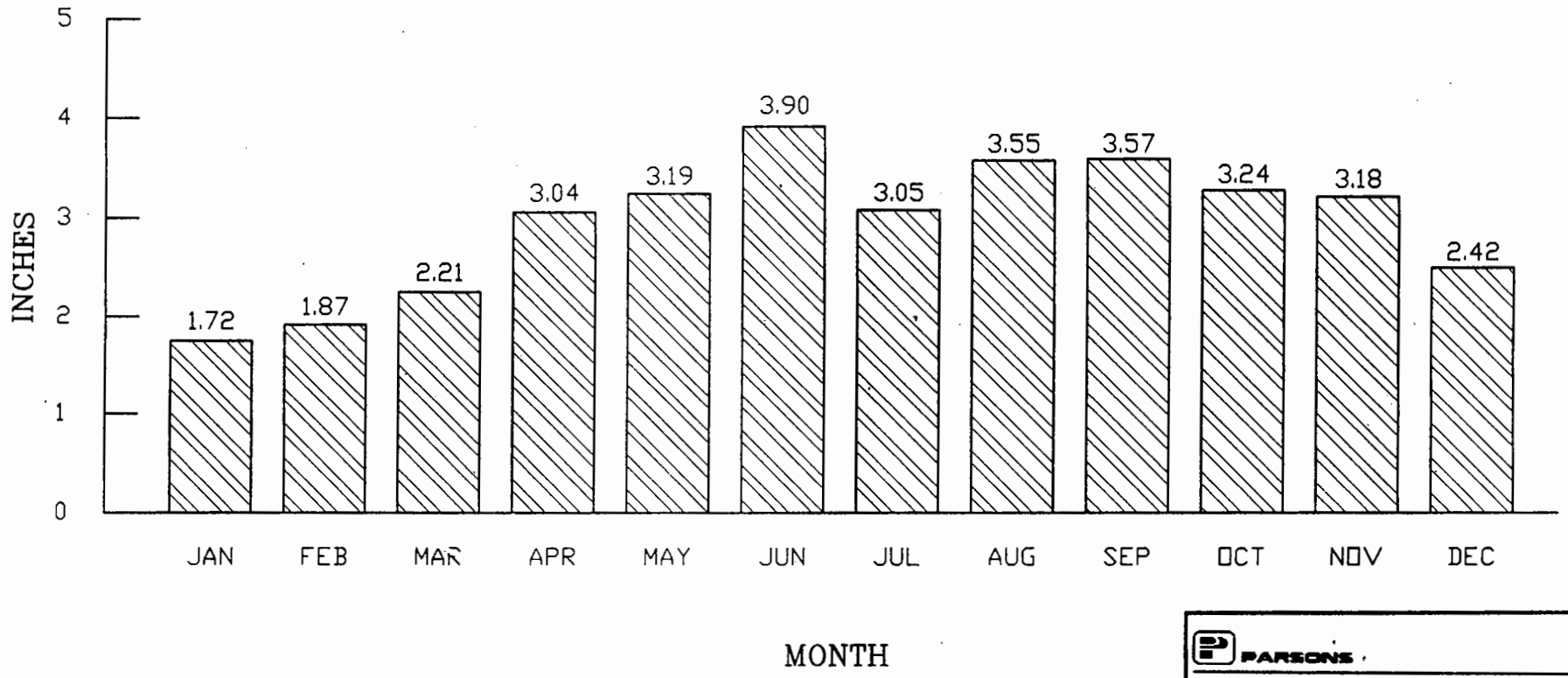
SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT
SEAD-11

DEPT. ENVIRONMENTAL ENGINEERING | DWG NO.

FIGURE 2-7
WIND ROSES

SCALE NA | DATE MAY2003

R:\PROJECT-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.

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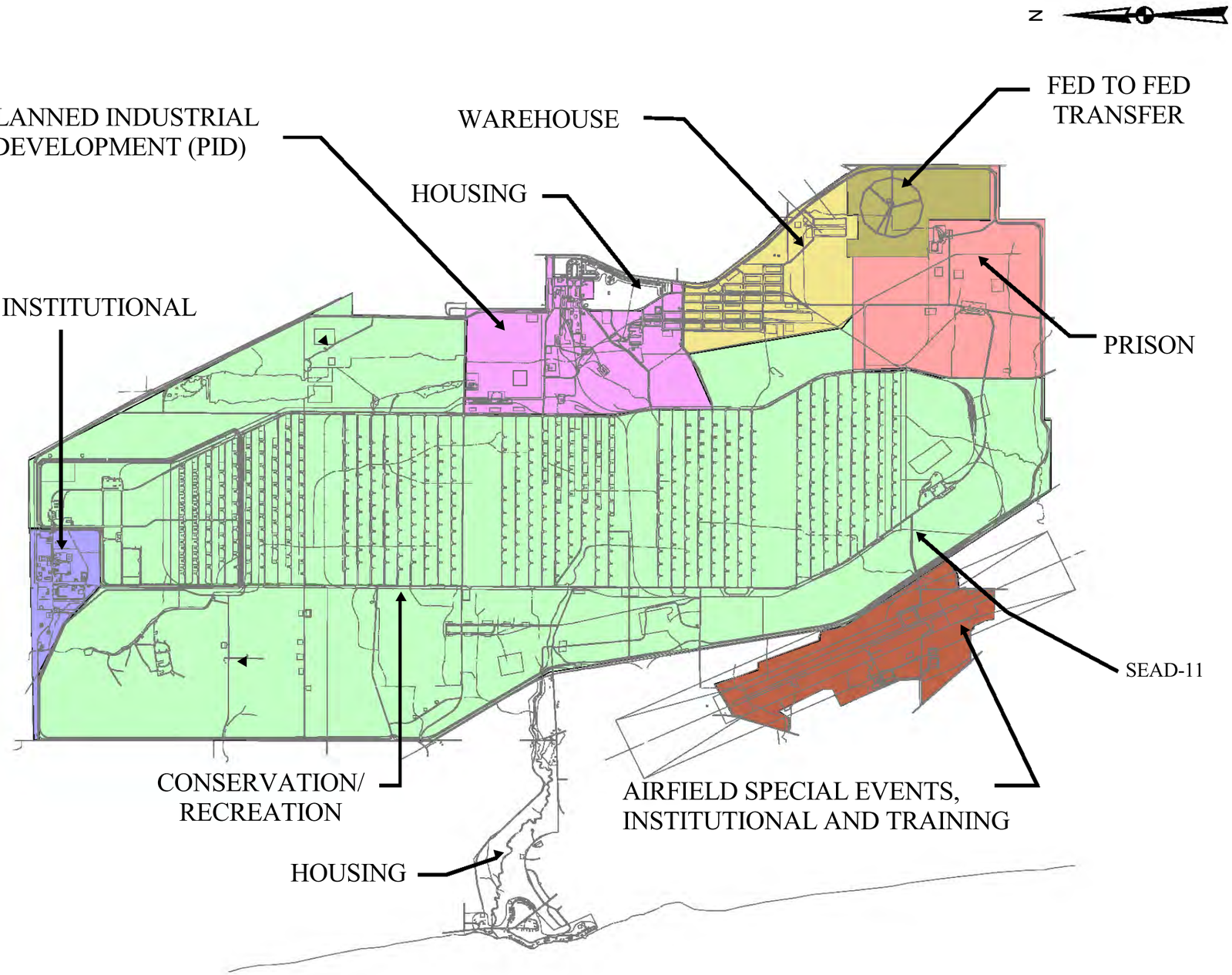
SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT – SEAD-11
SENECA ARMY DEPOT ACTIVITY

FIGURE 2-8

AVERAGE MONTHLY PRECIPATION IN PROXIMITY OF SENECA ARMY DEPOT ACTIVITY

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

S:\SENECA\RIES\SD59.MXG - MNTHLY.MXG



LEGEND

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

SOURCE:
AMENDED LAND USE PLAN - SENECA ARMY DEPOT, BERGMAN ASSOCIATES, MARCH 1999.

4000 0 4000 8000 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT
SEAD-11

FIGURE 2-9
SENECA ARMY DEPOT ACTIVITY
FINAL LAND USE PLAN

JOB NUMBER: 734543-01001 | DATE: APRIL 2003

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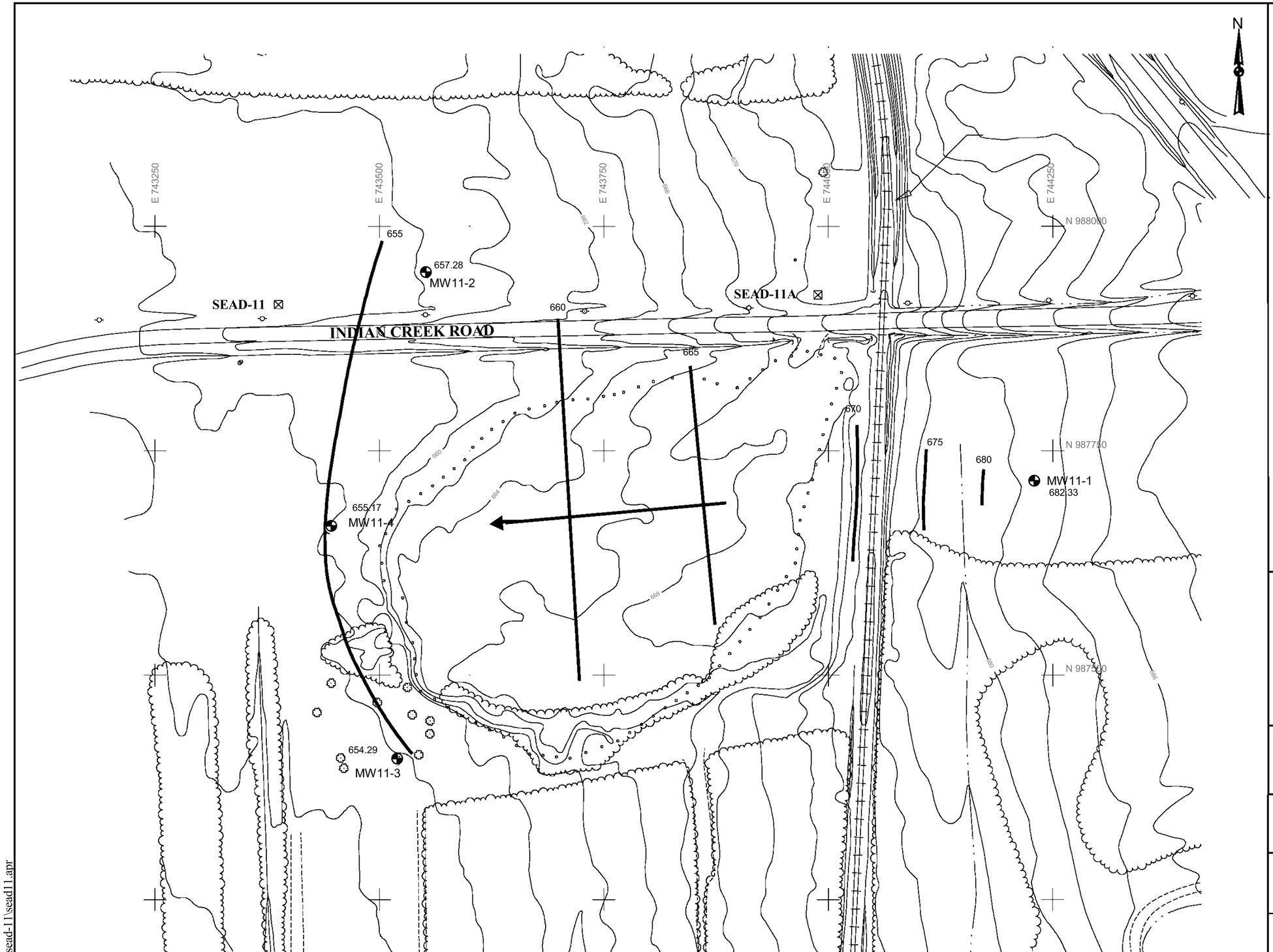


LEGEND

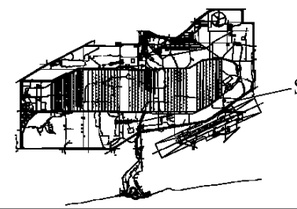
- RAILROAD TRACK
- EDGE OF WATER
- PROPERTY LINE
- ROAD
- FENCE
- 680 CONTOUR ELEVATION
- TREELINE
- SURVEY MONUMENT
- UTILITY POLE
- DECIDUOUS TREE
- LANDFILL EXTENT

MW11-1 682.33 — MONITORING WELL WITH WATER TABLE ELEVATION

670 — GROUNDWATER ELEVATION CONTOUR ARROW INDICATES DIRECTION OF FLOW

100 0 100 Feet

KEY PLAN



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SENECA ARMY DEPOT ACTIVITY
SEAD-11 DECISION DOCUMENT

FIGURE 2-10

GROUNDWATER ELEVATION MAP

JOB NUMBER: 734543-01000

DATE: APRIL 2003

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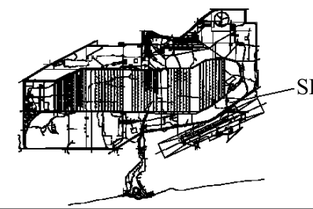
N

LEGEND

- RAILROAD TRACK
- EDGE OF WATER
- PROPERTY LINE
- ROAD
- FENCE
- 680 CONTOUR ELEVATION
- TREELINE
- SURVEY MONUMENT
- UTILITY POLE
- DECIDUOUS TREE
- LANDFILL EXTENT
- EXISTING MONITORING WELL AND DESIGNATION
- EXISTING TEST PIT AND DESIGNATION

100 0 100 Feet

KEY PLAN



PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-11 DECISION DOCUMENT

FIGURE 2-11

SEAD-11
LOCATION OF SAMPLING POINTS

JOB NUMBER: 734543-01000 | DATE: APRIL 2003

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E 743250
E 743500
E 743750
E 744000
E 744250
N 988000
N 987750
N 987500
P1
P2
P3
P4
SEAD-11
SEAD-11A
SEDA Railroad Tracks
Indian Creek Road
680
690
700

LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENT
- RAILROAD
- 760 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDUOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- COORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- SURVEY MONUMENT
- SEISMIC PROFILE
- EM TRANSECT
- GPR TRANSECT
- A' — A GPR Record (shown in report)

50 0 50 100
(feet)

N

NUMBER

PARSONS

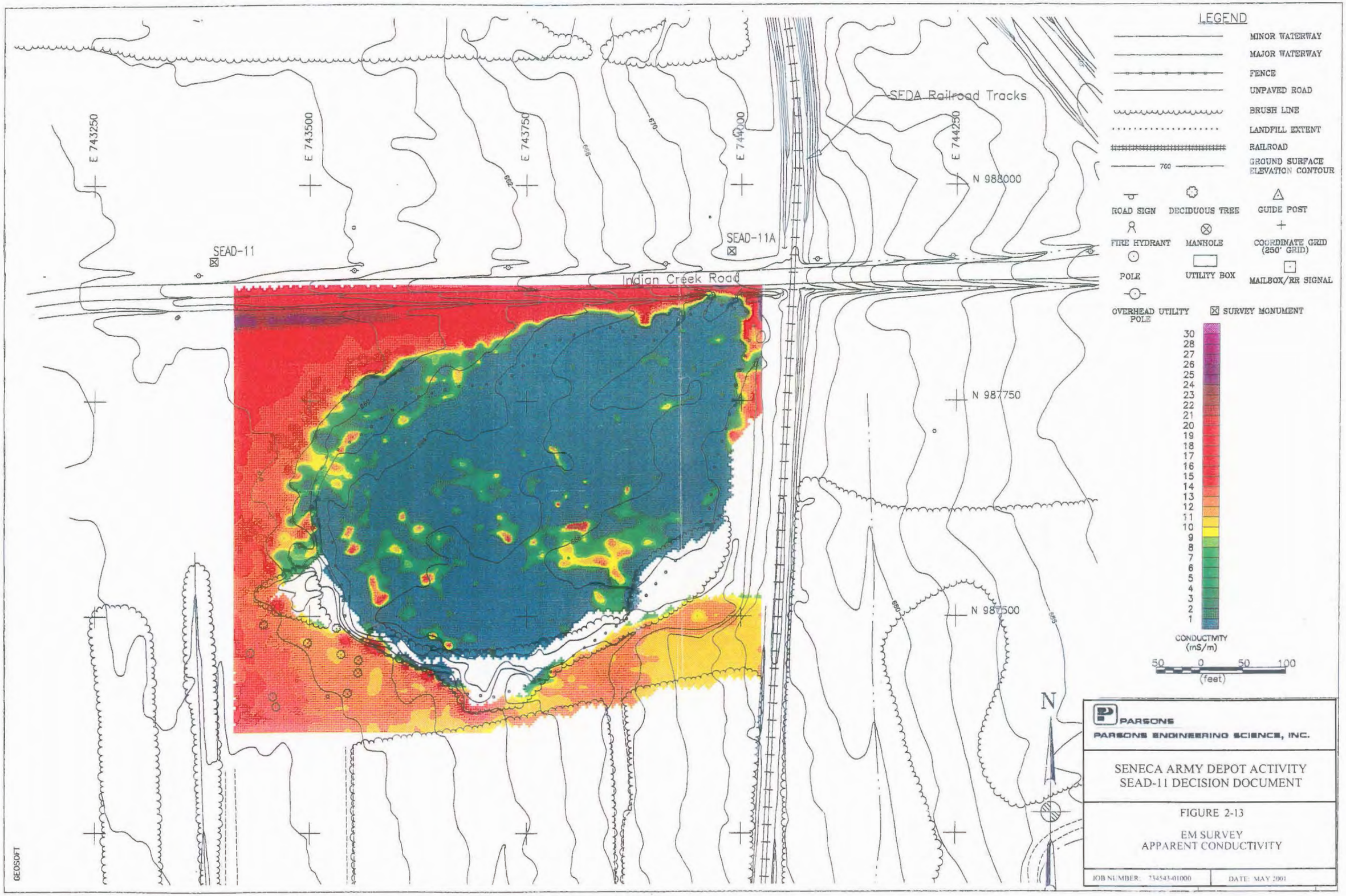
CLIENT/PROJECT TITLE

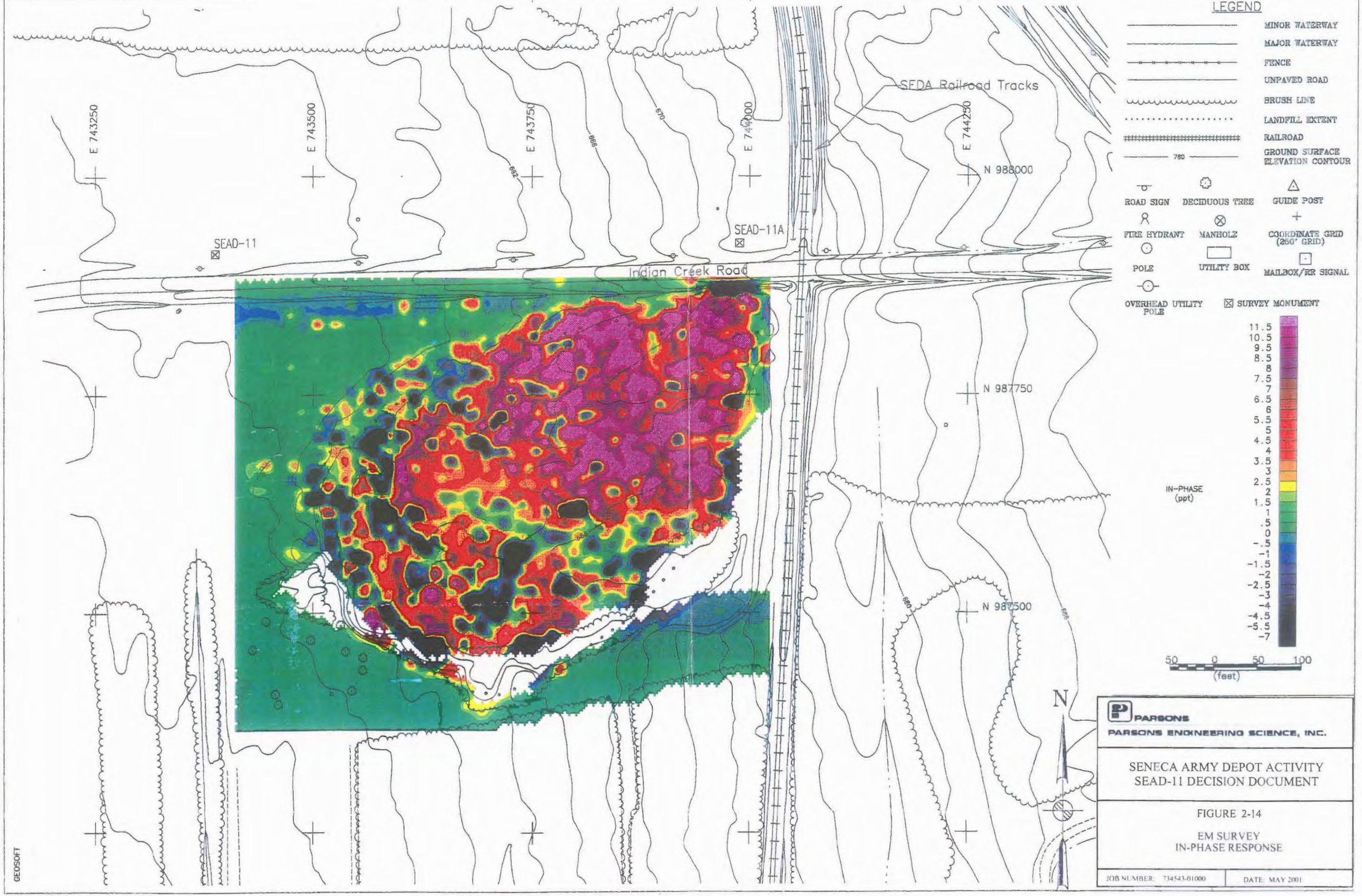
SENECA ARMY DEPOT ACTIVITY
SEAD-11 DECISION DOCUMENT

FIGURE 2-12

LOCATION OF
ESI GEOPHYSICAL SURVEYS

JOB NUMBER 734543-01000 | DATE APRIL 2003


LEGEND
MINOR WATERWAY
MAJOR WATERWAY
FENCE
UNPAVED ROAD
BRUSH LINE
LANDFILL EXTENT
RAILROAD
GROUND SURFACE ELEVATION CONTOUR
ROAD SIGN
DECIDUOUS TREE
GUIDE POST
FIRE HYDRANT
MANHOLE
COORDINATE GRID (250' GRID)
POLE
UTILITY BOX
MAILBOX/RR SIGNAL
OVERHEAD UTILITY POLE
SURVEY MONUMENT
CONDUCTIVITY (mS/m)
30 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
50 0 50 100
(feet)
SEFDA Railroad Tracks
Indian Creek Road
SEAD-11
SEAD-11A
E 743250
E 743500
E 743750
E 744000
E 744250
N 988000
N 987750
N 987500
670
665
660
GEOSOFT
N
PARSONS
PARSONS ENGINEERING SCIENCE, INC.
SENECA ARMY DEPOT ACTIVITY
SEAD-11 DECISION DOCUMENT
FIGURE 2-13
EM SURVEY
APPARENT CONDUCTIVITY
JOB NUMBER: 734543-01000
DATE: MAY 2001


LEGEND
MINOR WATERWAY
MAJOR WATERWAY
FENCE
UNPAVED ROAD
BRUSH LINE
LANDFILL EXTENT
RAILROAD
GROUND SURFACE ELEVATION CONTOUR
ROAD SIGN
DECIDUOUS TREE
GUIDE POST
FIRE HYDRANT
MANHOLE
COORDINATE GRID (250' GRID)
POLE
UTILITY BOX
MAILBOX/RR SIGNAL
OVERHEAD UTILITY POLE
SURVEY MONUMENT
SEFA Railroad Tracks
Indian Creek Road
SEAD-11
SEAD-11A
E 743250
E 743500
E 743750
E 744000
E 744250
N 988000
N 987750
N 987500
IN-PHASE (ppt)
11.5
10.5
9.5
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0
-.5
-1
-1.5
-2
-2.5
-3
-4
-4.5
-5.5
-7
50 0 50 100
(feet)
N
GEOSOFT
PARSONS
PARSONS ENGINEERING SCIENCE, INC.
SENECA ARMY DEPOT ACTIVITY
SEAD-11 DECISION DOCUMENT
FIGURE 2-14
EM SURVEY
IN-PHASE RESPONSE
JOB NUMBER: 734543-01000
DATE: MAY 2001

A

DISTANCE (FEET)

A'

1200

1240

BOUNDARIES OF DISPOSAL PIT

1320

TIME (FT)

0

1

2

3

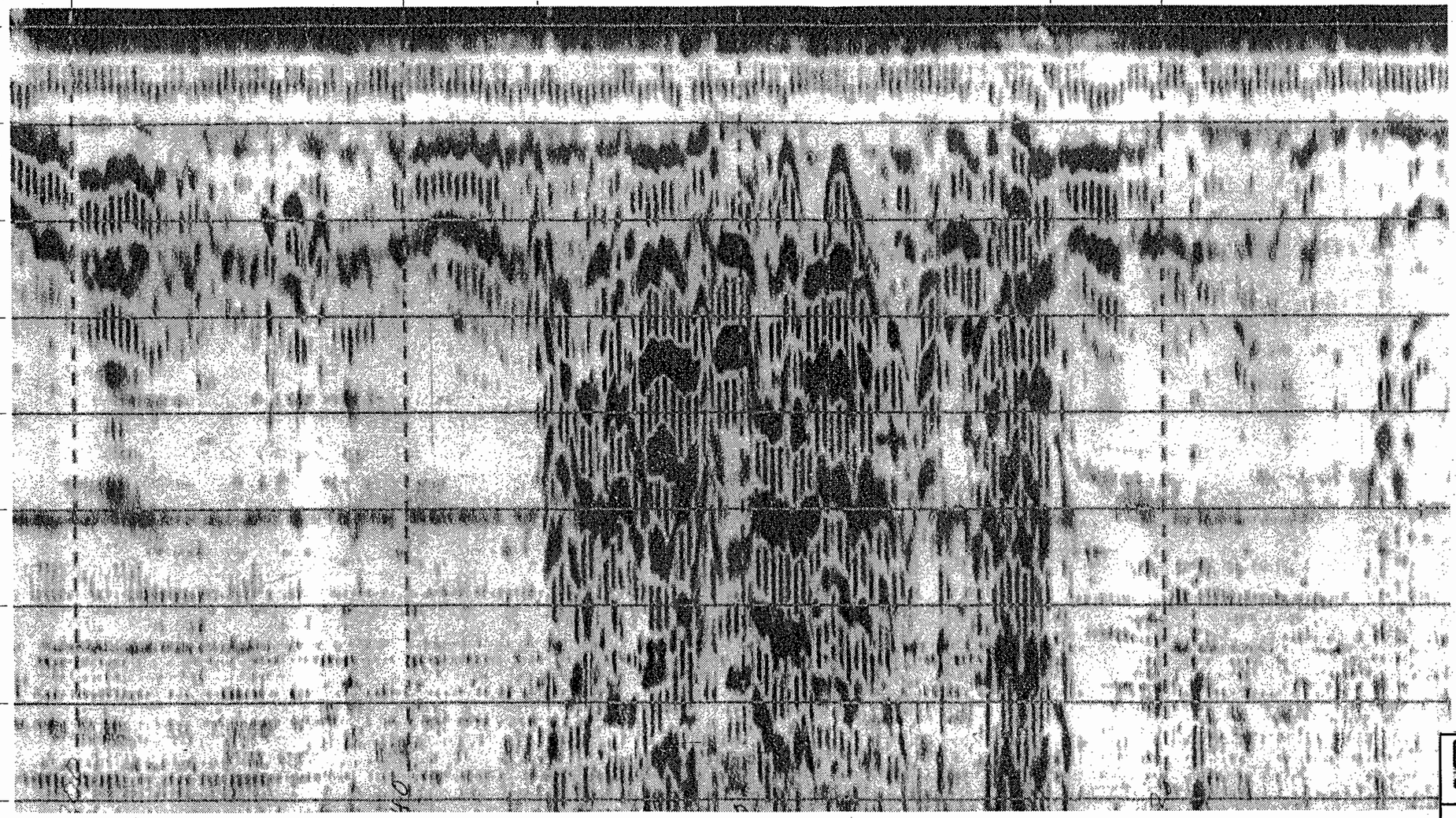
4

5

6

7

8



PARSONS

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SENECA ARMY DEPOT ACTIVITY
SEAD-11 DECISION DOCUMENT

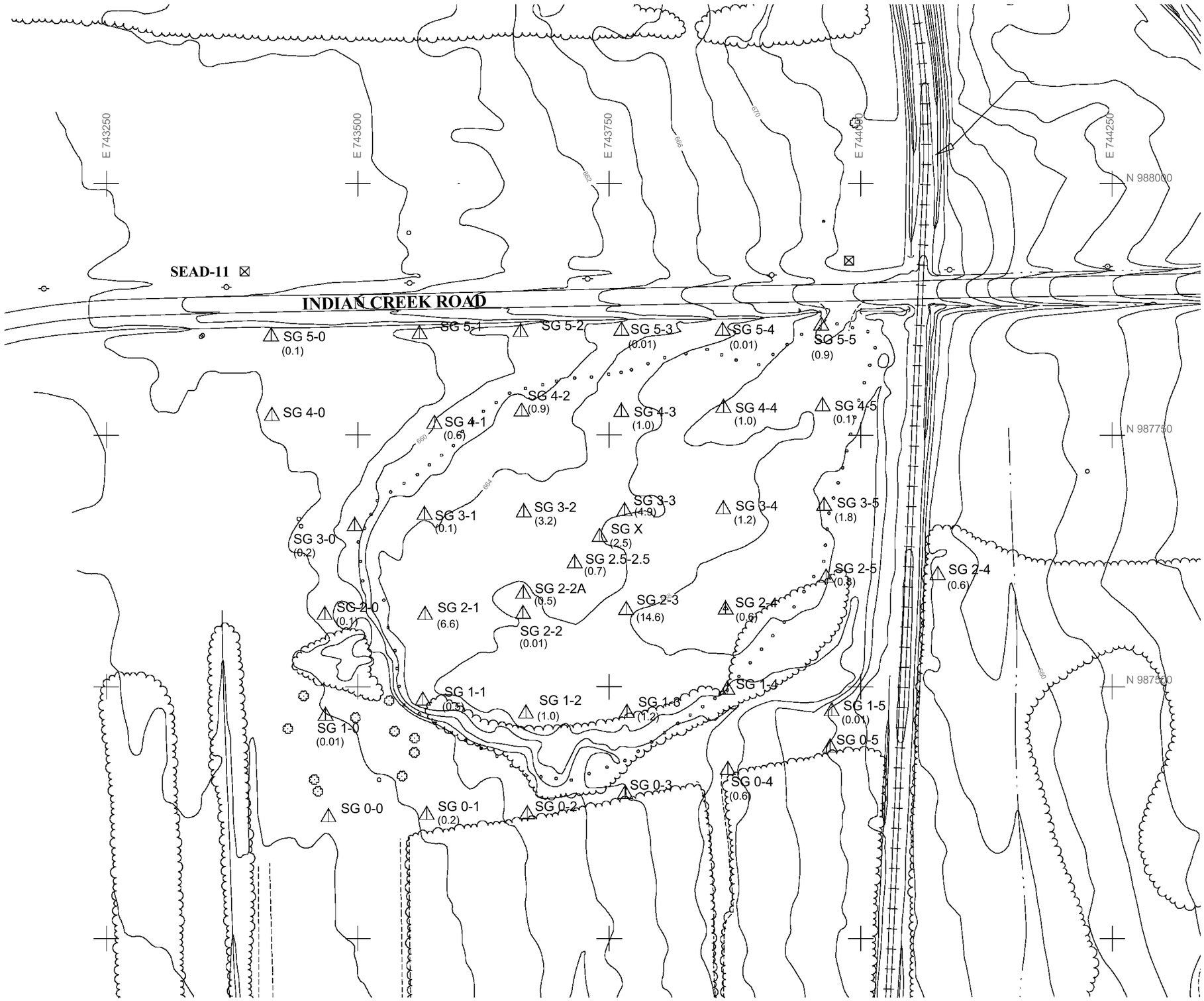
FIGURE 2-15

GPR PROFILE A-A'

JOB NUMBER: 734543-01000

DATE: MAY 2001

R:\GRAPHICS\SENECA\ARADARVFIG3-4-3.CDR



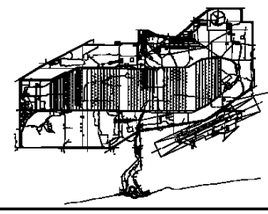
LEGEND

- RAILROAD TRACK
- EDGE OF WATER
- PROPERTY LINE
- ROAD
- FENCE
- 680 CONTOUR ELEVATION
- TREELINE
- SURVEY MONUMENT
- UTILITY POLE
- DECIDUOUS TREE
- LANDFILL EXTENT

△ SG 2-1 (0.2) — SOIL GAS POINT, SOIL GAS ID, CONCENTRATION IN PARTS PER MILLION VOLUME (ppmV) OF TRICHLOROETHENE

100 0 100 Feet

KEY PLAN



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SEAD-11 DECISION DOCUMENT

FIGURE 2-16

SEAD-11
SOIL GAS SURVEY RESULTS

JOB NUMBER: 734543-01000 | DATE: APRIL 2003

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TP11-5
21 J

TP11-8
4000

TP11-11

TP11-12
16000

TP11-1
410

TP11-9
12000

TP11-13
40000

TP11-6
3600

TP11-14
130

TP11-2
13

TP11-3
69

TP11-4
40

TP11-7
77

TP11-10
610 J

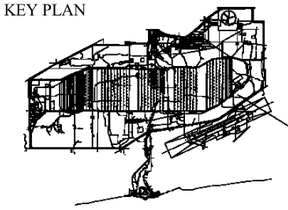
LEGEND

- PAVED ROAD
- 680 GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- TEST PIT LOCATION WITH TCE CONCENTRATION (UG/KG)

NOTE:
-THE TAGM VALUE FOR TCE IS 700UG/KG

100 0 100 Feet

KEY PLAN



SEAD-11
Area of
Study

PARSONS

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT
SEAD-11

FIGURE 2-17

TCE CONCENTRATIONS
IN SURFACE SOILS

JOB NUMBER: 734543-01001

DATE: APRIL 2003

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TP11-5
18 (3-3 ft)

TP11-8
2400 (3-3 ft)

TP11-11
4600 (0.5-1 ft)
1400 J (3-3 ft)

TP11-12
2200 (2.5-2.5 ft)

TP11-1
460 (3.3-3.3 ft)
34 (4.2-4.2 ft)

TP11-9
23000 (3.5-3.5 ft)
28000 J (3.5-3.5 ft)

TP11-13
42000 (3-3 ft)

TP11-6
74 (2-2 ft)

TP11-14
44 J (2-2 ft)

TP11-2
15 (5-5 ft)
12 U (5-5 ft)

TP11-3
40 J (2-4 ft)
40 (4-6 ft)

TP11-4
11 J (2-4 ft)
11 U (4-6 ft)

TP11-7
76 (4-5 ft)

TP11-10
2400 (5-5 ft)

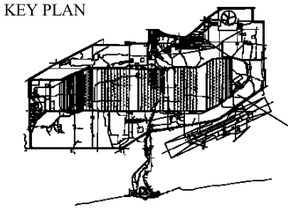
LEGEND

- PAVED ROAD
- 680 GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- TEST PIT LOCATION WITH TCE CONCENTRATION (UG/KG) AND SAMPLE DEPTH INTERVAL

NOTE:
-THE TAGM VALUE FOR TCE IS 700UG/KG

100 0 100 Feet

KEY PLAN



SEAD-11 Area of Study

PARSONS

SENECA ARMY DEPOT ACTIVITY
DECISION DOCUMENT
SEAD-11

FIGURE 2-18
TCE CONCENTRATIONS
IN SUBSURFACE SOILS

JOB NUMBER: 734543-01001 | DATE: APRIL 2003

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TP11-5
200 J

TP11-8
2960 J

TP11-11

TP11-12
7210 J

TP11-1
4050

TP11-9
1140 J

TP11-13
1180 J

TP11-6
1150 J

TP11-14
373 J

TP11-2
84

TP11-3

TP11-4

TP11-7
1160 J

TP11-10
2440 J

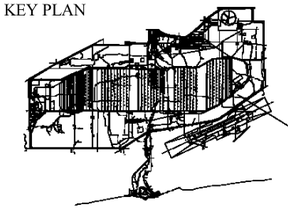
LEGEND

- PAVED ROAD
- 680 GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- TEST PIT LOCATION WITH LEAD CONCENTRATION (MG/KG)

NOTE:
-THE SITE BACKGROUND VALUE FOR LEAD IS 24.8 MG/KG

100 0 100 Feet

KEY PLAN



SEAD-11
Area of
Study

PARSONS

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT
SEAD-11

FIGURE 2-19
LEAD CONCENTRATIONS
IN SURFACE SOILS

JOB NUMBER: 734543-01001

DATE: APRIL 2003

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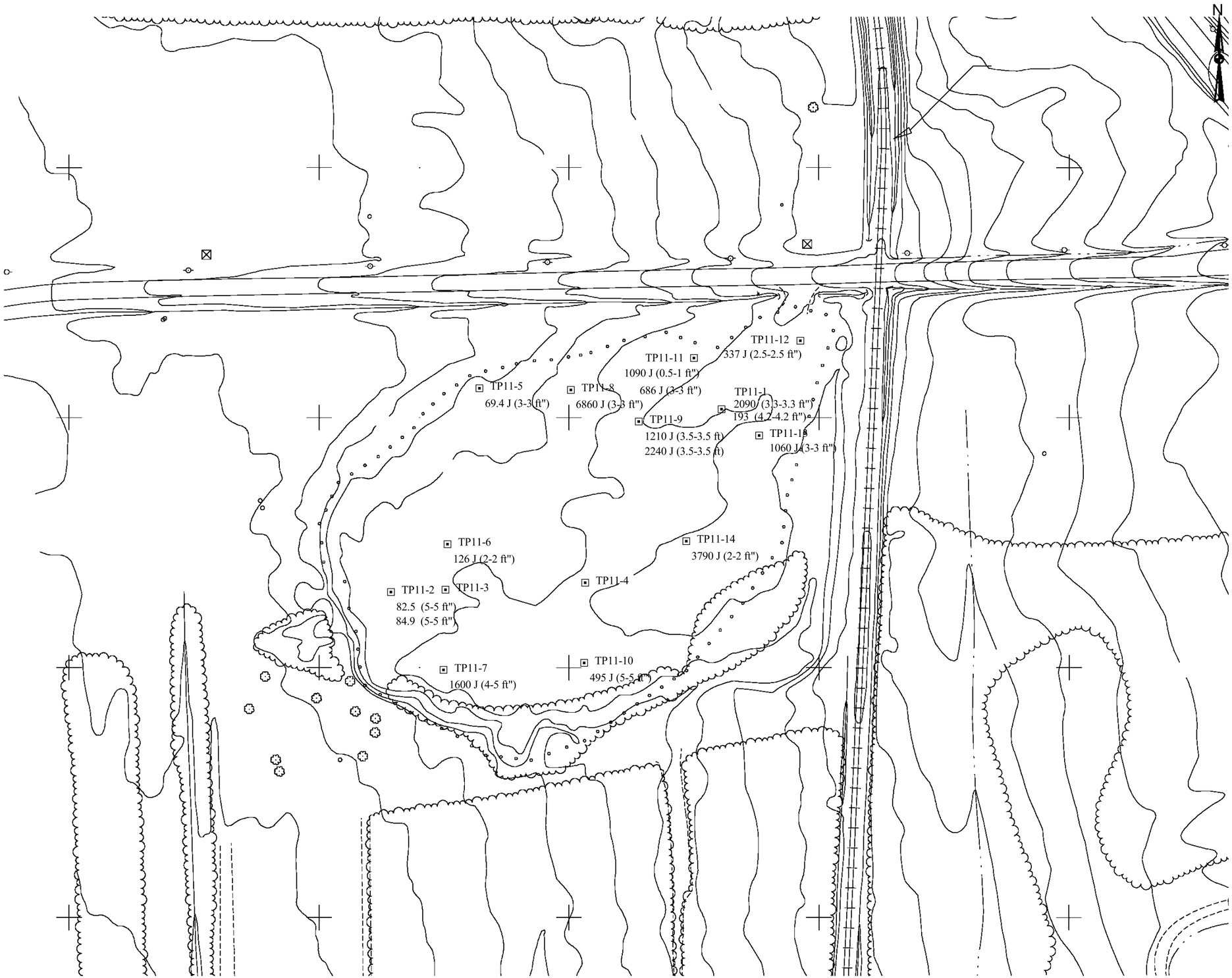


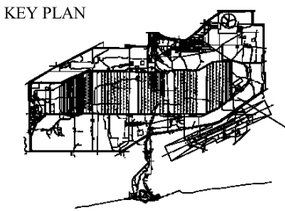
LEGEND

- PAVED ROAD
- 680 — GROUND CONTOUR AND ELEVATION
- WETLAND
- BRUSH
- CHAIN LINK FENCE
- UTILITY POLE
- APPROXIMATE LOCATION OF FIRE HYDRANT
- RAILROAD
- TEST PIT LOCATION WITH LEAD CONCENTRATION (MG/KG) WITH SAMPLE DEPTH INTERVAL

NOTE:
-THE SITE BACKGROUND VALUE FOR LEAD IS 24.8 MG/KG

80 0 80 Feet

KEY PLAN



PARSONS

SENECA ARMY DEPOT ACTIVITY

DECISION DOCUMENT
SEAD-11

FIGURE 2-20
LEAD CONCENTRATIONS
IN SUBSURFACE SOILS

JOB NUMBER: 734543-01001

DATE: APRIL 2003

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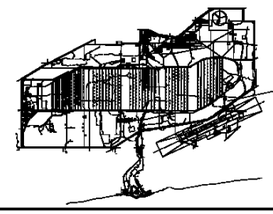
LEGEND

- RAILROAD TRACK
- EDGE OF WATER
- PROPERTY LINE
- ROAD
- FENCE
- 680 CONTOUR ELEVATION
- TREELINE
- SURVEY MONUMENT
- UTILITY POLE
- DECIDUOUS TREE
- MONITORING WELL
- SURVEY MONUMENT
- TEST PIT

100 0 100 Feet

KEY PLAN



PARSONS

SENECA ARMY DEPOT ACTIVITY
SEAD-11 DECISION DOCUMENT

FIGURE 3-1

SEAD-11
PROPOSED REMOVAL ACTION

JOB NUMBER: 734543-01000

DATE: APRIL 2003

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TABLE 2 .2- 1

BACKGROUND CONCENTRATIONS OF ELEMENTS IN SOILS OF THE EASTERN UNITED STATES WITH SPECIFIC DATA FOR NEW YORK STATE

SENECA ARMY DEPOT

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

SENECA ARMY DEPOT

ELEMENT	CONCENTRATION RANGE (mg/kg)	GEOGRAPHIC LOCATION
Magnesium	50 - 50,000 2,500 - 6,000 1,700 - 4,000	Eastern U.S. (2) New York State (1) Albany Area (1)
Manganese	> 2 - 7,000 50 - 5,000 400 - 600	Eastern U.S. (2) New York State (1) Albany Area (1)
Mercury	0.01 - 3.4 0.042 - 0.066	Eastern U.S. (2) Albany Area (1)
Nickel	< 5 - 700 19.5 (mean)	Eastern U.S. (2) New York State (1) (no range available)
Potassium	50 - 37,000 47.5 - 117.5	Eastern U.S. (2) New York State (1)
Selenium	> 0.1 - 3.9 Not Available	Eastern U.S. (2) No New York State Data Given (1)
Sodium	500 - 50,000 Not Available	Eastern U.S. (2) No New York State Data Given (1)
Vanadium	> 7 - 300 Not Available	Eastern U.S. (2) No New York State Data Given (1)
Zinc	> 5 - 2,900 37 - 60	Eastern U.S. (2) 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-11 Decision Document
Seneca Army Depot Activity

Month	Temperature (1),ºF			Mean Precipitation (1), in	Mean Relative Humidity (%)	Percent Sunshine	Mean Number of Days (4)		
	Maximum	Minimum	Mean				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
Septembe	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
Novembe	47.1	31.4	39.3	3.15	70	30	2	6	22
Decembe	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
Results of Seismic Refraction Survey
SEAD-11 Decision Document
Seneca Army Depot Activity

Profile	Distance [1]	Ground Elevation [2]	Bedrock	
			Depth	Elevation [2]
P1	0 (South end)	662.0	4.1	657.5
	57.5	662.5	5.5	568.5
	115	663.5	5.4	658.0
P2	0 (West end)	654.5	11.0	643.5
	57.5	653.0	10.9	642.0
	115	652.5	10.3	642.5
P3	0 (South end)	664.0	7.0	657.0
	57.5	665.0	6.6	658.0
	115	665.5	6.8	658.5
P4	0 (West end)	684.5	15.8	669.0
	57.5	687.0	16.9	670.0
	115	689.0	13.5	675.5

1. All distances are measured in feet along the axis of each seismic profile and were measured from geophone #1 of each profile.
2. All elevations are relative to an arbitrary datum established at the southwest corner of the chain link fence surrounding the stockpile of zinc ingots.

Table 2.7-2
Summary of Soil Gas Results

SEAD-11 Decision Document
Seneca Army Depot Activity

Sample Name	Location (1)		OVM Screen (2) (ppm)	Concentration (3) (ppmV as TCE)
	Easting	Northing		
SG 0-0	743470.71	987372.538	no data (4)	no data (4)
SG 0-1	743568.47	987374.731	<0.1	0.2
SG 0-2	743668.49	987375.4469	no data	no data
SG 0-3	743765.71	987395.8324	no data	no data
SG 0-4	743867.78	987419.4692	<0.1	0.6
SG 0-5	743969.44	987441.8642	no data	no data
SG 1-0	743467.87	987473.2255	<0.1	<0.01
SG 1-1	743564.56	987488.5735	<0.1	0.5
SG 1-2	743667.17	987475.3362	<0.1	1
SG 1-3	743767.44	987476.1975	3.0	1.2
SG 1-4	743867.22	987499.1956	no data	no data
SG 1-5	743971.04	987477.7634	<0.1	<0.01
SG 2-0	743467.03	987573.5014	<0.1	0.1
SG 2-1	743567.06	987573.3771	9.2	6.6
SG 2-2	743664.19	987574.4089	3.0	<0.01
SG 2-2A	743664.48	987594.6074	<0.1	0.5
SG 2.5-2.5	743715.49	987624.9052	3.0	0.7
SG 2-3	743766.79	987578.3305	12.3	14.6
SG 2-4	743865.65	987578.8576	3.0	0.6
SG 2-5	743965.63	987610.5863	<0.1	0.8
SG 3-0	743496.93	987661.8324	<0.1	0.2
SG 3-1	743566.32	987672.6855	<0.1	0.1
SG 3-2	743664.76	987675.4015	0.9	3.2
SG 3-3	743765.19	987676.5335	3.2	4.9
SG 3-4	743863.19	987678.5625	1.3	1.2
SG 3-5	743963.59	987681.7443	1.3	1.8
SG 4-0	743414.52	987771.1101	no data	no data
SG 4-1	743576.07	987763.2403	<0.1	0.6
SG 4-2	743662.83	987775.5407	0.9	0.9
SG 4-3	743761.94	987775.1712	0.4	1
SG 4-4	743863.41	987779.2466	3.2	1
SG 4-5	743961.95	987780.9374	1.3	0.1
SG 5-0	743413.71	987850.044	<0.1	0.1
SG 5-1	743561.29	987852.6556	no data	no data
SG 5-2	743661.78	987854.4705	no data	no data
SG 5-3	743762.07	987855.946	5.0	<0.01
SG 5-4	743862.65	987855.6674	<0.1	<0.01
SG 5-5	743960.71	987860.7673	<0.1	0.9
SG X	743740.34	987650.7193	<0.1	2.5

1) New York State Plane Coordinates
2) Highest concentration based on in-line monitoring with OVM during collection of soil gas sample
3) Based on TCE calibration curves using a gas chromatograph
4) No data acquired due to high water table

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Table 2.7-3
Summary Statistics of Compounds Detected in Soil
During the ESI and Additional Sampling
SEAD-11 Decision Document
Seneca Army Depot Activity

PARAMETER	UNIT	MAXIMUM	FREQUENCY OF DETECTION	TAGM	NUMBER ABOVE TAGM	NUMBER OF DETECTS	NUMBER OF ANALYSES
VOLATILE ORGANICS							
1,2-Dichloroethene (total)	UG/KG	2200	24%		0	9	37
Acetone	UG/KG	3200	22%	200	3	8	37
Benzene	UG/KG	45	19%	60	0	7	37
Carbon disulfide	UG/KG	26	16%	2700	0	6	37
Ethyl benzene	UG/KG	3	3%	5500	0	1	37
Methylene chloride	UG/KG	4	16%	100	0	6	37
Tetrachloroethene	UG/KG	370	14%	1400	0	5	37
Toluene	UG/KG	25	27%	1500	0	10	37
Total Xylenes	UG/KG	14	14%	1200	0	5	37
Trichloroethene	UG/KG	42000	86%	700	14	32	37
SEMI VOLATILE ORGANICS							
2-Methylnaphthalene	UG/KG	28000	60%	36400	0	9	15
Acenaphthene	UG/KG	84000	60%	50000	1	9	15
Anthracene	UG/KG	150000	73%	50000	1	11	15
Benzo(a)anthracene	UG/KG	190000	73%	224	8	11	15
Benzo(a)pyrene	UG/KG	140000	73%	61	11	11	15
Benzo(b)fluoranthene	UG/KG	110000	73%	1100	8	11	15
Benzo(ghi)perylene	UG/KG	53000	67%	50000	1	10	15
Benzo(k)fluoranthene	UG/KG	130000	73%	1100	8	11	15
Bis(2-Ethylhexyl)phthalate	UG/KG	67	20%	50000	0	3	15
Carbazole	UG/KG	81000	53%		0	8	15
Chrysene	UG/KG	170000	73%	400	8	11	15
Dibenz(a,h)anthracene	UG/KG	52000	67%	14	10	10	15
Dibenzofuran	UG/KG	60000	67%	6200	4	10	15
Fluoranthene	UG/KG	350000	80%	50000	5	12	15
Fluorene	UG/KG	88000	67%	50000	1	10	15
Indeno(1,2,3-cd)pyrene	UG/KG	100000	73%	3200	6	11	15
Naphthalene	UG/KG	100000	67%	13000	3	10	15
Phenanthrene	UG/KG	350000	73%	50000	4	11	15
Pyrene	UG/KG	280000	73%	50000	4	11	15
EXPLOSIVES							
1,3-Dinitrobenzene	UG/KG	770	7%		0	1	15
2,4,6-Trinitrotoluene	UG/KG	130	7%		0	1	15
2,4-Dinitrotoluene	UG/KG	440	13%		0	2	15
2,6-Dinitrotoluene	UG/KG	400	7%	1000	0	1	15
2-amino-4,6-Dinitrotoluene	UG/KG	680	7%		0	1	15
PESTICIDES/PCBs							
4,4'-DDD	UG/KG	1400	53%	2900	0	8	15
4,4'-DDE	UG/KG	1800	67%	2100	0	10	15
4,4'-DDT	UG/KG	4300	73%	2100	2	11	15
Alpha-BHC	UG/KG	24	7%	110	0	1	15
Alpha-Chlordane	UG/KG	190	27%		0	4	15
Delta-BHC	UG/KG	15	20%	300	0	3	15
Dieldrin	UG/KG	29	20%	44	0	3	15
Endosulfan II	UG/KG	66	40%	900	0	6	15
Endosulfan sulfate	UG/KG	2.5	7%	1000	0	1	15
Endrin	UG/KG	49	27%	100	0	4	15
HERBICIDES							
2,4,5-T	UG/KG	7.6	7%	1900	0	1	15

Table 2.7-3
Summary Statistics of Compounds Detected in Soil
During the ESI and Additional Sampling
SEAD-11 Decision Document
Seneca Army Depot Activity

PARAMETER	UNIT	MAXIMUM	FREQUENCY OF DETECTION	TAGM	NUMBER ABOVE TAGM	NUMBER OF DETECTS	NUMBER OF ANALYSES
2,4-DB	UG/KG	550	13%		0	2	15
Dalapon	UG/KG	2500	7%		0	1	15
METALS							
Aluminum	MG/KG	37500	100%	19300	2	37	37
Antimony	MG/KG	285	70%	5.9	22	26	37
Arsenic	MG/KG	23.2	92%	8.2	20	34	37
Barium	MG/KG	6560	100%	300	16	37	37
Beryllium	MG/KG	1.4	97%	1.1	1	36	37
Cadmium	MG/KG	16	73%	2.3	17	27	37
Calcium	MG/KG	104000	100%	121000	0	37	37
Chromium	MG/KG	462	100%	29.6	21	37	37
Cobalt	MG/KG	40.5	100%	30	1	37	37
Copper	MG/KG	1230	100%	33	30	37	37
Cyanide	MG/KG	1.7	5%	0.35	2	2	37
Iron	MG/KG	135000	100%	36500	19	37	37
Lead	MG/KG	7210	84%	24.8	29	31	37
Magnesium	MG/KG	44600	100%	21500	2	37	37
Manganese	MG/KG	3000	97%	1060	3	36	37
Mercury	MG/KG	6	68%	0.1	17	25	37
Nickel	MG/KG	221	100%	49	15	37	37
Potassium	MG/KG	5870	100%	2380	6	37	37
Selenium	MG/KG	3.7	76%	2	10	28	37
Silver	MG/KG	11.3	73%	0.75	24	27	37
Sodium	MG/KG	1700	92%	172	22	34	37
Thallium	MG/KG	8.8	59%	0.7	22	22	37
Vanadium	MG/KG	1940	100%	150	1	37	37
Zinc	MG/KG	7980	92%	110	32	34	37

Table 2.7-4
Summary Statistics of Compounds Detected in Groundwater
Round 1 - November 2000
SEAD-11 Decision Document
Seneca Army Depot Activity

PARAMETER	UNIT	MAXIMUM	FREQUENCY OF DETECTION	LOWEST GW STANDARD	APPLICABLE GW STANDARD	NUMBER ABOVE STANDARD	NUMBER OF DETECTS	NUMBER OF ANALYSES
Volatile Organic Compounds								
Tetrachloroethene	UG/L	2	25%	5	GA	0	2	8
Trichloroethene	UG/L	2	25%	5	GA	0	2	8
Semivolatile Organic Compounds								
2,4,5-Trichlorophenol	UG/L	0.073	13%			0	1	8
2,4,6-Trichlorophenol	UG/L	0.098	13%			0	1	8
Butylbenzylphthalate	UG/L	0.16	25%			0	2	8
Dimethylphthalate	UG/L	3.3	38%			0	3	8
Pyrene	UG/L	0.082	13%			0	1	8
Pesticides/PCBs								
4,4'-DDT	UG/L	0.006	13%	0.2	GA	0	1	8
Metals								
Aluminum	UG/L	184	75%	50	MCL	5	6	8
Antimony	UG/L	8	13%	3	GA	1	1	8
Barium	UG/L	68.9	100%	1000	GA	0	8	8
Beryllium	UG/L	0.27	25%	4	MCL	0	2	8
Cadmium	UG/L	0.35	13%	5	GA	0	1	8
Calcium	UG/L	236000	100%			0	8	8
Cobalt	UG/L	1.8	13%			0	1	8
Copper	UG/L	19.2	25%	200	GA	0	2	8
Iron	UG/L	302	75%	300	GA	1	6	8
Magnesium	UG/L	41000	100%			0	8	8
Manganese	UG/L	772	100%	50	SEC	3	8	8
Nickel	UG/L	2.5	13%	100	GA	0	1	8
Potassium	UG/L	6750	100%			0	8	8
Sodium	UG/L	36800	100%	20000	GA	3	8	8
Zinc	UG/L	9.2	25%	5000	MCL	0	2	8

Table 2.7-5
Summary Statistics of Compounds Detected in Groundwater
Round 2 - February 2001
SEAD-11 Decision Document
Seneca Army Depot Activity

PARAMETER	UNIT	MAXIMUM	FREQUENCY OF DETECTION	LOWEST GW STANDARD	APPLICABLE GW STANDARD	NUMBER ABOVE STANDARD	NUMBER OF DETECTS	NUMBER OF ANALYSES
Volatile Organic Compounds								
Tetrachloroethene	UG/L	2	38%	5	GA	0	3	8
Trichloroethene	UG/L	2.2	38%	5	GA	0	3	8
Semivolatile Organic Compounds								
Di-n-octylphthalate	UG/L	0.072	25%			0	2	8
Metals								
Aluminum	UG/L	284	88%	50	MCL	5	7	8
Arsenic	UG/L	3.9	88%	5	MCL	0	7	8
Barium	UG/L	71.2	100%	1000	GA	0	8	8
Cadmium	UG/L	0.32	13%	5	GA	0	1	8
Calcium	UG/L	193000	100%			0	8	8
Chromium	UG/L	1.8	50%	50	GA	0	4	8
Copper	UG/L	2	25%	200	GA	0	2	8
Iron	UG/L	533	100%	300	GA	1	8	8
Lead	UG/L	2.1	13%	15	MCL	0	1	8
Magnesium	UG/L	35800	100%			0	8	8
Manganese	UG/L	294	100%	50	SEC	3	8	8
Nickel	UG/L	1.9	38%	100	GA	0	3	8
Potassium	UG/L	6500	100%			0	8	8
Silver	UG/L	1.6	50%	50	GA	0	4	8
Sodium	UG/L	28900	100%	20000	GA	2	8	8
Thallium	UG/L	4.2	50%	2	MCL	4	4	8
Vanadium	UG/L	1.3	13%			0	1	8
Zinc	UG/L	33.4	88%	5000	MCL	0	7	8

Table 3.5-1
Cost Estimate for Excavation/Off-Site Disposal at SEAD-11
SEAD-11 Decision Document
Seneca Army Depot Activity

	Recommended Removal Action Excavation/Off-Site Disposal
Cost to Prime	$4,127,568
Cost to Owner	$5,698,960
Annual O&M Costs	$10,000
Present Worth O&M Costs (30 years)	$172,920
Total Evaluated Price	$5,871,880

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 O&M Costs are costs that will occur yearly due to activities such as maintenance and monitoring of the 2-foot vegetative cover.
4. Present Worth Cost is based on a 4% interest rate over 30 years.
5. Total Evaluated Price is the sum of the Project Cost and Present Worth Cost.

ATTACHMENT A
Laboratory Analyses Results – SEAD-11

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		
LOCATION ID								MW11-1		MW11-1		MW11-1		TP11-1		TP11-1		TP11-1		TP11-10		
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		
SAMPLE ID								SB11-3-1		SB11-3-2		SB11-3-6		TP11-1-1		TP11-1-2		TP11-1-3		114014		
SAMPLE DEPTH TO TOP OF SAMPLE								0		2		10		0		3.3		4.2		0.5		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								2		4		12		0.8		3.3		4.2		0.5		
SAMPLE DATE								11/2/93		11/2/93		11/3/93		11/20/93		11/20/93		11/20/93		10/25/00		
QC CODE								SA		SA		SA		SA		SA		SA		SA		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		ESI		ESI		ESI		ESI		SEAD-11 EECA		
			OF		ABOVE	OF	OF															
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N		
VOLATILE ORGANICS																						
1,1,1-Trichloroethane	UG/KG	0	0%	800	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
1,1,2,2-Tetrachloroethane	UG/KG	0	0%	600	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
1,1,2-Trichloroethane	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
1,1-Dichloroethane	UG/KG	0	0%	200	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
1,1-Dichloroethene	UG/KG	0	0%	400	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
1,2-Dichloroethane	UG/KG	0	0%	100	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
1,2-Dichloroethene (total)	UG/KG	2200	24%		0	9	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
1,2-Dichloropropane	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Acetone	UG/KG	3200	22%	200	3	8	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	UJ	
Benzene	UG/KG	45	19%	60	0	7	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	UJ	
Bromodichloromethane	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Bromoform	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Carbon disulfide	UG/KG	26	16%	2700	0	6	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Carbon tetrachloride	UG/KG	0	0%	600	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Chlorobenzene	UG/KG	0	0%	1700	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Chlorodibromomethane	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Chloroethane	UG/KG	0	0%	1900	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Chloroform	UG/KG	0	0%	300	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Cis-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Ethyl benzene	UG/KG	3	3%	5500	0	1	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Methyl bromide	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Methyl butyl ketone	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	UJ	
Methyl chloride	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Methyl ethyl ketone	UG/KG	0	0%	300	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	UJ	
Methyl isobutyl ketone	UG/KG	0	0%	1000	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Methylene chloride	UG/KG	4	16%	100	0	6	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Styrene	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Tetrachloroethene	UG/KG	370	14%	1400	0	5	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Toluene	UG/KG	25	27%	1500	0	10	37	12	U	2	J	3	J	22	U	61	U	12	U	1200	U	
Total Xylenes	UG/KG	14	14%	1200	0	5	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Trans-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
Trichloroethene	UG/KG	42000	86%	700	14	32	37	12	U	11	U	11	U	410		460		34		610	J	
Vinyl chloride	UG/KG	0	0%	200	0	0	37	12	U	11	U	11	U	22	U	61	U	12	U	1200	U	
SEMI VOLATILE ORGANICS																						
1,2,4-Trichlorobenzene	UG/KG	0	0%	3400	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
1,2-Dichlorobenzene	UG/KG	0	0%	7900	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
1,3-Dichlorobenzene	UG/KG	0	0%	1600	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
1,4-Dichlorobenzene	UG/KG	0	0%	8500	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
2,4,5-Trichlorophenol	UG/KG	0	0%	100	0	0	15	990	U	890	UJ	860	UJ	930	U	960	U	960	U			
2,4,6-Trichlorophenol	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
2,4-Dichlorophenol	UG/KG	0	0%	400	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
2,4-Dimethylphenol	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
2,4-Dinitrophenol	UG/KG	0	0%	200	0	0	15	990	U	890	UJ	860	UJ	930	U	960	U	960	U			
2,4-Dinitrotoluene	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
2,6-Dinitrotoluene	UG/KG	0	0%	1000	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
2-Chloronaphthalene	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		
LOCATION ID								MW11-1		MW11-1		MW11-1		TP11-1		TP11-1		TP11-1		TP11-10		
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		
SAMPLE ID								SB11-3-1		SB11-3-2		SB11-3-6		TP11-1-1		TP11-1-2		TP11-1-3		114014		
SAMPLE DEPTH TO TOP OF SAMPLE								0		2		10		0		3.3		4.2		0.5		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								2		4		12		0.8		3.3		4.2		0.5		
SAMPLE DATE								11/2/93		11/2/93		11/3/93		11/20/93		11/20/93		11/20/93		10/25/00		
QC CODE								SA		SA		SA		SA		SA		SA		SA		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		ESI		ESI		ESI		ESI		SEAD-11 EECA		
			OF		ABOVE	OF	OF															
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N		
2-Chlorophenol	UG/KG	0	0%	800	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
2-Methylnaphthalene	UG/KG	28000	60%	36400	0	9	15	410	U	370	UJ	350	UJ	27	J	27	J	400	U			
2-Methylphenol	UG/KG	0	0%	100	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
2-Nitroaniline	UG/KG	0	0%	430	0	0	15	990	U	890	UJ	860	UJ	930	U	960	U	960	U			
2-Nitrophenol	UG/KG	0	0%	330	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
3,3'-Dichlorobenzidine	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
3-Nitroaniline	UG/KG	0	0%	500	0	0	15	990	U	890	UJ	860	UJ	930	U	960	U	960	U			
4,6-Dinitro-2-methylphenol	UG/KG	0	0%		0	0	15	990	U	890	UJ	860	UJ	930	U	960	U	960	U			
4-Bromophenyl phenyl ether	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
4-Chloro-3-methylphenol	UG/KG	0	0%	240	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
4-Chloroaniline	UG/KG	0	0%	220	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
4-Chlorophenyl phenyl ether	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
4-Methylphenol	UG/KG	0	0%	900	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
4-Nitroaniline	UG/KG	0	0%		0	0	15	990	U	890	UJ	860	UJ	930	U	960	U	960	U			
4-Nitrophenol	UG/KG	0	0%	100	0	0	15	990	U	890	UJ	860	UJ	930	U	960	U	960	U			
Acenaphthene	UG/KG	84000	60%	50000	1	9	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Acenaphthylene	UG/KG	0	0%	41000	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Anthracene	UG/KG	150000	73%	50000	1	11	15	410	U	370	UJ	350	UJ	53	J	42	J	400	U			
Benzo(a)anthracene	UG/KG	190000	73%	224	8	11	15	410	U	370	UJ	350	UJ	150	J	160	J	400	U			
Benzo(a)pyrene	UG/KG	140000	73%	61	11	11	15	410	U	370	UJ	350	UJ	**210**	J	**130**	J	400	U			
Benzo(b)fluoranthene	UG/KG	110000	73%	1100	8	11	15	410	U	370	UJ	350	UJ	230	J	200	J	400	U			
Benzo(ghi)perylene	UG/KG	53000	67%	50000	1	10	15	410	U	370	UJ	350	UJ	81	J	400	U	400	U			
Benzo(k)fluoranthene	UG/KG	130000	73%	1100	8	11	15	410	U	370	UJ	350	UJ	190	J	140	J	400	U			
Bis(2-Chloroethoxy)methane	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Bis(2-Chloroethyl)ether	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Bis(2-Ethylhexyl)phthalate	UG/KG	67	20%	50000	0	3	15	740	U	480	UJ	350	UJ	380	U	67	J	25	J			
Butylbenzylphthalate	UG/KG	0	0%	50000	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Carbazole	UG/KG	81000	53%		0	8	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Chrysene	UG/KG	170000	73%	400	8	11	15	410	U	370	UJ	350	UJ	320	J	230	J	400	U			
Di-n-butylphthalate	UG/KG	0	0%	8100	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Di-n-octylphthalate	UG/KG	0	0%	50000	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Dibenz(a,h)anthracene	UG/KG	52000	67%	14	10	10	15	410	U	370	UJ	350	UJ	**60**	J	**37**	J	400	U			
Dibenzofuran	UG/KG	60000	67%	6200	4	10	15	410	U	370	UJ	350	UJ	23	J	25	J	400	U			
Diethyl phthalate	UG/KG	0	0%	7100	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Dimethylphthalate	UG/KG	0	0%	2000	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Fluoranthene	UG/KG	350000	80%	50000	5	12	15	410	U	370	UJ	350	UJ	450		340	J	21	J			
Fluorene	UG/KG	88000	67%	50000	1	10	15	410	U	370	UJ	350	UJ	21	J	20	J	400	U			
Hexachlorobenzene	UG/KG	0	0%	410	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Hexachlorobutadiene	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Hexachlorocyclopentadiene	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Hexachloroethane	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Indeno(1,2,3-cd)pyrene	UG/KG	100000	73%	3200	6	11	15	410	U	370	UJ	350	UJ	140	J	66	J	400	U			
Isophorone	UG/KG	0	0%	4400	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
N-Nitrosodiphenylamine	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
N-Nitrosodipropylamine	UG/KG	0	0%		0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Naphthalene	UG/KG	100000	67%	13000	3	10	15	410	U	370	UJ	350	UJ	23	J	39	J	400	U			
Nitrobenzene	UG/KG	0	0%	200	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Pentachlorophenol	UG/KG	0	0%	1000	0	0	15	990	U	890	UJ	860	UJ	930	U	960	U	960	U			

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		
LOCATION ID								MW11-1		MW11-1		MW11-1		TP11-1		TP11-1		TP11-1		TP11-10		
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		
SAMPLE ID								SB11-3-1		SB11-3-2		SB11-3-6		TP11-1-1		TP11-1-2		TP11-1-3		114014		
SAMPLE DEPTH TO TOP OF SAMPLE								0		2		10		0		3.3		4.2		0.5		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								2		4		12		0.8		3.3		4.2		0.5		
SAMPLE DATE								11/2/93		11/2/93		11/3/93		11/20/93		11/20/93		11/20/93		10/25/00		
QC CODE								SA		SA		SA		SA		SA		SA		SA		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		ESI		ESI		ESI		ESI		SEAD-11 EECA		
			OF		ABOVE	OF	OF															
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N		
Phenanthrene	UG/KG	350000	73%	50000	4	11	15	410	U	370	UJ	350	UJ	230	J	260	J	400	U			
Phenol	UG/KG	0	0%	30	0	0	15	410	U	370	UJ	350	UJ	380	U	400	U	400	U			
Pyrene	UG/KG	280000	73%	50000	4	11	15	410	U	370	UJ	350	UJ	420		260	J	400	U			
EXPLOSIVES																						
1,3,5-Trinitrobenzene	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	UJ	130	UJ	130	UJ			
1,3-Dinitrobenzene	UG/KG	770	7%		0	1	15	130	U	130	U	130	U	130	UJ	130	UJ	130	UJ			
2,4,6-Trinitrotoluene	UG/KG	130	7%		0	1	15	130	U	130	U	130	U	130	UJ	130	UJ	130	UJ			
2,4-Dinitrotoluene	UG/KG	440	13%		0	2	15	130	U	130	U	130	U	130	UJ	130	UJ	440				
2,6-Dinitrotoluene	UG/KG	400	7%	1000	0	1	15	130	U	130	U	130	U	130	UJ	130	UJ	130	UJ			
2-amino-4,6-Dinitrotoluene	UG/KG	680	7%		0	1	15	130	U	130	U	130	U	130	UJ	130	UJ	130	UJ			
4-amino-2,6-Dinitrotoluene	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	UJ	130	UJ	130	UJ			
HMX	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	UJ	130	UJ	130	UJ			
RDX	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	UJ	130	UJ	130	UJ			
Tetryl	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	UJ	130	UJ	130	UJ			
PESTICIDES/PCBs																						
4,4'-DDD	UG/KG	1400	53%	2900	0	8	15	4.1	U	3.7	U	3.6	U	2.9	J	4	U	28	J			
4,4'-DDE	UG/KG	1800	67%	2100	0	10	15	4.1	U	3.7	U	3.6	U	10		5.6	J	200	J			
4,4'-DDT	UG/KG	4300	73%	2100	2	11	15	4.1	U	35	U	30	U	12		3.5	J	290	J			
Aldrin	UG/KG	0	0%	41	0	0	15	21	U	18	U	15	U	2	U	2	U	20	UR			
Alpha-BHC	UG/KG	24	7%	110	0	1	15	2.1	U	1.9	U	1.8	U	2	U	2	U	24	J			
Alpha-Chlordane	UG/KG	190	27%		0	4	15	2.1	U	1.9	U	1.8	U	3.3	J	9.1		190	J			
Aroclor-1016	UG/KG	0	0%		0	0	15	41	U	37	U	36	U	38	U	40	U	400	UR			
Aroclor-1221	UG/KG	0	0%		0	0	15	83	U	75	U	73	U	78	U	81	U	810	UR			
Aroclor-1232	UG/KG	0	0%		0	0	15	41	U	37	U	36	U	38	U	40	U	400	UR			
Aroclor-1242	UG/KG	0	0%		0	0	15	41	U	37	U	36	U	38	U	40	U	400	UR			
Aroclor-1248	UG/KG	0	0%		0	0	15	41	U	37	U	36	U	38	U	40	U	400	UR			
Aroclor-1254	UG/KG	0	0%	10000	0	0	15	41	U	37	U	36	U	38	U	40	U	400	UR			
Aroclor-1260	UG/KG	0	0%	10000	0	0	15	41	U	37	U	36	U	38	U	40	U	400	UR			
Beta-BHC	UG/KG	0	0%	200	0	0	15	2.1	U	1.9	U	1.8	U	2	U	2	U	20	UR			
Delta-BHC	UG/KG	15	20%	300	0	3	15	2.1	U	1.9	U	1.8	U	2	U	2	U	15	J			
Dieldrin	UG/KG	29	20%	44	0	3	15	41	U	36	U	30	U	3.2	J	8.4	J	29	J			
Endosulfan I	UG/KG	0	0%	900	0	0	15	2.1	U	1.9	U	1.8	U	2	U	2	U	20	UR			
Endosulfan II	UG/KG	66	40%	900	0	6	15	4.1	U	3.7	U	3.6	U	3.8	U	3.1	J	40	UR			
Endosulfan sulfate	UG/KG	2.5	7%	1000	0	1	15	4.1	U	3.7	U	3.6	U	3.8	U	2.5	J	40	UR			
Endrin	UG/KG	49	27%	100	0	4	15	43	U	37	U	31	U	3.8	U	4	U	49	J			
Endrin aldehyde	UG/KG	0	0%		0	0	15	4.1	U	3.7	U	3.6	U	3.8	U	4	U	40	UR			
Endrin ketone	UG/KG	0	0%		0	0	15	4.1	U	3.7	U	3.6	U	3.8	U	4	U	40	UR			
Gamma-BHC/Lindane	UG/KG	0	0%	60	0	0	15	21	U	18	U	15	U	2	U	2	U	20	UR			
Gamma-Chlordane	UG/KG	0	0%	540	0	0	15	2.1	U	1.9	U	1.8	U	2	U	2	U	20	UR			
Heptachlor	UG/KG	0	0%	100	0	0	15	20	U	17	U	15	U	2	U	2	U	20	UR			
Heptachlor epoxide	UG/KG	0	0%	20	0	0	15	2.1	U	1.9	U	1.8	U	2	U	2	U	20	UR			
Methoxychlor	UG/KG	0	0%		0	0	15	21	U	19	U	18	U	20	U	20	U	200	UR			
Toxaphene	UG/KG	0	0%		0	0	15	210	U	190	U	180	U	200	U	200	U	2000	UR			
HERBICIDES																						
2,4,5-T	UG/KG	7.6	7%	1900	0	1	15	6.2	U	5.6	U	5.4	U	5.8	U	6	U	6	U			
2,4,5-TP/Silvex	UG/KG	0	0%	700	0	0	15	6.2	U	5.6	U	5.4	U	5.8	U	6	U	6	U			
2,4-D	UG/KG	0	0%	500	0	0	15	62	U	56	U	54	U	58	U	60	U	60	U			
2,4-DB	UG/KG	550	13%		0	2	15	62	U	56	U	54	U	75		60	U	60	U			

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		
LOCATION ID								MW11-1		MW11-1		MW11-1		TP11-1		TP11-1		TP11-1		TP11-10		
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		
SAMPLE ID								SB11-3-1		SB11-3-2		SB11-3-6		TP11-1-1		TP11-1-2		TP11-1-3		114014		
SAMPLE DEPTH TO TOP OF SAMPLE								0		2		10		0		3.3		4.2		0.5		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								2		4		12		0.8		3.3		4.2		0.5		
SAMPLE DATE								11/2/93		11/2/93		11/3/93		11/20/93		11/20/93		11/20/93		10/25/00		
QC CODE								SA		SA		SA		SA		SA		SA		SA		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		ESI		ESI		ESI		ESI		SEAD-11 EECA		
			OF		ABOVE	OF	OF															
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N		
Dalapon	UG/KG	2500	7%		0	1	15	150	U	140	U	130	U	140	U	150	U	150	U			
Dicamba	UG/KG	0	0%		0	0	15	6.2	U	5.6	U	5.4	U	5.8	U	6	U	6	U			
Dichloroprop	UG/KG	0	0%		0	0	15	62	U	56	U	54	U	58	U	60	U	60	U			
Dinoseb	UG/KG	0	0%		0	0	15	31	U	28	U	27	U	29	U	30	U	30	U			
MCPA	UG/KG	0	0%		0	0	15	6200	U	5600	U	5400	U	5800	U	6000	U	6000	U			
MCPP	UG/KG	0	0%		0	0	15	6200	U	5600	U	5400	U	5800	U	6000	U	6000	U			
METALS																						
Aluminum	MG/KG	37500	100%	19300	2	37	37	17600		6330		10900		13300		12200		11100		13000	J	
Antimony	MG/KG	285	70%	5.9	22	26	37	10.8	UJ	8	UJ	7.6	UJ	**285**	J	**118**	J	8.1	UJ	**10.2**	J	
Arsenic	MG/KG	23.2	92%	8.2	20	34	37	5.6	R	3.4	R	6	R	**15.5**		**11.8**		4.7		**14.2**		
Barium	MG/KG	6560	100%	300	16	37	37	113		57.4		62.7		**1090**		**953**		106		291	J	
Beryllium	MG/KG	1.4	97%	1.1	1	36	37	0.85	J	0.34	J	0.47	J	0.63	J	0.59	J	0.54	J	0.68	J	
Cadmium	MG/KG	16	73%	2.3	17	27	37	0.67	U	0.5	U	0.48	U	2.3		**3.9**		0.51	U	**9.5**		
Calcium	MG/KG	104000	100%	121000	0	37	37	4950		91300		48600		30300		41700		54100		76700		
Chromium	MG/KG	462	100%	29.6	21	37	37	24		11.1		18.6		**67.2**		**53.9**		18.7		**66.4**	J	
Cobalt	MG/KG	40.5	100%	30	1	37	37	11.3		6.5	J	10.1		15.9		15.3		9.4		14.6		
Copper	MG/KG	1230	100%	33	30	37	37	20		12.2		21.7		**492**		**374**		32.4		**567**	J	
Cyanide	MG/KG	1.7	5%	0.35	2	2	37	0.57	U	0.47	U	0.53	U	0.54	U	0.56	U	0.59	U	0.49	U	
Iron	MG/KG	135000	100%	36500	19	37	37	27200		13200		28300		**83600**		**42000**		22700		**39500**	J	
Lead	MG/KG	7210	84%	24.8	29	31	37	**27.9**		11.4		10.1		**4050**		**2090**		**193**		**2440**	J	
Magnesium	MG/KG	44600	100%	21500	2	37	37	4160		12900		10100		6760		10800		10100		7950		
Manganese	MG/KG	3000	97%	1060	3	36	37	674		356		434		801		611		637		748		
Mercury	MG/KG	6	68%	0.1	17	25	37	0.05	J	0.04	U	0.03	U	0.07	J	**2.9**		**0.7**		0.06	UJ	
Nickel	MG/KG	221	100%	49	15	37	37	28.3		16.7		29.5		**70.1**		**56.5**		25.2		41	J	
Potassium	MG/KG	5870	100%	2380	6	37	37	2110		1110		1230		1810		1620		1280		**2810**		
Selenium	MG/KG	3.7	76%	2	10	28	37	0.24	J	0.13	UJ	0.21	UJ	0.25	UJ	0.25	J	0.15	UJ	0.84	U	
Silver	MG/KG	11.3	73%	0.75	24	27	37	1.4	UJ	1	UJ	0.97	UJ	**2.4**		**1.5**	J	1	U	**10.3**		
Sodium	MG/KG	1700	92%	172	22	34	37	66.3	J	136	J	146	J	**288**	J	**296**	J	111	J	**657**	J	
Thallium	MG/KG	8.8	59%	0.7	22	22	37	0.19	U	1.5	U	0.23	U	0.27	UJ	0.26	UJ	0.17	UJ	**2.8**		
Vanadium	MG/KG	1940	100%	150	1	37	37	31.8		13.3		17		24.5		19.5		17.3		24.1	J	
Zinc	MG/KG	7980	92%	110	32	34	37	83.2	R	65	R	77.3	R	**3600**		**7980**		**377**		**1220**	J	

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11			SEAD-11			SEAD-11			SEAD-11			SEAD-11			SEAD-11		
LOCATION ID								TP11-10			TP11-11			TP11-11			TP11-12			TP11-12			TP11-13		
MATRIX								SOIL			SOIL			SOIL			SOIL			SOIL			SOIL		
SAMPLE ID								114013			114001			114000			114020			114019			114018		
SAMPLE DEPTH TO TOP OF SAMPLE								5			0.5			3			0.5			2.5			0.5		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								5			1			3			0.5			2.5			0.5		
SAMPLE DATE								10/25/00			10/23/00			10/23/00			10/26/00			10/26/00			10/26/00		
QC CODE								SA			SA			SA			SA			SA			SA		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA			SEAD-11 EECA			SEAD-11 EECA			SEAD-11 EECA			SEAD-11 EECA			SEAD-11 EECA		
			OF		ABOVE	OF	OF																			
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N			N			N			N			N			N		
VOLATILE ORGANICS																									
1,1,1-Trichloroethane	UG/KG	0	0%	800	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
1,1,2,2-Tetrachloroethane	UG/KG	0	0%	600	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
1,1,2-Trichloroethane	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
1,1-Dichloroethane	UG/KG	0	0%	200	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
1,1-Dichloroethene	UG/KG	0	0%	400	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
1,2-Dichloroethane	UG/KG	0	0%	100	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
1,2-Dichloroethene (total)	UG/KG	2200	24%		0	9	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		420	J
1,2-Dichloropropane	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Acetone	UG/KG	3200	22%	200	3	8	37	1700	UJ		1400	UJ		1900	UJ		1900	UJ		1200	UJ		2400	UJ		**3200**	J
Benzene	UG/KG	45	19%	60	0	7	37	1700	UJ		1400	UJ		1900	UJ		1900	UJ		1200	UJ		2400	UJ		2500	UJ
Bromodichloromethane	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Bromoform	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Carbon disulfide	UG/KG	26	16%	2700	0	6	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Carbon tetrachloride	UG/KG	0	0%	600	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Chlorobenzene	UG/KG	0	0%	1700	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Chlorodibromomethane	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Chloroethane	UG/KG	0	0%	1900	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Chloroform	UG/KG	0	0%	300	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Cis-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Ethyl benzene	UG/KG	3	3%	5500	0	1	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Methyl bromide	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Methyl butyl ketone	UG/KG	0	0%		0	0	37	1700	UJ		1400	UJ		1900	UJ		1900	UJ		1200	UJ		2400	UJ		2500	UJ
Methyl chloride	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Methyl ethyl ketone	UG/KG	0	0%	300	0	0	37	1700	UJ		1400	UJ		1900	UJ		1900	UJ		1200	UJ		2400	UJ		2500	UJ
Methyl isobutyl ketone	UG/KG	0	0%	1000	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Methylene chloride	UG/KG	4	16%	100	0	6	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Styrene	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Tetrachloroethene	UG/KG	370	14%	1400	0	5	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Toluene	UG/KG	25	27%	1500	0	10	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Total Xylenes	UG/KG	14	14%	1200	0	5	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Trans-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
Trichloroethene	UG/KG	42000	86%	700	14	32	37	**2400**			**4600**			**1400**	J		**16000**			**2200**			**40000**			**42000**	
Vinyl chloride	UG/KG	0	0%	200	0	0	37	1700	U		1400	U		1900	U		1900	U		1200	U		2400	U		2500	U
SEMI VOLATILE ORGANICS																									
1,2,4-Trichlorobenzene	UG/KG	0	0%	3400	0	0	15																		
1,2-Dichlorobenzene	UG/KG	0	0%	7900	0	0	15																		
1,3-Dichlorobenzene	UG/KG	0	0%	1600	0	0	15																		
1,4-Dichlorobenzene	UG/KG	0	0%	8500	0	0	15																		
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0%		0	0	15																		
2,4,5-Trichlorophenol	UG/KG	0	0%	100	0	0	15																		
2,4,6-Trichlorophenol	UG/KG	0	0%		0	0	15																		
2,4-Dichlorophenol	UG/KG	0	0%	400	0	0	15																		
2,4-Dimethylphenol	UG/KG	0	0%		0	0	15																		
2,4-Dinitrophenol	UG/KG	0	0%	200	0	0	15																		
2,4-Dinitrotoluene	UG/KG	0	0%		0	0	15																		
2,6-Dinitrotoluene	UG/KG	0	0%	1000	0	0	15																		
2-Chloronaphthalene	UG/KG	0	0%		0	0	15																		

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11
LOCATION ID								TP11-10		TP11-11		TP11-11		TP11-12		TP11-12		TP11-13		TP11-13
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL
SAMPLE ID								114013		114001		114000		114020		114019		114018		114021
SAMPLE DEPTH TO TOP OF SAMPLE								5		0.5		3		0.5		2.5		0.5		3
SAMPLE DEPTH TO BOTTOM OF SAMPLE								5		1		3		0.5		2.5		0.5		3
SAMPLE DATE								10/25/00		10/23/00		10/23/00		10/26/00		10/26/00		10/26/00		10/26/00
QC CODE								SA		SA		SA		SA		SA		SA		DU
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA
			OF		ABOVE	OF	OF													
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N
2-Chlorophenol	UG/KG	0	0%	800	0	0	15													
2-Methylnaphthalene	UG/KG	28000	60%	36400	0	9	15													
2-Methylphenol	UG/KG	0	0%	100	0	0	15													
2-Nitroaniline	UG/KG	0	0%	430	0	0	15													
2-Nitrophenol	UG/KG	0	0%	330	0	0	15													
3,3'-Dichlorobenzidine	UG/KG	0	0%		0	0	15													
3-Nitroaniline	UG/KG	0	0%	500	0	0	15													
4,6-Dinitro-2-methylphenol	UG/KG	0	0%		0	0	15													
4-Bromophenyl phenyl ether	UG/KG	0	0%		0	0	15													
4-Chloro-3-methylphenol	UG/KG	0	0%	240	0	0	15													
4-Chloroaniline	UG/KG	0	0%	220	0	0	15													
4-Chlorophenyl phenyl ether	UG/KG	0	0%		0	0	15													
4-Methylphenol	UG/KG	0	0%	900	0	0	15													
4-Nitroaniline	UG/KG	0	0%		0	0	15													
4-Nitrophenol	UG/KG	0	0%	100	0	0	15													
Acenaphthene	UG/KG	84000	60%	50000	1	9	15													
Acenaphthylene	UG/KG	0	0%	41000	0	0	15													
Anthracene	UG/KG	150000	73%	50000	1	11	15													
Benzo(a)anthracene	UG/KG	190000	73%	224	8	11	15													
Benzo(a)pyrene	UG/KG	140000	73%	61	11	11	15													
Benzo(b)fluoranthene	UG/KG	110000	73%	1100	8	11	15													
Benzo(ghi)perylene	UG/KG	53000	67%	50000	1	10	15													
Benzo(k)fluoranthene	UG/KG	130000	73%	1100	8	11	15													
Bis(2-Chloroethoxy)methane	UG/KG	0	0%		0	0	15													
Bis(2-Chloroethyl)ether	UG/KG	0	0%		0	0	15													
Bis(2-Ethylhexyl)phthalate	UG/KG	67	20%	50000	0	3	15													
Butylbenzylphthalate	UG/KG	0	0%	50000	0	0	15													
Carbazole	UG/KG	81000	53%		0	8	15													
Chrysene	UG/KG	170000	73%	400	8	11	15													
Di-n-butylphthalate	UG/KG	0	0%	8100	0	0	15													
Di-n-octylphthalate	UG/KG	0	0%	50000	0	0	15													
Dibenz(a,h)anthracene	UG/KG	52000	67%	14	10	10	15													
Dibenzofuran	UG/KG	60000	67%	6200	4	10	15													
Diethyl phthalate	UG/KG	0	0%	7100	0	0	15													
Dimethylphthalate	UG/KG	0	0%	2000	0	0	15													
Fluoranthene	UG/KG	350000	80%	50000	5	12	15													
Fluorene	UG/KG	88000	67%	50000	1	10	15													
Hexachlorobenzene	UG/KG	0	0%	410	0	0	15													
Hexachlorobutadiene	UG/KG	0	0%		0	0	15													
Hexachlorocyclopentadiene	UG/KG	0	0%		0	0	15													
Hexachloroethane	UG/KG	0	0%		0	0	15													
Indeno(1,2,3-cd)pyrene	UG/KG	100000	73%	3200	6	11	15													
Isophorone	UG/KG	0	0%	4400	0	0	15													
N-Nitrosodiphenylamine	UG/KG	0	0%		0	0	15													
N-Nitrosodipropylamine	UG/KG	0	0%		0	0	15													
Naphthalene	UG/KG	100000	67%	13000	3	10	15													
Nitrobenzene	UG/KG	0	0%	200	0	0	15													
Pentachlorophenol	UG/KG	0	0%	1000	0	0	15													

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		
LOCATION ID								TP11-10		TP11-11		TP11-11		TP11-12		TP11-12		TP11-13		TP11-13		
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		
SAMPLE ID								114013		114001		114000		114020		114019		114018		114021		
SAMPLE DEPTH TO TOP OF SAMPLE								5		0.5		3		0.5		2.5		0.5		3		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								5		1		3		0.5		2.5		0.5		3		
SAMPLE DATE								10/25/00		10/23/00		10/23/00		10/26/00		10/26/00		10/26/00		10/26/00		
QC CODE								SA		SA		SA		SA		SA		SA		DU		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		
			OF		ABOVE	OF	OF															
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N		
Phenanthrene	UG/KG	350000	73%	50000	4	11	15															
Phenol	UG/KG	0	0%	30	0	0	15															
Pyrene	UG/KG	280000	73%	50000	4	11	15															
EXPLOSIVES																						
1,3,5-Trinitrobenzene	UG/KG	0	0%		0	0	15															
1,3-Dinitrobenzene	UG/KG	770	7%		0	1	15															
2,4,6-Trinitrotoluene	UG/KG	130	7%		0	1	15															
2,4-Dinitrotoluene	UG/KG	440	13%		0	2	15															
2,6-Dinitrotoluene	UG/KG	400	7%	1000	0	1	15															
2-amino-4,6-Dinitrotoluene	UG/KG	680	7%		0	1	15															
4-amino-2,6-Dinitrotoluene	UG/KG	0	0%		0	0	15															
HMX	UG/KG	0	0%		0	0	15															
RDX	UG/KG	0	0%		0	0	15															
Tetryl	UG/KG	0	0%		0	0	15															
PESTICIDES/PCBs																						
4,4'-DDD	UG/KG	1400	53%	2900	0	8	15															
4,4'-DDE	UG/KG	1800	67%	2100	0	10	15															
4,4'-DDT	UG/KG	4300	73%	2100	2	11	15															
Aldrin	UG/KG	0	0%	41	0	0	15															
Alpha-BHC	UG/KG	24	7%	110	0	1	15															
Alpha-Chlordane	UG/KG	190	27%		0	4	15															
Aroclor-1016	UG/KG	0	0%		0	0	15															
Aroclor-1221	UG/KG	0	0%		0	0	15															
Aroclor-1232	UG/KG	0	0%		0	0	15															
Aroclor-1242	UG/KG	0	0%		0	0	15															
Aroclor-1248	UG/KG	0	0%		0	0	15															
Aroclor-1254	UG/KG	0	0%	10000	0	0	15															
Aroclor-1260	UG/KG	0	0%	10000	0	0	15															
Beta-BHC	UG/KG	0	0%	200	0	0	15															
Delta-BHC	UG/KG	15	20%	300	0	3	15															
Dieldrin	UG/KG	29	20%	44	0	3	15															
Endosulfan I	UG/KG	0	0%	900	0	0	15															
Endosulfan II	UG/KG	66	40%	900	0	6	15															
Endosulfan sulfate	UG/KG	2.5	7%	1000	0	1	15															
Endrin	UG/KG	49	27%	100	0	4	15															
Endrin aldehyde	UG/KG	0	0%		0	0	15															
Endrin ketone	UG/KG	0	0%		0	0	15															
Gamma-BHC/Lindane	UG/KG	0	0%	60	0	0	15															
Gamma-Chlordane	UG/KG	0	0%	540	0	0	15															
Heptachlor	UG/KG	0	0%	100	0	0	15															
Heptachlor epoxide	UG/KG	0	0%	20	0	0	15															
Methoxychlor	UG/KG	0	0%		0	0	15															
Toxaphene	UG/KG	0	0%		0	0	15															
HERBICIDES																						
2,4,5-T	UG/KG	7.6	7%	1900	0	1	15															
2,4,5-TP/Silvex	UG/KG	0	0%	700	0	0	15															
2,4-D	UG/KG	0	0%	500	0	0	15															
2,4-DB	UG/KG	550	13%		0	2	15															

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		
LOCATION ID								TP11-10		TP11-11		TP11-11		TP11-12		TP11-12		TP11-13		TP11-13		
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		
SAMPLE ID								114013		114001		114000		114020		114019		114018		114021		
SAMPLE DEPTH TO TOP OF SAMPLE								5		0.5		3		0.5		2.5		0.5		3		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								5		1		3		0.5		2.5		0.5		3		
SAMPLE DATE								10/25/00		10/23/00		10/23/00		10/26/00		10/26/00		10/26/00		10/26/00		
QC CODE								SA		SA		SA		SA		SA		SA		DU		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		
			OF		ABOVE	OF	OF															
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N		
Dalapon	UG/KG	2500	7%		0	1	15															
Dicamba	UG/KG	0	0%		0	0	15															
Dichloroprop	UG/KG	0	0%		0	0	15															
Dinoseb	UG/KG	0	0%		0	0	15															
MCPA	UG/KG	0	0%		0	0	15															
MCPP	UG/KG	0	0%		0	0	15															
METALS																						
Aluminum	MG/KG	37500	100%	19300	2	37	37	12800	J	8670	J	11200	J	14600	J	11500	J	19300	J	18400	J	
Antimony	MG/KG	285	70%	5.9	22	26	37	**6.7**	J	**7.1**	J	**28.5**	J	**199**	J	3.7	J	**22.1**	J	**35**	J	
Arsenic	MG/KG	23.2	92%	8.2	20	34	37	**10.5**		7.2		**14.2**		**8.6**		4.9		**11.3**		**11.4**	J	
Barium	MG/KG	6560	100%	300	16	37	37	198	J	139	J	242	J	**1720**	J	84.8	J	**435**	J	**472**	J	
Beryllium	MG/KG	1.4	97%	1.1	1	36	37	0.99	J	0.65	J	0.75	J	0.85	J	0.83	J	1		1.1	J	
Cadmium	MG/KG	16	73%	2.3	17	27	37	**4.3**		0.49	J	0.95	J	**2.8**		0.06	U	1.7		1.4		
Calcium	MG/KG	104000	100%	121000	0	37	37	11000		29900		24700		28200		32200		9230		57400	J	
Chromium	MG/KG	462	100%	29.6	21	37	37	**70.7**	J	19.1	J	**52.4**	J	**64.9**	J	18	J	**95.5**	J	**47.4**	J	
Cobalt	MG/KG	40.5	100%	30	1	37	37	19.2		10.1	J	12.4		15.7		13.5		14.3		13.5	J	
Copper	MG/KG	1230	100%	33	30	37	37	**462**	J	**87.3**	J	**133**	J	**834**	J	**40**	J	**1230**	J	**175**	J	
Cyanide	MG/KG	1.7	5%	0.35	2	2	37	0.54	U	0.6	U	0.57	U	0.57	U	0.55	U	0.54	U	0.7	U	
Iron	MG/KG	135000	100%	36500	19	37	37	**46100**	J	23200	J	32300	J	**44400**	J	26000	J	**41400**	J	**64600**	J	
Lead	MG/KG	7210	84%	24.8	29	31	37	**495**	J	**1090**	J	**686**	J	**7210**	J	**337**	J	**1180**	J	**913**	J	
Magnesium	MG/KG	44600	100%	21500	2	37	37	4380		8440		6670		6450		9450		4930		7600	J	
Manganese	MG/KG	3000	97%	1060	3	36	37	1040		745		629		616		935		776		**1120**	J	
Mercury	MG/KG	6	68%	0.1	17	25	37	0.1	J	0.06	UJ	**0.11**	J	**6**	J	0.06	UJ	0.06	UJ	0.07	UJ	
Nickel	MG/KG	221	100%	49	15	37	37	**50.9**	J	27.2	J	45.1	J	**57.5**	J	35	J	43.5	J	44.9	J	
Potassium	MG/KG	5870	100%	2380	6	37	37	1640		1290		1580		**2800**		1780		2230		**5870**	J	
Selenium	MG/KG	3.7	76%	2	10	28	37	0.85	U	0.83	U	**2.2**		1.9		0.94	J	**2.8**		2		
Silver	MG/KG	11.3	73%	0.75	24	27	37	**1.1**	J	0.42	J	**0.96**	J	**2.2**	J	0.33	U	**0.92**	J	**1**	J	
Sodium	MG/KG	1700	92%	172	22	34	37	106	J	167	J	**376**	J	**767**	J	74.8	J	**366**	J	**775**	J	
Thallium	MG/KG	8.8	59%	0.7	22	22	37	**3.3**		**2**	J	**2.4**		**3.7**		**2.7**		**3.2**		**5.7**	J	
Vanadium	MG/KG	1940	100%	150	1	37	37	26.4	J	16.7	J	22.5	J	24.4	J	20.6	J	28.8	J	34.6	J	
Zinc	MG/KG	7980	92%	110	32	34	37	**357**	J	**870**	J	**970**	J	**3840**	J	**166**	J	**2270**	J	**1170**	J	

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11			SEAD-11			SEAD-11			SEAD-11			SEAD-11			SEAD-11		
LOCATION ID								TP11-13			TP11-14			TP11-14			TP11-2			TP11-2			TP11-2		
MATRIX								SOIL			SOIL			SOIL			SOIL			SOIL			SOIL		
SAMPLE ID								114017			114016			114015			TP11-2-1			TP11-2-2			TP11-2-3			TP11-3-1		
SAMPLE DEPTH TO TOP OF SAMPLE								3			0.5			2			0			5			5			0		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								3			0.5			2			0.7			5			5			2		
SAMPLE DATE								10/26/00			10/25/00			10/25/00			11/19/93			11/20/93			11/20/93			12/14/93		
QC CODE								SA			SA			SA			SA			SA			SA			SA		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA			SEAD-11 EECA			SEAD-11 EECA			ESI			ESI			ESI			ESI		
			OF		ABOVE	OF	OF																					
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N			N			N			N			N			N			N		
VOLATILE ORGANICS																												
1,1,1-Trichloroethane	UG/KG	0	0%	800	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
1,1,2,2-Tetrachloroethane	UG/KG	0	0%	600	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
1,1,2-Trichloroethane	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
1,1-Dichloroethane	UG/KG	0	0%	200	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
1,1-Dichloroethene	UG/KG	0	0%	400	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
1,2-Dichloroethane	UG/KG	0	0%	100	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
1,2-Dichloroethene (total)	UG/KG	2200	24%		0	9	37	270	J		2	J		14	UJ		12	U		12	U		12	U		33	U	
1,2-Dichloropropane	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Acetone	UG/KG	3200	22%	200	3	8	37	1700	UJ		190	J		66	J		12	U		12	U		12	U		33	U	
Benzene	UG/KG	45	19%	60	0	7	37	1700	UJ		13	J		45	J		12	U		12	U		12	U		33	U	
Bromodichloromethane	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Bromoform	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Carbon disulfide	UG/KG	26	16%	2700	0	6	37	1700	U		26			10	J		12	U		12	U		12	U		33	U	
Carbon tetrachloride	UG/KG	0	0%	600	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Chlorobenzene	UG/KG	0	0%	1700	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Chlorodibromomethane	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Chloroethane	UG/KG	0	0%	1900	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Chloroform	UG/KG	0	0%	300	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Cis-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Ethyl benzene	UG/KG	3	3%	5500	0	1	37	1700	U		14	U		14	UJ		12	U		3	J		12	U		33	U	
Methyl bromide	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Methyl butyl ketone	UG/KG	0	0%		0	0	37	1700	UJ		14	U		14	UJ		12	U		12	U		12	U		33	U	
Methyl chloride	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Methyl ethyl ketone	UG/KG	0	0%	300	0	0	37	1700	UJ		14	U		14	UJ		12	U		12	U		12	U		33	U	
Methyl isobutyl ketone	UG/KG	0	0%	1000	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Methylene chloride	UG/KG	4	16%	100	0	6	37	1700	U		2	J		3	J		12	U		12	U		12	U		33	U	
Styrene	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Tetrachloroethene	UG/KG	370	14%	1400	0	5	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		370		
Toluene	UG/KG	25	27%	1500	0	10	37	1700	U		5	J		20	J		12	U		1	J		12	U		33	U	
Total Xylenes	UG/KG	14	14%	1200	0	5	37	1700	U		6	J		14	J		12	U		4	J		12	U		33	U	
Trans-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
Trichloroethene	UG/KG	42000	86%	700	14	32	37	**27000**			130			44	J		13			15			12	U		69		
Vinyl chloride	UG/KG	0	0%	200	0	0	37	1700	U		14	U		14	UJ		12	U		12	U		12	U		33	U	
SEMI VOLATILE ORGANICS																												
1,2,4-Trichlorobenzene	UG/KG	0	0%	3400	0	0	15										1400	U		39000	U		1300	U		61000	UJ	
1,2-Dichlorobenzene	UG/KG	0	0%	7900	0	0	15										1400	U		39000	U		1300	U		61000	UJ	
1,3-Dichlorobenzene	UG/KG	0	0%	1600	0	0	15										1400	U		39000	U		1300	U		61000	UJ	
1,4-Dichlorobenzene	UG/KG	0	0%	8500	0	0	15										1400	U		39000	U		1300	U		61000	UJ	
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0%		0	0	15										1400	U		39000	U		1300	U		61000	UJ	
2,4,5-Trichlorophenol	UG/KG	0	0%	100	0	0	15										3300	U		94000	U		3200	U		150000	UJ	
2,4,6-Trichlorophenol	UG/KG	0	0%		0	0	15										1400	U		39000	U		1300	U		61000	UJ	
2,4-Dichlorophenol	UG/KG	0	0%	400	0	0	15										1400	U		39000	U		1300	U		61000	UJ	
2,4-Dimethylphenol	UG/KG	0	0%		0	0	15										1400	U		39000	U		1300	U		61000	UJ	
2,4-Dinitrophenol	UG/KG	0	0%	200	0	0	15										3300	U		94000	U		3200	U		150000	UJ	
2,4-Dinitrotoluene	UG/KG	0	0%		0	0	15										1400	U		39000	U		1300	U		61000	UJ	
2,6-Dinitrotoluene	UG/KG	0	0%	1000	0	0	15										1400	U		39000	U		1300	U		61000	UJ	
2-Chloronaphthalene	UG/KG	0	0%		0	0	15										1400	U		39000	U		1300	U		61000	UJ	

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		
LOCATION ID								TP11-13		TP11-14		TP11-14		TP11-2		TP11-2		TP11-2		TP11-3	
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID								114017		114016		114015		TP11-2-1		TP11-2-2		TP11-2-3		TP11-3-1	
SAMPLE DEPTH TO TOP OF SAMPLE								3		0.5		2		0		5		5		0	
SAMPLE DEPTH TO BOTTOM OF SAMPLE								3		0.5		2		0.7		5		5		2	
SAMPLE DATE								10/26/00		10/25/00		10/25/00		11/19/93		11/20/93		11/20/93		12/14/93	
QC CODE								SA		SA		SA		SA		SA		SA		SA	
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		ESI		ESI		ESI		ESI	
			OF		ABOVE	OF	OF														
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N	
2-Chlorophenol	UG/KG	0	0%	800	0	0	15							1400	U	39000	U	1300	U	61000	UJ
2-Methylnaphthalene	UG/KG	28000	60%	36400	0	9	15							1400	U	28000	J	460	J	7700	J
2-Methylphenol	UG/KG	0	0%	100	0	0	15							1400	U	39000	U	1300	U	61000	UJ
2-Nitroaniline	UG/KG	0	0%	430	0	0	15							3300	U	94000	U	3200	U	150000	UJ
2-Nitrophenol	UG/KG	0	0%	330	0	0	15							1400	U	39000	U	1300	U	61000	UJ
3,3'-Dichlorobenzidine	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
3-Nitroaniline	UG/KG	0	0%	500	0	0	15							3300	U	94000	U	3200	U	150000	UJ
4,6-Dinitro-2-methylphenol	UG/KG	0	0%		0	0	15							3300	U	94000	U	3200	U	150000	UJ
4-Bromophenyl phenyl ether	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
4-Chloro-3-methylphenol	UG/KG	0	0%	240	0	0	15							1400	U	39000	U	1300	U	61000	UJ
4-Chloroaniline	UG/KG	0	0%	220	0	0	15							1400	U	39000	U	1300	U	61000	UJ
4-Chlorophenyl phenyl ether	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
4-Methylphenol	UG/KG	0	0%	900	0	0	15							1400	U	39000	U	1300	U	61000	UJ
4-Nitroaniline	UG/KG	0	0%		0	0	15							3300	U	94000	U	3200	U	150000	UJ
4-Nitrophenol	UG/KG	0	0%	100	0	0	15							3300	U	94000	U	3200	U	150000	UJ
Acenaphthene	UG/KG	84000	60%	50000	1	9	15							630	J	**84000**		1400		28000	J
Acenaphthylene	UG/KG	0	0%	41000	0	0	15							1400	U	39000	U	1300	U	61000	UJ
Anthracene	UG/KG	150000	73%	50000	1	11	15							1100	J	**150000**		2800		49000	J
Benzo(a)anthracene	UG/KG	190000	73%	224	8	11	15							**4200**		**190000**		**4600**		**110000**	J
Benzo(a)pyrene	UG/KG	140000	73%	61	11	11	15							**3800**		**140000**		**3400**		**110000**	J
Benzo(b)fluoranthene	UG/KG	110000	73%	1100	8	11	15							**4700**		**99000**		**2900**		**110000**	J
Benzo(ghi)perylene	UG/KG	53000	67%	50000	1	10	15							1000	J	32000	J	630	J	**53000**	J
Benzo(k)fluoranthene	UG/KG	130000	73%	1100	8	11	15							**3000**		**130000**		**3700**		**94000**	J
Bis(2-Chloroethoxy)methane	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
Bis(2-Chloroethyl)ether	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
Bis(2-Ethylhexyl)phthalate	UG/KG	67	20%	50000	0	3	15							1400	U	39000	U	1300	U	61000	UJ
Butylbenzylphthalate	UG/KG	0	0%	50000	0	0	15							1400	U	39000	U	1300	U	61000	UJ
Carbazole	UG/KG	81000	53%		0	8	15							820	J	81000		1600		33000	J
Chrysene	UG/KG	170000	73%	400	8	11	15							**4500**		**170000**		**4300**		**110000**	J
Di-n-butylphthalate	UG/KG	0	0%	8100	0	0	15							1400	U	39000	U	1300	U	61000	UJ
Di-n-octylphthalate	UG/KG	0	0%	50000	0	0	15							1400	U	39000	U	1300	U	61000	UJ
Dibenz(a,h)anthracene	UG/KG	52000	67%	14	10	10	15							**1100**	J	**52000**		**1200**	J	**16000**	J
Dibenzofuran	UG/KG	60000	67%	6200	4	10	15							250	J	**60000**		1000	J	**18000**	J
Diethyl phthalate	UG/KG	0	0%	7100	0	0	15							1400	U	39000	U	1300	U	61000	UJ
Dimethylphthalate	UG/KG	0	0%	2000	0	0	15							1400	U	39000	U	1300	U	61000	UJ
Fluoranthene	UG/KG	350000	80%	50000	5	12	15							9800		**350000**		11000		**320000**	J
Fluorene	UG/KG	88000	67%	50000	1	10	15							510	J	**88000**		1600		27000	J
Hexachlorobenzene	UG/KG	0	0%	410	0	0	15							1400	U	39000	U	1300	U	61000	UJ
Hexachlorobutadiene	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
Hexachlorocyclopentadiene	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
Hexachloroethane	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
Indeno(1,2,3-cd)pyrene	UG/KG	100000	73%	3200	6	11	15							2800		**100000**		2300		**60000**	J
Isophorone	UG/KG	0	0%	4400	0	0	15							1400	U	39000	U	1300	U	61000	UJ
N-Nitrosodiphenylamine	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
N-Nitrosodipropylamine	UG/KG	0	0%		0	0	15							1400	U	39000	U	1300	U	61000	UJ
Naphthalene	UG/KG	100000	67%	13000	3	10	15							220	J	**100000**		1700		**19000**	J
Nitrobenzene	UG/KG	0	0%	200	0	0	15							1400	U	39000	U	1300	U	61000	UJ
Pentachlorophenol	UG/KG	0	0%	1000	0	0	15							3300	U	94000	U	3200	U	150000	UJ

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11	
LOCATION ID								TP11-13		TP11-14		TP11-14		TP11-2		TP11-2		TP11-2		TP11-3	
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID								114017		114016		114015		TP11-2-1		TP11-2-2		TP11-2-3		TP11-3-1	
SAMPLE DEPTH TO TOP OF SAMPLE								3		0.5		2		0		5		5		0	
SAMPLE DEPTH TO BOTTOM OF SAMPLE								3		0.5		2		0.7		5		5		2	
SAMPLE DATE								10/26/00		10/25/00		10/25/00		11/19/93		11/20/93		11/20/93		12/14/93	
QC CODE								SA		SA		SA		SA		SA		SA		SA	
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		ESI		ESI		ESI		ESI	
			OF		ABOVE	OF	OF														
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N	
Phenanthrene	UG/KG	350000	73%	50000	4	11	15							5800		**350000**		9200		**210000**	J
Phenol	UG/KG	0	0%	30	0	0	15							1400	U	39000	U	1300	U	61000	UJ
Pyrene	UG/KG	280000	73%	50000	4	11	15							8500		**280000**		7800		**190000**	J
EXPLOSIVES																					
1,3,5-Trinitrobenzene	UG/KG	0	0%		0	0	15							130	U	130	UJ	130	UJ	130	U
1,3-Dinitrobenzene	UG/KG	770	7%		0	1	15							130	U	130	UJ	130	UJ	130	U
2,4,6-Trinitrotoluene	UG/KG	130	7%		0	1	15							130	U	130	J	130	UJ	130	U
2,4-Dinitrotoluene	UG/KG	440	13%		0	2	15							130	U	170	J	130	UJ	130	U
2,6-Dinitrotoluene	UG/KG	400	7%	1000	0	1	15							130	U	130	UJ	130	UJ	130	U
2-amino-4,6-Dinitrotoluene	UG/KG	680	7%		0	1	15							130	U	130	UJ	130	UJ	130	U
4-amino-2,6-Dinitrotoluene	UG/KG	0	0%		0	0	15							130	U	130	UJ	130	UJ	130	U
HMX	UG/KG	0	0%		0	0	15							130	U	130	UJ	130	UJ	130	U
RDX	UG/KG	0	0%		0	0	15							130	U	130	UJ	130	UJ	130	U
Tetryl	UG/KG	0	0%		0	0	15							130	UJ	130	UJ	130	UJ	130	U
PESTICIDES/PCBs																					
4,4'-DDD	UG/KG	1400	53%	2900	0	8	15							18	J	3.9	U	4	UR	1400	J
4,4'-DDE	UG/KG	1800	67%	2100	0	10	15							120		3.9	U	5	J	1800	J
4,4'-DDT	UG/KG	4300	73%	2100	2	11	15							140	J	3.9	U	11	J	**4300**	J
Aldrin	UG/KG	0	0%	41	0	0	15							10	U	2	U	2	UR	41	U
Alpha-BHC	UG/KG	24	7%	110	0	1	15							10	U	2	U	2	UR	41	U
Alpha-Chlordane	UG/KG	190	27%		0	4	15							10	U	2	U	11	J	41	U
Aroclor-1016	UG/KG	0	0%		0	0	15							200	U	39	U	40	UR	800	U
Aroclor-1221	UG/KG	0	0%		0	0	15							410	U	79	U	81	UR	1600	U
Aroclor-1232	UG/KG	0	0%		0	0	15							200	U	39	U	40	UR	800	U
Aroclor-1242	UG/KG	0	0%		0	0	15							200	U	39	U	40	UR	800	U
Aroclor-1248	UG/KG	0	0%		0	0	15							200	U	39	U	40	UR	800	U
Aroclor-1254	UG/KG	0	0%	10000	0	0	15							200	U	39	U	40	UR	800	U
Aroclor-1260	UG/KG	0	0%	10000	0	0	15							200	U	39	U	40	UR	800	U
Beta-BHC	UG/KG	0	0%	200	0	0	15							10	U	2	U	2	UR	41	U
Delta-BHC	UG/KG	15	20%	300	0	3	15							10	U	2	U	1.3	J	41	U
Dieldrin	UG/KG	29	20%	44	0	3	15							20	U	3.9	U	4	UR	80	U
Endosulfan I	UG/KG	0	0%	900	0	0	15							10	U	2	U	2	UR	41	U
Endosulfan II	UG/KG	66	40%	900	0	6	15							20	U	3.9	U	4.3	J	66	J
Endosulfan sulfate	UG/KG	2.5	7%	1000	0	1	15							20	U	3.9	U	4	UR	80	U
Endrin	UG/KG	49	27%	100	0	4	15							20	U	3.9	U	3	J	80	U
Endrin aldehyde	UG/KG	0	0%		0	0	15							20	U	3.9	U	4	UR	80	U
Endrin ketone	UG/KG	0	0%		0	0	15							20	U	3.9	U	4	UR	80	U
Gamma-BHC/Lindane	UG/KG	0	0%	60	0	0	15							10	U	2	U	2	UR	41	U
Gamma-Chlordane	UG/KG	0	0%	540	0	0	15							10	U	2	U	2	UR	41	U
Heptachlor	UG/KG	0	0%	100	0	0	15							10	U	2	U	2	UR	41	U
Heptachlor epoxide	UG/KG	0	0%	20	0	0	15							10	U	2	U	2	UR	41	U
Methoxychlor	UG/KG	0	0%		0	0	15							100	U	20	U	20	UR	410	U
Toxaphene	UG/KG	0	0%		0	0	15							1000	U	200	U	200	UR	4100	U
HERBICIDES																					
2,4,5-T	UG/KG	7.6	7%	1900	0	1	15							6.1	U	5.9	U	6	U	6.1	U
2,4,5-TP/Silvex	UG/KG	0	0%	700	0	0	15							6.1	UJ	5.9	U	6	U	6.1	U
2,4-D	UG/KG	0	0%	500	0	0	15							61	U	59	U	60	U	61	U
2,4-DB	UG/KG	550	13%		0	2	15							61	U	550		60	U	61	U

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		
LOCATION ID								TP11-13		TP11-14		TP11-14		TP11-2		TP11-2		TP11-2		TP11-3		
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		
SAMPLE ID								114017		114016		114015		TP11-2-1		TP11-2-2		TP11-2-3		TP11-3-1		
SAMPLE DEPTH TO TOP OF SAMPLE								3		0.5		2		0		5		5		0		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								3		0.5		2		0.7		5		5		2		
SAMPLE DATE								10/26/00		10/25/00		10/25/00		11/19/93		11/20/93		11/20/93		12/14/93		
QC CODE								SA		SA		SA		SA		SA		SA		SA		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		ESI		ESI		ESI		ESI		
			OF		ABOVE	OF	OF															
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N		
Dalapon	UG/KG	2500	7%		0	1	15							150	U	150	U	150	U	150	U	
Dicamba	UG/KG	0	0%		0	0	15							6.1	U	5.9	U	6	U	6.1	U	
Dichloroprop	UG/KG	0	0%		0	0	15							61	U	59	U	60	U	61	U	
Dinoseb	UG/KG	0	0%		0	0	15							31	UJ	30	U	30	U	31	U	
MCPA	UG/KG	0	0%		0	0	15							6100	U	5900	U	6000	U	6100	U	
MCPP	UG/KG	0	0%		0	0	15							6100	U	5900	U	6000	U	6100	U	
METALS																						
Aluminum	MG/KG	37500	100%	19300	2	37	37	6900	J	11200	J	13700	J	15300		8720		14000		**21700**		
Antimony	MG/KG	285	70%	5.9	22	26	37	**29.5**	J	**6**	J	**33.5**	J	9.4	UJ	12.3	UJ	10.6	UJ	**8.6**	J	
Arsenic	MG/KG	23.2	92%	8.2	20	34	37	5.8		**12.7**		**20.5**		**23.2**	J	6.4		6.4		8.2		
Barium	MG/KG	6560	100%	300	16	37	37	**328**	J	155	J	**490**	J	96.9		68.6		119		**415**		
Beryllium	MG/KG	1.4	97%	1.1	1	36	37	0.41	J	0.78	J	0.75	J	0.76	J	0.45	J	0.71	J	0.6	J	
Cadmium	MG/KG	16	73%	2.3	17	27	37	0.92	J	0.74	J	**4.8**		0.59	U	0.77	U	0.66	U	**9.2**		
Calcium	MG/KG	104000	100%	121000	0	37	37	15700	J	23700		27900		18600		83700		9090		73600		
Chromium	MG/KG	462	100%	29.6	21	37	37	29.4	J	**52**	J	**120**	J	23.9		15.5		19.5		**78.2**	J	
Cobalt	MG/KG	40.5	100%	30	1	37	37	6.2	J	15.2		18		10.8		7.2	J	10.8		13.5		
Copper	MG/KG	1230	100%	33	30	37	37	**133**	J	**219**	J	**306**	J	**35.5**		**121**		25.7		**1090**	J	
Cyanide	MG/KG	1.7	5%	0.35	2	2	37	0.65	U	0.59	U	0.54	U	0.58	U	0.58	U	0.55	U	0.6	U	
Iron	MG/KG	135000	100%	36500	19	37	37	**47900**	J	**78300**	J	**50900**	J	29200		19100		27400		34800		
Lead	MG/KG	7210	84%	24.8	29	31	37	**1060**	J	**373**	J	**3790**	J	**84.1**		**82.5**		**84.9**		1170	R	
Magnesium	MG/KG	44600	100%	21500	2	37	37	1970	J	10100		6490		11300		21100		6010		6860		
Manganese	MG/KG	3000	97%	1060	3	36	37	467	J	713		607		446	R	480		868		648		
Mercury	MG/KG	6	68%	0.1	17	25	37	0.06	UJ	0.1	J	**0.19**	J	**0.5**	J	0.07	J	0.08	J	**0.4**		
Nickel	MG/KG	221	100%	49	15	37	37	23.7	J	**95.8**	J	**191**	J	30.6		20.4		30.1		45.2		
Potassium	MG/KG	5870	100%	2380	6	37	37	1890	J	1680		2170		1430		1080	J	1220		**2980**		
Selenium	MG/KG	3.7	76%	2	10	28	37	1.6	J	**2.6**		**2.1**		0.68	J	0.2	UJ	0.26	UJ	0.58	J	
Silver	MG/KG	11.3	73%	0.75	24	27	37	**0.83**	J	0.73	J	**2.3**		1.2	U	1.6	U	1.3	U	**10.8**		
Sodium	MG/KG	1700	92%	172	22	34	37	**316**	J	96	J	**1700**		75.1	J	**226**	J	102	J	**1660**		
Thallium	MG/KG	8.8	59%	0.7	22	22	37	**2.8**	J	**4.6**		**3**		0.21	U	0.22	UJ	0.29	UJ	1	U	
Vanadium	MG/KG	1940	100%	150	1	37	37	16.2	J	33.9	J	25.5	J	23.8		14.1		22.7		31		
Zinc	MG/KG	7980	92%	110	32	34	37	**1030**	J	**451**	J	**7150**	J	**139**		**153**		**111**		**1250**		

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11	
LOCATION ID								TP11-3		TP11-3		TP11-4		TP11-4		TP11-4		TP11-5		TP11-5	
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID								TP11-3-2		TP11-3-3		TP11-4-1		TP11-4-2		TP11-4-3		114008		114007	
SAMPLE DEPTH TO TOP OF SAMPLE								2		4		0		2		4		0.5		3	
SAMPLE DEPTH TO BOTTOM OF SAMPLE								4		6		2		4		6		0.5		3	
SAMPLE DATE								12/14/93		12/14/93		12/14/93		12/16/93		12/16/93		10/25/00		10/25/00	
QC CODE								SA		SA		SA		SA		SA		SA		SA	
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		ESI		ESI		ESI		SEAD-11 EECA		SEAD-11 EECA	
			OF		ABOVE	OF	OF														
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N	
VOLATILE ORGANICS																					
1,1,1-Trichloroethane	UG/KG	0	0%	800	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
1,1,2,2-Tetrachloroethane	UG/KG	0	0%	600	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
1,1,2-Trichloroethane	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
1,1-Dichloroethane	UG/KG	0	0%	200	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
1,1-Dichloroethene	UG/KG	0	0%	400	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
1,2-Dichloroethane	UG/KG	0	0%	100	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
1,2-Dichloroethene (total)	UG/KG	2200	24%		0	9	37	4	J	3	J	11	U	12	U	11	U	10	UJ	16	U
1,2-Dichloropropane	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Acetone	UG/KG	3200	22%	200	3	8	37	22	U	12	U	11	U	12	U	11	U	110	J	140	J
Benzene	UG/KG	45	19%	60	0	7	37	22	U	12	U	11	U	12	U	11	U	6	J	2	J
Bromodichloromethane	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Bromoform	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Carbon disulfide	UG/KG	26	16%	2700	0	6	37	22	U	12	U	11	U	12	U	11	U	8	J	16	U
Carbon tetrachloride	UG/KG	0	0%	600	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Chlorobenzene	UG/KG	0	0%	1700	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Chlorodibromomethane	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Chloroethane	UG/KG	0	0%	1900	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Chloroform	UG/KG	0	0%	300	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Cis-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Ethyl benzene	UG/KG	3	3%	5500	0	1	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Methyl bromide	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Methyl butyl ketone	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	UJ
Methyl chloride	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Methyl ethyl ketone	UG/KG	0	0%	300	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	UJ
Methyl isobutyl ketone	UG/KG	0	0%	1000	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Methylene chloride	UG/KG	4	16%	100	0	6	37	22	U	12	U	11	U	12	U	11	U	10	UJ	3	J
Styrene	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Tetrachloroethene	UG/KG	370	14%	1400	0	5	37	260		200		11	U	12	U	11	U	10	UJ	16	U
Toluene	UG/KG	25	27%	1500	0	10	37	22	U	12	U	11	U	12	U	11	U	9	J	3	J
Total Xylenes	UG/KG	14	14%	1200	0	5	37	22	U	12	U	11	U	12	U	11	U	8	J	16	U
Trans-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	U
Trichloroethene	UG/KG	42000	86%	700	14	32	37	40		40		40		11	J	11	U	21	J	18	
Vinyl chloride	UG/KG	0	0%	200	0	0	37	22	U	12	U	11	U	12	U	11	U	10	UJ	16	UJ
SEMI VOLATILE ORGANICS																					
1,2,4-Trichlorobenzene	UG/KG	0	0%	3400	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
1,2-Dichlorobenzene	UG/KG	0	0%	7900	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
1,3-Dichlorobenzene	UG/KG	0	0%	1600	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
1,4-Dichlorobenzene	UG/KG	0	0%	8500	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
2,4,5-Trichlorophenol	UG/KG	0	0%	100	0	0	15	74000	U	140000	U	19000	U	5000	U	890	U				
2,4,6-Trichlorophenol	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
2,4-Dichlorophenol	UG/KG	0	0%	400	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
2,4-Dimethylphenol	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
2,4-Dinitrophenol	UG/KG	0	0%	200	0	0	15	74000	U	140000	U	19000	U	5000	U	890	U				
2,4-Dinitrotoluene	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
2,6-Dinitrotoluene	UG/KG	0	0%	1000	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
2-Chloronaphthalene	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11	
LOCATION ID								TP11-3		TP11-3		TP11-4		TP11-4		TP11-4		TP11-5		TP11-5	
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID								TP11-3-2		TP11-3-3		TP11-4-1		TP11-4-2		TP11-4-3		114008		114007	
SAMPLE DEPTH TO TOP OF SAMPLE								2		4		0		2		4		0.5		3	
SAMPLE DEPTH TO BOTTOM OF SAMPLE								4		6		2		4		6		0.5		3	
SAMPLE DATE								12/14/93		12/14/93		12/14/93		12/16/93		12/16/93		10/25/00		10/25/00	
QC CODE								SA		SA		SA		SA		SA		SA		SA	
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		ESI		ESI		ESI		SEAD-11 EECA		SEAD-11 EECA	
			OF		ABOVE	OF	OF														
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N	
2-Chlorophenol	UG/KG	0	0%	800	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
2-Methylnaphthalene	UG/KG	28000	60%	36400	0	9	15	3200	J	7300	J	850	J	170	J	370	U				
2-Methylphenol	UG/KG	0	0%	100	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
2-Nitroaniline	UG/KG	0	0%	430	0	0	15	74000	U	140000	U	19000	U	5000	U	890	U				
2-Nitrophenol	UG/KG	0	0%	330	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
3,3'-Dichlorobenzidine	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
3-Nitroaniline	UG/KG	0	0%	500	0	0	15	74000	U	140000	U	19000	U	5000	U	890	U				
4,6-Dinitro-2-methylphenol	UG/KG	0	0%		0	0	15	74000	U	140000	U	19000	U	5000	U	890	U				
4-Bromophenyl phenyl ether	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
4-Chloro-3-methylphenol	UG/KG	0	0%	240	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
4-Chloroaniline	UG/KG	0	0%	220	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
4-Chlorophenyl phenyl ether	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
4-Methylphenol	UG/KG	0	0%	900	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
4-Nitroaniline	UG/KG	0	0%		0	0	15	74000	U	140000	U	19000	U	5000	U	890	U				
4-Nitrophenol	UG/KG	0	0%	100	0	0	15	74000	U	140000	U	19000	U	5000	U	890	U				
Acenaphthene	UG/KG	84000	60%	50000	1	9	15	14000	J	25000	J	4100	J	1100	J	27	J				
Acenaphthylene	UG/KG	0	0%	41000	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Anthracene	UG/KG	150000	73%	50000	1	11	15	27000	J	44000	J	7700		2200		49	J				
Benzo(a)anthracene	UG/KG	190000	73%	224	8	11	15	**67000**		**79000**		**20000**		**6600**		160	J				
Benzo(a)pyrene	UG/KG	140000	73%	61	11	11	15	**60000**		**73000**		**19000**		**6100**		**160**	J				
Benzo(b)fluoranthene	UG/KG	110000	73%	1100	8	11	15	**67000**		**68000**		**26000**		**8400**		220	J				
Benzo(ghi)perylene	UG/KG	53000	67%	50000	1	10	15	11000	J	39000	J	9100		2900		160	J				
Benzo(k)fluoranthene	UG/KG	130000	73%	1100	8	11	15	**48000**		**66000**		**10000**		**3000**		94	J				
Bis(2-Chloroethoxy)methane	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Bis(2-Chloroethyl)ether	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Bis(2-Ethylhexyl)phthalate	UG/KG	67	20%	50000	0	3	15	29000	U	58000	U	7700	U	2100	U	22	J				
Butylbenzylphthalate	UG/KG	0	0%	50000	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Carbazole	UG/KG	81000	53%		0	8	15	16000	J	30000	J	6400	J	1300	J	370	U				
Chrysene	UG/KG	170000	73%	400	8	11	15	**64000**		**74000**		**22000**		**6900**		180	J				
Di-n-butylphthalate	UG/KG	0	0%	8100	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Di-n-octylphthalate	UG/KG	0	0%	50000	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Dibenz(a,h)anthracene	UG/KG	52000	67%	14	10	10	15	**9300**	J	**12000**	J	**3500**	J	**1000**	J	370	U				
Dibenzofuran	UG/KG	60000	67%	6200	4	10	15	**7900**	J	**16000**	J	2200	J	520	J	370	U				
Diethyl phthalate	UG/KG	0	0%	7100	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Dimethylphthalate	UG/KG	0	0%	2000	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Fluoranthene	UG/KG	350000	80%	50000	5	12	15	**150000**		**230000**		**54000**		14000		400					
Fluorene	UG/KG	88000	67%	50000	1	10	15	14000	J	24000	J	3300	J	1000	J	370	U				
Hexachlorobenzene	UG/KG	0	0%	410	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Hexachlorobutadiene	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Hexachlorocyclopentadiene	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Hexachloroethane	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Indeno(1,2,3-cd)pyrene	UG/KG	100000	73%	3200	6	11	15	**37000**		**45000**	J	**11000**		**3700**		120	J				
Isophorone	UG/KG	0	0%	4400	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
N-Nitrosodiphenylamine	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
N-Nitrosodipropylamine	UG/KG	0	0%		0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Naphthalene	UG/KG	100000	67%	13000	3	10	15	8600	J	**21000**	J	2500	J	400	J	370	U				
Nitrobenzene	UG/KG	0	0%	200	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Pentachlorophenol	UG/KG	0	0%	1000	0	0	15	74000	U	140000	U	19000	U	5000	U	890	U				

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11	
LOCATION ID								TP11-3		TP11-3		TP11-4		TP11-4		TP11-4		TP11-5		TP11-5	
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID								TP11-3-2		TP11-3-3		TP11-4-1		TP11-4-2		TP11-4-3		114008		114007	
SAMPLE DEPTH TO TOP OF SAMPLE								2		4		0		2		4		0.5		3	
SAMPLE DEPTH TO BOTTOM OF SAMPLE								4		6		2		4		6		0.5		3	
SAMPLE DATE								12/14/93		12/14/93		12/14/93		12/16/93		12/16/93		10/25/00		10/25/00	
QC CODE								SA		SA		SA		SA		SA		SA		SA	
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		ESI		ESI		ESI		SEAD-11 EECA		SEAD-11 EECA	
			OF		ABOVE	OF	OF														
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N	
Phenanthrene	UG/KG	350000	73%	50000	4	11	15	**110000**		**180000**		40000		9700		240	J				
Phenol	UG/KG	0	0%	30	0	0	15	29000	U	58000	U	7700	U	2100	U	370	U				
Pyrene	UG/KG	280000	73%	50000	4	11	15	**120000**		**140000**		38000		12000		340	J				
EXPLOSIVES																					
1,3,5-Trinitrobenzene	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	U	130	U				
1,3-Dinitrobenzene	UG/KG	770	7%		0	1	15	130	U	770	J	130	U	130	U	130	U				
2,4,6-Trinitrotoluene	UG/KG	130	7%		0	1	15	130	U	130	U	130	U	130	U	130	U				
2,4-Dinitrotoluene	UG/KG	440	13%		0	2	15	130	U	130	U	130	U	130	U	130	U				
2,6-Dinitrotoluene	UG/KG	400	7%	1000	0	1	15	400	J	130	U	130	U	130	U	130	U				
2-amino-4,6-Dinitrotoluene	UG/KG	680	7%		0	1	15	130	U	680	J	130	U	130	U	130	U				
4-amino-2,6-Dinitrotoluene	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	U	130	U				
HMX	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	U	130	U				
RDX	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	U	130	U				
Tetryl	UG/KG	0	0%		0	0	15	130	U	130	U	130	U	130	U	130	U				
PESTICIDES/PCBs																					
4,4'-DDD	UG/KG	1400	53%	2900	0	8	15	630	J	320	J	13	J	4.8	J	3.7	U				
4,4'-DDE	UG/KG	1800	67%	2100	0	10	15	1000	J	670	J	34	J	12	J	3.7	U				
4,4'-DDT	UG/KG	4300	73%	2100	2	11	15	**2400**		1500		72		17		1.6	J				
Aldrin	UG/KG	0	0%	41	0	0	15	20	U	9.9	U	9.9	U	2.1	U	1.9	U				
Alpha-BHC	UG/KG	24	7%	110	0	1	15	20	U	9.9	U	9.9	U	2.1	U	1.9	U				
Alpha-Chlordane	UG/KG	190	27%		0	4	15	20	U	9.9	U	9.9	U	2.1	U	1.9	U				
Aroclor-1016	UG/KG	0	0%		0	0	15	390	U	190	U	190	U	41	U	37	U				
Aroclor-1221	UG/KG	0	0%		0	0	15	790	U	390	U	390	U	84	U	74	U				
Aroclor-1232	UG/KG	0	0%		0	0	15	390	U	190	U	190	U	41	U	37	U				
Aroclor-1242	UG/KG	0	0%		0	0	15	390	U	190	U	190	U	41	U	37	U				
Aroclor-1248	UG/KG	0	0%		0	0	15	390	U	190	U	190	U	41	U	37	U				
Aroclor-1254	UG/KG	0	0%	10000	0	0	15	390	U	190	U	190	U	41	U	37	U				
Aroclor-1260	UG/KG	0	0%	10000	0	0	15	390	U	190	U	190	U	41	U	37	U				
Beta-BHC	UG/KG	0	0%	200	0	0	15	20	U	9.9	U	9.9	U	2.1	U	1.9	U				
Delta-BHC	UG/KG	15	20%	300	0	3	15	20	U	9.2	J	9.9	U	2.1	U	1.9	U				
Dieldrin	UG/KG	29	20%	44	0	3	15	39	U	19	U	19	U	4.1	U	3.7	U				
Endosulfan I	UG/KG	0	0%	900	0	0	15	20	U	9.9	U	9.9	U	2.1	U	1.9	U				
Endosulfan II	UG/KG	66	40%	900	0	6	15	36	J	31	J	14	J	4.1	U	3.7	U				
Endosulfan sulfate	UG/KG	2.5	7%	1000	0	1	15	39	U	19	U	19	U	4.1	U	3.7	U				
Endrin	UG/KG	49	27%	100	0	4	15	35	J	45	J	19	U	4.1	U	3.7	U				
Endrin aldehyde	UG/KG	0	0%		0	0	15	39	U	19	U	19	U	4.1	U	3.7	U				
Endrin ketone	UG/KG	0	0%		0	0	15	39	U	19	U	19	U	4.1	U	3.7	U				
Gamma-BHC/Lindane	UG/KG	0	0%	60	0	0	15	20	U	9.9	U	9.9	U	2.1	U	1.9	U				
Gamma-Chlordane	UG/KG	0	0%	540	0	0	15	20	U	9.9	U	9.9	U	2.1	U	1.9	U				
Heptachlor	UG/KG	0	0%	100	0	0	15	20	U	9.9	U	9.9	U	2.1	U	1.9	U				
Heptachlor epoxide	UG/KG	0	0%	20	0	0	15	20	U	9.9	U	9.9	U	2.1	U	1.9	U				
Methoxychlor	UG/KG	0	0%		0	0	15	200	U	99	U	99	U	21	U	19	U				
Toxaphene	UG/KG	0	0%		0	0	15	2000	U	990	U	990	U	210	U	190	U				
HERBICIDES																					
2,4,5-T	UG/KG	7.6	7%	1900	0	1	15	7.6		5.8	U	5.9	U	6.3	U	5.6	UJ				
2,4,5-TP/Silvex	UG/KG	0	0%	700	0	0	15	5.9	U	5.8	U	5.9	U	6.3	U	5.6	UJ				
2,4-D	UG/KG	0	0%	500	0	0	15	59	U	58	U	59	U	63	U	56	UJ				
2,4-DB	UG/KG	550	13%		0	2	15	59	U	58	U	59	U	63	U	56	UJ				

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11	
LOCATION ID								TP11-3		TP11-3		TP11-4		TP11-4		TP11-4		TP11-5		TP11-5	
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID								TP11-3-2		TP11-3-3		TP11-4-1		TP11-4-2		TP11-4-3		114008		114007	
SAMPLE DEPTH TO TOP OF SAMPLE								2		4		0		2		4		0.5		3	
SAMPLE DEPTH TO BOTTOM OF SAMPLE								4		6		2		4		6		0.5		3	
SAMPLE DATE								12/14/93		12/14/93		12/14/93		12/16/93		12/16/93		10/25/00		10/25/00	
QC CODE								SA		SA		SA		SA		SA		SA		SA	
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		ESI		ESI		ESI		SEAD-11 EECA		SEAD-11 EECA	
			OF		ABOVE	OF	OF														
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N	
Dalapon	UG/KG	2500	7%		0	1	15	150	U	140	U	140	U	2500		140	UJ				
Dicamba	UG/KG	0	0%		0	0	15	5.9	U	5.8	U	5.9	U	6.3	U	5.6	UJ				
Dichloroprop	UG/KG	0	0%		0	0	15	59	U	58	U	59	U	63	U	55	UJ				
Dinoseb	UG/KG	0	0%		0	0	15	30	U	29	U	30	U	32	U	28	UJ				
MCPA	UG/KG	0	0%		0	0	15	5900	U	5800	U	5900	U	6300	U	5600	UJ				
MCPP	UG/KG	0	0%		0	0	15	5900	U	5800	U	5900	U	6300	U	5600	UJ				
METALS																					
Aluminum	MG/KG	37500	100%	19300	2	37	37	12100		12300		9660		15000		7170		12300	J	12200	J
Antimony	MG/KG	285	70%	5.9	22	26	37	4	J	**11.3**	J	**25.3**	J	5.2	UJ	4.1	UJ	1.5	J	1.1	UJ
Arsenic	MG/KG	23.2	92%	8.2	20	34	37	6.9		6.9		**12.4**		5.7		5.7		4.8		6.2	
Barium	MG/KG	6560	100%	300	16	37	37	133		**477**		244		131		44.1		101	J	122	J
Beryllium	MG/KG	1.4	97%	1.1	1	36	37	0.55	J	0.38	J	0.48	J	0.93	J	0.39	J	0.86	J	1	J
Cadmium	MG/KG	16	73%	2.3	17	27	37	**3**		**16**		**5.6**		0.51	U	0.4	U	0.58	J	0.28	J
Calcium	MG/KG	104000	100%	121000	0	37	37	85300		41300		95300		4340		103000		12200		17400	
Chromium	MG/KG	462	100%	29.6	21	37	37	**41.4**	J	**172**	J	**242**	J	21.3	J	25.9	J	29.4	J	21.6	J
Cobalt	MG/KG	40.5	100%	30	1	37	37	12.3		27.5		11.1		10.4	J	6.6	J	11.6	J	10.2	J
Copper	MG/KG	1230	100%	33	30	37	37	**225**	J	**642**	J	**154**	J	22.9	J	19.4	J	**62.8**	J	**34.4**	J
Cyanide	MG/KG	1.7	5%	0.35	2	2	37	0.58	U	0.55	U	0.54	U	0.55	U	0.55	U	0.46	U	0.6	U
Iron	MG/KG	135000	100%	36500	19	37	37	30200		**118000**		27100		28300		15100		25900	J	24200	J
Lead	MG/KG	7210	84%	24.8	29	31	37	474	R	1330	R	1890	R	27.3	R	161	R	**200**	J	**69.4**	J
Magnesium	MG/KG	44600	100%	21500	2	37	37	12700		9190		**44600**		3710		**26300**		6910		11200	
Manganese	MG/KG	3000	97%	1060	3	36	37	512		946		440		602		420		757		**1120**	
Mercury	MG/KG	6	68%	0.1	17	25	37	**0.4**		**0.41**		**0.37**		0.04	J	0.02	J	0.06	UJ	0.06	UJ
Nickel	MG/KG	221	100%	49	15	37	37	41.3		**117**		33		25		20.2		31.4	J	25.6	J
Potassium	MG/KG	5870	100%	2380	6	37	37	2380		2040		1450		1530		1200		1920		1770	
Selenium	MG/KG	3.7	76%	2	10	28	37	0.66	J	0.74	J	0.7	J	0.6	J	0.17	J	0.97	J	1.6	
Silver	MG/KG	11.3	73%	0.75	24	27	37	**5.2**		**11.3**		**1.3**	J	1	U	0.81	U	**0.84**	J	0.57	J
Sodium	MG/KG	1700	92%	172	22	34	37	**315**	J	**508**	J	**236**	J	48	U	156	J	58.8	U	61	U
Thallium	MG/KG	8.8	59%	0.7	22	22	37	0.2	U	0.25	U	0.27	U	0.24	U	0.26	U	**2.9**		**2.2**	J
Vanadium	MG/KG	1940	100%	150	1	37	37	24.1		30.2		18.7		26.1		12.9		22.1	J	25.5	J
Zinc	MG/KG	7980	92%	110	32	34	37	**777**		**1720**		**632**		99.7		92.4		**222**	J	**126**	J

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		
LOCATION ID								TP11-4		TP11-4		TP11-5		TP11-5		TP11-6		TP11-6		
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		
SAMPLE ID								TP11-4-2		TP11-4-3		114008		114007		114010		114009		
SAMPLE DEPTH TO TOP OF SAMPLE								2		4		0.5		3		0.5		2		
SAMPLE DEPTH TO BOTTOM OF SAMPLE								4		6		0.5		3		0.5		2		
SAMPLE DATE								12/16/1993		12/16/1993		10/25/2000		10/25/2000		10/25/2000		10/25/2000		
QC CODE								SA		SA		SA		SA		SA		SA		
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		
			OF		ABOVE	OF	OF													
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		
VOLATILE ORGANICS																				
1,1,1-Trichloroethane	UG/KG	0	0%	800	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
1,1,2,2-Tetrachloroethane	UG/KG	0	0%	600	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
1,1,2-Trichloroethane	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
1,1-Dichloroethane	UG/KG	0	0%	200	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
1,1-Dichloroethene	UG/KG	0	0%	400	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
1,2-Dichloroethane	UG/KG	0	0%	100	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
1,2-Dichloroethene (total)	UG/KG	2200	24%		0	9	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
1,2-Dichloropropane	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Acetone	UG/KG	3200	22%	200	3	8	37	12	U	11	U	110	J	140	J	1100	UJ	140	J	
Benzene	UG/KG	45	19%	60	0	7	37	12	U	11	U	6	J	2	J	1100	UJ	3	J	
Bromodichloromethane	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Bromoform	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Carbon disulfide	UG/KG	26	16%	2700	0	6	37	12	U	11	U	8	J	16	U	1100	U	4	J	
Carbon tetrachloride	UG/KG	0	0%	600	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Chlorobenzene	UG/KG	0	0%	1700	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Chlorodibromomethane	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Chloroethane	UG/KG	0	0%	1900	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Chloroform	UG/KG	0	0%	300	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Cis-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Ethyl benzene	UG/KG	3	3%	5500	0	1	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Methyl bromide	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Methyl butyl ketone	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	UJ	1100	UJ	18	UJ	
Methyl chloride	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Methyl ethyl ketone	UG/KG	0	0%	300	0	0	37	12	U	11	U	10	UJ	16	UJ	1100	UJ	18	UJ	
Methyl isobutyl ketone	UG/KG	0	0%	1000	0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Methylene chloride	UG/KG	4	16%	100	0	6	37	12	U	11	U	10	UJ	3	J	1100	U	3	J	
Styrene	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Tetrachloroethene	UG/KG	370	14%	1400	0	5	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Toluene	UG/KG	25	27%	1500	0	10	37	12	U	11	U	9	J	3	J	1100	U	6	J	
Total Xylenes	UG/KG	14	14%	1200	0	5	37	12	U	11	U	8	J	16	U	1100	U	18	U	
Trans-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	12	U	11	U	10	UJ	16	U	1100	U	18	U	
Trichloroethene	UG/KG	42000	86%	700	14	32	37	11	J	11	U	21	J	18		**3600**		74		
Vinyl chloride	UG/KG	0	0%	200	0	0	37	12	U	11	U	10	UJ	16	UJ	1100	U	18	U	
SEMI VOLATILE ORGANICS																				
1,2,4-Trichlorobenzene	UG/KG	0	0%	3400	0	0	15	2100	U	370	U									
1,2-Dichlorobenzene	UG/KG	0	0%	7900	0	0	15	2100	U	370	U									
1,3-Dichlorobenzene	UG/KG	0	0%	1600	0	0	15	2100	U	370	U									
1,4-Dichlorobenzene	UG/KG	0	0%	8500	0	0	15	2100	U	370	U									
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0%		0	0	15	2100	U	370	U									
2,4,5-Trichlorophenol	UG/KG	0	0%	100	0	0	15	5000	U	890	U									
2,4,6-Trichlorophenol	UG/KG	0	0%		0	0	15	2100	U	370	U									
2,4-Dichlorophenol	UG/KG	0	0%	400	0	0	15	2100	U	370	U									
2,4-Dimethylphenol	UG/KG	0	0%		0	0	15	2100	U	370	U									

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11	SEAD-11	SEAD-11	SEAD-11
LOCATION ID								TP11-4		TP11-4		TP11-5	TP11-5	TP11-6	TP11-6
MATRIX								SOIL		SOIL		SOIL	SOIL	SOIL	SOIL
SAMPLE ID								TP11-4-2		TP11-4-3		114008	114007	114010	114009
SAMPLE DEPTH TO TOP OF SAMPLE								2		4		0.5	3	0.5	2
SAMPLE DEPTH TO BOTTOM OF SAMPLE								4		6		0.5	3	0.5	2
SAMPLE DATE								12/16/1993		12/16/1993		10/25/2000	10/25/2000	10/25/2000	10/25/2000
QC CODE								SA		SA		SA	SA	SA	SA
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA
			OF		ABOVE	OF	OF								
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N	N	N	N
2,4-Dinitrophenol	UG/KG	0	0%	200	0	0	15	5000	U	890	U				
2,4-Dinitrotoluene	UG/KG	0	0%		0	0	15	2100	U	370	U				
2,6-Dinitrotoluene	UG/KG	0	0%	1000	0	0	15	2100	U	370	U				
2-Chloronaphthalene	UG/KG	0	0%		0	0	15	2100	U	370	U				
2-Chlorophenol	UG/KG	0	0%	800	0	0	15	2100	U	370	U				
2-Methylnaphthalene	UG/KG	28000	60%	36400	0	9	15	170	J	370	U				
2-Methylphenol	UG/KG	0	0%	100	0	0	15	2100	U	370	U				
2-Nitroaniline	UG/KG	0	0%	430	0	0	15	5000	U	890	U				
2-Nitrophenol	UG/KG	0	0%	330	0	0	15	2100	U	370	U				
3,3'-Dichlorobenzidine	UG/KG	0	0%		0	0	15	2100	U	370	U				
3-Nitroaniline	UG/KG	0	0%	500	0	0	15	5000	U	890	U				
4,6-Dinitro-2-methylphenol	UG/KG	0	0%		0	0	15	5000	U	890	U				
4-Bromophenyl phenyl ether	UG/KG	0	0%		0	0	15	2100	U	370	U				
4-Chloro-3-methylphenol	UG/KG	0	0%	240	0	0	15	2100	U	370	U				
4-Chloroaniline	UG/KG	0	0%	220	0	0	15	2100	U	370	U				
4-Chlorophenyl phenyl ether	UG/KG	0	0%		0	0	15	2100	U	370	U				
4-Methylphenol	UG/KG	0	0%	900	0	0	15	2100	U	370	U				
4-Nitroaniline	UG/KG	0	0%		0	0	15	5000	U	890	U				
4-Nitrophenol	UG/KG	0	0%	100	0	0	15	5000	U	890	U				
Acenaphthene	UG/KG	84000	60%	50000	1	9	15	1100	J	27	J				
Acenaphthylene	UG/KG	0	0%	41000	0	0	15	2100	U	370	U				
Anthracene	UG/KG	150000	73%	50000	1	11	15	2200		49	J				
Benzo(a)anthracene	UG/KG	190000	73%	224	8	11	15	**6600**		160	J				
Benzo(a)pyrene	UG/KG	140000	73%	61	11	11	15	**6100**		**160**	J				
Benzo(b)fluoranthene	UG/KG	110000	73%	1100	8	11	15	**8400**		220	J				
Benzo(ghi)perylene	UG/KG	53000	67%	50000	1	10	15	2900		160	J				
Benzo(k)fluoranthene	UG/KG	130000	73%	1100	8	11	15	**3000**		94	J				
Bis(2-Chloroethoxy)methane	UG/KG	0	0%		0	0	15	2100	U	370	U				
Bis(2-Chloroethyl)ether	UG/KG	0	0%		0	0	15	2100	U	370	U				
Bis(2-Ethylhexyl)phthalate	UG/KG	67	20%	50000	0	3	15	2100	U	22	J				
Butylbenzylphthalate	UG/KG	0	0%	50000	0	0	15	2100	U	370	U				
Carbazole	UG/KG	81000	53%		0	8	15	1300	J	370	U				
Chrysene	UG/KG	170000	73%	400	8	11	15	**6900**		180	J				
Di-n-butylphthalate	UG/KG	0	0%	8100	0	0	15	2100	U	370	U				
Di-n-octylphthalate	UG/KG	0	0%	50000	0	0	15	2100	U	370	U				
Dibenz(a,h)anthracene	UG/KG	52000	67%	14	10	10	15	**1000**	J	370	U				
Dibenzofuran	UG/KG	60000	67%	6200	4	10	15	520	J	370	U				
Diethyl phthalate	UG/KG	0	0%	7100	0	0	15	2100	U	370	U				
Dimethylphthalate	UG/KG	0	0%	2000	0	0	15	2100	U	370	U				
Fluoranthene	UG/KG	350000	80%	50000	5	12	15	14000		400					
Fluorene	UG/KG	88000	67%	50000	1	10	15	1000	J	370	U				
Hexachlorobenzene	UG/KG	0	0%	410	0	0	15	2100	U	370	U				
Hexachlorobutadiene	UG/KG	0	0%		0	0	15	2100	U	370	U				
Hexachlorocyclopentadiene	UG/KG	0	0%		0	0	15	2100	U	370	U				
Hexachloroethane	UG/KG	0	0%		0	0	15	2100	U	370	U				
Indeno(1,2,3-cd)pyrene	UG/KG	100000	73%	3200	6	11	15	**3700**		120	J				

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11	
LOCATION ID								TP11-4		TP11-4		TP11-5		TP11-5		TP11-6		TP11-6	
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID								TP11-4-2		TP11-4-3		114008		114007		114010		114009	
SAMPLE DEPTH TO TOP OF SAMPLE								2		4		0.5		3		0.5		2	
SAMPLE DEPTH TO BOTTOM OF SAMPLE								4		6		0.5		3		0.5		2	
SAMPLE DATE								12/16/1993		12/16/1993		10/25/2000		10/25/2000		10/25/2000		10/25/2000	
QC CODE								SA		SA		SA		SA		SA		SA	
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF		ABOVE	OF	OF												
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N	
Isophorone	UG/KG	0	0%	4400	0	0	15	2100	U	370	U								
N-Nitrosodiphenylamine	UG/KG	0	0%		0	0	15	2100	U	370	U								
N-Nitrosodipropylamine	UG/KG	0	0%		0	0	15	2100	U	370	U								
Naphthalene	UG/KG	100000	67%	13000	3	10	15	400	J	370	U								
Nitrobenzene	UG/KG	0	0%	200	0	0	15	2100	U	370	U								
Pentachlorophenol	UG/KG	0	0%	1000	0	0	15	5000	U	890	U								
Phenanthrene	UG/KG	350000	73%	50000	4	11	15	9700		240	J								
Phenol	UG/KG	0	0%	30	0	0	15	2100	U	370	U								
Pyrene	UG/KG	280000	73%	50000	4	11	15	12000		340	J								
EXPLOSIVES																			
1,3,5-Trinitrobenzene	UG/KG	0	0%		0	0	15	130	U	130	U								
1,3-Dinitrobenzene	UG/KG	770	7%		0	1	15	130	U	130	U								
2,4,6-Trinitrotoluene	UG/KG	130	7%		0	1	15	130	U	130	U								
2,4-Dinitrotoluene	UG/KG	440	13%		0	2	15	130	U	130	U								
2,6-Dinitrotoluene	UG/KG	400	7%	1000	0	1	15	130	U	130	U								
2-amino-4,6-Dinitrotoluene	UG/KG	680	7%		0	1	15	130	U	130	U								
4-amino-2,6-Dinitrotoluene	UG/KG	0	0%		0	0	15	130	U	130	U								
HMX	UG/KG	0	0%		0	0	15	130	U	130	U								
RDX	UG/KG	0	0%		0	0	15	130	U	130	U								
Tetryl	UG/KG	0	0%		0	0	15	130	U	130	U								
PESTICIDES/PCBs																			
4,4'-DDD	UG/KG	1400	53%	2900	0	8	15	4.8	J	3.7	U								
4,4'-DDE	UG/KG	1800	67%	2100	0	10	15	12	J	3.7	U								
4,4'-DDT	UG/KG	4300	73%	2100	2	11	15	17		1.6	J								
Aldrin	UG/KG	0	0%	41	0	0	15	2.1	U	1.9	U								
Alpha-BHC	UG/KG	24	7%	110	0	1	15	2.1	U	1.9	U								
Alpha-Chlordane	UG/KG	190	27%		0	4	15	2.1	U	1.9	U								
Aroclor-1016	UG/KG	0	0%		0	0	15	41	U	37	U								
Aroclor-1221	UG/KG	0	0%		0	0	15	84	U	74	U								
Aroclor-1232	UG/KG	0	0%		0	0	15	41	U	37	U								
Aroclor-1242	UG/KG	0	0%		0	0	15	41	U	37	U								
Aroclor-1248	UG/KG	0	0%		0	0	15	41	U	37	U								
Aroclor-1254	UG/KG	0	0%	10000	0	0	15	41	U	37	U								
Aroclor-1260	UG/KG	0	0%	10000	0	0	15	41	U	37	U								
Beta-BHC	UG/KG	0	0%	200	0	0	15	2.1	U	1.9	U								
Delta-BHC	UG/KG	15	20%	300	0	3	15	2.1	U	1.9	U								
Dieldrin	UG/KG	29	20%	44	0	3	15	4.1	U	3.7	U								
Endosulfan I	UG/KG	0	0%	900	0	0	15	2.1	U	1.9	U								
Endosulfan II	UG/KG	66	40%	900	0	6	15	4.1	U	3.7	U								
Endosulfan sulfate	UG/KG	2.5	7%	1000	0	1	15	4.1	U	3.7	U								
Endrin	UG/KG	49	27%	100	0	4	15	4.1	U	3.7	U								
Endrin aldehyde	UG/KG	0	0%		0	0	15	4.1	U	3.7	U								
Endrin ketone	UG/KG	0	0%		0	0	15	4.1	U	3.7	U								
Gamma-BHC/Lindane	UG/KG	0	0%	60	0	0	15	2.1	U	1.9	U								
Gamma-Chlordane	UG/KG	0	0%	540	0	0	15	2.1	U	1.9	U								
Heptachlor	UG/KG	0	0%	100	0	0	15	2.1	U	1.9	U								

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11	
LOCATION ID								TP11-4		TP11-4		TP11-5		TP11-5		TP11-6		TP11-6	
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE ID								TP11-4-2		TP11-4-3		114008		114007		114010		114009	
SAMPLE DEPTH TO TOP OF SAMPLE								2		4		0.5		3		0.5		2	
SAMPLE DEPTH TO BOTTOM OF SAMPLE								4		6		0.5		3		0.5		2	
SAMPLE DATE								12/16/1993		12/16/1993		10/25/2000		10/25/2000		10/25/2000		10/25/2000	
QC CODE								SA		SA		SA		SA		SA		SA	
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	ESI		ESI		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF		ABOVE	OF	OF												
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N	
Heptachlor epoxide	UG/KG	0	0%	20	0	0	15	2.1	U	1.9	U								
Methoxychlor	UG/KG	0	0%		0	0	15	21	U	19	U								
Toxaphene	UG/KG	0	0%		0	0	15	210	U	190	U								
HERBICIDES																			
2,4,5-T	UG/KG	7.6	7%	1900	0	1	15	6.3	U	5.6	UJ								
2,4,5-TP/Silvex	UG/KG	0	0%	700	0	0	15	6.3	U	5.6	UJ								
2,4-D	UG/KG	0	0%	500	0	0	15	63	U	56	UJ								
2,4-DB	UG/KG	550	13%		0	2	15	63	U	56	UJ								
Dalapon	UG/KG	2500	7%		0	1	15	2500		140	UJ								
Dicamba	UG/KG	0	0%		0	0	15	6.3	U	5.6	UJ								
Dichloroprop	UG/KG	0	0%		0	0	15	63	U	55	UJ								
Dinoseb	UG/KG	0	0%		0	0	15	32	U	28	UJ								
MCPA	UG/KG	0	0%		0	0	15	6300	U	5600	UJ								
MCPP	UG/KG	0	0%		0	0	15	6300	U	5600	UJ								
METALS																			
Aluminum	MG/KG	37500	100%	19300	2	37	37	15000		7170		12300	J	12200	J	**37500**	J	3660	J
Antimony	MG/KG	285	70%	5.9	22	26	37	5.2	UJ	4.1	UJ	1.5	J	1.1	UJ	**29.6**	J	2.3	J
Arsenic	MG/KG	23.2	92%	8.2	20	34	37	5.7		5.7		4.8		6.2		**11**		**12.9**	
Barium	MG/KG	6560	100%	300	16	37	37	131		44.1		101	J	122	J	**340**	J	92.2	J
Beryllium	MG/KG	1.4	97%	1.1	1	36	37	0.93	J	0.39	J	0.86	J	1	J	0.81	J	0.33	J
Cadmium	MG/KG	16	73%	2.3	17	27	37	0.51	U	0.4	U	0.58	J	0.28	J	**4.9**		1.2	
Calcium	MG/KG	104000	100%	121000	0	37	37	4340		103000		12200		17400		23700		5270	
Chromium	MG/KG	462	100%	29.6	21	37	37	21.3	J	25.9	J	29.4	J	21.6	J	**83.2**	J	16.7	J
Cobalt	MG/KG	40.5	100%	30	1	37	37	10.4	J	6.6	J	11.6	J	10.2	J	19.7		9.7	
Copper	MG/KG	1230	100%	33	30	37	37	22.9	J	19.4	J	**62.8**	J	**34.4**	J	**339**	J	**85.1**	J
Cyanide	MG/KG	1.7	5%	0.35	2	2	37	0.55	U	0.55	U	0.46	U	0.6	U	**0.59**		0.58	U
Iron	MG/KG	135000	100%	36500	19	37	37	28300		15100		25900	J	24200	J	**63100**	J	30500	J
Lead	MG/KG	7210	84%	24.8	29	31	37	27.3	R	161	R	**200**	J	**69.4**	J	**1150**	J	**126**	J
Magnesium	MG/KG	44600	100%	21500	2	37	37	3710		**26300**		6910		11200		6470		2040	
Manganese	MG/KG	3000	97%	1060	3	36	37	602		420		757		**1120**		836		181	
Mercury	MG/KG	6	68%	0.1	17	25	37	0.04	J	0.02	J	0.06	UJ	0.06	UJ	0.05	UJ	**0.15**	J
Nickel	MG/KG	221	100%	49	15	37	37	25		20.2		31.4	J	25.6	J	**67.3**	J	24	J
Potassium	MG/KG	5870	100%	2380	6	37	37	1530		1200		1920		1770		2300		580	J
Selenium	MG/KG	3.7	76%	2	10	28	37	0.6	J	0.17	J	0.97	J	1.6		1.1		**2.7**	
Silver	MG/KG	11.3	73%	0.75	24	27	37	1	U	0.81	U	**0.84**	J	0.57	J	**8.5**		**1.9**	
Sodium	MG/KG	1700	92%	172	22	34	37	48	U	156	J	58.8	U	61	U	**387**	J	120	J
Thallium	MG/KG	8.8	59%	0.7	22	22	37	0.24	U	0.26	U	**2.9**		**2.2**	J	**4.2**		**1.3**	J
Vanadium	MG/KG	1940	100%	150	1	37	37	26.1		12.9		22.1	J	25.5	J	48.2	J	55.3	J
Zinc	MG/KG	7980	92%	110	32	34	37	99.7		92.4		**222**	J	**126**	J	**920**	J	**961**	J

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11	SEAD-11	SEAD-11	SEAD-11	SEAD-11	SEAD-11	SEAD-11
LOCATION ID								TP11-7	TP11-7	TP11-8	TP11-8	TP11-9	TP11-9	TP11-9
MATRIX								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE ID								114012	114011	114006	114005	114003	114002	114004
SAMPLE DEPTH TO TOP OF SAMPLE								0.5	4	0.5	3	0.5	3.5	3.5
SAMPLE DEPTH TO BOTTOM OF SAMPLE								0.5	5	0.5	3	0.5	3.5	3.5
SAMPLE DATE								10/25/2000	10/25/2000	10/25/2000	10/25/2000	10/24/2000	10/24/2000	10/24/2000
QC CODE								SA	SA	SA	SA	SA	SA	SA
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA
			OF		ABOVE	OF	OF							
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N	N	N	N	N	N	N
VOLATILE ORGANICS														
1,1,1-Trichloroethane	UG/KG	0	0%	800	0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
1,1,2,2-Tetrachloroethane	UG/KG	0	0%	600	0	0	37	16 UJ	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
1,1,2-Trichloroethane	UG/KG	0	0%		0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
1,1-Dichloroethane	UG/KG	0	0%	200	0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
1,1-Dichloroethene	UG/KG	0	0%	400	0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
1,2-Dichloroethane	UG/KG	0	0%	100	0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
1,2-Dichloroethene (total)	UG/KG	2200	24%		0	9	37	12 J	16 U	1200 U	1400 U	250 J	2200	1900
1,2-Dichloropropane	UG/KG	0	0%		0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Acetone	UG/KG	3200	22%	200	3	8	37	**270** J	**370** J	1200 UJ	1400 UJ	1000 UJ	1500 UJ	1000 UJ
Benzene	UG/KG	45	19%	60	0	7	37	30	2 J	1200 UJ	1400 UJ	1000 UJ	1500 UJ	1000 UJ
Bromodichloromethane	UG/KG	0	0%		0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Bromoform	UG/KG	0	0%		0	0	37	16 UJ	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Carbon disulfide	UG/KG	26	16%	2700	0	6	37	9 J	19	1200 U	1400 U	1000 U	1500 U	1000 U
Carbon tetrachloride	UG/KG	0	0%	600	0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Chlorobenzene	UG/KG	0	0%	1700	0	0	37	16 UJ	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Chlorodibromomethane	UG/KG	0	0%		0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Chloroethane	UG/KG	0	0%	1900	0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Chloroform	UG/KG	0	0%	300	0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Cis-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Ethyl benzene	UG/KG	3	3%	5500	0	1	37	16 UJ	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Methyl bromide	UG/KG	0	0%		0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Methyl butyl ketone	UG/KG	0	0%		0	0	37	16 UJ	16 U	1200 UJ	1400 UJ	1000 UJ	1500 UJ	1000 UJ
Methyl chloride	UG/KG	0	0%		0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Methyl ethyl ketone	UG/KG	0	0%	300	0	0	37	16 UJ	16 U	1200 UJ	1400 UJ	1000 UJ	1500 UJ	1000 UJ
Methyl isobutyl ketone	UG/KG	0	0%	1000	0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Methylene chloride	UG/KG	4	16%	100	0	6	37	4 J	3 J	1200 U	1400 U	1000 U	1500 U	1000 U
Styrene	UG/KG	0	0%		0	0	37	16 UJ	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Tetrachloroethene	UG/KG	370	14%	1400	0	5	37	8 J	10 J	1200 U	1400 U	1000 U	1500 U	1000 U
Toluene	UG/KG	25	27%	1500	0	10	37	25	3 J	1200 U	1400 U	1000 U	1500 U	1000 U
Total Xylenes	UG/KG	14	14%	1200	0	5	37	8 J	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Trans-1,3-Dichloropropene	UG/KG	0	0%		0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
Trichloroethene	UG/KG	42000	86%	700	14	32	37	77	76	**4000**	**2400**	**12000**	**23000**	**28000** J
Vinyl chloride	UG/KG	0	0%	200	0	0	37	16 U	16 U	1200 U	1400 U	1000 U	1500 U	1000 U
SEMI VOLATILE ORGANICS														
1,2,4-Trichlorobenzene	UG/KG	0	0%	3400	0	0	15							
1,2-Dichlorobenzene	UG/KG	0	0%	7900	0	0	15							
1,3-Dichlorobenzene	UG/KG	0	0%	1600	0	0	15							
1,4-Dichlorobenzene	UG/KG	0	0%	8500	0	0	15							
2,2'-oxybis(1-Chloropropane)	UG/KG	0	0%		0	0	15							
2,4,5-Trichlorophenol	UG/KG	0	0%	100	0	0	15							
2,4,6-Trichlorophenol	UG/KG	0	0%		0	0	15							
2,4-Dichlorophenol	UG/KG	0	0%	400	0	0	15							
2,4-Dimethylphenol	UG/KG	0	0%		0	0	15							

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11
LOCATION ID								TP11-7		TP11-7		TP11-8		TP11-8		TP11-9		TP11-9		TP11-9
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL
SAMPLE ID								114012		114011		114006		114005		114003		114002		114004
SAMPLE DEPTH TO TOP OF SAMPLE								0.5		4		0.5		3		0.5		3.5		3.5
SAMPLE DEPTH TO BOTTOM OF SAMPLE								0.5		5		0.5		3		0.5		3.5		3.5
SAMPLE DATE								10/25/2000		10/25/2000		10/25/2000		10/25/2000		10/24/2000		10/24/2000		10/24/2000
QC CODE								SA		SA		SA		SA		SA		SA		SA
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA
			OF		ABOVE	OF	OF													
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N
2,4-Dinitrophenol	UG/KG	0	0%	200	0	0	15													
2,4-Dinitrotoluene	UG/KG	0	0%		0	0	15													
2,6-Dinitrotoluene	UG/KG	0	0%	1000	0	0	15													
2-Chloronaphthalene	UG/KG	0	0%		0	0	15													
2-Chlorophenol	UG/KG	0	0%	800	0	0	15													
2-Methylnaphthalene	UG/KG	28000	60%	36400	0	9	15													
2-Methylphenol	UG/KG	0	0%	100	0	0	15													
2-Nitroaniline	UG/KG	0	0%	430	0	0	15													
2-Nitrophenol	UG/KG	0	0%	330	0	0	15													
3,3'-Dichlorobenzidine	UG/KG	0	0%		0	0	15													
3-Nitroaniline	UG/KG	0	0%	500	0	0	15													
4,6-Dinitro-2-methylphenol	UG/KG	0	0%		0	0	15													
4-Bromophenyl phenyl ether	UG/KG	0	0%		0	0	15													
4-Chloro-3-methylphenol	UG/KG	0	0%	240	0	0	15													
4-Chloroaniline	UG/KG	0	0%	220	0	0	15													
4-Chlorophenyl phenyl ether	UG/KG	0	0%		0	0	15													
4-Methylphenol	UG/KG	0	0%	900	0	0	15													
4-Nitroaniline	UG/KG	0	0%		0	0	15													
4-Nitrophenol	UG/KG	0	0%	100	0	0	15													
Acenaphthene	UG/KG	84000	60%	50000	1	9	15													
Acenaphthylene	UG/KG	0	0%	41000	0	0	15													
Anthracene	UG/KG	150000	73%	50000	1	11	15													
Benzo(a)anthracene	UG/KG	190000	73%	224	8	11	15													
Benzo(a)pyrene	UG/KG	140000	73%	61	11	11	15													
Benzo(b)fluoranthene	UG/KG	110000	73%	1100	8	11	15													
Benzo(ghi)perylene	UG/KG	53000	67%	50000	1	10	15													
Benzo(k)fluoranthene	UG/KG	130000	73%	1100	8	11	15													
Bis(2-Chloroethoxy)methane	UG/KG	0	0%		0	0	15													
Bis(2-Chloroethyl)ether	UG/KG	0	0%		0	0	15													
Bis(2-Ethylhexyl)phthalate	UG/KG	67	20%	50000	0	3	15													
Butylbenzylphthalate	UG/KG	0	0%	50000	0	0	15													
Carbazole	UG/KG	81000	53%		0	8	15													
Chrysene	UG/KG	170000	73%	400	8	11	15													
Di-n-butylphthalate	UG/KG	0	0%	8100	0	0	15													
Di-n-octylphthalate	UG/KG	0	0%	50000	0	0	15													
Dibenz(a,h)anthracene	UG/KG	52000	67%	14	10	10	15													
Dibenzofuran	UG/KG	60000	67%	6200	4	10	15													
Diethyl phthalate	UG/KG	0	0%	7100	0	0	15													
Dimethylphthalate	UG/KG	0	0%	2000	0	0	15													
Fluoranthene	UG/KG	350000	80%	50000	5	12	15													
Fluorene	UG/KG	88000	67%	50000	1	10	15													
Hexachlorobenzene	UG/KG	0	0%	410	0	0	15													
Hexachlorobutadiene	UG/KG	0	0%		0	0	15													
Hexachlorocyclopentadiene	UG/KG	0	0%		0	0	15													
Hexachloroethane	UG/KG	0	0%		0	0	15													
Indeno(1,2,3-cd)pyrene	UG/KG	100000	73%	3200	6	11	15													

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11		SEAD-11
LOCATION ID								TP11-7		TP11-7		TP11-8		TP11-8		TP11-9		TP11-9		TP11-9
MATRIX								SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL
SAMPLE ID								114012		114011		114006		114005		114003		114002		114004
SAMPLE DEPTH TO TOP OF SAMPLE								0.5		4		0.5		3		0.5		3.5		3.5
SAMPLE DEPTH TO BOTTOM OF SAMPLE								0.5		5		0.5		3		0.5		3.5		3.5
SAMPLE DATE								10/25/2000		10/25/2000		10/25/2000		10/25/2000		10/24/2000		10/24/2000		10/24/2000
QC CODE								SA		SA		SA		SA		SA		SA		SA
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA
			OF		ABOVE	OF	OF													
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N		N		N		N		N		N		N
Isophorone	UG/KG	0	0%	4400	0	0	15													
N-Nitrosodiphenylamine	UG/KG	0	0%		0	0	15													
N-Nitrosodipropylamine	UG/KG	0	0%		0	0	15													
Naphthalene	UG/KG	100000	67%	13000	3	10	15													
Nitrobenzene	UG/KG	0	0%	200	0	0	15													
Pentachlorophenol	UG/KG	0	0%	1000	0	0	15													
Phenanthrene	UG/KG	350000	73%	50000	4	11	15													
Phenol	UG/KG	0	0%	30	0	0	15													
Pyrene	UG/KG	280000	73%	50000	4	11	15													
EXPLOSIVES																				
1,3,5-Trinitrobenzene	UG/KG	0	0%		0	0	15													
1,3-Dinitrobenzene	UG/KG	770	7%		0	1	15													
2,4,6-Trinitrotoluene	UG/KG	130	7%		0	1	15													
2,4-Dinitrotoluene	UG/KG	440	13%		0	2	15													
2,6-Dinitrotoluene	UG/KG	400	7%	1000	0	1	15													
2-amino-4,6-Dinitrotoluene	UG/KG	680	7%		0	1	15													
4-amino-2,6-Dinitrotoluene	UG/KG	0	0%		0	0	15													
HMX	UG/KG	0	0%		0	0	15													
RDX	UG/KG	0	0%		0	0	15													
Tetryl	UG/KG	0	0%		0	0	15													
PESTICIDES/PCBs																				
4,4'-DDD	UG/KG	1400	53%	2900	0	8	15													
4,4'-DDE	UG/KG	1800	67%	2100	0	10	15													
4,4'-DDT	UG/KG	4300	73%	2100	2	11	15													
Aldrin	UG/KG	0	0%	41	0	0	15													
Alpha-BHC	UG/KG	24	7%	110	0	1	15													
Alpha-Chlordane	UG/KG	190	27%		0	4	15													
Aroclor-1016	UG/KG	0	0%		0	0	15													
Aroclor-1221	UG/KG	0	0%		0	0	15													
Aroclor-1232	UG/KG	0	0%		0	0	15													
Aroclor-1242	UG/KG	0	0%		0	0	15													
Aroclor-1248	UG/KG	0	0%		0	0	15													
Aroclor-1254	UG/KG	0	0%	10000	0	0	15													
Aroclor-1260	UG/KG	0	0%	10000	0	0	15													
Beta-BHC	UG/KG	0	0%	200	0	0	15													
Delta-BHC	UG/KG	15	20%	300	0	3	15													
Dieldrin	UG/KG	29	20%	44	0	3	15													
Endosulfan I	UG/KG	0	0%	900	0	0	15													
Endosulfan II	UG/KG	66	40%	900	0	6	15													
Endosulfan sulfate	UG/KG	2.5	7%	1000	0	1	15													
Endrin	UG/KG	49	27%	100	0	4	15													
Endrin aldehyde	UG/KG	0	0%		0	0	15													
Endrin ketone	UG/KG	0	0%		0	0	15													
Gamma-BHC/Lindane	UG/KG	0	0%	60	0	0	15													
Gamma-Chlordane	UG/KG	0	0%	540	0	0	15													
Heptachlor	UG/KG	0	0%	100	0	0	15													

Table A-1
SEAD-11 SOIL DATA
Seneca Army Depot Activity

FACILITY								SEAD-11	SEAD-11	SEAD-11	SEAD-11	SEAD-11	SEAD-11	SEAD-11
LOCATION ID								TP11-7	TP11-7	TP11-8	TP11-8	TP11-9	TP11-9	TP11-9
MATRIX								SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE ID								114012	114011	114006	114005	114003	114002	114004
SAMPLE DEPTH TO TOP OF SAMPLE								0.5	4	0.5	3	0.5	3.5	3.5
SAMPLE DEPTH TO BOTTOM OF SAMPLE								0.5	5	0.5	3	0.5	3.5	3.5
SAMPLE DATE								10/25/2000	10/25/2000	10/25/2000	10/25/2000	10/24/2000	10/24/2000	10/24/2000
QC CODE								SA	SA	SA	SA	SA	SA	SA
STUDY ID			FREQUENCY		NUMBER	NUMBER	NUMBER	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA	SEAD-11 EECA
			OF		ABOVE	OF	OF							
PARAMETER	UNIT	MAXIMUM	DETECTION	TAGM	TAGM	DETECTS	ANALYSES	N	N	N	N	N	N	N
Heptachlor epoxide	UG/KG	0	0%	20	0	0	15							
Methoxychlor	UG/KG	0	0%		0	0	15							
Toxaphene	UG/KG	0	0%		0	0	15							
HERBICIDES														
2,4,5-T	UG/KG	7.6	7%	1900	0	1	15							
2,4,5-TP/Silvex	UG/KG	0	0%	700	0	0	15							
2,4-D	UG/KG	0	0%	500	0	0	15							
2,4-DB	UG/KG	550	13%		0	2	15							
Dalapon	UG/KG	2500	7%		0	1	15							
Dicamba	UG/KG	0	0%		0	0	15							
Dichloroprop	UG/KG	0	0%		0	0	15							
Dinoseb	UG/KG	0	0%		0	0	15							
MCPA	UG/KG	0	0%		0	0	15							
MCPP	UG/KG	0	0%		0	0	15							
METALS														
Aluminum	MG/KG	37500	100%	19300	2	37	37	19300 J	16400 J	12200 J	13600 J	13000 J	14800 J	14600 J
Antimony	MG/KG	285	70%	5.9	22	26	37	**9.1** J	1 UJ	**24.2** J	**13.3** J	**16.8** J	**19.5** J	**45.8** J
Arsenic	MG/KG	23.2	92%	8.2	20	34	37	7.9	**13.3**	**8.3**	**21.4**	**11.2**	**13.3**	**11.7**
Barium	MG/KG	6560	100%	300	16	37	37	258 J	**396** J	**349** J	**6560** J	**461** J	**597** J	**528** J
Beryllium	MG/KG	1.4	97%	1.1	1	36	37	**1.4**	0.02 U	0.73 J	0.77 J	0.84 J	0.88 J	0.92 J
Cadmium	MG/KG	16	73%	2.3	17	27	37	**14.1**	**10.9**	**11**	**3.6**	**3.2**	**2.8**	**3.2**
Calcium	MG/KG	104000	100%	121000	0	37	37	24900	104000	21200	24700	33400	26800	30700
Chromium	MG/KG	462	100%	29.6	21	37	37	**149** J	27.4 J	**122** J	**462** J	**91.2** J	**78.3** J	**103** J
Cobalt	MG/KG	40.5	100%	30	1	37	37	16.8	**40.5**	18.5	29.3	16.4	15.6	20.2
Copper	MG/KG	1230	100%	33	30	37	37	**262** J	**594** J	**781** J	**584** J	**281** J	**461** J	**427** J
Cyanide	MG/KG	1.7	5%	0.35	2	2	37	**1.7**	0.58 U	0.54 U	0.56 U	0.43 U	0.35 U	0.54 U
Iron	MG/KG	135000	100%	36500	19	37	37	**110000** J	**91500** J	**81800** J	**135000** J	**66600** J	**50500** J	**62800** J
Lead	MG/KG	7210	84%	24.8	29	31	37	**1160** J	**1600** J	**2960** J	**6860** J	**1140** J	**1210** J	**2240** J
Magnesium	MG/KG	44600	100%	21500	2	37	37	6200	5370	5150	5370	7590	7830	9140
Manganese	MG/KG	3000	97%	1060	3	36	37	**3000**	647	753	1000	956	948	881
Mercury	MG/KG	6	68%	0.1	17	25	37	**3.9** J	0.06 UJ	**0.23** J	**0.33** J	**0.22** J	**0.44** J	**0.13** J
Nickel	MG/KG	221	100%	49	15	37	37	**63.5** J	**209** J	**93.1** J	**221** J	**70.1** J	**51.9** J	**66.7** J
Potassium	MG/KG	5870	100%	2380	6	37	37	1950	**5200**	2190	1500	1930	2100	**2500**
Selenium	MG/KG	3.7	76%	2	10	28	37	**3.4**	**3.4**	**2.3**	**3.7**	1.4 J	**3.1** J	1.4 J
Silver	MG/KG	11.3	73%	0.75	24	27	37	**7.3**	**4.6**	**1.4** J	**2.1** J	**2.6**	**1.6** J	**3.2**
Sodium	MG/KG	1700	92%	172	22	34	37	**607** J	**1580**	**512** J	**1660**	**422** J	**823** J	**828** J
Thallium	MG/KG	8.8	59%	0.7	22	22	37	**8.8**	**4.5**	**5.1**	**8.3**	**4.6**	**4.5**	**3.9**
Vanadium	MG/KG	1940	100%	150	1	37	37	26.7 J	**1940** J	23.4 J	23.8 J	27.4 J	27.7 J	27.4 J
Zinc	MG/KG	7980	92%	110	32	34	37	**1860** J	**645** J	**2730** J	**6960** J	**1940** J	**2610** J	**3990** J

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-1		MW11-2		MW11-3	
MATRIX									GW		GW		GW	
SAMPLE ID									112101		112100		112102	
SAMPLE DEPTH TO TOP OF SAMPLE									0		0		9	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									0		0		9	
SAMPLE DATE									11/21/2000		11/21/2000		11/20/2000	
QC CODE									SA		SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
Volatile Organic Compounds														
1,1,1-Trichloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
1,1,2-Trichloroethane	UG/L	0	0%	1	GA	0	0	8	1	U	1	U	1	U
1,1-Dichloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
1,1-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	GA	0	0	8	1	U	1	U	1	U
1,2-Dibromoethane	UG/L	0	0%	0.0006	GA	0	0	8	1	U	1	U	1	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U	1	U
1,2-Dichloroethane	UG/L	0	0%	0.6	GA	0	0	8	1	U	1	U	1	U
1,2-Dichloropropane	UG/L	0	0%	1	GA	0	0	8	1	U	1	U	1	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U	1	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U	1	U
Acetone	UG/L	0	0%			0	0	8	5	U	5	U	5	U
Benzene	UG/L	0	0%	1	GA	0	0	8	1	U	1	U	1	U
Bromochloromethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Bromodichloromethane	UG/L	0	0%	80	MCL	0	0	8	1	U	1	U	1	U
Bromoform	UG/L	0	0%	80	MCL	0	0	8	1	U	1	U	1	U
Carbon disulfide	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Carbon tetrachloride	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Chlorobenzene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Chlorodibromomethane	UG/L	0	0%	80	MCL	0	0	8	1	U	1	U	1	U
Chloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Chloroform	UG/L	0	0%	7	GA	0	0	8	1	U	1	U	1	U
Cis-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	1	U	1	U	1	U
Ethyl benzene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Methyl bromide	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Methyl butyl ketone	UG/L	0	0%			0	0	8	5	U	5	U	5	U
Methyl chloride	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Methyl ethyl ketone	UG/L	0	0%			0	0	8	5	U	5	U	5	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-1		MW11-2		MW11-3	
MATRIX									GW		GW		GW	
SAMPLE ID									112101		112100		112102	
SAMPLE DEPTH TO TOP OF SAMPLE									0		0		9	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									0		0		9	
SAMPLE DATE									11/21/2000		11/21/2000		11/20/2000	
QC CODE									SA		SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
Methyl isobutyl ketone	UG/L	0	0%			0	0	8	5	U	5	U	5	U
Methylene chloride	UG/L	0	0%	5	GA	0	0	8	2	U	2	U	2	U
Styrene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Tetrachloroethene	UG/L	2	25%	5	GA	0	2	8	1	U	1	U	1	U
Toluene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Total Xylenes	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Trans-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	1	U	1	U	1	U
Trichloroethene	UG/L	2	25%	5	GA	0	2	8	1	U	1	U	0.7	J
Vinyl chloride	UG/L	0	0%	2	GA	0	0	8	1	U	1	U	1	U
Semivolatile Organic Compounds														
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.1	U	1.1	U	1	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.1	U	1.1	U	1	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.1	U	1.1	U	1	U
2,4,5-Trichlorophenol	UG/L	0.073	13%			0	1	8	2.7	U	2.8	U	2.6	U
2,4,6-Trichlorophenol	UG/L	0.098	13%			0	1	8	1.1	U	1.1	U	1	U
2,4-Dichlorophenol	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
2,4-Dimethylphenol	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
2,4-Dinitrophenol	UG/L	0	0%			0	0	8	2.7	UJ	2.8	UJ	2.6	UJ
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
2-Chloronaphthalene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
2-Chlorophenol	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
2-Methylnaphthalene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
2-Methylphenol	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
2-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.7	U	2.8	U	2.6	U
2-Nitrophenol	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
3,3'-Dichlorobenzidine	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
3-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.7	U	2.8	U	2.6	U
4,6-Dinitro-2-methylphenol	UG/L	0	0%			0	0	8	2.7	UJ	2.8	UJ	2.6	UJ
4-Bromophenyl phenyl ether	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-1		MW11-2		MW11-3	
MATRIX									GW		GW		GW	
SAMPLE ID									112101		112100		112102	
SAMPLE DEPTH TO TOP OF SAMPLE									0		0		9	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									0		0		9	
SAMPLE DATE									11/21/2000		11/21/2000		11/20/2000	
QC CODE									SA		SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
4-Chloro-3-methylphenol	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
4-Chloroaniline	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
4-Chlorophenyl phenyl ether	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
4-Methylphenol	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
4-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.7	U	2.8	U	2.6	U
4-Nitrophenol	UG/L	0	0%			0	0	8	2.7	U	2.8	U	2.6	U
Acenaphthene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Acenaphthylene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Anthracene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Benzo(a)anthracene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Benzo(a)pyrene	UG/L	0	0%	0	GA	0	0	8	1.1	U	1.1	U	1	U
Benzo(b)fluoranthene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Benzo(ghi)perylene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Benzo(k)fluoranthene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Bis(2-Chloroethoxy)methane	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
Bis(2-Chloroethyl)ether	UG/L	0	0%	1	GA	0	0	8	1.1	U	1.1	U	1	U
Bis(2-Chloroisopropyl)ether	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
Bis(2-Ethylhexyl)phthalate	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
Butylbenzylphthalate	UG/L	0.16	25%			0	2	8	1.1	U	0.07	J	1	U
Carbazole	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Chrysene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Di-n-butylphthalate	UG/L	0	0%	50	GA	0	0	8	1.1	U	1.1	U	1	U
Di-n-octylphthalate	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Dibenz(a,h)anthracene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Dibenzofuran	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Diethyl phthalate	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Dimethylphthalate	UG/L	3.3	38%			0	3	8	1.1	U	1.1	U	1	U
Fluoranthene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Fluorene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	1.1	U	1.1	U	1	U
Hexachlorobutadiene	UG/L	0	0%	0.5	GA	0	0	8	1.1	U	1.1	U	1	U
Hexachlorocyclopentadiene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-1		MW11-2		MW11-3	
MATRIX									GW		GW		GW	
SAMPLE ID									112101		112100		112102	
SAMPLE DEPTH TO TOP OF SAMPLE									0		0		9	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									0		0		9	
SAMPLE DATE									11/21/2000		11/21/2000		11/20/2000	
QC CODE									SA		SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
Hexachloroethane	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.1	U	1	U
Indeno(1,2,3-cd)pyrene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Isophorone	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
N-Nitrosodiphenylamine	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
N-Nitrosodipropylamine	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Naphthalene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	1.1	U	1.1	U	1	U
Pentachlorophenol	UG/L	0	0%	1	GA	0	0	8	2.7	U	2.8	U	2.6	U
Phenanthrene	UG/L	0	0%			0	0	8	1.1	U	1.1	U	1	U
Phenol	UG/L	0	0%	1	GA	0	0	8	1.1	U	1.1	U	1	U
Pyrene	UG/L	0.082	13%			0	1	8	1.1	U	1.1	U	1	U
Explosives														
1,3,5-Trinitrobenzene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
1,3-Dinitrobenzene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2,4,6-Trinitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2-amino-4,6-Dinitrotoluene	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
3-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
4-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
4-amino-2,6-Dinitrotoluene	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
HMX	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	0.25	U	0.25	U	0.25	U
RDX	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
Tetryl	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
Pesticides/PCBs														
4,4'-DDD	UG/L	0	0%	0.3	GA	0	0	8	0.011	U	0.011	U	0.01	U
4,4'-DDE	UG/L	0	0%	0.2	GA	0	0	8	0.011	U	0.011	U	0.01	U
4,4'-DDT	UG/L	0.006	13%	0.2	GA	0	1	8	0.011	U	0.011	U	0.01	U
Aldrin	UG/L	0	0%	0	GA	0	0	8	0.0055	U	0.0055	U	0.0052	U
Alpha-BHC	UG/L	0	0%	0.01	GA	0	0	8	0.0055	U	0.0055	U	0.0052	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-1		MW11-2		MW11-3	
MATRIX									GW		GW		GW	
SAMPLE ID									112101		112100		112102	
SAMPLE DEPTH TO TOP OF SAMPLE									0		0		9	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									0		0		9	
SAMPLE DATE									11/21/2000		11/21/2000		11/20/2000	
QC CODE									SA		SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
Alpha-Chlordane	UG/L	0	0%			0	0	8	0.0055	U	0.0055	U	0.0052	U
Aroclor-1016	UG/L	0	0%	0.09	GA	0	0	8	0.11	U	0.11	U	0.1	U
Aroclor-1221	UG/L	0	0%	0.09	GA	0	0	8	0.22	U	0.22	U	0.21	U
Aroclor-1232	UG/L	0	0%	0.09	GA	0	0	8	0.11	U	0.11	U	0.1	U
Aroclor-1242	UG/L	0	0%	0.09	GA	0	0	8	0.11	U	0.11	U	0.1	U
Aroclor-1248	UG/L	0	0%	0.09	GA	0	0	8	0.11	U	0.11	U	0.1	U
Aroclor-1254	UG/L	0	0%	0.09	GA	0	0	8	0.11	U	0.11	U	0.1	U
Aroclor-1260	UG/L	0	0%	0.09	GA	0	0	8	0.11	U	0.11	U	0.1	U
Beta-BHC	UG/L	0	0%	0.04	GA	0	0	8	0.0055	U	0.0055	U	0.0052	U
Delta-BHC	UG/L	0	0%	0.04	GA	0	0	8	0.0055	U	0.0055	U	0.0052	U
Dieldrin	UG/L	0	0%	0.004	GA	0	0	8	0.011	U	0.011	U	0.01	U
Endosulfan I	UG/L	0	0%			0	0	8	0.0055	U	0.0055	U	0.0052	U
Endosulfan II	UG/L	0	0%			0	0	8	0.011	U	0.011	U	0.01	U
Endosulfan sulfate	UG/L	0	0%			0	0	8	0.011	U	0.011	U	0.01	U
Endrin	UG/L	0	0%	0	GA	0	0	8	0.011	U	0.011	U	0.01	U
Endrin aldehyde	UG/L	0	0%	5	GA	0	0	8	0.011	U	0.011	U	0.01	U
Endrin ketone	UG/L	0	0%	5	GA	0	0	8	0.011	U	0.011	U	0.01	U
Gamma-BHC/Lindane	UG/L	0	0%	0.05	GA	0	0	8	0.0055	U	0.0055	U	0.0052	U
Gamma-Chlordane	UG/L	0	0%			0	0	8	0.0055	U	0.0055	U	0.0052	U
Heptachlor	UG/L	0	0%	0.04	GA	0	0	8	0.0055	U	0.0055	U	0.0052	U
Heptachlor epoxide	UG/L	0	0%	0.03	GA	0	0	8	0.0055	U	0.0055	U	0.0052	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	0.011	UJ	0.011	UJ	0.01	UJ
Methoxychlor	UG/L	0	0%	35	GA	0	0	8	0.055	U	0.055	U	0.052	U
Toxaphene	UG/L	0	0%	0.06	GA	0	0	8	0.55	U	0.55	U	0.52	U
Metals														
Aluminum	UG/L	184	75%	50	MCL	5	6	8	**53.9**	J	27.2	J	12.4	U
Antimony	UG/L	8	13%	3	GA	1	1	8	7.9	U	7.9	U	7.9	U
Arsenic	UG/L	0	0%	5	MCL	0	0	8	4.2	U	4.2	U	4.2	U
Barium	UG/L	68.9	100%	1000	GA	0	8	8	32.5	J	49.9	J	62.5	J
Beryllium	UG/L	0.27	25%	4	MCL	0	2	8	0.1	U	0.16	J	0.1	U
Cadmium	UG/L	0.35	13%	5	GA	0	1	8	0.3	U	0.35	J	0.3	U
Calcium	UG/L	236000	100%			0	8	8	89000		103000		122000	

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-1		MW11-2		MW11-3	
MATRIX									GW		GW		GW	
SAMPLE ID									112101		112100		112102	
SAMPLE DEPTH TO TOP OF SAMPLE									0		0		9	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									0		0		9	
SAMPLE DATE									11/21/2000		11/21/2000		11/20/2000	
QC CODE									SA		SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
Chromium	UG/L	0	0%	50	GA	0	0	8	1.1	U	1.1	U	1.1	U
Cobalt	UG/L	1.8	13%			0	1	8	1.6	U	1.6	U	1.6	U
Copper	UG/L	19.2	25%	200	GA	0	2	8	3.3	U	3.3	U	4.6	J
Cyanide	UG/L	0	0%	200	GA	0	0	8	10	U	10	U	10	U
Iron	UG/L	302	75%	300	GA	1	6	8	67	J	102		21.2	U
Lead	UG/L	0	0%	15	MCL	0	0	8	1.8	U	1.8	U	1.8	U
Magnesium	UG/L	41000	100%			0	8	8	24600		20200		19200	
Manganese	UG/L	772	100%	50	SEC	3	8	8	47.7		26.8		3.1	J
Mercury	UG/L	0	0%	0.7	GA	0	0	8	0.1	U	0.1	U	0.1	U
Nickel	UG/L	2.5	13%	100	GA	0	1	8	2.1	U	2.1	U	2.1	U
Potassium	UG/L	6750	100%			0	8	8	2220	J	2160	J	3700	J
Selenium	UG/L	0	0%	10	GA	0	0	8	3.7	U	3.7	U	3.7	U
Silver	UG/L	0	0%	50	GA	0	0	8	1.6	U	1.6	U	1.6	U
Sodium	UG/L	36800	100%	20000	GA	3	8	8	4520	J	**36800**		15300	
Thallium	UG/L	0	0%	2	MCL	0	0	8	4.5	U	4.5	U	4.5	U
Vanadium	UG/L	0	0%			0	0	8	2	U	2	U	2	U
Zinc	UG/L	9.2	25%	5000	MCL	0	2	8	7.9	J	9.2	J	3.5	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY										SEAD-11		SEAD-11		SEAD-11	
LOCATION ID										MW11-4		MW11-5		MW11-5	
MATRIX										GW		GW		GW	
SAMPLE ID										112104		112107		112103	
SAMPLE DEPTH TO TOP OF SAMPLE										11		10		10	
SAMPLE DEPTH TO BOTTOM OF SAMPLE										11		10		10	
SAMPLE DATE										11/20/2000		11/21/2000		11/21/2000	
QC CODE										SA		DU		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER		SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF		1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES		N		N		N	
										Value	(Q)	Value	(Q)	Value	(Q)
Volatile Organic Compounds															
1,1,1-Trichloroethane	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
1,1,2-Trichloroethane	UG/L	0	0%	1	GA	0	0	8		1	U	1	U	1	U
1,1-Dichloroethane	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
1,1-Dichloroethene	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	GA	0	0	8		1	U	1	U	1	U
1,2-Dibromoethane	UG/L	0	0%	0.0006	GA	0	0	8		1	U	1	U	1	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8		1	U	1	U	1	U
1,2-Dichloroethane	UG/L	0	0%	0.6	GA	0	0	8		1	U	1	U	1	U
1,2-Dichloropropane	UG/L	0	0%	1	GA	0	0	8		1	U	1	U	1	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8		1	U	1	U	1	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8		1	U	1	U	1	U
Acetone	UG/L	0	0%			0	0	8		5	U	5	U	5	U
Benzene	UG/L	0	0%	1	GA	0	0	8		1	U	1	U	1	U
Bromochloromethane	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
Bromodichloromethane	UG/L	0	0%	80	MCL	0	0	8		1	U	1	U	1	U
Bromoform	UG/L	0	0%	80	MCL	0	0	8		1	U	1	U	1	U
Carbon disulfide	UG/L	0	0%			0	0	8		1	U	1	U	1	U
Carbon tetrachloride	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
Chlorobenzene	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
Chlorodibromomethane	UG/L	0	0%	80	MCL	0	0	8		1	U	1	U	1	U
Chloroethane	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
Chloroform	UG/L	0	0%	7	GA	0	0	8		1	U	1	U	1	U
Cis-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8		1	U	1	U	1	U
Ethyl benzene	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
Methyl bromide	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
Methyl butyl ketone	UG/L	0	0%			0	0	8		5	U	5	U	5	U
Methyl chloride	UG/L	0	0%	5	GA	0	0	8		1	U	1	U	1	U
Methyl ethyl ketone	UG/L	0	0%			0	0	8		5	U	5	U	5	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-4		MW11-5		MW11-5	
MATRIX									GW		GW		GW	
SAMPLE ID									112104		112107		112103	
SAMPLE DEPTH TO TOP OF SAMPLE									11		10		10	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									11		10		10	
SAMPLE DATE									11/20/2000		11/21/2000		11/21/2000	
QC CODE									SA		DU		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
Methyl isobutyl ketone	UG/L	0	0%			0	0	8	5	U	5	U	5	U
Methylene chloride	UG/L	0	0%	5	GA	0	0	8	2	U	2	U	2	U
Styrene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Tetrachloroethene	UG/L	2	25%	5	GA	0	2	8	1	U	1	U	1	U
Toluene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Total Xylenes	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Trans-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	1	U	1	U	1	U
Trichloroethene	UG/L	2	25%	5	GA	0	2	8	1	U	1	U	1	U
Vinyl chloride	UG/L	0	0%	2	GA	0	0	8	1	U	1	U	1	U
Semivolatile Organic Compounds														
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U	1	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U	1	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U	1	U
2,4,5-Trichlorophenol	UG/L	0.073	13%			0	1	8	2.6	U	0.073	J	2.6	U
2,4,6-Trichlorophenol	UG/L	0.098	13%			0	1	8	1	U	0.098	J	1	U
2,4-Dichlorophenol	UG/L	0	0%	5	GA	0	0	8	1	U	1	R	1	U
2,4-Dimethylphenol	UG/L	0	0%			0	0	8	1	U	1	R	1	U
2,4-Dinitrophenol	UG/L	0	0%			0	0	8	2.6	UJ	2.6	R	2.6	UJ
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
2-Chloronaphthalene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
2-Chlorophenol	UG/L	0	0%			0	0	8	1	U	1	R	1	U
2-Methylnaphthalene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
2-Methylphenol	UG/L	0	0%			0	0	8	1	U	1	R	1	U
2-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.6	U	2.6	U	2.6	U
2-Nitrophenol	UG/L	0	0%			0	0	8	1	U	1	R	1	U
3,3'-Dichlorobenzidine	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
3-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.6	U	2.6	U	2.6	U
4,6-Dinitro-2-methylphenol	UG/L	0	0%			0	0	8	2.6	UJ	2.6	R	2.6	UJ
4-Bromophenyl phenyl ether	UG/L	0	0%			0	0	8	1	U	1	U	1	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-4		MW11-5		MW11-5	
MATRIX									GW		GW		GW	
SAMPLE ID									112104		112107		112103	
SAMPLE DEPTH TO TOP OF SAMPLE									11		10		10	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									11		10		10	
SAMPLE DATE									11/20/2000		11/21/2000		11/21/2000	
QC CODE									SA		DU		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
4-Chloro-3-methylphenol	UG/L	0	0%			0	0	8	1	U	1	R	1	U
4-Chloroaniline	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
4-Chlorophenyl phenyl ether	UG/L	0	0%			0	0	8	1	U	1	U	1	U
4-Methylphenol	UG/L	0	0%			0	0	8	1	U	1	R	1	U
4-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.6	U	2.6	U	2.6	U
4-Nitrophenol	UG/L	0	0%			0	0	8	2.6	U	2.6	R	2.6	U
Acenaphthene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Acenaphthylene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Anthracene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Benzo(a)anthracene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Benzo(a)pyrene	UG/L	0	0%	0	GA	0	0	8	1	U	1	U	1	U
Benzo(b)fluoranthene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Benzo(ghi)perylene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Benzo(k)fluoranthene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Bis(2-Chloroethoxy)methane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Bis(2-Chloroethyl)ether	UG/L	0	0%	1	GA	0	0	8	1	U	1	U	1	U
Bis(2-Chloroisopropyl)ether	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Bis(2-Ethylhexyl)phthalate	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Butylbenzylphthalate	UG/L	0.16	25%			0	2	8	1	U	1	U	1	U
Carbazole	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Chrysene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Di-n-butylphthalate	UG/L	0	0%	50	GA	0	0	8	1	U	1	U	1	U
Di-n-octylphthalate	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Dibenz(a,h)anthracene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Dibenzofuran	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Diethyl phthalate	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Dimethylphthalate	UG/L	3.3	38%			0	3	8	1	U	3.3		2.7	
Fluoranthene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Fluorene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	1	U	1	U	1	U
Hexachlorobutadiene	UG/L	0	0%	0.5	GA	0	0	8	1	U	1	U	1	U
Hexachlorocyclopentadiene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-4		MW11-5		MW11-5	
MATRIX									GW		GW		GW	
SAMPLE ID									112104		112107		112103	
SAMPLE DEPTH TO TOP OF SAMPLE									11		10		10	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									11		10		10	
SAMPLE DATE									11/20/2000		11/21/2000		11/21/2000	
QC CODE									SA		DU		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
Hexachloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U	1	U
Indeno(1,2,3-cd)pyrene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Isophorone	UG/L	0	0%			0	0	8	1	U	1	U	1	U
N-Nitrosodiphenylamine	UG/L	0	0%			0	0	8	1	U	1	U	1	U
N-Nitrosodipropylamine	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Naphthalene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	1	U	1	U	1	U
Pentachlorophenol	UG/L	0	0%	1	GA	0	0	8	2.6	U	2.6	R	2.6	U
Phenanthrene	UG/L	0	0%			0	0	8	1	U	1	U	1	U
Phenol	UG/L	0	0%	1	GA	0	0	8	1	U	1	R	1	U
Pyrene	UG/L	0.082	13%			0	1	8	1	U	1	U	1	U
Explosives														
1,3,5-Trinitrobenzene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
1,3-Dinitrobenzene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2,4,6-Trinitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
2-amino-4,6-Dinitrotoluene	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
3-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
4-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U	0.25	U
4-amino-2,6-Dinitrotoluene	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
HMX	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	0.25	U	0.25	U	0.25	U
RDX	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
Tetryl	UG/L	0	0%			0	0	8	0.25	U	0.25	U	0.25	U
Pesticides/PCBs														
4,4'-DDD	UG/L	0	0%	0.3	GA	0	0	8	0.01	U	0.011	U	0.01	U
4,4'-DDE	UG/L	0	0%	0.2	GA	0	0	8	0.01	U	0.011	U	0.01	U
4,4'-DDT	UG/L	0.006	13%	0.2	GA	0	1	8	0.01	U	0.011	U	0.01	U
Aldrin	UG/L	0	0%	0	GA	0	0	8	0.0052	U	0.0054	U	0.0052	U
Alpha-BHC	UG/L	0	0%	0.01	GA	0	0	8	0.0052	U	0.0054	U	0.0052	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-4		MW11-5		MW11-5	
MATRIX									GW		GW		GW	
SAMPLE ID									112104		112107		112103	
SAMPLE DEPTH TO TOP OF SAMPLE									11		10		10	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									11		10		10	
SAMPLE DATE									11/20/2000		11/21/2000		11/21/2000	
QC CODE									SA		DU		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
Alpha-Chlordane	UG/L	0	0%			0	0	8	0.0052	U	0.0054	U	0.0052	U
Aroclor-1016	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.11	U	0.1	U
Aroclor-1221	UG/L	0	0%	0.09	GA	0	0	8	0.21	U	0.22	U	0.21	U
Aroclor-1232	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.11	U	0.1	U
Aroclor-1242	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.11	U	0.1	U
Aroclor-1248	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.11	U	0.1	U
Aroclor-1254	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.11	U	0.1	U
Aroclor-1260	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.11	U	0.1	U
Beta-BHC	UG/L	0	0%	0.04	GA	0	0	8	0.0052	U	0.0054	U	0.0052	U
Delta-BHC	UG/L	0	0%	0.04	GA	0	0	8	0.0052	U	0.0054	U	0.0052	U
Dieldrin	UG/L	0	0%	0.004	GA	0	0	8	0.01	U	0.011	U	0.01	U
Endosulfan I	UG/L	0	0%			0	0	8	0.0052	U	0.0054	U	0.0052	U
Endosulfan II	UG/L	0	0%			0	0	8	0.01	U	0.011	U	0.01	U
Endosulfan sulfate	UG/L	0	0%			0	0	8	0.01	U	0.011	U	0.01	U
Endrin	UG/L	0	0%	0	GA	0	0	8	0.01	U	0.011	U	0.01	U
Endrin aldehyde	UG/L	0	0%	5	GA	0	0	8	0.01	U	0.011	U	0.01	U
Endrin ketone	UG/L	0	0%	5	GA	0	0	8	0.01	U	0.011	U	0.01	U
Gamma-BHC/Lindane	UG/L	0	0%	0.05	GA	0	0	8	0.0052	U	0.0054	U	0.0052	U
Gamma-Chlordane	UG/L	0	0%			0	0	8	0.0052	U	0.0054	U	0.0052	U
Heptachlor	UG/L	0	0%	0.04	GA	0	0	8	0.0052	U	0.0054	U	0.0052	U
Heptachlor epoxide	UG/L	0	0%	0.03	GA	0	0	8	0.0052	U	0.0054	U	0.0052	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	0.01	UJ	0.011	UJ	0.01	UJ
Methoxychlor	UG/L	0	0%	35	GA	0	0	8	0.052	U	0.054	U	0.052	U
Toxaphene	UG/L	0	0%	0.06	GA	0	0	8	0.52	U	0.54	U	0.52	U
Metals														
Aluminum	UG/L	184	75%	50	MCL	5	6	8	12.4	U	**107**	J	**184**	J
Antimony	UG/L	8	13%	3	GA	1	1	8	7.9	U	7.9	U	7.9	U
Arsenic	UG/L	0	0%	5	MCL	0	0	8	4.2	U	4.2	U	4.2	U
Barium	UG/L	68.9	100%	1000	GA	0	8	8	48.7	J	68.4	J	68.9	J
Beryllium	UG/L	0.27	25%	4	MCL	0	2	8	0.1	U	0.1	U	0.1	U
Cadmium	UG/L	0.35	13%	5	GA	0	1	8	0.3	U	0.3	U	0.3	U
Calcium	UG/L	236000	100%			0	8	8	193000		133000		132000	

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID									MW11-4		MW11-5		MW11-5	
MATRIX									GW		GW		GW	
SAMPLE ID									112104		112107		112103	
SAMPLE DEPTH TO TOP OF SAMPLE									11		10		10	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									11		10		10	
SAMPLE DATE									11/20/2000		11/21/2000		11/21/2000	
QC CODE									SA		DU		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N		N	
									Value	(Q)	Value	(Q)	Value	(Q)
Chromium	UG/L	0	0%	50	GA	0	0	8	1.1	U	1.1	U	1.1	U
Cobalt	UG/L	1.8	13%			0	1	8	1.6	U	1.6	U	1.6	U
Copper	UG/L	19.2	25%	200	GA	0	2	8	3.3	U	3.3	U	19.2	J
Cyanide	UG/L	0	0%	200	GA	0	0	8	10	U	10	U	10	U
Iron	UG/L	302	75%	300	GA	1	6	8	21.2	U	196		**302**	
Lead	UG/L	0	0%	15	MCL	0	0	8	1.8	U	1.8	U	1.8	U
Magnesium	UG/L	41000	100%			0	8	8	32900		23200		23000	
Manganese	UG/L	772	100%	50	SEC	3	8	8	12.1	J	**150**		**152**	
Mercury	UG/L	0	0%	0.7	GA	0	0	8	0.1	U	0.1	U	0.1	U
Nickel	UG/L	2.5	13%	100	GA	0	1	8	2.1	U	2.1	U	2.1	U
Potassium	UG/L	6750	100%			0	8	8	3470	J	2790	J	2820	J
Selenium	UG/L	0	0%	10	GA	0	0	8	3.7	U	3.7	U	3.7	U
Silver	UG/L	0	0%	50	GA	0	0	8	1.6	U	1.6	U	1.6	U
Sodium	UG/L	36800	100%	20000	GA	3	8	8	10200		**24200**		**22900**	
Thallium	UG/L	0	0%	2	MCL	0	0	8	4.5	U	4.5	U	4.5	U
Vanadium	UG/L	0	0%			0	0	8	2	U	2	U	2	U
Zinc	UG/L	9.2	25%	5000	MCL	0	2	8	3.5	U	3.5	U	3.5	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID									MW11-6		MW11-7	
MATRIX									GW		GW	
SAMPLE ID									112105		112106	
SAMPLE DEPTH TO TOP OF SAMPLE									8		7.2	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									8		7.2	
SAMPLE DATE									11/20/2000		11/20/2000	
QC CODE									SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N	
									Value	(Q)	Value	(Q)
Volatile Organic Compounds												
1,1,1-Trichloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
1,1,2-Trichloroethane	UG/L	0	0%	1	GA	0	0	8	1	U	1	U
1,1-Dichloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
1,1-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	GA	0	0	8	1	U	1	U
1,2-Dibromoethane	UG/L	0	0%	0.0006	GA	0	0	8	1	U	1	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U
1,2-Dichloroethane	UG/L	0	0%	0.6	GA	0	0	8	1	U	1	U
1,2-Dichloropropane	UG/L	0	0%	1	GA	0	0	8	1	U	1	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U
Acetone	UG/L	0	0%			0	0	8	5	U	5	U
Benzene	UG/L	0	0%	1	GA	0	0	8	1	U	1	U
Bromochloromethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Bromodichloromethane	UG/L	0	0%	80	MCL	0	0	8	1	U	1	U
Bromoform	UG/L	0	0%	80	MCL	0	0	8	1	U	1	U
Carbon disulfide	UG/L	0	0%			0	0	8	1	U	1	U
Carbon tetrachloride	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Chlorobenzene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Chlorodibromomethane	UG/L	0	0%	80	MCL	0	0	8	1	U	1	U
Chloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Chloroform	UG/L	0	0%	7	GA	0	0	8	1	U	1	U
Cis-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	1	U	1	U
Ethyl benzene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Methyl bromide	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Methyl butyl ketone	UG/L	0	0%			0	0	8	5	U	5	U
Methyl chloride	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Methyl ethyl ketone	UG/L	0	0%			0	0	8	5	U	5	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID									MW11-6		MW11-7	
MATRIX									GW		GW	
SAMPLE ID									112105		112106	
SAMPLE DEPTH TO TOP OF SAMPLE									8		7.2	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									8		7.2	
SAMPLE DATE									11/20/2000		11/20/2000	
QC CODE									SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N	
									Value	(Q)	Value	(Q)
Methyl isobutyl ketone	UG/L	0	0%			0	0	8	5	U	5	U
Methylene chloride	UG/L	0	0%	5	GA	0	0	8	2	U	2	U
Styrene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Tetrachloroethene	UG/L	2	25%	5	GA	0	2	8	2		0.4	J
Toluene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Total Xylenes	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Trans-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	1	U	1	U
Trichloroethene	UG/L	2	25%	5	GA	0	2	8	2		1	U
Vinyl chloride	UG/L	0	0%	2	GA	0	0	8	1	U	1	U
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1	U	1	U
2,4,5-Trichlorophenol	UG/L	0.073	13%			0	1	8	2.6	U	2.6	U
2,4,6-Trichlorophenol	UG/L	0.098	13%			0	1	8	1	U	1	U
2,4-Dichlorophenol	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
2,4-Dimethylphenol	UG/L	0	0%			0	0	8	1	U	1	U
2,4-Dinitrophenol	UG/L	0	0%			0	0	8	2.6	UJ	2.6	UJ
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
2-Chloronaphthalene	UG/L	0	0%			0	0	8	1	U	1	U
2-Chlorophenol	UG/L	0	0%			0	0	8	1	U	1	U
2-Methylnaphthalene	UG/L	0	0%			0	0	8	1	U	1	U
2-Methylphenol	UG/L	0	0%			0	0	8	1	U	1	U
2-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.6	U	2.6	U
2-Nitrophenol	UG/L	0	0%			0	0	8	1	U	1	U
3,3'-Dichlorobenzidine	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
3-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.6	U	2.6	U
4,6-Dinitro-2-methylphenol	UG/L	0	0%			0	0	8	2.6	UJ	2.6	UJ
4-Bromophenyl phenyl ether	UG/L	0	0%			0	0	8	1	U	1	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID									MW11-6		MW11-7	
MATRIX									GW		GW	
SAMPLE ID									112105		112106	
SAMPLE DEPTH TO TOP OF SAMPLE									8		7.2	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									8		7.2	
SAMPLE DATE									11/20/2000		11/20/2000	
QC CODE									SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N	
									Value	(Q)	Value	(Q)
4-Chloro-3-methylphenol	UG/L	0	0%			0	0	8	1	U	1	U
4-Chloroaniline	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
4-Chlorophenyl phenyl ether	UG/L	0	0%			0	0	8	1	U	1	U
4-Methylphenol	UG/L	0	0%			0	0	8	1	U	1	U
4-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.6	U	2.6	U
4-Nitrophenol	UG/L	0	0%			0	0	8	2.6	U	2.6	U
Acenaphthene	UG/L	0	0%			0	0	8	1	U	1	U
Acenaphthylene	UG/L	0	0%			0	0	8	1	U	1	U
Anthracene	UG/L	0	0%			0	0	8	1	U	1	U
Benzo(a)anthracene	UG/L	0	0%			0	0	8	1	U	1	U
Benzo(a)pyrene	UG/L	0	0%	0	GA	0	0	8	1	U	1	U
Benzo(b)fluoranthene	UG/L	0	0%			0	0	8	1	U	1	U
Benzo(ghi)perylene	UG/L	0	0%			0	0	8	1	U	1	U
Benzo(k)fluoranthene	UG/L	0	0%			0	0	8	1	U	1	U
Bis(2-Chloroethoxy)methane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Bis(2-Chloroethyl)ether	UG/L	0	0%	1	GA	0	0	8	1	U	1	U
Bis(2-Chloroisopropyl)ether	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Bis(2-Ethylhexyl)phthalate	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Butylbenzylphthalate	UG/L	0.16	25%			0	2	8	1	U	0.16	J
Carbazole	UG/L	0	0%			0	0	8	1	U	1	U
Chrysene	UG/L	0	0%			0	0	8	1	U	1	U
Di-n-butylphthalate	UG/L	0	0%	50	GA	0	0	8	1	U	1	U
Di-n-octylphthalate	UG/L	0	0%			0	0	8	1	U	1	U
Dibenz(a,h)anthracene	UG/L	0	0%			0	0	8	1	U	1	U
Dibenzofuran	UG/L	0	0%			0	0	8	1	U	1	U
Diethyl phthalate	UG/L	0	0%			0	0	8	1	U	1	U
Dimethylphthalate	UG/L	3.3	38%			0	3	8	1	U	0.36	J
Fluoranthene	UG/L	0	0%			0	0	8	1	U	1	U
Fluorene	UG/L	0	0%			0	0	8	1	U	1	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	1	U	1	U
Hexachlorobutadiene	UG/L	0	0%	0.5	GA	0	0	8	1	U	1	U
Hexachlorocyclopentadiene	UG/L	0	0%	5	GA	0	0	8	1	U	1	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID									MW11-6		MW11-7	
MATRIX									GW		GW	
SAMPLE ID									112105		112106	
SAMPLE DEPTH TO TOP OF SAMPLE									8		7.2	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									8		7.2	
SAMPLE DATE									11/20/2000		11/20/2000	
QC CODE									SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N	
									Value	(Q)	Value	(Q)
Hexachloroethane	UG/L	0	0%	5	GA	0	0	8	1	U	1	U
Indeno(1,2,3-cd)pyrene	UG/L	0	0%			0	0	8	1	U	1	U
Isophorone	UG/L	0	0%			0	0	8	1	U	1	U
N-Nitrosodiphenylamine	UG/L	0	0%			0	0	8	1	U	1	U
N-Nitrosodipropylamine	UG/L	0	0%			0	0	8	1	U	1	U
Naphthalene	UG/L	0	0%			0	0	8	1	U	1	U
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	1	U	1	U
Pentachlorophenol	UG/L	0	0%	1	GA	0	0	8	2.6	U	2.6	U
Phenanthrene	UG/L	0	0%			0	0	8	1	U	1	U
Phenol	UG/L	0	0%	1	GA	0	0	8	1	U	1	U
Pyrene	UG/L	0.082	13%			0	1	8	0.082	J	1	U
Explosives												
1,3,5-Trinitrobenzene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U
1,3-Dinitrobenzene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U
2,4,6-Trinitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U
2-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U
2-amino-4,6-Dinitrotoluene	UG/L	0	0%			0	0	8	0.25	U	0.25	U
3-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U
4-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	0.25	U	0.25	U
4-amino-2,6-Dinitrotoluene	UG/L	0	0%			0	0	8	0.25	U	0.25	U
HMX	UG/L	0	0%			0	0	8	0.25	U	0.25	U
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	0.25	U	0.25	U
RDX	UG/L	0	0%			0	0	8	0.25	U	0.25	U
Tetryl	UG/L	0	0%			0	0	8	0.25	U	0.25	U
Pesticides/PCBs												
4,4'-DDD	UG/L	0	0%	0.3	GA	0	0	8	0.01	U	0.01	U
4,4'-DDE	UG/L	0	0%	0.2	GA	0	0	8	0.01	U	0.01	U
4,4'-DDT	UG/L	0.006	13%	0.2	GA	0	1	8	0.006	J	0.01	U
Aldrin	UG/L	0	0%	0	GA	0	0	8	0.0052	U	0.0052	U
Alpha-BHC	UG/L	0	0%	0.01	GA	0	0	8	0.0052	U	0.0052	U

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID									MW11-6		MW11-7	
MATRIX									GW		GW	
SAMPLE ID									112105		112106	
SAMPLE DEPTH TO TOP OF SAMPLE									8		7.2	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									8		7.2	
SAMPLE DATE									11/20/2000		11/20/2000	
QC CODE									SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N	
									Value	(Q)	Value	(Q)
Alpha-Chlordane	UG/L	0	0%			0	0	8	0.0052	U	0.0052	U
Aroclor-1016	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.1	U
Aroclor-1221	UG/L	0	0%	0.09	GA	0	0	8	0.21	U	0.21	U
Aroclor-1232	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.1	U
Aroclor-1242	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.1	U
Aroclor-1248	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.1	U
Aroclor-1254	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.1	U
Aroclor-1260	UG/L	0	0%	0.09	GA	0	0	8	0.1	U	0.1	U
Beta-BHC	UG/L	0	0%	0.04	GA	0	0	8	0.0052	U	0.0052	U
Delta-BHC	UG/L	0	0%	0.04	GA	0	0	8	0.0052	U	0.0052	U
Dieldrin	UG/L	0	0%	0.004	GA	0	0	8	0.01	U	0.01	U
Endosulfan I	UG/L	0	0%			0	0	8	0.0052	U	0.0052	U
Endosulfan II	UG/L	0	0%			0	0	8	0.01	U	0.01	U
Endosulfan sulfate	UG/L	0	0%			0	0	8	0.01	U	0.01	U
Endrin	UG/L	0	0%	0	GA	0	0	8	0.01	U	0.01	U
Endrin aldehyde	UG/L	0	0%	5	GA	0	0	8	0.01	U	0.01	U
Endrin ketone	UG/L	0	0%	5	GA	0	0	8	0.01	U	0.01	U
Gamma-BHC/Lindane	UG/L	0	0%	0.05	GA	0	0	8	0.0052	U	0.0052	U
Gamma-Chlordane	UG/L	0	0%			0	0	8	0.0052	U	0.0052	U
Heptachlor	UG/L	0	0%	0.04	GA	0	0	8	0.0052	U	0.0052	U
Heptachlor epoxide	UG/L	0	0%	0.03	GA	0	0	8	0.0052	U	0.0052	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	0.01	UJ	0.01	UJ
Methoxychlor	UG/L	0	0%	35	GA	0	0	8	0.052	U	0.052	U
Toxaphene	UG/L	0	0%	0.06	GA	0	0	8	0.52	U	0.52	U
Metals												
Aluminum	UG/L	184	75%	50	MCL	5	6	8	**51.4**	J	**147**	J
Antimony	UG/L	8	13%	3	GA	1	1	8	7.9	U	**8**	J
Arsenic	UG/L	0	0%	5	MCL	0	0	8	4.2	U	4.2	U
Barium	UG/L	68.9	100%	1000	GA	0	8	8	48.9	J	55.2	J
Beryllium	UG/L	0.27	25%	4	MCL	0	2	8	0.1	U	0.27	J
Cadmium	UG/L	0.35	13%	5	GA	0	1	8	0.3	U	0.3	U
Calcium	UG/L	236000	100%			0	8	8	184000		236000	

Table A-2
SEAD-11 Groundwater Data
Round 1 - November 2000
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID									MW11-6		MW11-7	
MATRIX									GW		GW	
SAMPLE ID									112105		112106	
SAMPLE DEPTH TO TOP OF SAMPLE									8		7.2	
SAMPLE DEPTH TO BOTTOM OF SAMPLE									8		7.2	
SAMPLE DATE									11/20/2000		11/20/2000	
QC CODE									SA		SA	
STUDY ID			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER	SEAD-11 EECA		SEAD-11 EECA	
			OF	GW	GW	ABOVE	OF	OF	1		1	
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	N		N	
									Value	(Q)	Value	(Q)
Chromium	UG/L	0	0%	50	GA	0	0	8	1.1	U	1.1	U
Cobalt	UG/L	1.8	13%			0	1	8	1.6	U	1.8	J
Copper	UG/L	19.2	25%	200	GA	0	2	8	3.3	U	3.3	U
Cyanide	UG/L	0	0%	200	GA	0	0	8	10	U	10	U
Iron	UG/L	302	75%	300	GA	1	6	8	59.7	J	223	
Lead	UG/L	0	0%	15	MCL	0	0	8	1.8	U	1.8	U
Magnesium	UG/L	41000	100%			0	8	8	32200		41000	
Manganese	UG/L	772	100%	50	SEC	3	8	8	13.8	J	**772**	
Mercury	UG/L	0	0%	0.7	GA	0	0	8	0.1	U	0.1	U
Nickel	UG/L	2.5	13%	100	GA	0	1	8	2.1	U	2.5	J
Potassium	UG/L	6750	100%			0	8	8	6750		4160	J
Selenium	UG/L	0	0%	10	GA	0	0	8	3.7	UJ	3.7	U
Silver	UG/L	0	0%	50	GA	0	0	8	1.6	U	1.6	U
Sodium	UG/L	36800	100%	20000	GA	3	8	8	12800		16500	
Thallium	UG/L	0	0%	2	MCL	0	0	8	4.5	U	4.5	U
Vanadium	UG/L	0	0%			0	0	8	2	U	2	U
Zinc	UG/L	9.2	25%	5000	MCL	0	2	8	3.5	U	3.5	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11		
LOCATION ID:									MW11-1		MW11-2		MW11-3		
MATRIX:									GW		GW		GW		
SAMP_ID:									112200		112201		112202		
SAMP. DEPTH TOP:									13		10		9		
SAMP. DEPTH BOT:									13		10		9		
SAMP. DATE:									27-Feb-01		27-Feb-01		27-Feb-01		
QC CODE:									SA		SA		SA		
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA		
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER							
			OF	GW	GW	ABOVE	OF	OF							
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)	
Volatile Organic Compounds															
1,1,1,2-Tetrachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,1,1-Trichloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,1,2-Trichloroethane	UG/L	0	0%	1	GA	0	0	8	.5	U	.5	U	.5	U	
1,1-Dichloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,1-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,1-Dichloropropene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,2,3-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,2,3-Trichloropropane	UG/L	0	0%	0.04	GA	0	0	8	.5	U	.5	U	.5	U	
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,2,4-Trimethylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	GA	0	0	8	.5	U	.5	U	.5	U	
1,2-Dibromoethane	UG/L	0	0%	0.0006	GA	0	0	8	.5	U	.5	U	.5	U	
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	.5	U	.5	U	.5	U	
1,2-Dichloroethane	UG/L	0	0%	0.6	GA	0	0	8	.5	U	.5	U	.5	U	
1,2-Dichloropropane	UG/L	0	0%	1	GA	0	0	8	.5	U	.5	U	.5	U	
1,3,5-Trimethylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	.5	U	.5	U	.5	U	
1,3-Dichloropropane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	.5	U	.5	U	.5	U	
2,2-Dichloropropane	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U	
2-Chlorotoluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
2-Nitropropane	UG/L	0	0%			0	0	8	25.	U	25.	U	25.	U	
Acetone	UG/L	0	0%			0	0	8	5.	U	5.	U	5.	U	
Acrylonitrile	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
Allyl chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
Benzene	UG/L	0	0%	1	GA	0	0	8	.5	U	.5	U	.5	U	
Bromobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
Bromochloromethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U	
Bromodichloromethane	UG/L	0	0%	80	MCL	0	0	8	.5	U	.5	U	.5	U	
Bromoform	UG/L	0	0%	80	MCL	0	0	8	.5	U	.5	U	.5	U	

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-1		MW11-2		MW11-3	
MATRIX:									GW		GW		GW	
SAMP_ID:									112200		112201		112202	
SAMP. DEPTH TOP:									13		10		9	
SAMP. DEPTH BOT:									13		10		9	
SAMP. DATE:									27-Feb-01		27-Feb-01		27-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Butyl chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Carbon disulfide	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Carbon tetrachloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Chloracetonitrile	UG/L	0	0%			0	0	8	25.	U	25.	U	25.	U
Chlorobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Chlorodibromomethane	UG/L	0	0%	80	MCL	0	0	8	.5	U	.5	U	.5	U
Chloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Chloroform	UG/L	0	0%	7	GA	0	0	8	.5	U	.5	U	.5	U
Cis-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	.5	U	.5	U	.5	U
Dichlorodifluoromethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Dichloromethyl methyl ketone	UG/L	0	0%			0	0	8	25.	UR	25.	UR	25.	UR
Ethyl benzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Ethyl ether	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Ethyl methacrylate	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Hexachlorobutadiene	UG/L	0	0%	0.5	GA	0	0	8	.5	U	.5	U	.5	U
Hexachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Isopropylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Meta/Para Xylene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methacrylonitrile	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methyl 2-propenoate	UG/L	0	0%			0	0	8	.5	UJ	.5	UJ	.5	UJ
Methyl Tertbutyl Ether	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Methyl bromide	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methyl butyl ketone	UG/L	0	0%			0	0	8	2.5	U	2.5	U	2.5	U
Methyl chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methyl ethyl ketone	UG/L	0	0%			0	0	8	5.	U	5.	U	5.	U
Methyl iodide	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methyl isobutyl ketone	UG/L	0	0%			0	0	8	2.5	UJ	2.5	UJ	2.5	UJ
Methyl methacrylate	UG/L	0	0%	50	GA	0	0	8	.5	U	.5	U	.5	U
Methylene bromide	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methylene chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Naphthalene	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-1		MW11-2		MW11-3	
MATRIX:									GW		GW		GW	
SAMP_ID:									112200		112201		112202	
SAMP. DEPTH TOP:									13		10		9	
SAMP. DEPTH BOT:									13		10		9	
SAMP. DATE:									27-Feb-01		27-Feb-01		27-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	25.	UR	25.	UR	25.	UR
Ortho Xylene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Pentachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Propionitrile	UG/L	0	0%			0	0	8	25.	U	25.	U	25.	U
Propylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Styrene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Tetrachloroethene	UG/L	2	38%	5	GA	0	3	8	.5	U	.5	U	.5	U
Tetrahydrofuran	UG/L	0	0%			0	0	8	2.5	U	2.5	U	2.5	U
Toluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Total Xylenes	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Trans-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	.5	U	.5	U	.5	U
Trans-1,4-Dichloro-2-butene	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Trichloroethene	UG/L	2.2	38%	5	GA	0	3	8	.5	U	.5	U	.5	U
Trichlorofluoromethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Vinyl chloride	UG/L	0	0%	2	GA	0	0	8	.5	U	.5	U	.5	U
n-Butylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
p-Chlorotoluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
p-Isopropyltoluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
sec-Butylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
tert-Butylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Semivolatile Organic Compounds														
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.1	U	1.	U	1.	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.1	U	1.	U	1.	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.1	U	1.	U	1.	U
2,4,5-Trichlorophenol	UG/L	0	0%			0	0	8	2.6	U	2.5	U	2.6	U
2,4,6-Trichlorophenol	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
2,4-Dichlorophenol	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.	U
2,4-Dimethylphenol	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
2,4-Dinitrophenol	UG/L	0	0%			0	0	8	2.6	UJ	2.5	UJ	2.6	UJ
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-1		MW11-2		MW11-3	
MATRIX:									GW		GW		GW	
SAMP_ID:									112200		112201		112202	
SAMP. DEPTH TOP:									13		10		9	
SAMP. DEPTH BOT:									13		10		9	
SAMP. DATE:									27-Feb-01		27-Feb-01		27-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.	U
2-Chloronaphthalene	UG/L	0	0%			0	0	8	1.1	UJ	1.	UJ	1.	UJ
2-Chlorophenol	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
2-Methylnaphthalene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
2-Methylphenol	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
2-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.6	U	2.5	U	2.6	U
2-Nitrophenol	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
3,3'-Dichlorobenzidine	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.	U
3-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.6	UJ	2.5	UJ	2.6	UJ
4,6-Dinitro-2-methylphenol	UG/L	0	0%			0	0	8	2.6	UJ	2.5	UJ	2.6	UJ
4-Bromophenyl phenyl ether	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
4-Chloro-3-methylphenol	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
4-Chloroaniline	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.	U
4-Chlorophenyl phenyl ether	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
4-Methylphenol	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
4-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.6	UJ	2.5	UJ	2.6	UJ
4-Nitrophenol	UG/L	0	0%			0	0	8	2.6	UJ	2.5	UJ	2.6	UJ
Acenaphthene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Acenaphthylene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Anthracene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Benzo(a)anthracene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Benzo(a)pyrene	UG/L	0	0%	0	GA	0	0	8	1.1	U	1.	U	1.	U
Benzo(b)fluoranthene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Benzo(ghi)perylene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Benzo(k)fluoranthene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Bis(2-Chloroethoxy)methane	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.	U
Bis(2-Chloroethyl)ether	UG/L	0	0%	1	GA	0	0	8	1.1	U	1.	U	1.	U
Bis(2-Chloroisopropyl)ether	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.	U
Bis(2-Ethylhexyl)phthalate	UG/L	0	0%	5	GA	0	0	8	1.	U	1.1	U	1.	U
Butylbenzylphthalate	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Carbazole	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Chrysene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-1		MW11-2		MW11-3	
MATRIX:									GW		GW		GW	
SAMP_ID:									112200		112201		112202	
SAMP. DEPTH TOP:									13		10		9	
SAMP. DEPTH BOT:									13		10		9	
SAMP. DATE:									27-Feb-01		27-Feb-01		27-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Di-n-butylphthalate	UG/L	0	0%	50	GA	0	0	8	1.1	U	1.	U	1.	U
Di-n-octylphthalate	UG/L	0.072	25%			0	2	8	1.1	U	.072	J	1.	U
Dibenz(a,h)anthracene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Dibenzofuran	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Diethyl phthalate	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Dimethylphthalate	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Fluoranthene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Fluorene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	1.1	U	1.	U	1.	U
Hexachlorobutadiene	UG/L	0	0%	0.5	GA	0	0	8	1.1	UJ	1.	UJ	1.	UJ
Hexachlorocyclopentadiene	UG/L	0	0%	5	GA	0	0	8	1.	UJ	1.1	UJ	1.	UJ
Hexachloroethane	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.	U
Indeno(1,2,3-cd)pyrene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Isophorone	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
N-Nitrosodiphenylamine	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
N-Nitrosodipropylamine	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Naphthalene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	1.1	U	1.	U	1.	U
Pentachlorophenol	UG/L	0	0%	1	GA	0	0	8	2.6	UJ	2.5	UJ	2.6	UJ
Phenanthrene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Phenol	UG/L	0	0%	1	GA	0	0	8	1.1	U	1.	U	1.	U
Pyrene	UG/L	0	0%			0	0	8	1.1	U	1.	U	1.	U
Pesticides/PCBs														
4,4'-DDD	UG/L	0	0%	0.3	GA	0	0	8	.11	U	.11	U	.11	U
4,4'-DDE	UG/L	0	0%	0.2	GA	0	0	8	.11	U	.11	U	.11	U
4,4'-DDT	UG/L	0	0%	0.2	GA	0	0	8	.11	U	.11	U	.11	U
Aldrin	UG/L	0	0%	0	GA	0	0	8	.056	U	.054	U	.057	U
Alpha-BHC	UG/L	0	0%	0.01	GA	0	0	8	.056	U	.054	U	.057	U
Alpha-Chlordane	UG/L	0	0%			0	0	8	.056	U	.054	U	.057	U
Aroclor-1016	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U	1.1	U
Aroclor-1221	UG/L	0	0%	0.09	GA	0	0	8	2.2	U	2.2	U	2.3	U
Aroclor-1232	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U	1.1	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-1		MW11-2		MW11-3	
MATRIX:									GW		GW		GW	
SAMP_ID:									112200		112201		112202	
SAMP. DEPTH TOP:									13		10		9	
SAMP. DEPTH BOT:									13		10		9	
SAMP. DATE:									27-Feb-01		27-Feb-01		27-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Aroclor-1242	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U	1.1	U
Aroclor-1248	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U	1.1	U
Aroclor-1254	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U	1.1	U
Aroclor-1260	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U	1.1	U
Beta-BHC	UG/L	0	0%	0.04	GA	0	0	8	.056	U	.054	U	.057	U
Delta-BHC	UG/L	0	0%	0.04	GA	0	0	8	.056	U	.054	U	.057	U
Dieldrin	UG/L	0	0%	0.004	GA	0	0	8	.11	U	.11	U	.11	U
Endosulfan I	UG/L	0	0%			0	0	8	.056	U	.054	U	.057	U
Endosulfan II	UG/L	0	0%			0	0	8	.11	U	.11	U	.11	U
Endosulfan sulfate	UG/L	0	0%			0	0	8	.11	U	.11	U	.11	U
Endrin	UG/L	0	0%	0	GA	0	0	8	.11	U	.11	U	.11	U
Endrin aldehyde	UG/L	0	0%	5	GA	0	0	8	.11	U	.11	U	.11	U
Endrin ketone	UG/L	0	0%	5	GA	0	0	8	.11	U	.11	U	.11	U
Gamma-BHC/Lindane	UG/L	0	0%	0.05	GA	0	0	8	.056	U	.054	U	.057	U
Gamma-Chlordane	UG/L	0	0%			0	0	8	.056	U	.054	U	.057	U
Heptachlor	UG/L	0	0%	0.04	GA	0	0	8	.056	U	.054	U	.057	U
Heptachlor epoxide	UG/L	0	0%	0.03	GA	0	0	8	.056	U	.054	U	.057	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	.11	U	.11	U	.11	U
Methoxychlor	UG/L	0	0%	35	GA	0	0	8	.56	U	.54	U	.57	U
Toxaphene	UG/L	0	0%	0.06	GA	0	0	8	5.6	U	5.4	U	5.7	U
Explosives														
1,3,5-Trinitrobenzene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
1,3-Dinitrobenzene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2,4,6-Trinitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2-amino-4,6-Dinitrotoluene	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U
3-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
4-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
4-amino-2,6-Dinitrotoluene	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U
HMX	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-1		MW11-2		MW11-3	
MATRIX:									GW		GW		GW	
SAMP_ID:									112200		112201		112202	
SAMP. DEPTH TOP:									13		10		9	
SAMP. DEPTH BOT:									13		10		9	
SAMP. DATE:									27-Feb-01		27-Feb-01		27-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	.25	U	.25	U	.25	U
RDX	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U
Tetryl	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U
Metals														
Aluminum	UG/L	284	88%	50	MCL	5	7	8	**103.**	J	46.7	J	28.4	U
Antimony	UG/L	0	0%	3	GA	0	0	8	2.4	U	2.4	U	2.4	U
Arsenic	UG/L	3.9	88%	5	MCL	0	7	8	2.9	J	2.8	J	3.	J
Barium	UG/L	71.2	100%	1000	GA	0	8	8	30.7	J	50.4	J	39.8	J
Beryllium	UG/L	0	0%	4	MCL	0	0	8	.2	U	.2	U	.2	U
Cadmium	UG/L	0.32	13%	5	GA	0	1	8	.3	U	.3	U	.3	U
Calcium	UG/L	193000	100%			0	8	8	87,800.		106,000.		175,000.	
Chromium	UG/L	1.8	50%	50	GA	0	4	8	.84	J	.96	J	.7	U
Cobalt	UG/L	0	0%			0	0	8	.9	U	.9	U	.9	U
Copper	UG/L	2	25%	200	GA	0	2	8	1.5	UJ	1.5	UJ	1.5	UJ
Cyanide	UG/L	0	0%	200	GA	0	0	8	10.	U	10.	U	10.	U
Iron	UG/L	533	100%	300	GA	1	8	8	181.		107.		42.1	J
Lead	UG/L	2.1	13%	15	MCL	0	1	8	1.6	U	1.6	U	1.6	U
Magnesium	UG/L	35800	100%			0	8	8	24,600.		19,300.		31,500.	
Manganese	UG/L	294	100%	50	SEC	3	8	8	26.2		8.4	J	**63.4**	
Mercury	UG/L	0	0%	0.7	GA	0	0	8	.1	U	.1	U	.1	U
Nickel	UG/L	1.9	38%	100	GA	0	3	8	1.3	U	1.3	U	1.3	U
Potassium	UG/L	6500	100%			0	8	8	2,100.	J	2,850.	J	3,260.	J
Selenium	UG/L	0	0%	10	GA	0	0	8	2.3	UJ	2.3	UJ	2.3	UJ
Silver	UG/L	1.6	50%	50	GA	0	4	8	1.1	U	1.3	J	1.1	U
Sodium	UG/L	28900	100%	20000	GA	2	8	8	4,160.	J	**26,500.**		9,760.	
Thallium	UG/L	4.2	50%	2	MCL	4	4	8	**2.5**	J	**3.3**	J	1.9	U
Vanadium	UG/L	1.3	13%			0	1	8	1.2	U	1.2	U	1.2	U
Zinc	UG/L	33.4	88%	5000	MCL	0	7	8	3.2	J	5.9	J	33.4	

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-4		MW11-5		MW11-6	
MATRIX:									GW		GW		GW	
SAMP_ID:									112203		112204		112205	
SAMP. DEPTH TOP:									11		10		8	
SAMP. DEPTH BOT:									11		10		8	
SAMP. DATE:									27-Feb-01		27-Feb-01		28-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,1,1-Trichloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,1,2-Trichloroethane	UG/L	0	0%	1	GA	0	0	8	.5	U	.5	U	.5	U
1,1-Dichloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,1-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,1-Dichloropropene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,2,3-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,2,3-Trichloropropane	UG/L	0	0%	0.04	GA	0	0	8	.5	U	.5	U	.5	U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,2,4-Trimethylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	GA	0	0	8	.5	U	.5	U	.5	U
1,2-Dibromoethane	UG/L	0	0%	0.0006	GA	0	0	8	.5	U	.5	U	.5	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	.5	U	.5	U	.5	U
1,2-Dichloroethane	UG/L	0	0%	0.6	GA	0	0	8	.5	U	.5	U	.5	U
1,2-Dichloropropane	UG/L	0	0%	1	GA	0	0	8	.5	U	.5	U	.5	U
1,3,5-Trimethylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	.5	U	.5	U	.5	U
1,3-Dichloropropane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	.5	U	.5	U	.5	U
2,2-Dichloropropane	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
2-Chlorotoluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
2-Nitropropane	UG/L	0	0%			0	0	8	25.	U	25.	U	25.	U
Acetone	UG/L	0	0%			0	0	8	5.	U	5.	U	5.	U
Acrylonitrile	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Allyl chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Benzene	UG/L	0	0%	1	GA	0	0	8	.5	U	.5	U	.5	U
Bromobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Bromochloromethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Bromodichloromethane	UG/L	0	0%	80	MCL	0	0	8	.5	U	.5	U	.5	U
Bromoform	UG/L	0	0%	80	MCL	0	0	8	.5	U	.5	U	.5	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-4		MW11-5		MW11-6	
MATRIX:									GW		GW		GW	
SAMP_ID:									112203		112204		112205	
SAMP. DEPTH TOP:									11		10		8	
SAMP. DEPTH BOT:									11		10		8	
SAMP. DATE:									27-Feb-01		27-Feb-01		28-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Butyl chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Carbon disulfide	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Carbon tetrachloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Chloracetonitrile	UG/L	0	0%			0	0	8	25.	U	25.	U	25.	U
Chlorobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Chlorodibromomethane	UG/L	0	0%	80	MCL	0	0	8	.5	U	.5	U	.5	U
Chloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Chloroform	UG/L	0	0%	7	GA	0	0	8	.5	U	.5	U	.5	U
Cis-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	.5	U	.5	U	.5	U
Dichlorodifluoromethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Dichloromethyl methyl ketone	UG/L	0	0%			0	0	8	25.	UR	25.	UR	25.	UR
Ethyl benzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Ethyl ether	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Ethyl methacrylate	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Hexachlorobutadiene	UG/L	0	0%	0.5	GA	0	0	8	.5	U	.5	U	.5	U
Hexachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Isopropylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Meta/Para Xylene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methacrylonitrile	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methyl 2-propenoate	UG/L	0	0%			0	0	8	.5	UJ	.5	UJ	.5	UJ
Methyl Tertbutyl Ether	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Methyl bromide	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methyl butyl ketone	UG/L	0	0%			0	0	8	2.5	U	2.5	U	2.5	U
Methyl chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methyl ethyl ketone	UG/L	0	0%			0	0	8	5.	U	5.	U	5.	U
Methyl iodide	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methyl isobutyl ketone	UG/L	0	0%			0	0	8	2.5	UJ	2.5	UJ	2.5	UJ
Methyl methacrylate	UG/L	0	0%	50	GA	0	0	8	.5	U	.5	U	.5	U
Methylene bromide	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Methylene chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Naphthalene	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-4		MW11-5		MW11-6	
MATRIX:									GW		GW		GW	
SAMP_ID:									112203		112204		112205	
SAMP. DEPTH TOP:									11		10		8	
SAMP. DEPTH BOT:									11		10		8	
SAMP. DATE:									27-Feb-01		27-Feb-01		28-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	25.	UR	25.	UR	25.	UR
Ortho Xylene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Pentachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Propionitrile	UG/L	0	0%			0	0	8	25.	U	25.	U	25.	U
Propylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Styrene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Tetrachloroethene	UG/L	2	38%	5	GA	0	3	8	.5	U	.5	U	2.	
Tetrahydrofuran	UG/L	0	0%			0	0	8	2.5	U	2.5	U	2.5	U
Toluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Total Xylenes	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Trans-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	.5	U	.5	U	.5	U
Trans-1,4-Dichloro-2-butene	UG/L	0	0%			0	0	8	.5	U	.5	U	.5	U
Trichloroethene	UG/L	2.2	38%	5	GA	0	3	8	.64		.5	U	2.2	
Trichlorofluoromethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Vinyl chloride	UG/L	0	0%	2	GA	0	0	8	.5	U	.5	U	.5	U
n-Butylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
p-Chlorotoluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
p-Isopropyltoluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
sec-Butylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
tert-Butylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U	.5	U
Semivolatile Organic Compounds														
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U	1.	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.	U	1.	U	1.	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.	U	1.	U	1.	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.	U	1.	U	1.	U
2,4,5-Trichlorophenol	UG/L	0	0%			0	0	8	2.5	U	2.6	U	2.5	U
2,4,6-Trichlorophenol	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
2,4-Dichlorophenol	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U	1.	U
2,4-Dimethylphenol	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
2,4-Dinitrophenol	UG/L	0	0%			0	0	8	2.5	UJ	2.6	UJ	2.5	UJ
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U	1.	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-4		MW11-5		MW11-6	
MATRIX:									GW		GW		GW	
SAMP_ID:									112203		112204		112205	
SAMP. DEPTH TOP:									11		10		8	
SAMP. DEPTH BOT:									11		10		8	
SAMP. DATE:									27-Feb-01		27-Feb-01		28-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U	1.	U
2-Chloronaphthalene	UG/L	0	0%			0	0	8	1.	UJ	1.	UJ	1.	UJ
2-Chlorophenol	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
2-Methylnaphthalene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
2-Methylphenol	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
2-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.5	U	2.6	U	2.5	U
2-Nitrophenol	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
3,3'-Dichlorobenzidine	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U	1.	U
3-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.5	UJ	2.6	UJ	2.5	UJ
4,6-Dinitro-2-methylphenol	UG/L	0	0%			0	0	8	2.5	UJ	2.6	UJ	2.5	UJ
4-Bromophenyl phenyl ether	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
4-Chloro-3-methylphenol	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
4-Chloroaniline	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U	1.	U
4-Chlorophenyl phenyl ether	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
4-Methylphenol	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
4-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.5	UJ	2.6	UJ	2.5	UJ
4-Nitrophenol	UG/L	0	0%			0	0	8	2.5	UJ	2.6	UJ	2.5	UJ
Acenaphthene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Acenaphthylene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Anthracene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Benzo(a)anthracene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Benzo(a)pyrene	UG/L	0	0%	0	GA	0	0	8	1.	U	1.	U	1.	U
Benzo(b)fluoranthene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Benzo(ghi)perylene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Benzo(k)fluoranthene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Bis(2-Chloroethoxy)methane	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U	1.	U
Bis(2-Chloroethyl)ether	UG/L	0	0%	1	GA	0	0	8	1.	U	1.	U	1.	U
Bis(2-Chloroisopropyl)ether	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U	1.	U
Bis(2-Ethylhexyl)phthalate	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U	1.1	U
Butylbenzylphthalate	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Carbazole	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Chrysene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-4		MW11-5		MW11-6	
MATRIX:									GW		GW		GW	
SAMP_ID:									112203		112204		112205	
SAMP. DEPTH TOP:									11		10		8	
SAMP. DEPTH BOT:									11		10		8	
SAMP. DATE:									27-Feb-01		27-Feb-01		28-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Di-n-butylphthalate	UG/L	0	0%	50	GA	0	0	8	1.	U	1.	U	1.	U
Di-n-octylphthalate	UG/L	0.072	25%			0	2	8	1.	U	1.	U	1.	U
Dibenz(a,h)anthracene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Dibenzofuran	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Diethyl phthalate	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Dimethylphthalate	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Fluoranthene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Fluorene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	1.	U	1.	U	1.	U
Hexachlorobutadiene	UG/L	0	0%	0.5	GA	0	0	8	1.	UJ	1.	UJ	1.	UJ
Hexachlorocyclopentadiene	UG/L	0	0%	5	GA	0	0	8	1.1	UJ	1.	UJ	1.1	UJ
Hexachloroethane	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U	1.	U
Indeno(1,2,3-cd)pyrene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Isophorone	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
N-Nitrosodiphenylamine	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
N-Nitrosodipropylamine	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Naphthalene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	1.	U	1.	U	1.	U
Pentachlorophenol	UG/L	0	0%	1	GA	0	0	8	2.5	UJ	2.6	UJ	2.5	UJ
Phenanthrene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Phenol	UG/L	0	0%	1	GA	0	0	8	1.	U	1.	U	1.	U
Pyrene	UG/L	0	0%			0	0	8	1.	U	1.	U	1.	U
Pesticides/PCBs														
4,4'-DDD	UG/L	0	0%	0.3	GA	0	0	8	.11	U	.1	U	.11	U
4,4'-DDE	UG/L	0	0%	0.2	GA	0	0	8	.11	U	.1	U	.11	U
4,4'-DDT	UG/L	0	0%	0.2	GA	0	0	8	.11	U	.1	U	.11	U
Aldrin	UG/L	0	0%	0	GA	0	0	8	.057	U	.05	U	.053	U
Alpha-BHC	UG/L	0	0%	0.01	GA	0	0	8	.057	U	.05	U	.053	U
Alpha-Chlordane	UG/L	0	0%			0	0	8	.057	U	.05	U	.053	U
Aroclor-1016	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.	U	1.1	U
Aroclor-1221	UG/L	0	0%	0.09	GA	0	0	8	2.3	U	2.	U	2.1	U
Aroclor-1232	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.	U	1.1	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-4		MW11-5		MW11-6	
MATRIX:									GW		GW		GW	
SAMP_ID:									112203		112204		112205	
SAMP. DEPTH TOP:									11		10		8	
SAMP. DEPTH BOT:									11		10		8	
SAMP. DATE:									27-Feb-01		27-Feb-01		28-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Aroclor-1242	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.	U	1.1	U
Aroclor-1248	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.	U	1.1	U
Aroclor-1254	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.	U	1.1	U
Aroclor-1260	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.	U	1.1	U
Beta-BHC	UG/L	0	0%	0.04	GA	0	0	8	.057	U	.05	U	.053	U
Delta-BHC	UG/L	0	0%	0.04	GA	0	0	8	.057	U	.05	U	.053	U
Dieldrin	UG/L	0	0%	0.004	GA	0	0	8	.11	U	.1	U	.11	U
Endosulfan I	UG/L	0	0%			0	0	8	.057	U	.05	U	.053	U
Endosulfan II	UG/L	0	0%			0	0	8	.11	U	.1	U	.11	U
Endosulfan sulfate	UG/L	0	0%			0	0	8	.11	U	.1	U	.11	U
Endrin	UG/L	0	0%	0	GA	0	0	8	.11	U	.1	U	.11	U
Endrin aldehyde	UG/L	0	0%	5	GA	0	0	8	.11	U	.1	U	.11	U
Endrin ketone	UG/L	0	0%	5	GA	0	0	8	.11	U	.1	U	.11	U
Gamma-BHC/Lindane	UG/L	0	0%	0.05	GA	0	0	8	.057	U	.05	U	.053	U
Gamma-Chlordane	UG/L	0	0%			0	0	8	.057	U	.05	U	.053	U
Heptachlor	UG/L	0	0%	0.04	GA	0	0	8	.057	U	.05	U	.053	U
Heptachlor epoxide	UG/L	0	0%	0.03	GA	0	0	8	.057	U	.05	U	.053	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	.11	U	.1	U	.11	U
Methoxychlor	UG/L	0	0%	35	GA	0	0	8	.57	U	.5	U	.53	U
Toxaphene	UG/L	0	0%	0.06	GA	0	0	8	5.7	U	5.	U	5.3	U
Explosives														
1,3,5-Trinitrobenzene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
1,3-Dinitrobenzene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2,4,6-Trinitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
2-amino-4,6-Dinitrotoluene	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U
3-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
4-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U	.25	U
4-amino-2,6-Dinitrotoluene	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U
HMX	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U

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SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11		SEAD-11	
LOCATION ID:									MW11-4		MW11-5		MW11-6	
MATRIX:									GW		GW		GW	
SAMP_ID:									112203		112204		112205	
SAMP. DEPTH TOP:									11		10		8	
SAMP. DEPTH BOT:									11		10		8	
SAMP. DATE:									27-Feb-01		27-Feb-01		28-Feb-01	
QC CODE:									SA		SA		SA	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER						
			OF	GW	GW	ABOVE	OF	OF						
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)	Value	(Q)
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	.25	U	.25	U	.25	U
RDX	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U
Tetryl	UG/L	0	0%			0	0	8	.25	U	.25	U	.25	U
Metals														
Aluminum	UG/L	284	88%	50	MCL	5	7	8	**52.8**	J	**284.**		46.4	J
Antimony	UG/L	0	0%	3	GA	0	0	8	2.4	U	2.4	U	2.4	U
Arsenic	UG/L	3.9	88%	5	MCL	0	7	8	3.1	J	2.5	U	3.9	J
Barium	UG/L	71.2	100%	1000	GA	0	8	8	55.1	J	71.2	J	41.1	J
Beryllium	UG/L	0	0%	4	MCL	0	0	8	.2	U	.2	U	.2	U
Cadmium	UG/L	0.32	13%	5	GA	0	1	8	.3	U	.3	U	.3	U
Calcium	UG/L	193000	100%			0	8	8	104,000.		117,000.		184,000.	
Chromium	UG/L	1.8	50%	50	GA	0	4	8	1.3	J	1.8	J	.7	U
Cobalt	UG/L	0	0%			0	0	8	.9	U	.9	U	.9	U
Copper	UG/L	2	25%	200	GA	0	2	8	1.7	J	2.	J	1.5	UJ
Cyanide	UG/L	0	0%	200	GA	0	0	8	10.	U	10.	U	10.	U
Iron	UG/L	533	100%	300	GA	1	8	8	85.7	J	**533.**		95.1	J
Lead	UG/L	2.1	13%	15	MCL	0	1	8	1.6	U	1.6	U	1.6	U
Magnesium	UG/L	35800	100%			0	8	8	16,900.		21,600.		33,200.	
Manganese	UG/L	294	100%	50	SEC	3	8	8	5.1	J	**182.**		6.7	J
Mercury	UG/L	0	0%	0.7	GA	0	0	8	.1	U	.1	U	.1	U
Nickel	UG/L	1.9	38%	100	GA	0	3	8	1.3	U	1.8	J	1.3	U
Potassium	UG/L	6500	100%			0	8	8	3,370.	J	4,050.	J	6,080.	
Selenium	UG/L	0	0%	10	GA	0	0	8	2.3	UJ	2.3	U	2.3	UJ
Silver	UG/L	1.6	50%	50	GA	0	4	8	1.6	J	1.5	J	1.6	J
Sodium	UG/L	28900	100%	20000	GA	2	8	8	13,000.		**28,900.**		9,060.	
Thallium	UG/L	4.2	50%	2	MCL	4	4	8	**2.6**	J	1.9	U	**4.2**	J
Vanadium	UG/L	1.3	13%			0	1	8	1.2	U	1.3	J	1.2	U
Zinc	UG/L	33.4	88%	5000	MCL	0	7	8	2.2	J	13.5	J	.8	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID:									MW11-7		MW11-6	
MATRIX:									GW		GW	
SAMP_ID:									112206		112207	
SAMP. DEPTH TOP:									7.2		8	
SAMP. DEPTH BOT:									7.2		8	
SAMP. DATE:									27-Feb-01		28-Feb-01	
QC CODE:									SA		DU	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER				
			OF	GW	GW	ABOVE	OF	OF				
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,1,1-Trichloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,1,2,2-Tetrachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,1,2-Trichloroethane	UG/L	0	0%	1	GA	0	0	8	.5	U	.5	U
1,1-Dichloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,1-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,1-Dichloropropene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,2,3-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,2,3-Trichloropropane	UG/L	0	0%	0.04	GA	0	0	8	.5	U	.5	U
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,2,4-Trimethylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,2-Dibromo-3-chloropropane	UG/L	0	0%	0.04	GA	0	0	8	.5	U	.5	U
1,2-Dibromoethane	UG/L	0	0%	0.0006	GA	0	0	8	.5	U	.5	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	.5	U	.5	U
1,2-Dichloroethane	UG/L	0	0%	0.6	GA	0	0	8	.5	U	.5	U
1,2-Dichloropropane	UG/L	0	0%	1	GA	0	0	8	.5	U	.5	U
1,3,5-Trimethylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	.5	U	.5	U
1,3-Dichloropropane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	.5	U	.5	U
2,2-Dichloropropane	UG/L	0	0%			0	0	8	.5	U	.5	U
2-Chlorotoluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
2-Nitropropane	UG/L	0	0%			0	0	8	25.	U	25.	U
Acetone	UG/L	0	0%			0	0	8	5.	U	5.	U
Acrylonitrile	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Allyl chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Benzene	UG/L	0	0%	1	GA	0	0	8	.5	U	.5	U
Bromobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Bromochloromethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Bromodichloromethane	UG/L	0	0%	80	MCL	0	0	8	.5	U	.5	U
Bromoform	UG/L	0	0%	80	MCL	0	0	8	.5	U	.5	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID:									MW11-7		MW11-6	
MATRIX:									GW		GW	
SAMP_ID:									112206		112207	
SAMP. DEPTH TOP:									7.2		8	
SAMP. DEPTH BOT:									7.2		8	
SAMP. DATE:									27-Feb-01		28-Feb-01	
QC CODE:									SA		DU	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER				
			OF	GW	GW	ABOVE	OF	OF				
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)
Butyl chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Carbon disulfide	UG/L	0	0%			0	0	8	.5	U	.5	U
Carbon tetrachloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Chloracetonitrile	UG/L	0	0%			0	0	8	25.	U	25.	U
Chlorobenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Chlorodibromomethane	UG/L	0	0%	80	MCL	0	0	8	.5	U	.5	U
Chloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Chloroform	UG/L	0	0%	7	GA	0	0	8	.5	U	.5	U
Cis-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Cis-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	.5	U	.5	U
Dichlorodifluoromethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Dichloromethyl methyl ketone	UG/L	0	0%			0	0	8	25.	UR	25.	UR
Ethyl benzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Ethyl ether	UG/L	0	0%			0	0	8	.5	U	.5	U
Ethyl methacrylate	UG/L	0	0%			0	0	8	.5	U	.5	U
Hexachlorobutadiene	UG/L	0	0%	0.5	GA	0	0	8	.5	U	.5	U
Hexachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Isopropylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Meta/Para Xylene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Methacrylonitrile	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Methyl 2-propenoate	UG/L	0	0%			0	0	8	.5	UJ	.5	UJ
Methyl Tertbutyl Ether	UG/L	0	0%			0	0	8	.5	U	.5	U
Methyl bromide	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Methyl butyl ketone	UG/L	0	0%			0	0	8	2.5	U	2.5	UJ
Methyl chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Methyl ethyl ketone	UG/L	0	0%			0	0	8	5.	U	5.	U
Methyl iodide	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Methyl isobutyl ketone	UG/L	0	0%			0	0	8	2.5	UJ	2.5	U
Methyl methacrylate	UG/L	0	0%	50	GA	0	0	8	.5	U	.5	U
Methylene bromide	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Methylene chloride	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Naphthalene	UG/L	0	0%			0	0	8	.5	U	.5	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID:									MW11-7		MW11-6	
MATRIX:									GW		GW	
SAMP_ID:									112206		112207	
SAMP. DEPTH TOP:									7.2		8	
SAMP. DEPTH BOT:									7.2		8	
SAMP. DATE:									27-Feb-01		28-Feb-01	
QC CODE:									SA		DU	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER				
			OF	GW	GW	ABOVE	OF	OF				
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	25.	UR	25.	UR
Ortho Xylene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Pentachloroethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Propionitrile	UG/L	0	0%			0	0	8	25.	U	25.	U
Propylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Styrene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Tetrachloroethene	UG/L	2	38%	5	GA	0	3	8	.42	J	1.9	
Tetrahydrofuran	UG/L	0	0%			0	0	8	2.5	U	2.5	U
Toluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Total Xylenes	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Trans-1,2-Dichloroethene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Trans-1,3-Dichloropropene	UG/L	0	0%	0.4	GA	0	0	8	.5	U	.5	U
Trans-1,4-Dichloro-2-butene	UG/L	0	0%			0	0	8	.5	U	.5	U
Trichloroethene	UG/L	2.2	38%	5	GA	0	3	8	.5	U	2.2	
Trichlorofluoromethane	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Vinyl chloride	UG/L	0	0%	2	GA	0	0	8	.5	U	.5	U
n-Butylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
p-Chlorotoluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
p-Isopropyltoluene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
sec-Butylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
tert-Butylbenzene	UG/L	0	0%	5	GA	0	0	8	.5	U	.5	U
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U
1,2-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.1	U	1.	U
1,3-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.1	U	1.	U
1,4-Dichlorobenzene	UG/L	0	0%	3	GA	0	0	8	1.1	U	1.	U
2,4,5-Trichlorophenol	UG/L	0	0%			0	0	8	2.8	U	2.5	U
2,4,6-Trichlorophenol	UG/L	0	0%			0	0	8	1.1	U	1.	U
2,4-Dichlorophenol	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U
2,4-Dimethylphenol	UG/L	0	0%			0	0	8	1.1	U	1.	U
2,4-Dinitrophenol	UG/L	0	0%			0	0	8	2.8	UJ	2.5	UJ
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID:									MW11-7		MW11-6	
MATRIX:									GW		GW	
SAMP_ID:									112206		112207	
SAMP. DEPTH TOP:									7.2		8	
SAMP. DEPTH BOT:									7.2		8	
SAMP. DATE:									27-Feb-01		28-Feb-01	
QC CODE:									SA		DU	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER				
			OF	GW	GW	ABOVE	OF	OF				
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U
2-Chloronaphthalene	UG/L	0	0%			0	0	8	1.1	UJ	1.	UJ
2-Chlorophenol	UG/L	0	0%			0	0	8	1.1	U	1.	U
2-Methylnaphthalene	UG/L	0	0%			0	0	8	1.1	U	1.	U
2-Methylphenol	UG/L	0	0%			0	0	8	1.1	U	1.	U
2-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.8	U	2.5	U
2-Nitrophenol	UG/L	0	0%			0	0	8	1.1	U	1.	U
3,3'-Dichlorobenzidine	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U
3-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.8	UJ	2.5	UJ
4,6-Dinitro-2-methylphenol	UG/L	0	0%			0	0	8	2.8	UJ	2.5	UJ
4-Bromophenyl phenyl ether	UG/L	0	0%			0	0	8	1.1	U	1.	U
4-Chloro-3-methylphenol	UG/L	0	0%			0	0	8	1.1	U	1.	U
4-Chloroaniline	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U
4-Chlorophenyl phenyl ether	UG/L	0	0%			0	0	8	1.1	U	1.	U
4-Methylphenol	UG/L	0	0%			0	0	8	1.1	U	1.	U
4-Nitroaniline	UG/L	0	0%	5	GA	0	0	8	2.8	UJ	2.5	UJ
4-Nitrophenol	UG/L	0	0%			0	0	8	2.8	UJ	2.5	UJ
Acenaphthene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Acenaphthylene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Anthracene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Benzo(a)anthracene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Benzo(a)pyrene	UG/L	0	0%	0	GA	0	0	8	1.1	U	1.	U
Benzo(b)fluoranthene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Benzo(ghi)perylene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Benzo(k)fluoranthene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Bis(2-Chloroethoxy)methane	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U
Bis(2-Chloroethyl)ether	UG/L	0	0%	1	GA	0	0	8	1.1	U	1.	U
Bis(2-Chloroisopropyl)ether	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U
Bis(2-Ethylhexyl)phthalate	UG/L	0	0%	5	GA	0	0	8	1.	U	1.	U
Butylbenzylphthalate	UG/L	0	0%			0	0	8	1.1	U	1.	U
Carbazole	UG/L	0	0%			0	0	8	1.1	U	1.	U
Chrysene	UG/L	0	0%			0	0	8	1.1	U	1.	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID:									MW11-7		MW11-6	
MATRIX:									GW		GW	
SAMP_ID:									112206		112207	
SAMP. DEPTH TOP:									7.2		8	
SAMP. DEPTH BOT:									7.2		8	
SAMP. DATE:									27-Feb-01		28-Feb-01	
QC CODE:									SA		DU	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER				
			OF	GW	GW	ABOVE	OF	OF				
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)
Di-n-butylphthalate	UG/L	0	0%	50	GA	0	0	8	1.1	U	1.	U
Di-n-octylphthalate	UG/L	0.072	25%			0	2	8	1.1	U	.062	J
Dibenz(a,h)anthracene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Dibenzofuran	UG/L	0	0%			0	0	8	1.1	U	1.	U
Diethyl phthalate	UG/L	0	0%			0	0	8	1.1	U	1.	U
Dimethylphthalate	UG/L	0	0%			0	0	8	1.1	U	1.	U
Fluoranthene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Fluorene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	1.1	U	1.	U
Hexachlorobutadiene	UG/L	0	0%	0.5	GA	0	0	8	1.1	UJ	1.	UJ
Hexachlorocyclopentadiene	UG/L	0	0%	5	GA	0	0	8	1.	UJ	1.	UJ
Hexachloroethane	UG/L	0	0%	5	GA	0	0	8	1.1	U	1.	U
Indeno(1,2,3-cd)pyrene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Isophorone	UG/L	0	0%			0	0	8	1.1	U	1.	U
N-Nitrosodiphenylamine	UG/L	0	0%			0	0	8	1.1	U	1.	U
N-Nitrosodipropylamine	UG/L	0	0%			0	0	8	1.1	U	1.	U
Naphthalene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	1.1	U	1.	U
Pentachlorophenol	UG/L	0	0%	1	GA	0	0	8	2.8	UJ	2.5	UJ
Phenanthrene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Phenol	UG/L	0	0%	1	GA	0	0	8	1.1	U	1.	U
Pyrene	UG/L	0	0%			0	0	8	1.1	U	1.	U
Pesticides/PCBs												
4,4'-DDD	UG/L	0	0%	0.3	GA	0	0	8	.11	U	.11	U
4,4'-DDE	UG/L	0	0%	0.2	GA	0	0	8	.11	U	.11	U
4,4'-DDT	UG/L	0	0%	0.2	GA	0	0	8	.11	U	.11	U
Aldrin	UG/L	0	0%	0	GA	0	0	8	.054	U	.055	U
Alpha-BHC	UG/L	0	0%	0.01	GA	0	0	8	.054	U	.055	U
Alpha-Chlordane	UG/L	0	0%			0	0	8	.054	U	.055	U
Aroclor-1016	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U
Aroclor-1221	UG/L	0	0%	0.09	GA	0	0	8	2.2	U	2.2	U
Aroclor-1232	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID:									MW11-7		MW11-6	
MATRIX:									GW		GW	
SAMP_ID:									112206		112207	
SAMP. DEPTH TOP:									7.2		8	
SAMP. DEPTH BOT:									7.2		8	
SAMP. DATE:									27-Feb-01		28-Feb-01	
QC CODE:									SA		DU	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER				
			OF	GW	GW	ABOVE	OF	OF				
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)
Aroclor-1242	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U
Aroclor-1248	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U
Aroclor-1254	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U
Aroclor-1260	UG/L	0	0%	0.09	GA	0	0	8	1.1	U	1.1	U
Beta-BHC	UG/L	0	0%	0.04	GA	0	0	8	.054	U	.055	U
Delta-BHC	UG/L	0	0%	0.04	GA	0	0	8	.054	U	.055	U
Dieldrin	UG/L	0	0%	0.004	GA	0	0	8	.11	U	.11	U
Endosulfan I	UG/L	0	0%			0	0	8	.054	U	.055	U
Endosulfan II	UG/L	0	0%			0	0	8	.11	U	.11	U
Endosulfan sulfate	UG/L	0	0%			0	0	8	.11	U	.11	U
Endrin	UG/L	0	0%	0	GA	0	0	8	.11	U	.11	U
Endrin aldehyde	UG/L	0	0%	5	GA	0	0	8	.11	U	.11	U
Endrin ketone	UG/L	0	0%	5	GA	0	0	8	.11	U	.11	U
Gamma-BHC/Lindane	UG/L	0	0%	0.05	GA	0	0	8	.054	U	.055	U
Gamma-Chlordane	UG/L	0	0%			0	0	8	.054	U	.055	U
Heptachlor	UG/L	0	0%	0.04	GA	0	0	8	.054	U	.055	U
Heptachlor epoxide	UG/L	0	0%	0.03	GA	0	0	8	.054	U	.055	U
Hexachlorobenzene	UG/L	0	0%	0.04	GA	0	0	8	.11	U	.11	U
Methoxychlor	UG/L	0	0%	35	GA	0	0	8	.54	U	.55	U
Toxaphene	UG/L	0	0%	0.06	GA	0	0	8	5.4	U	5.5	U
Explosives												
1,3,5-Trinitrobenzene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U
1,3-Dinitrobenzene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U
2,4,6-Trinitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U
2,4-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U
2,6-Dinitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U
2-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U
2-amino-4,6-Dinitrotoluene	UG/L	0	0%			0	0	8	.25	U	.25	U
3-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U
4-Nitrotoluene	UG/L	0	0%	5	GA	0	0	8	.25	U	.25	U
4-amino-2,6-Dinitrotoluene	UG/L	0	0%			0	0	8	.25	U	.25	U
HMX	UG/L	0	0%			0	0	8	.25	U	.25	U

Table A-3
SEAD-11 Groundwater Data
Round 2 - February 2001
Seneca Army Depot Activity

FACILITY									SEAD-11		SEAD-11	
LOCATION ID:									MW11-7		MW11-6	
MATRIX:									GW		GW	
SAMP_ID:									112206		112207	
SAMP. DEPTH TOP:									7.2		8	
SAMP. DEPTH BOT:									7.2		8	
SAMP. DATE:									27-Feb-01		28-Feb-01	
QC CODE:									SA		DU	
STUDY ID:									SEAD-11 EECA		SEAD-11 EECA	
			FREQUENCY	LOWEST	APPLICABLE	NUMBER	NUMBER	NUMBER				
			OF	GW	GW	ABOVE	OF	OF				
PARAMETER	UNIT	MAXIMUM	DETECTION	STANDARD	STANDARD	STANDARD	DETECTS	ANALYSES	Value	(Q)	Value	(Q)
Nitrobenzene	UG/L	0	0%	0.4	GA	0	0	8	.25	U	.25	U
RDX	UG/L	0	0%			0	0	8	.25	U	.25	U
Tetryl	UG/L	0	0%			0	0	8	.25	U	.25	U
Metals												
Aluminum	UG/L	284	88%	50	MCL	5	7	8	**165.**	J	**73.5**	J
Antimony	UG/L	0	0%	3	GA	0	0	8	2.4	U	2.4	U
Arsenic	UG/L	3.9	88%	5	MCL	0	7	8	3.8	J	3.4	J
Barium	UG/L	71.2	100%	1000	GA	0	8	8	39.6	J	43.9	J
Beryllium	UG/L	0	0%	4	MCL	0	0	8	.2	U	.2	U
Cadmium	UG/L	0.32	13%	5	GA	0	1	8	.3	U	.32	J
Calcium	UG/L	193000	100%			0	8	8	193,000.		192,000.	
Chromium	UG/L	1.8	50%	50	GA	0	4	8	.7	U	.7	U
Cobalt	UG/L	0	0%			0	0	8	.9	U	.9	U
Copper	UG/L	2	25%	200	GA	0	2	8	1.5	UJ	1.5	UJ
Cyanide	UG/L	0	0%	200	GA	0	0	8	10.	U	10.	U
Iron	UG/L	533	100%	300	GA	1	8	8	245.		135.	
Lead	UG/L	2.1	13%	15	MCL	0	1	8	1.6	U	2.1	J
Magnesium	UG/L	35800	100%			0	8	8	35,800.		34,600.	
Manganese	UG/L	294	100%	50	SEC	3	8	8	**294.**		7.2	J
Mercury	UG/L	0	0%	0.7	GA	0	0	8	.1	U	.1	U
Nickel	UG/L	1.9	38%	100	GA	0	3	8	1.9	J	1.4	J
Potassium	UG/L	6500	100%			0	8	8	3,150.	J	6,500.	
Selenium	UG/L	0	0%	10	GA	0	0	8	2.3	UJ	2.3	UJ
Silver	UG/L	1.6	50%	50	GA	0	4	8	1.1	U	1.1	U
Sodium	UG/L	28900	100%	20000	GA	2	8	8	13,300.		9,680.	
Thallium	UG/L	4.2	50%	2	MCL	4	4	8	1.9	U	1.9	U
Vanadium	UG/L	1.3	13%			0	1	8	1.2	U	1.2	U
Zinc	UG/L	33.4	88%	5000	MCL	0	7	8	2.1	J	1.1	J

ATTACHMENT B

Table B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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 B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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 B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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 B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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 B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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 B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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 B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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:
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Table B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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.
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Table B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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:
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Table B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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:
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Shaded cells with bolded text indicates TAGM value exceeded.

Table B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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 B-1
ALL BACKGROUND METALS DATA IN SOILS AT SEDA
Decision Document - SEAD-11
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 B-2
GROUNDWATER BACKGROUND DATA
DECISION DOCUMENT - SEAD-11
SENECA ARMY DEPOT

									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 B-2
GROUNDWATER BACKGROUND DATA
DECISION DOCUMENT - SEAD-11
SENECA ARMY DEPOT

									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 OF	CRITERIA	TYPE OF	NUMBER OF	NUMBER OF	NUMBER OF	16101		16152		16108		16171	
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	**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 B-2
GROUNDWATER BACKGROUND DATA
DECISION DOCUMENT - SEAD-11
SENECA ARMY DEPOT

									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 B-2
GROUNDWATER BACKGROUND DATA
DECISION DOCUMENT - SEAD-11
SENECA ARMY DEPOT

									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 OF	CRITERIA	TYPE OF	NUMBER OF	NUMBER OF	NUMBER OF	MW4-1-1		MW44A-1-1		MW44B-1-1		MW57-1-1	
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	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 B-2
GROUNDWATER BACKGROUND DATA
DECISION DOCUMENT - SEAD-11
SENECA ARMY DEPOT

									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		TYPE	NUMBER	NUMBER	NUMBER	MW58-1-1		MW64A-1-1(		MW64B-1-1(		MW64C-9-1		MW64D-1-1	
PARAMETER	UNIT	MAXIMUM	OF DETECTION	CRITERIA VALUE	OF CRITERIA	OF EXCEEDENCES	OF DETECTS	OF 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 B-2
GROUNDWATER BACKGROUND DATA
DECISION DOCUMENT - SEAD-11
SENECA ARMY DEPOT

									PT-10		MW24-1		MW45-4		MW60-1	
STUDY ID:									RI PHASE2		ESI		QUARTERLY		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:									GROUNDWA		GROUNDWA		GROUNDWA		GROUNDWA	
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 B-2
GROUNDWATER BACKGROUND DATA
DECISION DOCUMENT - SEAD-11
SENECA ARMY DEPOT

									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)

ATTACHMENT C
Detailed Cost Estimate

- List of Assumptions used in Cost Estimates
- MCACES Cost Estimate for SEAD-11 – Excavation/Off-Site Disposal
- MCACES Cost Estimate for SEAD-11 – Annual Monitoring Costs

Attachment C
Seneca Army Depot Activity
SEAD-11 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 SEAD-11. The cost estimate was developed using the recommended Removal Action outlined in Section 3.3 of this Decision Document. Quantities used were based on figures presented in Section 4. 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.

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 4 acres of land at SEAD-11 will require light clearing and grubbing.
- 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 site.
- A surveyor will be on site for approximately 10 days to layout the excavation area and survey record information.
- In situ volumes of material are based on the areas and proposed excavation depths shown in Figure 3-1 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-11, the total in situ volume of soil is estimated to be 36,300 cubic yards in the landfill area. 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 51,910 cubic yards.
- Cleanup verification sampling of the soil will be conducted at a frequency of one sample every 900 square feet as agreed upon with the regulatory agencies for this site.
- 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 polyethylene liner. 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. 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 10 percent of the material from SEAD-11 will fail the TCLP test and will require stabilization prior to off-site disposal.
- Based on the soil data from SEAD-11, it was assumed that 64 percent of the excavated soil (26,350 tons) will have concentrations above TAGM #4046 Recommended Soil Cleanup Objectives and will require off-site disposal.

- Cost estimates were developed for the site based on removing geophysical anomalies and remediating soils with pesticides and metals greater than the TAGM #4046 Soil Cleanup Objectives.

Operation and Maintenance (O & M)

In the case that New York Codes, Rules, and Regulations (NYCRR) Part 360 becomes applicable, an annual O&M cost of $10,000 has been estimated to cover routine maintenance and monitoring of the two-foot vegetative cover.

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 Army for implementing 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 (i.e., the Army).

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

- Five percent 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 percent 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 percent 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 percent 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-11
EXCAVATION/OFF-SITE DISPOSAL
EPA Soil Screening Levels for
Terrestrial Animals

Designed By: Parsons ES
Estimated By: Parsons ES

Prepared By: Parsons ES

Preparation Date: 06/20/01
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 the excavation/off site disposal alternative.

Off-Site Disposal: Excavate/Off-site Disposal
- Mobilize, site prep, clear/grub, erosion control, and survey
- Excavate soils in the Landfill.
- Screen excavated soils to remove debris and drums.
- 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 > EPA SSLs at off site landfill.
- Backfill excavations with excavated soils with concentrations < SSLs.
- Cover former landfill
- Demobilize
- Ground water monitoring for 5 years (costed separately)

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%

33.01. 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 1.40/150 = 215 x 1.2 = 260 samples									
HTW AA For Disposal: TCLP, volatile organics (SW-846 Methods 1311&8240), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy)	415.00	EA	0	0	0	0	49,800	49,800	120.00
AFH AA For Disposal: TCLP-SVOCs (SW-846 Methods 1311 & 8270A), soil (Severn Trent Lab, 9/99) (Assume 1 sample every 150cy)	415.00	EA	0	0	0	0	95,450	95,450	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)	415.00	EA	0	0	0	0	49,800	49,800	120.00
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.	47.00	EA	0	0	0	0	8,225	8,225	175.00

33.02. Sampling, & Testing	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
AFH AA Confirmatory: NYSDEC CLP-SVOCs , soil (Severn Trent Lab, 9/99) (Assume 1 sample every 50 ft of wall and floor of excavation.	47.00	EA	0	0	0	0	17,390	17,390	370.00
AFH AA Confirmatory: NYSDEC CLP TAL - Metals , soil (Severn Trent	47.00	EA	0	0	0	0	7,285	7,285	155.00
33.03. Site Work									
33.03.02. Clearing and Grubbing									
AF AA Clearing, brush w/dozer & brush rake, light brush	4.00	ACR	64	1,731	2,516	0	0	4,246	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 - staked	16000	LF	5	2,720	0	17,120	0	19,840	1.24
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									
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

..07. Air Stripping	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
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 the entire landfill at SEAD-11									
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 soi l	51910	CY	0	0	0	0	1,038,200	1,038,200	20.00
(volumes used for estimate are									
USR AA Plastic sheeting for ground: polyethylene liner (1000sf	865170	SF	0	0	0	74,059	0	74,059	0.09
USR AA Cover stockpiles w/ plastic sheeting: Plastic sheeting: polyethylene liner (1000sf / roll; 1 roll = $75)	865170	SF	0	0	0	74,059	0	74,059	0.09
MIL AA Loam or topsoil, furnish & place, imported, 6" deep	17025	CY	1,502	45,457	23,665	332,091	0	401,213	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.	0.01	TON	0	0	0	0	0	0	4.65
AF AA Fill, spread borrow w/dozer	18690	CY	224	6,728	12,149	0	0	18,877	1.01
AF Compaction, steel wheel tandem roller, 5 ton	18690	CY	133	3,925	3,364	0	0	7,289	0.39
RSM AA Seeding, athletic field mix, 8#/MSFpush spreader	174.00	MSF	174	4,399	0	7,745	0	12,144	69.79
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. Soil Remediation	QUANTY	UOM	MANHOUR	LABOR	EQUIPMNT	MATERIAL	SUBCONTR	TOTAL COST	UNIT COST
33.10.06. Disposal: Disposal and Transportation of drums to hazardous waste landfill; disposal of debris and soil in solid waste landfill; treatment of and disposal of soils exceeding TCLP in haz. waste facility.									
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,	5990.00	TON	0	0	0	0	188,685	188,685	31.50
HTW AA Soils: Transport and Dispose nonhaz waste, bulk (Earthwatch, 7/00)	26350	TON	0	0	0	0	830,025	830,025	31.50
HTW AA Soils: Transport and Dispose haz waste, bulk (Earthwatch, 7/00)	5990.00	TON	0	0	0	0	658,900	658,900	110.00
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-11			5,961	464,834	65,317	641,810	2,955,606	4,127,568	

	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	269,440	5,390	8,240	70,770	12,380	29,300	395,520	395521.99
33.02.13 Confirmatory-Soil	1.00 EA	45,450	910	1,390	11,940	2,090	4,940	66,710	66714.55
TOTAL Sampling, & Testi	1.00 EA	329,390	6,590	10,080	86,510	15,140	35,820	483,530	483528.42
33.03 Site Work									
33.03.02 Clearing and Grub	4.00 ACR	5,870	120	180	1,540	270	640	8,610	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	245,580	4,910	7,510	64,500	11,290	26,700	360,500	360504.24
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	2,243,120	44,860	68,640	589,160	103,100	243,910	3,292,790	3292793.85
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	2,325,420	46,510	71,160	610,770	106,880	252,860	3,413,600	3413596.03
TOTAL Soil Remediation	1.00 EA	4,573,420	91,470	139,950	1,201,210	210,210	497,300	6,713,560	6713560.17
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	5,698,960	113,980	174,390	1,496,830	261,950	619,690	8,365,790	8365792.23

ATTACHMENT D
Test Pit Reports

ATTACHMENT D
Test Pit Reports

TEST PIT REPORT

ENGINEERING-SCIENCE, INC.	CLIENT: SEAD	TEST PIT #: TP11-1
PROJECT: SEAD 3 SWMU INVESTIGATION LOCATION: SEAD 11		JOB NUMBER: 720978-0100 EST. GROUND ELEV. INSPECTOR: JWC CONTRACTOR: ES/WXB START DATE: 11/20/93 COMPLETION DATE: 11/20/93 CHECKED BY: DATE CHECKED:

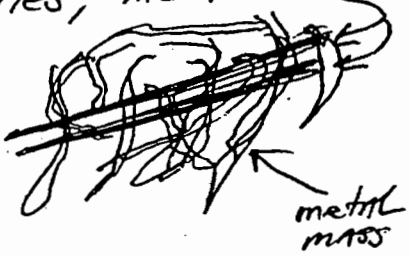
TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION/SHORING METHOD
8'	4'	4'4"	BACKHOE

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
OVM-580B	10.8	—	11/20/93 11:10
LEL/O2/H2S		NORMAL	11/24/93 "
RADIATION		—	11/20/93 11:15

QA/QC DUPLICATE SAMPLE: YES or NO
Duplicate Sample Number:
MRD Sample Number:
QA/QC Rinsate Sample Number:
COMMENTS: [15] 3 LOCATION DEPTHS

SCALE (FT)	VOC/ RAD.	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA SCHEMATIC	DESCRIPTION OF MATERIALS (BURMEISTER METHODOLOGY)	REMARKS
1		1	0-8"		TOPSOIL, FILL TOPSOIL w/definite SCRAP METAL FILL Cobbweb metal., SCRAPS, Bottles, metal RODS*  	★ ANOMALY determination metal RODS which were entangled in A BALL of WEBBED METAL
2						
3		2	3'4"			
4					FILL MATERIAL w/SHALE FRAGMENTS interbedded	
		3	4'+		NATURAL MATERIAL CLASTIC TILL (DARK GREY Bottom of TEST PIT	
5						

SEE MASTER ACRONYM LIST FOR COMPLETE LISTING OF ABBREVIATIONS TEST PIT #: TP11-1

TEST PIT REPORT

ENGINEERING–SCIENCE, INC.	CLIENT: SEAD	TEST PIT #: TP11-2
PROJECT: SENECA 10 SWMU INVESTIGATION		JOB NUMBER: 720478-01000
LOCATION:		EST. GROUND ELEV.
		INSPECTOR: JWC
		CONTRACTOR: ES/UXB
		START DATE: 11/19/93
		COMPLETION DATE: 11/20/93
		CHECKED BY:
		DATE CHECKED:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION/SHORING METHOD
15'	4'6"	8'6"	BACKHOE

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
OVM-580B	10 eV	ø	11/19/93 1:30
LEL/O2/H_2S			" "

COMMENTS:

SEAD-11 LANDFILL INVESTIGATION

TOTAL SAMPLES: [15] 3 LOCATIONS (DEPTHS)

SCALE (FT)	VOC/RAD.	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA SCHEMATIC	DESCRIPTION OF MATERIALS (BURMEISTER METHODOLOGY)	REMARKS
	ø				TOPSOIL W/FOREIGN MATERIAL METAL PIECES	
1	ø	FULL SUITE	SAMPLE TAKEN 8"		FILL MATERIAL MED.-BROWN SILT ORGANIC W/ HUGE PIECES OF CONCRETE (5'x4') SECTIONS 1" DIAMETER STEEL CABLE >20' LONG	LARGE FOREIGN OBJECTS
2						
3					Rubber Hoses LARGE METAL TRASH (1) ((FILL MATERIAL)) 6" STEEL GURDERS Rebar CONCRETE PIECES	
4						
5					FILL MATERIAL	

SEE MASTER ACRONYM LIST FOR COMPLETE LISTING OF ABBREVIATIONS TEST PIT #:

TEST PIT REPORT

ENGINEERING–SCIENCE, INC.	CLIENT:	TEST PIT #: TP11-2 (CONT'D)

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
OVM-580B	10.0 ppm	—	11/20/93 10:30 AM
LEL/O2/H_2S	—	—	" "

DATE START: 11/19/93
DATE FINISH: 11/20/93
INSPECTOR: JWC
CONTRACTOR: ES/UXB

SCALE (FT)	VOC/ RAD.	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA SCHEMATIC	DESCRIPTION OF MATERIALS (BURMEISTER METHODOLOGY)	REMARKS
6	ϕ				FILL MATERIAL MEDIUM BROWN SILT W/ CONCRETE AND STEEL PIECES	
7	ϕ	5 Full Suite	SAMPLE TAKEN		ASPHALT MATERIAL MUCH LIKE ROOFING MATERIAL	SAMPLE HAD ODOR OF TAR/ ASPHALT
8		5	SAMPLE Full Suite		NATURAL MATERIAL MED.–FINE SILTY SAND MED. BROWN	NO WATER ENCOUNTERED

SEE MASTER ACRONYM LIST FOR COMPLETE LISTING OF ABBREVIATIONS

TEST PIT #:

TEST PIT REPORT

ENGINEERING–SCIENCE, INC.	CLIENT: USACOE	TEST PIT #: TP11-3
PROJECT: Seneca Army Depot LOCATION: SEAD 11		JOB NUMBER: EST. GROUND ELEV. INSPECTOR: BH CONTRACTOR: START DATE: 12/14/93 COMPLETION DATE: CHECKED BY: DATE CHECKED:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION/SHORING METHOD

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
OVM	PID		
Rad			

COMMENTS: SG 2-1 Location
Depth 6.C
Width
Length

TOTAL SAMPLES:

SCALE (FT)	VOC/ RAD.	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA SCHEMATIC	DESCRIPTION OF MATERIALS (BURMEISTER METHODOLOGY)	REMARKS
1	Oppm		0-1		Building material, concrete/rock, wire, pipe, Glass, Sand, Dark brn (color) Rust, Plastic (melted) Ash (black)	Sample No 11-3-1 Time 1350
2	↓		1-2			
3		Oppm	2-4		Metal, Glass bottle (Soda bottle) w/liquid Dark brn, soils Large boulders wet soil, sand, Rust Ash (black)	Sample No 11-3-2 Time 1400
4			4-6		Stone Metal, Glass Gravel, small rock, soils Debris, Dark Brn Soil	Sample No 11-3-3 TIME 1420
5						

SEE MASTER ACRONYM LIST FOR COMPLETE LISTING OF ABBREVIATIONS TEST PIT #:

TEST PIT REPORT

ENGINEERING–SCIENCE, INC.	CLIENT: U.S. COE	TEST PIT #: TP1-4

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
OVM	PID	0 ppm	

DATE START: 12/14/93
DATE FINISH:
INSPECTOR: BH
CONTRACTOR:

SCALE (FT)	VOC/ RAD.	SAMPLE NUMBER	SAMPLE DEPTH RANGE	STRATA SCHEMATIC	DESCRIPTION OF MATERIALS (BURMEISTER METHODOLOGY)	REMARKS
	0 ppm	S-2			Glass, Drills Clay, Sand, Dk Brn	SG 2-3 Time 1500 11-4-1
	0 ppm	2-4			Clay, Shale Dk Brown (color) Rock	Time 1515 11-4-2
	3 ppm Rock		4-6		Sand, Clay, Glass DARK Brn	11-4-3 Time 1530

SEE MASTER ACRONYM LIST FOR COMPLETE LISTING OF ABBREVIATIONS

TEST PIT #:

PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Additional Sampling
Project Number:
Date / Time Start: 10/25/00 1002
Date / Time Finish: 10/25/00 1040
Weather: Cloudy, 58°F, Light wind - south
Contractor: Arrow
Inspector(s):

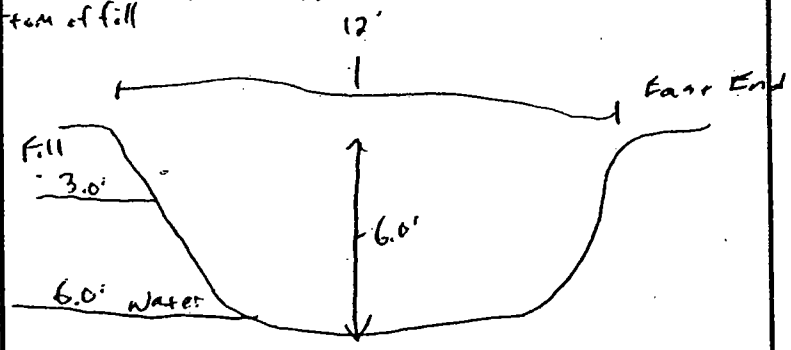
TEST PIT NO. TP11-5
Location:

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0.5'			Dark Brown Topsoil	
3.0'			Black to brown sandy soil with mostly fine gravel. Bricks, asphalt asbestos? transite corrugated roofing sheet metal, misc metal, large concrete chunks - Bottom of fill	0ppm throughout layer
6.0'			Brown to grey sandy clay Water at 6.0' Bottom of excavation	0ppm

EXCAVATION DIMENSIONS: (Length X Width X Depth)
AIR MONITORING DATA: Background OVM Reading:
Maximum Breathing Zone OVM Reading:

TIME	SAMPLE I.D.	LOCATION
1026	114007 TP-11-5 Deep	Center of excavation 3' in depth - bottom of fill
1030 1025 KBJ	114008 TP-11-5 Shallow	0.5' depth on West end.

CROSS SECTION
(Include approximate dimensions)



PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Additional Sampling
Project Number: 734543-01001
Date / Time Start: 10/25/00 1106
Date / Time Finish: 10/25/00 1155
Weather: Breaking Clouds - 65° F, Light wind
Contractor: Arrow
Inspector(s): KKS, DRD

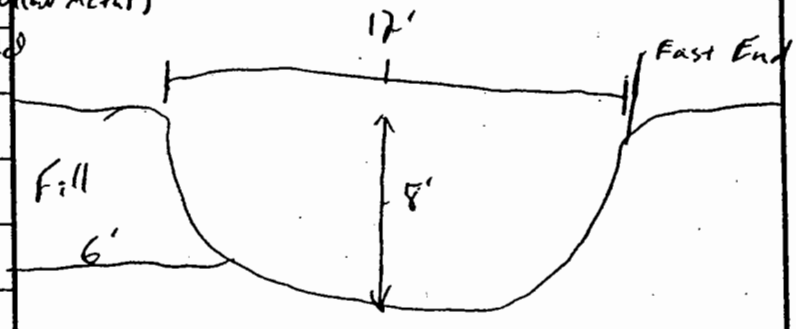
TEST PIT NO. TP11-6
Location: SEAD-11
Former Seneca Army Depot
Romulus, NY

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0.5'			Dark Brown Topsoil	
6.0'			Brown to Black sandy soil (Fill) with metal debris, barbed wire, pipe cable, etc. Bottles, brick tar chunks. Large metal (4-5' Round cylindrical piece on west end at 3-4' in depth. Another piece visible in North side of p.t.	0ppm throughout
8.0'			Brown sandy clay	0ppm
			Bottom of excavation	

EXCAVATION DIMENSIONS: (Length X Width X Depth) 12' x 2.5 x 8'
AIR MONITORING DATA: Background OVM Reading: 0.0
Maximum Breathing Zone OVM Reading: 0.0

TIME	SAMPLE I.D.	LOCATION
1130	114009 Deep TP-11-6	3-4' depth from inside cylinder (hollow metal)
1140	114010 Shallow TP-11-6	0.5 on east end below topsoil

CROSS SECTION
(Include approximate dimensions)



PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Additional Sampling
Project Number: 734543-01001
Date / Time Start: 10/25/00 1250
Date / Time Finish: 10/25/00 1340
Weather: Sunny, warm Temps in 60s
Contractor: Arrow
Inspector(s): KKS + DRD

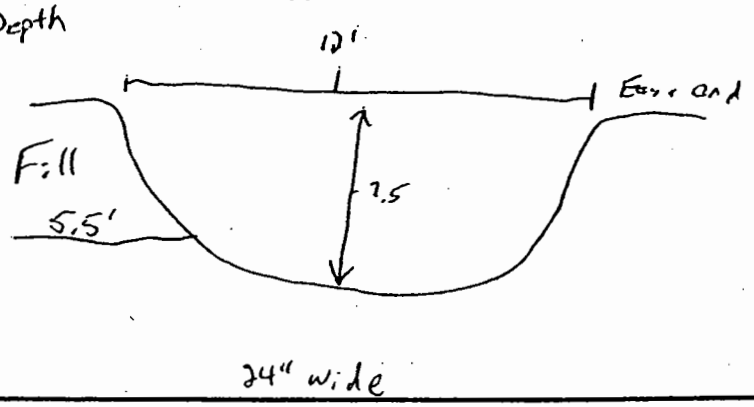
TEST PIT NO. TP-11-7
Location: SEAD-11
Former Seneca Army Depot
Romulus, NY

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0.5			Dark Brown Topsoil	
5.5			Black to brown sandy soil. Mostly household waste, bottles (glass and plastic), Toys. Washing Machine body 4-5' depth 10' from east end	Oppm Throughout
7.5			Brown sandy clay	Oppm
			Bottom of excavation	

EXCAVATION DIMENSIONS: (Length X Width X Depth) 12' x 2.5' x 7.5'
AIR MONITORING DATA: Background OVM Reading: 0.0
Maximum Breathing Zone OVM Reading: 0.0

TIME	SAMPLE I.D.	LOCATION
1310	114011 Deep TP-11-7	greenish material inside Washer 4.5'
1320	114012 Shallow TP-11-7	0.5' Depth at east end

CROSS SECTION
(Include approximate dimensions)



OK

PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Additional sampling
Project Number:
Date / Time Start: 10/25/00 0940
Date / Time Finish: 10/25/00 0945
Weather: Overcast, foggy Temps in 30s
Contractor:
Inspector(s):

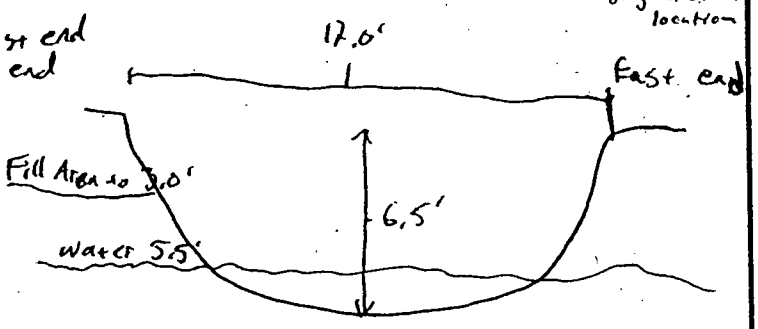
TEST PIT NO. 11-8
Location: SEAD-11

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0.5'			Dark brown topsoil	
3.0'			Brown to Black Sandy soil with numerous metal objects. Banding, ammo can, crushed container etc wire. Auto parts - horn, oil pan, thermostat	0 ppm throughout layer
5.5'			Brown to grey sandy clay, some gravel water at 5.5'	0 ppm
6.5'			Bottom of excavation	

EXCAVATION DIMENSIONS: (Length X Width X Depth) 12 x 2.5 x 6.5
AIR MONITORING DATA: Background OVM Reading: 0.0
Maximum Breathing Zone OVM Reading: 0.0

TIME	SAMPLE I.D.	LOCATION
0915	114005 TP-11-8 Deep	Composite 2 to 3' depth near to 2 metal containers
0920	114006 TP-11-8 Shallow	Containers 6' from east end 0.5' depth 2' from east end

CROSS SECTION
(Include approximate dimensions)



PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Test Pits
Project Number:
Date / Time Start: 10/24/00 1535
Date / Time Finish: 10/24/00 1715
Weather: Overcast, Temps in 50s
Contractor: Arrow
Inspector(s): KLS, DD

TEST PIT NO. 11-9
Location: SEAD-11

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0-0.5'			Dark Brown Topsoil	
3.5'	Fill		Rusted Metal Debris, crushed 55 gal drum at 3' depth, wood pieces, steel cable, rubber hoses, etc. Soils are black to brown sandy soil, rust colored 35 gallon sstel ? drum found on east end 1' depth	0ppm / 0ppm in crushed drum - 0.0pm sstel drum. Drum located in center 35 gal drum east end (0ppm)
7.5'			Brown to gray low plast. clay with sand and small to large cobbles, moist. Water at 7.5'	0 ppm

EXCAVATION DIMENSIONS: (Length X Width X Depth)
AIR MONITORING DATA: Background OVM Reading:
Maximum Breathing Zone OVM Reading:

TIME	SAMPLE I.D.	LOCATION
	114002 Deep TP-11-9 (Deep)	8" west of stake 3.5' depth below crushed drum
	114003 TP-11-9 (Shallow)	1' west of stake 0.5' below topsoil
	114004 TP-11-9 (Deep-2)	2' west of stake 1.5' depth below 35 gal drum

CROSS SECTION
(Include approximate dimensions)

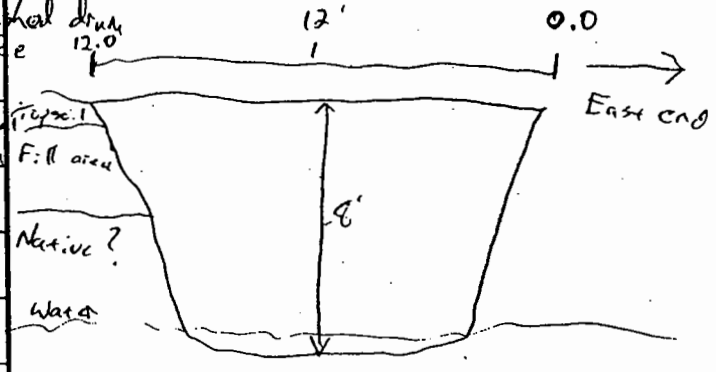


Photo 5 Crushed drum TP-11-9

Photo 6 Crushed drum out of hole TP-11-9

Photo 7 Crushed 35 gal sstel drum TP 11-9

PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Additional Sampling
Project Number:
Date / Time Start:
Date / Time Finish:
Weather: Sunny, warm, Temps in 60s
Contractor: Arrow
Inspector(s): KKS, D.D

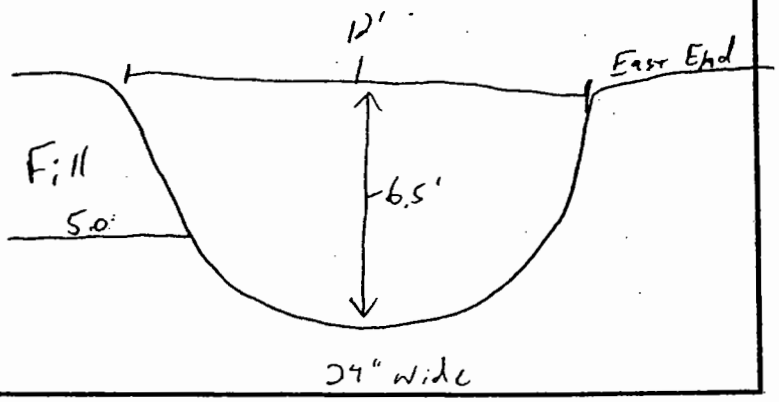
TEST PIT NO. TP-11-10
Location:

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0.5'			Dark Brown Topsoil	
			Black sandy soil with fill materials. Bottles, Leaf spring, Pipe, drywall Scrap metal, bricks, roofing tin and tar Wood	0 ppm throughout
5.0'			Bottom of Fill	
			Brown sandy clay, low plast.	0 ppm
6.5'			Bottom of Excavation	

EXCAVATION DIMENSIONS: (Length X Width X Depth)
AIR MONITORING DATA: Background OVM Reading:
Maximum Breathing Zone OVM Reading:

TIME	SAMPLE I.D.	LOCATION
1420	TP-11-10 Deep 114013	5.0' Depth interface with native soils on east end
1425	TP-11-10 Shallow 114014	0.5' on east end

CROSS SECTION
(Include approximate dimensions)



PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Additional Sampling
Project Number: 734543-01001
Date / Time Start: 10/23/00 1605
Date / Time Finish: 10/23/00 1700
Weather: Clear Warm
Contractor: Arrow
Inspector(s): Dale Dolph + Kerry Smith

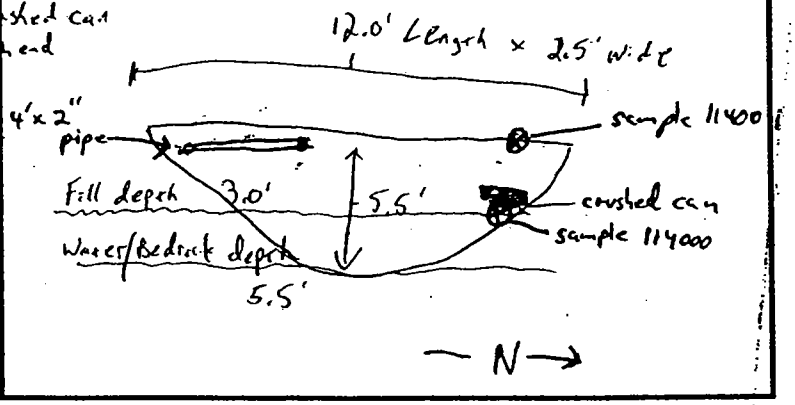
TEST PIT NO. 11
Location: SEAD-11

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0.95			Dark Brown Topsoil	0 ppm PID
3.0			Metal Debris, fasteners, scrap metal crushed metal container, bricks etc w/ dark brown sandy soil/ash Metal Pipe, metal banding, Bomb Tail Fins (5) Asbestos? roof board (corrugated) small pieces	0 ppm PID
5.5'			Gray silty clay, low plasticity with angular gravel and wood (3.5')	0 ppm PID
			Water large rock (Boulders) Bedrock? water	

EXCAVATION DIMENSIONS: (Length X Width X Depth)
AIR MONITORING DATA: Background OVM Reading:
Maximum Breathing Zone OVM Reading:

TIME	SAMPLE I.D.	LOCATION
1630	TP-11 (Deep) 114000	3-3.5' Depth North end below crushed can
1650	TP-11 (Shallow) 11400	0.5-1' Depth - North end Below topsoil layer
1655	? Asbestos? - Roof Board	3' depth

CROSS SECTION
(Include approximate dimensions)



1 - Metal Fasteners TP-11
2 - Metal Pipe and debris TP-11
3 - Metal Debr: TP-11

PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Additional Sampling
Project Number: 731543-01001
Date / Time Start:
Date / Time Finish:
Weather: Sunny, Warm Temps in 60s
Contractor: Arrow
Inspector(s): KKS + DD

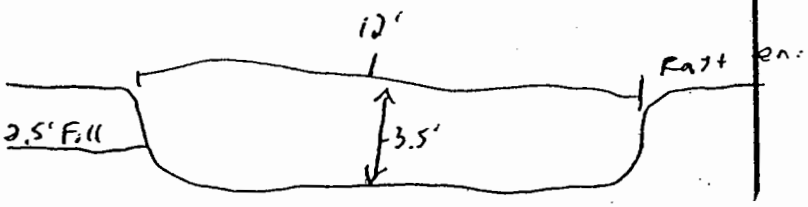
TEST PIT NO. TP-11-12
Location:

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0.5			Dark brown Topsoil, Large concrete chunk on surface	
			Brown to Black sandy soil with metal debris, Asbestos? Transite roofing, Bottles, banding, wire	Oppm Throughout
2.5'			Bottom of fill	
3.5'			Brown to Grey Sandy clay	Oppm
			Bottom of excavation	

EXCAVATION DIMENSIONS: (Length X Width X Depth)
AIR MONITORING DATA: Background OVM Reading:
Maximum Breathing Zone OVM Reading:

TIME	SAMPLE I.D.	LOCATION
1100	TP-11-12 Deep 114019 +MS/MSD	2.5' at f.11 interface Center of hole
1110	TP-11-12 Shallow 114020	0.5' depth on East End

CROSS SECTION
(Include approximate dimensions)



PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Additional Sampling
Project Number: 731513-a001
Date / Time Start:
Date / Time Finish:
Weather: Clear, cool Temps in 50s
Contractor: Arrow
Inspector(s): KRS, DD

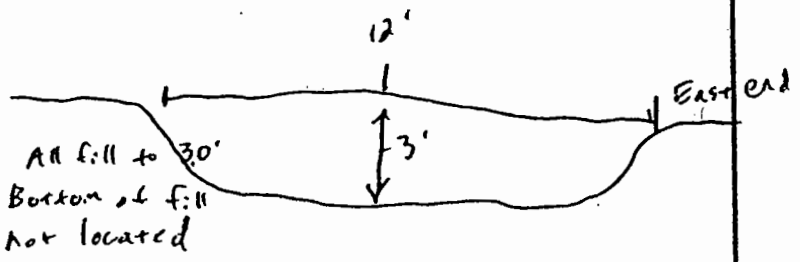
TEST PIT NO. TP-11-13
Location:

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0.5'			Dark Brown Topsoil	
3.0'			Brown to Black Sandy soil with brick, metal debris, wire, metal rods. Crushed drum at 2' depth (37 ppm inside drum) Drum is crushed, open, not intact	37 ppm inside crushed drum. 0 ppm BZ
			Excavation Terminated 2 - 37 mm shell casings found Bottom of ~~Test Pit~~ Fill not located	

EXCAVATION DIMENSIONS: (Length X Width X Depth)
AIR MONITORING DATA: Background OVM Reading:
Maximum Breathing Zone OVM Reading:

TIME	SAMPLE I.D.	LOCATION
0825	TP-11-13 Deep 21 114017 + 114018	0835 3' Depth (Dup) middle of Test Pit
0906	TP-11-13 Shallow 114018	0.5 on east end of Test pit

CROSS SECTION
(Include approximate dimensions)



PARSONS ENGINEERING SCIENCE, INC.
TEST PIT RECORD

Project Name: SEAD-11 Additional Sampling
Project Number: 734543-01001
Date / Time Start: 10/25/00 1500
Date / Time Finish: 10/25/08
Weather: Sunny, Warm Temps in 60s
Contractor:
Inspector(s):

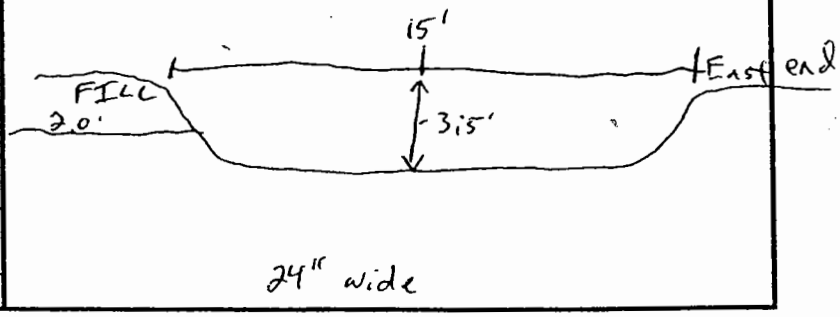
TEST PIT NO. TP11-14
Location: SEAD-11
Former Seneca Army Depot
Romulus, NY

DEPTH (ft bgs)	Stratigraphy	Macro	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0.5'			Dark Brown Topsoil	
2.0'			Black to Brown Sandy Soil with some metal debris, bottles, pipe, fencing, metal trash can on west side of pit	Oppm Throughout
3.5'			Brown sandy clay, low plast. Bottom of 1.11	Oppm
			Bottom of excavation	

EXCAVATION DIMENSIONS: (Length X Width X Depth) 15' x 2.5' x 3.5'
AIR MONITORING DATA: Background OVM Reading: 0.0
Maximum Breathing Zone OVM Reading: 0.0

TIME	SAMPLE I.D.	LOCATION
1515	TP-11-14 Deep 114015	2.0' depth below Trash can on west end
1520	TP-11-14 Shallow 114016	0.5' depth from east end

CROSS SECTION
(Include approximate dimensions)



APPENDIX B

CONFIRMATORY SAMPLING FOR REMOVAL ACTION AT SEAD-11

Confirmatory Sampling
For Removal Action at SEAD 11

1. Introduction

Confirmatory soil sampling will be conducted where excavations are performed. The goal of the confirmatory sampling is to verify that the identified contamination has been removed, and that concentrations of contaminants remaining at the subject site comply with the cleanup objectives. If the results of the confirmatory analysis verify that the cleanup objectives have been achieved, no further excavation will be conducted at the subject site. If the confirmatory results show that the Army's cleanup objectives have not been achieved, 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, Location, and Analytical Testing of Confirmatory Samples

In general, confirmational soil samples will be collected from the base and sidewalls of each excavation. Sidewall samples will not be collected where the depth of the excavation measures 12 inches or less. In situations where the sidewalls of the excavation are 12 inches or less in depth, confirmational samples will be collected from the perimeter of the excavation.

At least one discrete sample will be collected from each face of the open excavation that is 12 inches in depth or greater. Thus, a minimum of five confirmational samples (i.e., one base, and four sidewall samples) will be collected at each excavation. Additional confirmational samples will be collected from the base of each excavation at a rate of at least one per every 900 square feet, or fraction thereof, of surface area. Furthermore, additional sidewall samples will be collected for each additional 30-foot length, or fraction thereof, of excavation opened on any sidewall face.

For excavations where the depth of the excavation is less than or equal to 12 inches in depth, confirmational 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 900 square feet or less of surface area.

Based on this specification, it is currently anticipated that a minimum of approximately 330 confirmatory samples will be collected from the proposed excavation and sidewalls in SEAD 11. The number of samples was estimated based on an excavation footprint of 245,000 square feet and a sidewall length of 1,800 linear feet. Each of the proposed SEAD-11 confirmatory samples will be analyzed for the TAL metals, TCL VOCs, TCL PAHs, and nitroaromatics. In addition, 25 percent of the confirmation samples will be analyzed for TCL pesticides based on site locations where these pesticides have been detected previously.

Locations of confirmational 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 additional confirmational sampling locations.

Additional confirmational samples will be collected and analyzed, as needed, based on results of field screening and observations, or based on professional judgment. Samples may be collected at a more intense rate than one sample per 900 square feet, if particularly high contamination concentrations are noted during excavation or initial confirmatory sampling and analysis.

4. 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 will be collected including 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.

Confirmational 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 confirmational samples are obtained will be recorded in the field notes at the time of collection.

At the time of their collection, confirmational 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).

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.

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.

5. Recommended Sampling Order

A recommended order for the proposed sample collection at SEAD 11 is provided below:

<u>Collected without homogenization</u>
Volatile Organic Compounds

<u>Collected, homogenized, and split into required bottles</u>
Semivolatile Organic Compounds
Nitroaromatics
Metals
Pesticides

6. Laboratory Analyses

An analytical laboratory that is certified by the State of New York for the identified analyses will perform analyses on confirmation samples. The analytical procedures used for the performance of the proposed analyses will conform to requirements identified by the EPA in its document Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods (EPA, SW-846 most recent edition) as modified by the NYSDEC's Contract Laboratory Program (CLP) Analytical Services Protocol (ASP).

The proposed analytical methods identified for SEAD-11 include:

- TAL Metals by SW-846 Method 6010B et al. as modified under NYSDEC's CLP ASP.
- TCL VOCs by SW-846 Method 8260B as modified under NYSDEC's CLP ASP.
- TCL PAHs by SW-846 Method 8270C as modified under NYSDEC's CLP ASP.
- TCL pesticides by SW-846 Method 8270C as modified under NYSDEC's CLP ASP.
- Nitroaromatics by SW-846 Method 8330

7. Quality Assurance/Quality Control Samples

Field quality assurance/quality control (QA/QC) samples will consist of the collection and analysis of one equipment blank, matrix spike, matrix spike duplicate, and duplicate sample for every batch of eighteen field samples or less per analytical matrix (e.g., soil or surface water) that is submitted to the laboratory for analysis. The identified QA/QC samples will be analyzed for the same parameters as the field samples. It is currently anticipated that each analytical sample delivery group will consist of a maximum of 18 field samples, one field duplicate, one field blank, one matrix spike and one matrix spike duplicate (a total of 22 samples in the SDG). Additional QA/QC samples will be collected in the event that particular sample delivery groups (SDGs) need to be closed due to delays in the field sampling program that impact sample extraction and analysis requirements defined by EPA and the NYSDEC.

Field QA/QC samples will be identified using standard sample identifiers, which will provide no indication of their QA/QC role. QA/QC sampling requirements are described in Section 5.4 of Appendix C of SEDA's Generic Installation RI/FS Work Plan (Parsons, 1995). Required sample containers, preservation techniques, and holding times are also specified in the Generic Installation RI/FS Work Plan, and in EPA's SW-846 document.

8. Data Validation

Validation of analytical data resulting from analytical determinations in soil will be performed in a manner that is generally consistent with procedures defined in the EPA's "National Functional Guidelines for Organic Data Review" and "National Functional Guidelines for Inorganic Data Review" and consistent with EPA Region 2's Standard Operating Procedures. Specific data validation procedures that will be followed include:

- HW-6, CLP Organics Data Review and Preliminary Review, Revision 12, March 2001;

- HW-22, Validating Semivolatile Organic Compounds by SW-846 Method 8270, Revision 2, June 2001;

- HW-24, Standard Operating Procedure For The Validation of Organic Data Acquired Using SW-846 Method 8260B, Revision 2, June 1999; and

- HW-2, Evaluation of Metals Data for CLP Program, Revision 11, January 1992.

The data package submittal requested from the laboratory for the analytical determinations in soil will contain all data generated during the analysis, including mass spectral identification charts, mass spectral tuning data, spike recoveries, laboratory duplicate results, method blank results, instrument calibration, and holding time documentation.

Analyses will be subjected to full data validation. Full data validation is a qualitative and quantitative review of those items evaluated during a qualitative assessment in addition to calculating sample and laboratory QC results with the instrument raw data. This level of data quality provides assurance that all sample results reported by the laboratory were transcribed, calculated, and reported correctly. Therefore, this level of data review requires laboratories to submit environmental sample results, laboratory QC results, and instrument raw data (i.e., a full data package or "CLP-type" data deliverable).

APPENDIX C

RESPONSES TO AGENCY COMMENTS ON THE DRAFT ACTION MEMORANDUM

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

Subject: Approval of Removal Action at SEAD 11
Seneca Army Depot
Romulus, New York

Comments Dated: January 26, 2004

Date of Comment Response: May 20, 2004

Army's Response

Factor 1: Table D-1, Metals Cleanup Goals for Soils will be revised to contain cleanup goals agreed to in 1998 and referenced as TAGM-4046 on the table enclosed with this letter.

Response 1: Agreed.

Factor 2: cPAHs are a concern at this site and the cleanup goal will be 10 ppm benzo(a)pyrene toxicity equivalent calculated as instructed on the guidance enclosed with this letter.

Response 2: Agreed.

Factor 3: The removal action constitutes what we usually refer to as an Interim Remedial Measure (IRM) and we require that the public participation effort be taken with regard to the removal plan. In addition to the measures normally taken at the site I would like to request that you post the Final Document on the internet and include the document address in the public notices that you send out and put in the local paper. You may include me as a contact for questions and put my email address on the web site for this document. The DEC web site has an example of this type of public participation at http://www.dec.state.ny.us/website/der/projects/hastings/.

Response 3: At this time, the Army will not be posting documents on a website. While the BRAC office is pursuing the possibility of establishing a website; currently, there are no procedures in place, nor are their funds available, to enable the Army to complete this task.

Response to Comments from the United States Environmental Protection Agency

Subject: Draft Final Removal Action For SEAD-11
Seneca Army Depot
Romulus, New York

Comments Dated: August 22, 2002

Date of Comment Response: April 10, 2003

General Comments:

Comment 1: This document is an action memorandum, which was prepared as part of the non-time-critical removal action path under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). However, the text of the document refers to the removal action as being both time-critical and non-time-critical. Although this removal action was originally to be conducted as time-critical, the text indicates that this site will be remediated as a non-time critical removal action because over 6 months has passed since the last site evaluation was conducted (the most recent site investigation was a groundwater sampling event in February 2001). The text should be revised to reflect the changes in the CERCLA pathway. Additionally, a section should be added to the document that produces adequate explanation of the shift from the time-critical path to the non-time-critical path.

Response 1: Agreed. The removal action will be non-time critical. A section has been added to state that the action is non-time critical since potential reuse of neighboring areas has not occurred as quickly as originally anticipated by the Army.

Comment 2: Appendix A states that asbestos building materials were discovered in test pit TP 11-12 and TP 11-5. Section 5.2 does not contain any specific mention of asbestos-specific applicable or relevant and appropriate requirements (ARARs). ARARs to be considered include, but are not limited to, the following:

- U.S. Code of Federal Regulations (CFR) Title 40, Part 61, Subpart M;
- U.S. CFR Title 40, Part 141;
- U.S. CFR Title 40, Part 763;
- U.S. CFR Title 29, Part 1926.1101;
- Toxic Substance Control Act; and
- Clear Air Act.

The text should be revised to include appropriate ARARs for the removal, handling, and subsequent disposal of asbestos-containing materials.

Response 2: Agreed. These ARARs will be listed in Section 5.2. The text has been modified to state that these ARARs will be followed where asbestos containing materials are present.

Comment 3: The action memorandum does not include information on the SEAD-11 National Priority List (NPL) status. This is a required section of an action memorandum according to *Guidance on Conducting Non-Time-Critical Removal Action Under CERCLA and Superfund Removal Procedures Action Memorandum Guidance*. This information should be included in the text.

Response 3: Agreed. A sentence has been added to indicate that SEAD-11 is a solid waste management unit (SWMU) as part of the depot that is listed on the NPL.

Comment 4: The use of New York State Technical and Administrative Guidance Memorandum (TAGM) 4046 criteria as the cleanup objectives is acceptable. However, a table of the site-specific cleanup objectives should be provided in the text. The table should reference the TAGM 4046 as the source of the cleanup criteria to be used for the SEAD-11 removal action.

Response 4: The site-specific metals cleanup goals have been included in Appendix D. These cleanup goals were developed based on background data at Seneca Army Depot. Cleanup goals for all other compounds are listed in TAGM 4046.

Comment 5: The text of the action memorandum and attached appendices do not provide an adequate explanation of the procedures used to sample the stockpiles of soil (both likely to be used as backfill and those unlikely to be used as backfill). Additional detail should be added that provides more detail of the way samples will be selected, the frequency of samples to be collected, and other pertinent information about the sampling process.

Response 5: The workplan will be established in accordance with EPA guidance documents (*Guidance for the Data Quality Objectives Process (QA/G-4),* (EPA 2000); *EPA Requirements for Quality Assurance Project Plans (QAPP) (QA/R-5),* (EPA 2001); *Guidance for Data Quality Assessment: Practical Methods for Data Analysis (QA/G-9),* (EPA 2000)). Decision rules and statistical parameters for the methodology for sampling stockpiles will be developed using the process outlined in these documents. Although some details of the sampling plan will be left for the "design" stage, the boundaries of parameters affecting data errors and quality will be established. The requested level of detail will be included in the site-specific removal action work plan.

Specific Comments:

Comment 1: Section 2.5.1, Page 2-4: This section provides a summary of the geophysical investigations conducted at SEAD-11. It refers to a number of small isolated metallic objects that were detected by the in-phase response beyond the limits of the landfill. It is not clear whether these objects will be investigated or removed as part of the removal action. The text should be revised to address the metallic objects.

Response 1: The Army does not believe that these small isolated metallic objects represent additional areas of fill. Most likely, these materials were dropped during the filling process. During the removal action, the Army will investigate a representative number of these anomalies to determine if additional action is required.

Comment 2: Section 2.5.3, Page 2-5: The section summarizes the results of the Expanded Site Investigation (ESI) and the Additional Sampling Program (ASP). The soil data section describes two areas in the landfill that were identified with elevated concentrations of volatile organic compounds (VOCs) and refers to Figure 2-3. The text should provide the sample identifications for these two areas.

Response 2: Agreed. Two areas with elevated VOC readings (greater than 2.0 ppmV) in soil gas were detected. The following sentences have been added to the text. "The first area is located in the center of SEAD-11 and is associated with soil gas sampling points SG2-3, SG3-2, SG3-3 and SG-X. The second area is located west of this area and associated with sample SG2-1. The second area appears to be isolated from the first area."

Comment 3: Section 2.5.3, Page 2-5. The text summarizes the results of the ESI and the ASP. The text indicates that two VOCs, acetone and trichloroethene (TCE), were detected at concentrations above their respective New York State TAGM 4046 criteria. It is not clear from the text whether this exceedence refers to the soil gas analytical results or the soil analytical results. The text should be clarified.

Response 3: Agreed. The sentence has been revised to state "Soil analytical results showed that two VOCs, acetone and trichloroethene (TCE), were detected at concentrations above their respective TAGM criteria." This sentence starts a new paragraph for further clarification.

Comment 4: Figure 2-3: The figure shows soil gas survey results. The legend indicates that the concentrations of soil gas are presented as parts per million per volume (ppmV). Table 2.7-2 in Appendix A reports the concentrations as ppmV of TCE, which is based on a TCE calibration survey

using a gas chromatograph. The figure should be revised to indicate that the concentrations are reported as TCE.

Response 4: Agreed. The figure has been revised as requested.

Comment 5: Figures 2-4 through 2-7: These figures present TCE and lead concentrations present in the surface and subsurface soils from the 14 test pits located at SEAD-11. Test pit TP 11-5 is located outside of the depicted landfill extent. Appendix A indicates the contents of TP 11-5 are construction-related debris including asbestos building material. The contents of the test pit indicate that it should be included as part of the landfill. The landfill extent outline should be revised to include this location as part of the landfill.

Response 5: Agreed. The extent of the landfill has been revised on all figures to show that test pit location TP 11-5 is within this revised area.

Comment 6: Section 5.1.2, Page 5-1: This section describes the proposed action to be taken at SEAD-11. Although the construction contractor will submit a construction water management plan for Engineer review, note that an erosion and sedimentation plan prepared by an Engineer is also needed.

Response 6: Agreed. It should be noted that significant additional detail has been added to Section 5.1.2, *Proposed Action Description*, of the Action Memorandum. Specifically, subsections relating to the work plan, site preparation, excavation activities, materials handling, air monitoring, and site restoration has been included in this Final document.

Comment 7: Section 5.1.2, Page 5-1: This section describes the proposed action to be taken at SEAD-11. The text indicates that the removal action at SEAD-11 would involve the excavation of the entire landfill. The response to EPA comment number 3 in Appendix C indicates that the excavation will at a minimum be extended until native materials is encountered. The text of this section does not reflect the response, and should be revised to indicate that the excavation will extend to native material.

Response 7: Agreed. The text has been revised to state that all contaminated filled material will be excavated until native soil is encountered. Native material would be free of materials with waste and rubbish and can be defined by the characteristics of boring samples collected outside the affected area at SEAD-11. In summary, the soil boring logs from SEAD-11 document that native material consists of medium brown silt and clay with trace quantity of fine sand and fine shale fragments at the surface. As depth increases, the presence of light brown to light gray shale fragments and dry cobbles

becomes more prevalent. During excavation, material believed to be "native material" would be compared to the borings described in the log from past sampling.

It should be noted that significant additional detail has been added to Section 5.1.2, *Proposed Action Description*, of the Action Memorandum. Specifically, subsections relating to the work plan, site preparation, excavation activities, materials handling, air monitoring, and site restoration has been included in this Final document.

Comment 8: Section 5.1.2, Page 5-1: The text in this section does not reflect all of the text from the response to EPA comment number 3 in Appendix C. There is no mention of stockpile maintenance, dust control, and confirmatory sampling of the excavation. The text should be revised to include the text provide in the response to EPA comment number 3.

Response 8: Agreed. The text has been revised to present the general procedures outlined in the response to this comment. The details of stockpile maintenance, dust control, and confirmational sampling will be provided in the site-specific removal action work plan. It should be noted that significant additional detail has been added to Section 5.1.2, *Proposed Action Description*, of the Action Memorandum. Specifically, subsections relating to the work plan, site preparation, excavation activities, materials handling, air monitoring, and site restoration has been included in this Final document.

Comment 9: Section 5.1.2, Page 5-1: The text in this section states that the drums will be stockpiled separately and disposed off-site as specified in Appendix A. The text should give more explanation of the drum handling procedures similar to that found in the response to EPA comment number 5 in Appendix C. The text should also provide a description of the procedures to handle asbestos building materials that were identified in test pits TP 11-5 and TP 11-12. Additional text should be added to provide this information.

Response 9: Agreed. The text has been revised to present the general procedures outlined in the response to this comment. The details of drum handling and asbestos-handling procedures will be provided in the site-specific removal action work plan. It should be noted that significant additional detail has been added to Section 5.1.2, *Proposed Action Description*, of the Action Memorandum. Specifically, subsections relating to the work plan, site preparation, excavation activities, materials handling, air monitoring, and site restoration has been included in this Final document.

Comment 10: Section 5.1.2, Page 5-2: The text indicates the New York Codes, Rules and Regulations (NYCRR) Part 360 is assumed to no longer apply because the fill area will be removed. However, NYSDEC comment number 5 states that NYCRR Part 360 may still be applicable depending on the concentrations of the backfilled soil. The text of the action memorandum and

Appendix A, Section 2.3, page 3-3 do not acknowledge this comment. The text in both sections of the reviewed document should be revised to indicate that NYCCR Part 360 may still be applicable to the removal action.

Response 10: Agreed. The requested statement has been added to the text.

Comment 11: Section 5.1.2, Page 5-1 and 5-2: This section indicates that stabilization of soils exceeding toxicity characteristic leaching procedure (TCLP) limits may be necessary on site or off site. Additionally, the text indicates that on site treatment of the water generated during the excavation may be required. The Action Memorandum and Appendix A do not provide adequate explanation of the decision processes that will be used to dispose of waste soil and water. The text should be revised to include information on this process.

Response 11: The workplan will be established in accordance with EPA guidance documents (*Guidance for the Data Quality Objectives Process (QA/G-4),* (EPA 2000); *EPA Requirements for Quality Assurance Project Plans (QAPP) (QA/R-5),* (EPA 2001); *Guidance for Data Quality Assessment: Practical Methods for Data Analysis (QA/G-9),* (EPA 2000)). Decision rules and statistical parameters for the determination of the disposal of waste soil and water will be developed using the process outlined in these documents. Although some details of the sampling plan will be left for the "design" stage, the boundaries of parameters affecting data errors and quality will be established. The requested level of detail will be included in the site-specific removal action work plan.

Comment 12: Appendix A, Section 2.7.6, Page 2-16: The section describes the results of the soil gas survey conducted as part of the ESI at SEAD-11. The text lists several specific VOCs detected as part of the soil gas survey. Appendix A, however, does not provide data supporting this statement. These data should be included.

Response 12: Agreed. The data from the soil gas survey has been added to Appendix A.

Comment 13: Appendix A, Section 3.2, Page 3-1: This section describes the removal action that is proposed at SEAD-11. The text states that soils will be segregated by those likely to reused and those likely to be re-used. The text does to provide an explanation of how this determination will be made. The text should be revised to include a decision tree or rationale for screening the two types of excavated soils.

Response 13: The workplan will be established in accordance with EPA guidance documents (*Guidance for the Data Quality Objectives Process (QA/G-4),* (EPA 2000); *EPA Requirements for Quality Assurance Project Plans (QAPP) (QA/R-5),* (EPA 2001); *Guidance for Data Quality*

Assessment: Practical Methods for Data Analysis (QA/G-9), (EPA 2000)). Decision rules for the determination of whether soil can be used as backfill will be developed using the process outlined in these documents.

Comment 14: Appendix B, Section 7, Page 5: This section describes the collection and analysis of the QA/QC samples that will be collected for the confirmatory sampling conducted for the removal action. The text indicates that the QA/QC samples specification is applicable to target analyte list (TAL) metals and target compound list (TCL) SVOCs only. The QA/QC samples should be analyzed for the same compounds/analytes as the field samples. The text should be revised to indicate that the QA/QC samples will be analyzed for the same compounds/analytes as the field samples to verify that the field samples are valid.

Response 14: Agreed. The requested change has been made.

Response to Comments from the New York State Department of Environmental Conservation
Subject: Draft Final Action Memorandum for Removal Action at SWMU SEAD-11
Seneca Army Depot
Romulus, New York

Comments Dated: August 28, 2002

Date of Comment Response: April 10, 2003

The New York State Departments of Environmental Conservation and Health have reviewed the above referenced document dated August 2002. Comments are as follows:

General Comments:

Comment 1: The title of this document should denote that it is a proposing a non-time critical removal action, not simply a removal action.

Response 1: Agreed. The title of the document will be changed to Action Memorandum for Non-Time Critical Removal Action at SEAD-11.

Comment 2: Throughout the Action Memorandum and Decision Document, the proposed removal action is referred to as time-critical in some instances and in others as non-time critical. It is unclear whether this proposed action is considered time-critical or not. For instance, in the Executive Summary of the Action Memorandum it states that "(T)his removal action is considered non-time critical," while in the following paragraph the Army refers to the action as "the proposed time-critical removal action at SEAD-11." Please reconcile.

Response 2: The Army proposes a non-time critical removal action at SEAD-11. All references to a time-critical removal action will be removed.

Comment 3: The Army has changed their statement "this removal action is intended to be the final remedy for the site" to "this removal action is intended to remove the source of potential risks to human health, the environment, and groundwater quality." The change is no better than the original wording because it implies that the removal action obviates an RI/FS.

Response 3: The referenced statement will be revised to state "this removal action is intended to remove the contaminated source materials at SEAD-11. The statement that "Further actions to address residually contaminated groundwater and soil, if any, will be evaluated following the removal action during completion of the RI/FS process" will be added.

Comment 4: The Army should provide a list of the background levels for the metals in TAGM 4046 that it proposes to use and the derivation of those background levels.

Response 4: Agreed. The background levels for the metals in TAGM 4046 will be provided in tabular form in new Appendix D. The text will state that the background levels are the maximum concentrations in background samples collected at Seneca Army Depot.

Specific Comments: Action Memorandum

Comment 1: Page 5-4, Section 5.1.9, QA/QC Plan: The Army states that "confirmational samples will be collected for laboratory analysis for lead, TCL, VOCs, and TCL PAHs. In addition, 25 percent of the confirmational samples will also be analyzed for TAL metals and TCL pesticides based on locations where these metals and pesticides were detected previously." It is not appropriate that the Army in choosing to perform a full analysis of metals on only 25 percent of the samples when it is stated in the ESI that "several of the metals were identified at highly elevated concentrations and/or in a large number of samples above their TAGM values." Due to the heterogeneity of the disposal areas, a full analysis of metals for all confirmational samples is warranted.

Because five compounds of nitroaromatics were detected in the subsurface soils at SEAD-11, and one compound was detected in an on-site monitoring well, all confirmational samples should be analyzed for nitroaromatics.

Response 1: Agreed. Full analysis of metals and nitroaromatics will be performed on all confirmational samples.

Specific Comments: Decision Document

Comment 1: Page 2-16, Section 2.7.5, Test Pitting Program for the Additional Sampling Program: Under Test Pit TP11-11, it states that "(F)our bomb tails assemblies to 260-pound bombs were excavated." The document should address whether this area should be considered as part of an UXO-EE/CA investigation.

Response 1: The tail assemblies are components that are stored separately from the explosive portion of the bombs. The tail assemblies are not explosive in nature. The Army's ordnance experts inspected the tail assemblies that were found and determined that they did not represent a safety risk. Accordingly, a UXO-EE/CA investigation is not required.

Comment 2: Page C-1, Detailed Cost Estimate for Excavation/Off-site Disposal: Under assumptions, it states that "(C)learing and grubbing is necessary to perform soil capping, soil excavation, sediment excavation, and stockpiling." Is soil capping and sediment excavation proposed for this removal action? This is the only section where this is mentioned. Please clarify.

Response 2: The referenced statement remained from a previous version of the document and is incorrect. The references to soil capping and sediment excavation has been removed.

Comment 3: Page C-3, Detailed Cost Estimate for Excavation/Off-site Disposal: Under Operation and Maintenance, it states that "(A)n annual O&M cost of $10,000 has been estimated to cover routing maintenance and monitoring of the two-foot vegetative cover." Is a two-foot vegetative cover proposed or simply regrading and seeding? This is the only section where this is mentioned in the document. Please clarify.

Response 3: A two-foot cover will not be required for this alternative unless New York Codes, Rules, and Regulations (NYCRR) Part 360 are applicable. The Army does not anticipate that Part 360 regulations will be applicable. The area will simply be regraded and seeded. Maintenance of the seeded areas will not be required.

Comment 4: Page 2, Appendix B: For excavations of one foot depth or less, confirmational samples should be collected from the perimeter of the excavation at a rate of one sample per every 30 linear feet of length as stated for surface spills in the Draft Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation.

Response 4: Agreed.

Comment 5: Page 5, Appendix B: Under Laboratory Analyses, the proposed analytical methods list TCL PAHs. Under Quality Assurance/Quality Control (QA/QC) Samples, it states that "QA/QC sample specification is applicable to TAL metal and TCL SVOC analyses only." Which analyses is proposed, TCL PAHs or TCL SVOCs? Please reconcile.

Response 5: The referenced sentence will be revised to state "The identified QA/QC samples will be analyzed for the same parameters as the field samples."

Response to Comments From United Stated Environmental Protection Agency

Subject: Draft Action Memorandum for SEAD-11
Seneca Army Depot
Romulus, New York,

Comments Dated: July 23, 2001

Date of Comment Response: July 19, 2002

General Comments:

1. **Comment**: The Army has elected to use ecological soil screening levels (SSLs) as clean up goals at this site. Please note that the practice of using SSLs as clean up criteria is discouraged by the EPA, "The Eco-SSLs are not designed to be used as cleanup levels and EPA emphasizes that it would be inappropriate to adopt or modify these Eco-SSLs as national cleanup standards," (USEPA 2000). SSLs tend to be fairly conservative and Seneca Army Depot may end up removing a lot more soil than what may be needed at this site, with the potential to adversely effect local habitat due to the destruction of sensitive environmental areas (e.g. wetlands, etc.).

   Response:

   Several changes have been made to this Action Memorandum and Decision Document to address both the NYSDEC's and USEPA's concerns regarding the cleanup goals established for the site. The Army has reviewed the NYSDEC's Technical and Administrative Guidance Memorandum #4046 – Determination of Soil Cleanup Objectives and Cleanup Levels (January 24, 1994) with regard to SEAD-11. Based on this review and recent conversations with the USEPA and NYSDEC, the Army has agreed to use the TAGM #4046 soil cleanup objectives as the cleanup goals for the removal action.

2. **Comment**: SSLs do not take into consideration dermal contact and inhalation exposure pathways in the case of high volatile organic compounds (VOCs) for burrowing mammals nor do they take into consideration all of the metals of concern found at this site. Please provide a discussion for the exclusion of the above-mentioned evaluations.

   Response:

   As stated above, the NYSDEC's TAGM #4046 soil cleanup objectives will be the cleanup goals for the removal action. As described in Section 5.1.2 of the Draft Action Memorandum, the entire landfill will be excavated and soils exceeding the TAGM #4046 soil cleanup objectives will be removed. The goal is to only backfill soils which meet the requirements of TAGM #4046. In general, only those soils that pose no risk to human health or groundwater will be used as backfill. Upon completion of the project, construction-

impacted areas at the site will be covered with topsoil as needed and revegetated to provide long-term grass cover.

3. **Comment**: A significant omission in this report is the limited discussion of the planned collection of confirmation samples from the excavated areas at SEAD-11. While the Executive Summary mentions that the "extent of the area requiring excavation will be confirmed via sampling and analysis," Section 5.1.2 does not discuss the confirmation sampling procedures which will be followed at the excavated areas. 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.

Further, the action memorandum provides a limited presentation of the way that the excavation will be terminated. For example, will excavation terminate based on visual staining or discoloration of soil? 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:

Confirmation Sampling

Confirmation samples will be collected from the bottom of the excavation at a rate of one per 900 square feet (30-foot by 30-foot grid on average) and one sample from each sidewall. Additional sidewall confirmation samples will be collected for each additional 30 linear feet of excavation sidewall. Confirmation samples will be submitted for laboratory analysis for the contaminants of concern, which are lead, TCL VOCs, and TCL PAHs. The other contaminants at this site are generally co-located with the site contaminants of concern. In addition, 25 percent of the confirmation samples will also be analyzed for TAL metals and TCL pesticides based on areas where these metals and pesticides were detected previously. If analytical results indicate that soils remaining in place exceed the soil cleanup goals developed for the site, the excavation will be extended in that area and the wall or bottom of the extended excavation will be sampled. These steps would be repeated until analytical results indicate that the soil cleanup goals have been achieved.

Maintenance of Excavation/Stockpiles

The staging area for stockpiled soils will be bermed and underlined with polyethylene sheeting. The staging area will be sloped towards a lined collection sump. Water collected in the sump and in the excavation (if any) will be pumped and containerized, as necessary, for subsequent management with other construction water from the removal action in accordance

with discharge requirements. Construction fencing will be installed and maintained along the perimeters of the excavation and soil staging area.

Excavated soil will be deposited onto temporary, underlined stockpiles. Clean soil potentially useable as backfill will be stockpiled separate from soil most likely not suitable for backfill. Intact drums will be stockpiled separate from soil. Stockpiles will be covered overnight and prior to significant rain events with flexible polyethylene cover material. Soil ready for offsite disposal will be placed into transport trucks to be brought to the site. The construction contractor will be responsible for water management such that soil meets moisture content requirements for the disposal facility.

Excavation Termination

As stated in the Draft Action Memorandum, the removal action will involve the excavation of the entire landfill. Observations made during previous investigation activities and recorded on the Test Pit Reports provided in Appendix D of the Decision Document indicate that the limits of fill material and native material are clearly distinguishable. Therefore, the removal excavation will be extended (at a minimum) until native material is encountered. As described above, confirmation sampling will be conducted to indicate that the soil cleanup goals have been achieved and the excavation is complete.

4. **Comment:** The Army's proposal of this removal action as a Final Action is not appropriate considering the extremely high levels of contaminants at the site. TCE, in particular, was detected in site soil at a maximum concentration of 42,000 ppb, which is significantly higher than the appropriate NYSDEC TAGM value of 700 ppb. The same is true for acetone, and numerous SVOCs, pesticides, and metals. A removal action based only on the few contaminants for which SSLs have been developed does not appear to provide adequate protection of groundwater. Therefore, suggest revision of the goal of this Action Memorandum to be an interim removal action instead of a final one.

Response:

Several changes have been made to this Action Memorandum and Decision Document to address the agencies' 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. An evaluation of additional required remedial measures, if any, will be completed once the removal action is complete and residual impacts from SEAD-11 are assessed.

The statement "this removal action is intended to be the final remedy for the site" 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 states that further actions to address contaminated groundwater, if any, will be evaluated following the removal action.

5. **Comment**: Review of Figures 2-14 of this document and Figure 2.3-3 of the May 1995 Draft Final ESI completed for SEAD-11 shows that the locations of completed test pits at these two sites, with the exception of TP 11-1, do not correspond well with locations of the anomalies that were delineated by the geophysics. The other three test pit locations (TP 11-2, 11-3, and 11-4) match up with the results of soil gas surveys (as shown on Figure 4.1-1 of the Draft Final ESI). The limited prior investigation of anomalies suggests that additional areas of waste and debris may be discovered during excavation. 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 found at SEAD-11, are encountered.

Response:

As discussed previously, the removal action will involve excavation of the entire landfill, including all debris within the landfill. If during excavation, waste or debris is discovered that varies from the materials observed to date, an attempt will be made to determine the nature and extent of these materials. To the extent practicable, these materials will be addressed during the removal action to achieve the TAGM #4046 soil cleanup objectives. As mentioned previously, the Army will assess remaining contaminant concentrations in both soil and groundwater following the removal action to determine if additional action is required. Any drums encountered during excavation will be removed and disposed of in accordance with applicable rules and regulations.

The primary method of removing drums and debris from the site will likely be a backhoe equipped with a hydraulic grappler. Non-sparking drum slings and drum lifters compatible with the backhoe may also be used to remove the drums. Debris will be handled on a case-by-case basis depending on its size and weight.

Intact drums that likely will not tolerate significant manipulation will be removed and placed directly into an overpack or salvage drum. Any deteriorated drums containing liquids will have the liquids removed using an explosion-proof electric pump as warranted. Any drums with evidence of internal pressure will be isolated as best as reasonably possible in the excavation and overpacked separately from other drums.

As needed, drums will be opened and sampled at a centralized, underlined location most likely using a remote drum drill. Contents will be sampled with a drum thief or following removal of the drum top. If drum contents can not be determined in advance, Level B personal protection will be implemented as a safety precaution.

Drums will be transferred to a temporary drum staging area and placed in two rows separated so each drum is readily accessible. The drum staging area will be bermed and underlined to contain drum contents in case of a spill or leak. Drums will be labeled and inventoried within the staging area and removed from Seneca as soon as reasonably possible following excavation and sampling.

6. **Comment**: The Army recommends a groundwater monitoring program to address the elevated levels of VOCs and metals found at this media. However, this aspect of the action is considered by EPA as premature. The groundwater action requires a full evaluation of the parameters affecting its implementation. Therefore, EPA recommends that this groundwater alternative be evaluated through a "focused" RI/FS process.

Note that all actions taken at this site require a Proposed Remedial Action Plan (PRAP) and a Record of Decision (ROD) pursuant to CERCLA and our FFA.

Response:

See response to General Comment 3. The discussion of a groundwater monitoring program has been removed from the Action Memorandum and Decision Document. A groundwater monitoring program will be developed, if necessary, during the completion of the RI/FS process after completion of the removal action.

Specific Comments:

Comment 1: Executive Summary, Section 1.1, Last Paragraph, Page 1:2: This paragraph states that "geophysical anomalies will be removed from the landfill." This is not accurate. Revise the statement to read that excavated soil, along with whatever debris materials are removed from the excavations and which are presumed to be sources of the anomalies, will be removed from the landfill. This Section is the same for both the Action Memorandum and the Decision Document.

Response 1:

The text in both documents has been revised as suggested.

Comment 2: Section 3.3, Last Sentence of 1st ¶, Page 3-3: Please provide additional information regarding this off site treatment alternative. What kind of treatment would be used, duration of the treatment, long-term effectiveness and permanence, residual toxicity, etc.?

Response 2:

Excavated soils characterized as hazardous based on TCLP analytical results may be stabilized on site or off site as to be determined during the removal action in accordance with all applicable rules and regulations. Treatment will be performed to comply with the land disposal restriction (LDR) treatment standards for contaminated soils set forth in 40 CFR 268.49. The specific treatment method and duration will be determined based on the hazardous constituent(s) present in the soil and the specific requirements of the disposal facility. Based on the available analytical data for the site, it is anticipated that the treatment of some SEAD-11 soils via stabilization may be required prior to land disposal due to TCLP metal concentrations.

Comment 3: Section 5.1.2, Page 5-1: The second paragraph of this sentence indicates that approximately 36,300 cubic yards of soil will be excavated at SEAD-11 and refers the reader to Figure 5-1 to view the extent of the excavation area. However, examination of Figure 5-1 and a rough calculation of the highlighted area shows it to be approximately 36,300 square yards. This would indicate that the anticipated excavation depth to equal a volume of 36,300 cubic yards is only one foot below ground surface. The actual average excavation depth is likely to be deeper than one foot, so the estimate of 36,300 cubic yards appears low. Revise the estimate to be more realistic with respect to actual site conditions, as well as adding text to indicate that as much debris and soil as required will be excavated to ensure that all potential sources of contamination and impacted soils have been removed.

Response 3:

The USEPA's method of volume calculation is unclear. The volume of soil to be excavated (36,300 cubic yards) was estimated using an excavation area of approximately 245,000 square feet (27,000 square yards) and an average depth of excavation (fill materials) of four feet (1.3 yards) based on previous investigation activities. The text has been revised to state that the goal of the removal action is to meet the NYSDEC's TAGM #4046 soil cleanup objectives.

Comment 4: Section 5.1.2, 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 and "other compounds". Specify that the "other compounds" should include VOCs, SVOCs, pesticides, and herbicides because these compounds were detected in samples collected from the site during the winter 1993 sampling round.

- 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.

Response 4:

The specific procedures for the collection and analysis of disposal and confirmation soil samples will be outlined in the removal action work plan. In general, excavated soil will be sampled for the constituents of concern (metals, VOCs, PAHs, and pesticides that have been detected above the soil cleanup objectives) to determine whether it can be used as backfill in the excavation (i.e., concentrations are less than the soil cleanup goals developed for the site). If analytical results indicate that the excavated soil exceeds the TAGM 4046 soil cleanup objectives, that soil will be transported off-site for treatment/disposal as either non-hazardous or hazardous waste. Soil to be transported off-site for treatment/disposal will be sampled for TCLP analyses, at a minimum. Additional analyses may also be performed to meet the requirements of the specific treatment/disposal facility. The text has been revised to include this clarification. In addition, references to a stockpile size of 150 cubic yards have been removed. Stockpile size will be determined during the removal action. If the material, for example, is to be disposed off site, stockpiles could be 2,000 cubic yards in size.

Comment 5: Section 5.1.2, Proposed Action Description, Page 5-2: There is no information concerning trenching and shoring or dewatering activities that may be required for the removal action that will be carried out at SEAD-11. This information should be provided.

Response 5:

The Occupational Safety and Health Act (OSHA) standards for general construction activities were identified as an action-specific ARAR in Section 5.1.2. Accordingly, excavation activities will be conducted in compliance with the OSHA requirements for excavation contained in 29 CFR 1926, Subpart P, including the use (as required) of protective measures such as sloping or shoring.

The text has been revised to specify that the excavation will be dewatered (as necessary) and the water placed in on-site holding tanks. Depending on the volume of water generated during excavation, the water will either be: 1) treated on site prior to discharge to a storm drain or drainage

ditch in accordance with applicable discharge requirements; or 2) transported off-site for treatment/disposal in accordance with applicable rules and regulations.

Maximum areas to be excavated will be shown on an excavation drawing to be prepared. Excavation areas will be located based on subsurface soil and surface soil concentrations.

Soil will be excavated to depths based on available investigation results. Confirmatory sampling will be conducted in accordance with the procedure described in the response to July 2001 NYSDEC comments for this site. Any additional soil or sediment found due to confirmatory sampling that exceeds project requirements will be removed and confirmatory sampling will be repeated.

Small tree stumps and other vegetation not free of soil will be fed through a small grinder prior to being placed in transport trucks. Vegetation free of soil will be chipped and used for erosion control at the site.

Groundwater that needs to be removed from the excavation in order to allow excavation to proceed will be managed and disposed offsite at an approved treatment facility in accordance with the construction contractor's construction water management plan.

Comment 6: Decision Document, Operation and Maintenance, Table 3.6-1: This table indicates that Annual O&M Costs of the Excavation/Off-Site Disposal option are $0. While the selection of the removal action for remediation at SEAD-11 should not entail major O&M costs, minor costs such as the maintenance of the vegetative cover at SEAD-11 should be included in this Cost Estimate.

Response 6:

Table 3.6-1 has been revised to include O&M costs for an excavation/off-site disposal removal.

Comment 7: 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 7:

The text has been revised as suggested.

Comment 8: Appendix A, Section 2.1, 3rd¶, Page 2-1: This paragraph seems outdated. Has SEDA mission terminated?

Response 8:

This paragraph has been removed.

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

Subject: Draft Action Memorandum for Removal Actions at SWMU SEAD-11
Seneca Army Depot
Romulus, New York,

Comments Dated: July 2001
Date of Comment Response: July 19, 2002

General Comments:

The New York State Department of Environmental Conservation received the above referenced document on July 23, 2001. Several of the issues regarding the above said document are similar to those regarding the Draft Action Memorandum proposing a Time Critical Removal Action at SEADs 59, 71, therefore several of the comments below are identical to those stated in our comment letter of July 31, 2001 and are being repeated for the site record.

As stated in our comment letter of July 31, 2001, 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. RI/FS) is taken to complete the entire remedial response at a site. The statement "this remedy is intended to be the final remedy for the site" 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.

The proposed soil cleanup levels are not acceptable to the NYSDEC Division of Fish and Wildlife. Table 5.3-1 is lacking given the contaminants known to be present in the landfill. Attached are three tables: *Screening Benchmark Concentrations for Phytotoxicity of Chemicals in Soil and Soil Solution, Screening Benchmark Concentrations/or the Toxicity of Chemicals to Earthworms,* and *Screening Benchmark Concentrations for the Toxicity of Chemicals to Soil Microorganisms and Microbial Processes*. The lowest concentration in any of the tables for a given chemical should be chosen as the cleanup value except as identified below. For lead, the soil cleanup value should be 60 ppm, the same value that was used for the Open Burning Grounds (SEAD-23). For cadmium the cleanup value should be 1 ppm as in TAGM 4046. For any chemicals not identified in the 3 attached tables or specifically identified above, soil background values should be utilized. Since the use of this area is intended for conservation/recreation the lower of human health or non-human biota should be the cleanup criteria.

As stated in our letter, 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. In Section 1.2, Purpose, Scope and Objectives, the Army states that this

"time critical removal action, which will be completed as a result of this Action Memorandum, is intended to incorporate the necessary measures for removal site closeout." Presented later in the document, the Army proposes 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 Conservation/ Recreation. 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 such items as 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 the use of a removal action as a final remedy at SEAD-11 and cleanup goals developed outside of NYSDEC TAGM #4046. The Army's responses are as follows:

Removal Action as Final Remedy

Several changes have been made to this Action Memorandum and Decision Document to address the 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. An evaluation of additional required remedial measures, if any, will be completed once the removal action is complete and residual impacts from SEAD-11 are assessed.

The statement "this removal action is intended to be the final remedy for the site" 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 states that further actions to address impacted soil and/or groundwater, if any, will be evaluated following the removal action.

Cleanup Goals

The Army recognizes NYSDEC's rejection of cleanup goals that are based solely on human health risk calculations. The Army has reviewed the NYSDEC's Technical and Administrative Guidance Memorandum #4046 – Determination of Soil Cleanup Objectives and Cleanup Levels (January 24, 1994). Based on this review and recent conversations with the 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 SEAD-11 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 landfill debris and soils. The soil samples will be analyzed and the results compared to the soil cleanup objectives presented in Tables 1, 2, 3, and 4 of TAGM #4046. The goal of the removal action is to comply with the TAGM #4046 cleanup objectives. The results of the verification sampling will be used to complete the RI/FS process and 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 (if required) at SEAD-11 will be presented later in the RI/FS process.

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

Specific Comments for Draft Action Memorandum:

Comment 1: Page TOC-10, List of Acronyms: TAGM is an acronym for Technical and Administrative Guidance Memorandum not "Chemical and Administrative Guidance Memorandum."

Response 1:

The text has been revised accordingly.

Comment 2: Page 2-2, Section 2.3, Site Specific Hydrology and Hydrogeology: Please specify the presence of any wetlands and depict such on corresponding figures.

Response 2:

SEAD-11 is defined by the limits of the landfill and characterized by an area of elevated topography. No wetlands are present within SEAD-11.

Comment 3: Page 3-1, Section 3.2, Threats to the Environment: Please clarify on how the Army proposes this removal action as the final remedy for the site when "threats to the environment posed by the site have not been quantified," and there's potential for surface water contamination and groundwater contamination posing a threat to aquatic life.

Response 3:

See General Response. The cleanup goals for the removal action are those presented in TAGM #4046. The removal action is intended to remove the source of potential risks to human health, the environment, and groundwater quality. This removal action, however, may not be the final site remedy. Following the removal action, the Army will assess remaining contaminant concentrations to determine if additional action is required. The assessment will include potential

surface water and groundwater contamination.

Comment 4: Page 3-2, 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 landfill area and contamination in soils and groundwater are considered justification for performing a removal action at SEAD-11." 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 former landform." Please clarify how the Army plans on developing cleanup goals based on existing conditions when the contents of the drums are unknown.

Response 4:

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

Comment 5: Page 5-1, 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 and other compounds below the cleanup goals" that were developed based on ecological 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. Also, your proposal for disposing the water from excavation dewatering "into a storm drain or drainage ditch" will require sampling to demonstrate that any discharge will meet surface water quality standards and if appropriate, a SPDES equivalent permit.

Response 5:

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.

The text has been revised to specify that the disposal of water generated during excavation dewatering will be conducted in accordance with all applicable rules and regulations. Depending on the volume of water generated during excavation, the water will either be: 1) treated on site prior to discharge to a storm drain or drainage ditch in accordance with applicable discharge requirements; or 2) transported off-site for treatment/disposal in accordance with applicable rules and regulations.

The construction contractor shall submit for Engineers' review and approval, a construction water management plan, a minimum of five working days prior to the commencement of site work. The selected treatment method and/or in-place system must meet discharge requirements of the offsite

permitted treatment facility. Various options exist depending on available hydraulic and treatment capacity. These options include the Seneca County Sewer District No. 2 treatment facility located at the east-central portion of Seneca, a treatment facility that is part of the KidsPeace project just north of Seneca, a site-specific temporary treatment system that would need to be separately permitted through the NYSDEC Division of Water, or a permitted, private offsite facility. The construction contractor will provide to the Engineer the location where the groundwater will be released and the extent of water pretreatment to be provided prior to release.

Comment 6: Page 5-2, 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 6:

Agreed. See General Response.

Comment 7: Page 9-1, Section 9.0, Recommendation: Please specify whether the stabilization is to be performed on-site or off-site.

Response 7:

The text has been revised to specify that stabilization may be performed on site or off site as to be determined during the removal action based on the need for stabilization.

Specific Comments on Draft Decision Document:

Comment 8: 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 8:

The above responses have been applied to both documents.

Comment 9: Page TOC-6, Abbreviations and Acronyms: Please correct each for micrograms per kilogram and micrograms per liter.

Response 9:

The text has been revised accordingly.

General Comment:

Although your Draft Attachment 5 Schedule dated August 9, 2001 states that a public comment period is scheduled for September 18 through October 18, 2001, 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 the Comments from the New York State Department of Health

Subject: Draft Action Memorandum for Removal Actions at SWMU SEAD-11
Seneca Army Depot
Romulus, New York,

Comments Dated: September 7, 2001
Date of Comment Response: July 19, 2002

Comments:

It should be kept in mind that the final remedy for the site will be selected after completion of this 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.

The proposed clean up goals for this IRM are based on the USEPA's ecological soil screening levels for the protection of terrestrial mammals, in this case a shrew. Only three of the parameters listed in Table 5.3-1 are contaminants of concern at this site. Of the three, only antimony is widely detected across the landfill above the USEPA shrew protection levels. The clean up goals for this project do not directly address the volatile and semi-volatile organic compounds found in SEAD-11 soils in excess of NYSDEC TAGM 4046 levels. It is unclear how these contaminants will be affected by this removal action. In theory, soils with VOCs and SVOCs well in excess of the TAGM levels could be put right back into the excavation if the 150 cubic yard stockpile from which they originate contains less than 21 ppm antimony. If the Army hopes to assert that this interim remedial measure is the final remedy for this site it would be appropriate to sample the soils being placed back into the excavation for VOCs and SVOCs known to be present in the landfill instead of just metals. This information would further assist the agencies in making a post-IRM decision about the final remedy for the site.

I am pleased to see the Army concede on page 5-8 that "the final management of these (hazardous) materials will be the focus of the ultimate Record of Decision (ROD)" and are not the focus of this action. If the cleanup of this site is to be based on protection of a shrew, the New York State Department of Health will want to see a deed that specifically spells out restrictions on anything but conservation reuse by the time a ROD is developed for the site.

Due to the volume of contaminated soils to be excavated 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.

Finally, the third paragraph of Section 2.1 "Base Description and History" which states that Seneca is currently used for "performing maintenance..... on conventional and special weapons" is no longer relevant. Please remove the whole paragraph.

Response:

Responses to the above NYSDOH comments are provided below.

Removal Action as Final Remedy

Several changes have been made to the Action Memorandum and Decision Document to address agency 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. An evaluation of additional required remedial measures, if any, will be completed once the removal action is complete and residual impacts from SEAD-11 are assessed.

The statement "this removal action is intended to be the final remedy for the site" 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 states that further actions to address contaminated groundwater, if any, will be evaluated following the removal action.

Cleanup Goals

The Army has reviewed the NYSDEC's Technical and Administrative Guidance Memorandum #4046 – Determination of Soil Cleanup Objectives and Cleanup Levels (January 24, 1994). Based on this review and recent conversations with the NYSDEC and USEPA, the Army has a better understanding of this guidance document and its requirements in determining cleanup objectives. The goal of the removal action at SEAD-11 is to meet the cleanup objectives presented in TAGM #4046 for all constituents of concern at the site.

Details regarding the excavation, confirmation sampling, and backfilling activities have been provided in the responses to NYSDEC and USEPA comments. In general, the entire landfill (including all debris) will be excavated. Confirmation sampling will be conducted to

demonstrate the acceptability of the surrounding soil quality after the excavation of the landfill debris and soils. The soil samples will be analyzed and the results compared to the soil cleanup objectives presented in Tables 1, 2, 3, and 4 of TAGM #4046. Additionally, excavated soils will be sampled to determine whether they may be used as backfill on-site or require off-site treatment/disposal. Only those soils that pose acceptable 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 recognizes that land use controls may be necessary following the removal action based on the results of the RI/FS. However, 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 (if required) at SEAD-11 will be presented in future documents. In addition, the discussion of a groundwater monitoring program has been removed from the Action Memorandum and Decision Document. A groundwater monitoring program will be developed, if necessary, during the completion of the RI/FS process after the removal action.

The third paragraph of Section 2.1 has been removed as suggested.

Worker Space Air Monitoring - Air monitoring will be conducted with a PID during all field activities. The PID will be used to monitor for VOCs in the breathing zone and in boreholes, and to screen samples for analysis. PID readings will be recorded in the field book and on the boring log during drilling activities.

If VOCs are detected in the breathing zone with the PID, then precautions detailed in the Health and Safety Plan will be followed.

The PID will be a Photovac MicroTip HL-2000 (or equivalent) equipped with a 10.6 eV lamp. The Photovac MicroTip is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for roughly 54 percent to 73 percent of the VOCs on the NYSDEC ASP Target Compound List. The detailed procedure for the PID operation is included in the Health and Safety Plan.

Calibration will be performed at the beginning and end of each day of use with a standard calibration gas of a concentration within the expected range of use in accordance with Manufacturer's Calibration Specifications. The calibration gas which is most often used has an approximate concentration of 100 ppm of isobutylene. If abnormal or erratic readings are observed, additional calibration will be required. All calibration data will be recorded in field notebooks and on

calibration log sheets to be maintained on-site. A battery check will be completed at the beginning and end of each working to ensure proper voltage.

Site Perimeter Air Monitoring - Real-time air monitoring for volatile compounds at the perimeter of the exclusion zone will be conducted that conforms to the NYSDOH Community Air Monitoring Plan. If particulates become a concern at this site, possibly during excavation activities, this community air monitoring plan will be modified accordingly. Contaminants on site are not anticipated to pose a problem as particulates because of the moisture content of the soil and the effectiveness of spraying water for dust control.

Volatile organic compounds will be monitored at the downwind perimeter of the exclusion zone daily continuously during excavation activities. If total organic vapor levels exceed 5 ppm above background based on 15-minute average concentrations, excavation activities must be halted and monitoring continued under the provisions of the Vapor Emission Response Plan (see below). All air monitoring readings must be recorded and be available for USEPA, NYSDEC and NYSDOH personnel to review.

If particulate levels become a concern, the following protocol will be followed. Particulates shall be continuously monitored downwind of the exclusion zone with a portable particulate monitor that would have an alarm set at 150 $\mu g/m^3$. If downwind particulate levels, integrated over a period of 15 minutes, exceed 150 $\mu g/m^3$, then particulate levels upwind of the survey or work site would be measured. If the downwind particulate level is more than 100 $\mu g/m^3$ greater than the upwind particulate level, then excavation activities must be stopped and corrective action taken. Ensure that downwind readings are not elevated by diesel emissions from heavy equipment. All readings must be recorded and be available for USEPA, NYSDEC and NYSDOH personnel to review. These action levels can be modified if particulates are specifically characterized and identified.

Vapor Emission Response Plan - If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the Exclusion Zone, excavation activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, excavation activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the Exclusion Zone, activities can resume provided:

- The organic vapor level 200 ft. downwind of the Exclusion Zone or half the distance to the nearest receptor, whichever is less, but in no case less than 20 feet, is below 5 ppm over background based on 15-minute averages, and
- More frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.

APPENDIX D

METALS CLEANUP GOALS FOR SOILS

TABLE D-1
METALS CLEANUP GOALS FOR SOILS
SEAD-11 Action Memorandum
Seneca Army Depot Activity

Metals	Soil Criteria [1] (mg/kg)
Aluminum	19,520
Antimony	6.0
Arsenic	9
Barium	300
Beryllium	1.1
Cadmium	2.5
Calcium	125,300
Chromium	30
Cobalt	30
Copper	33
Iron	37,410
Lead	24
Magnesium	21,700
Manganese	1,100
Mercury	0.10
Nickel	50
Potassium	3
Selenium	2.0
Silver	0.80
Sodium	188
Thallium	0.9
Vanadium	150
Zinc	115

Notes:
1. Soil cleanup goals for metals are the 95th percentile of the SEDA background data set, calculated in 1998.