00785

38

NON-TIME CRITICAL REMOVAL ACTION
MISCELLANEOUS COMPONENTS BURIAL SITE (SEAD-63)

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

REMOVAL ACTION WORK PLAN

Revision 0

November 2003

Prepared for:

U.S. ARMY CORPS OF ENGINEERS, BALTIMORE & NEW YORK DISTRICTS
Contract Number DACA31-01-D-0032, Delivery Order 0007

Prepared by:

Plexus Scientific Corporation
27 Wildwood Drive
Bedford, Massachusetts 01730

Printed on Recycled Paper

STRAIGHT BILL OF LADING - SHORT FORM - ORIGINAL - Not Negotiable

Shipper: JOHN CLEARY (607-869-1309)
5786 STATE RT. 96 (ARMRY DEPOT
ROMULUS NY 14541-

Shipper No. RTN
Purchase/ Customer Order No.
Date: 04/11/2005

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading. the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as shown below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

Consignee
ERIC GERDES/505-665-9512
U OF CA LANL FOR USDOE
TA 16 BLDG. 300
LOS ALAMOS NM 87545-
CELL:699-1954,PAGER 996-4055

CARRIER LIGS / LANDSTAR LIGON

* * * L I G S *

CAR OR VEHICLE INITIALS & NO. 903267 **SEAL #**

Route: **Carrier No.** **Section 13712 Tender, No.:**

No. PKGS.	HM	Description of Articles (Subject to Correction), Kind of Package, Special Marks and Exceptions (See NMFC Item (Rule) 360)	Weight (Subject to Correction)	Class	Rate	Charges
3 BSTC		Trainer (8 each) packed in B-25 boxes. Shipped per 49CFR 173.424	8880 LBS			
3 Total Pieces		**TOTALS:**	4028 Kgs	8880 lbs		

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges

Signature of Consignor

If freight charges are to be prepaid, write or stamp here "TO BE PREPAID"

PREPAID

Note: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

$ _____ per lb.

*Job order, reference, account, or work order number

Savings:
$

IN THE EVENT OF AN EMERGENCY, PHONE (505)667-6211 - 24 HOURS

ITEM NO.	NMFC 100-	NPM NO.	
1			

*Label(s) applied

*Placard(s) Required

Remarks:
Return of acquired equipment for use at LANL.
8P05 RC1D WW31

TECHNICAL CONTACT:

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. (Applicable for Hazardous Materials Only.)

Shipper: J. C. Cleary

Acting under contract _____ with U.S. Dept. of Energy

Per: _____ Date: 04/11/2005

Seneca Army Depot, Romulus, NY 14541
TRANSPORTATION DEPT. - Permanent Post Office Address of Shipper

*This shipment is for U.S. Department of Energy and the actual total transportation charges paid to the carrier(s) by the consignor or consignee are assignable to, and shall be reimbursed by, the U.S. Government and is subject to the terms and conditions set forth in the standard form of the U.S. Government Bill of Lading and to any available special rates or charges (41 CFR 109-40.50 and 41 CFR 40.3)

[X] YES [ ] NO

*The addition on the face hereof and to the terms and conditions are here by noted:

Carrier: LIGS / LANDSTAR LIGON

Per Rodney Ramsey Date: 4/11/05

04/11/2005 07:42
26WE20815
TC:17899

REMOTE STATION	START	TIME	Pages	RESULT	REMARKS
15056655290	04-11 07:41	00:01 26	002/002	OK	

REMARKS TMR:Timer, POL:Poll, TRN:Turn around, 2IN:2in1 Tx, ORG:Original size set, DPG:Book Tx
FME:Frame erase Tx, MIX:Mixed original, CALL:Manual-Com, KRDS:KRDS, FWD:FORWARD
FLP:Flip Side 2, SP:Special Original
FCODE:Fcode, MBX:Confidential, BUL:Bulletin, RLY:Relay, RTX:Re-Tx, PC:PC-FAX
S-OK:Stop communication, Busy:Busy, Cont.:Continue, No ans:No answer
M-full:Memory full, PW-OFF:Power switch OFF, TEL:Rx from TEL

SENECA ARMY DEPOT ACTIVITY
5786 State Route 96
Romulus, NY 14541
(607)869-1309

facsimile transmittal

To: Marcella Mathieson **Fax:** 505-665-5290

From: John Cleary **Date:** 04/11/05

Re: Bill pf Lading **Pages:** 2 including cover

CC:

☐ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

Notes: The shipment left at 0830 hours our time this morning. Copy of BL is enclosed. Thank you for your assistance. Your help was invaluable to the success of this mission.

Regards,

John

SENECA ARMY DEPOT ACTIVITY
5786 State Route 96
Romulus, NY 14541
(607)869-1309

facsimile transmittal

To:	Marcella Mathieson	**Fax:**	505-665-5290
From:	John Cleary	**Date:**	04/11/05
Re:	Bill pf Lading	**Pages:**	2 including cover
CC:			

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

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Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

Consignee
ERIC GERDES/505-665-9512
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$ _____ per lb.

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$

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[X] YES [ ] NO

*The addition on the face hereof and to the terms and conditions are here by noted:

Carrier: LIGS / LANDSTAR LIGON

Per _____ Date: _____

TRANSPORTATION DEPT. - Permanent Post Office Address of Shipper

Los Alamos National Laboratory
Los Alamos NM 87545

BUS-4 HAZARDOUS MATERIALS TRANSPORTATION OPERATIONS

TA-3, SM-30 BIKINI ATOLL RD.
MS-A190

TO: John
GROUP:
TEL#:
FAX#: 607-869 1362

FROM: Marcella Mathieson
TEL#: 505-665-6475
FAX#: 665-5290

NUMBER OF PAGES, EXCLUDING COVER:

Message:

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MISCELLANEOUS COMPONENTS BURIAL SITE (SEAD-63)

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

REMOVAL ACTION WORK PLAN

Revision 0

November 2003

Prepared for:

U.S. ARMY CORPS OF ENGINEERS, BALTIMORE & NEW YORK DISTRICTS
Contract Number DACA31-01-D-0032, Delivery Order 0007

Prepared by:

Plexus Scientific Corporation
27 Wildwood Drive
Bedford, Massachusetts 01730

Printed on Recycled Paper

TABLE OF CONTENTS

Section Page

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

BGS	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CQC	Contractor Quality Control
CPM	Critical Path Method
DCGL	Derived Concentration Guideline Level
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
EM	electromagnetic
ESI	Expanded Site Investigation
FSS	Final Status Survey
i.e.	that is to say
JMC	(US Army) Joint Munitions Command
LLRW	Low Level Radioactive Waste
MARSSIM	Multi-Agency Radiological Survey and Site Investigation Manual
mg/Kg	milligrams per Kilogram
mg/ℓ	milligram per liter
mrem/yr	milli roentgen equivalent man per year
NPL	National Priority List
NTCRA	Non-Time Critical Removal Action
NTU	Nephelometric turbidity unit
NYS AWQS	New York State Ambient Water Quality Standard
NYSDEC	New York State Department of Environmental Protection
PAHs	Polycyclic Aromatic Hydrocarbons
%	percent

ACRONYMS AND ABBREVIATIONS (CONT)

Plexus	Plexus Scientific Corporation
PVC	Polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
SAP	Sampling and Analysis Plan
SEDA	Seneca Army Depot Activity
SSHP	Site Safety and Health Plan
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

REFERENCES

Multi-Agency Radiological Site and Survey Investigation Manual (MARSSIM). NUREG-1975. EPA 402-R-97-016). December 1997.

New York State Department of Environmental Conservation. 1999. Technical Guidance for Screening Contaminated Sediments, Division of Fish, Wildlife and Marine Resources. January 25, 1999.

New York State Department of Environmental Protection, Division of Hazardous Waste Remediation. Technical and Administrative Guidance Memorandum # 4046, Determination of Soil Cleanup Objectives and Cleanup Levels. January 24, 1994.

New York State Department of Environmental Protection, Division of Hazardous Waste Remediation. Technical and Administrative Guidance Memorandum # HWR-89-4031, Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites. October 27, 1989.

New York State Department of Environmental Protection, Division of Hazardous Waste Remediation. Technical and Administrative Guidance Memorandum # 4003, Soil Cleanup Guideline for Soils Contaminated with Radioactive Materials. September 14, 1993.

Parsons Engineering Science, Inc., Expanded Site Investigation Report for Seven Low Priority AOCs – SEADs 60, 62, 63, 64, (A, B, C and D), 67, 70 and 71 – Draft Final. April 1996a.

Parsons Engineering Science, Inc., Expanded Site Investigation Report for Three Moderately High Priority SWMUs. April 1995.

Parsons Engineering Science, Inc., Revised Final Engineering Evaluation/Cost Analysis. October 2001.

Parsons Engineering Science, Inc., Revised Final Action Memorandum. October 2001.

Unite States Environmental Protection Agency-Region II, United Stated Department of the Army and the New York State Department of Environmental Conservation. 1993. Federal Facilities Agreement Under CERCLA Section 120, Seneca Army Depot, Romulus New York. (last signatory) February 21, 1993.

1. BACKGROUND AND PURPOSE

Two *Expanded Site Inspections* (ESIs) (Parsons Engineering Science, Inc., 1996 and 1995) and an *Engineering Evaluation/Cost Analysis* (EE/CA) (Parsons Engineering Science, Inc., 2001) were performed for the Miscellaneous Components Burial Site (designated SEAD-63) at the Seneca Army Depot Activity (SEDA) in Romulus, New York (NY). The ESIs and EE/CA documented the presence of burial pits at the SEAD-63 site ("site") which were found to contain miscellaneous military components. The ESIs and EE/CA also reported that soil in and surrounding the burial pits that exceeded cleanup goals for several chemical constituents, cadmium in particular. Surface sediment in portions of drainage ditches adjacent to the site were also reported as having slightly higher concentrations of chemical and radiological than background.

SEDA was officially closed by the Department of Defense (DoD) and the United States (US) Army and in accordance with the Base Realignment and Closure (BRAC) process. Portions of the depot are in the process of being released to the public and private sectors for reuse. As increased access to the depot property is afforded, the potential for exposure to low levels of residual chemical and radiological constituents that may present at the SEAD-63 site will increase.

An *Action Memorandum* and the EE/CA for the SEAD-63 site were completed in July 2000, and amended in July and October 2001 (Parsons Engineering Science, Inc., 2001) in response to New York State Department of Environmental Conservation (NYSDEC) and US Environmental Protection Agency (USEPA) comments. The *Action Memorandum* documented the Army's selection of a non time-critical removal action (NTCRA) at the site. The removal action described in this Removal Action Work Plan and accompanying project plans, will:

(1) Eliminate an identified source of residual materials in the soil, and

(2) Remove or at least lessen the magnitude of the potential impact that it represents to surrounding populations and the environment.

Removal of buried debris (miscellaneous military components) is the focus of the planned NTRA for SEAD-63. Soil containing low concentrations of chemical constituents in and immediately surrounding the burial pits and a small quantity of surface sediment in portions of drainage ditches adjacent to the site will also be removed during the removal action. Monitoring wells will be installed in overburden materials for future ground-water monitoring (by others).

This Removal Action Work Plan is supported by a number of accompanying project plans, including: Contractor Quality Control (CQC) Plan, Site Safety and Health Plan (SSHP), Air Monitoring Plan, Sampling and Analysis Plan (SAP) and Final Status Survey (FSS) Plan.

2. FACILITY AND SITE INFORMATION

2.1 FACILITY LOCATION

SEDA is a US Army facility located in Seneca County, NY, occupying approximately 10,600 acres. It is bounded on the west by State Route 96A and on the east by State Route 96. The cities of Geneva and Rochester are located to the northwest (14 and 50 miles, respectively); Syracuse is 50 miles to the northeast and Ithaca is 31 miles to the south. The surrounding area is generally used for farming. A locus map is presented as Figure 2-1.

2.2 FACILITY DESCRIPTION

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. SEDA was constructed in 1941 and has been owned by the US Government and operated by the Department of the Army since that time. The depot 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 a former army barracks area at the north end of the depot. The depot was later expanded to encompass a 1,524-meter airstrip, formerly the Sampson Air Force Base.

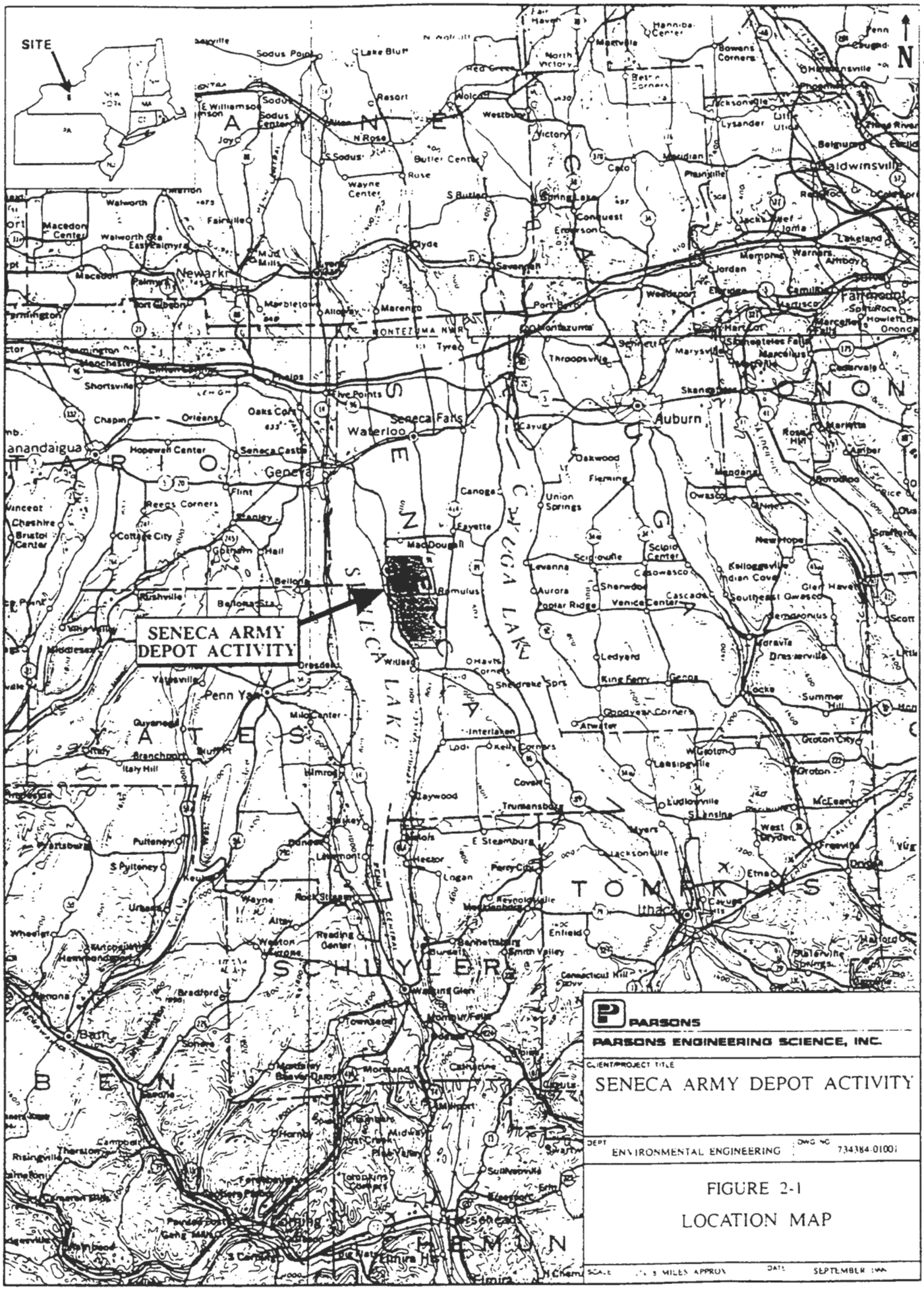
The mission of SEDA has primarily been the management of munitions. SEDA was used for: (1) receiving, storing, and distributing ammunition and explosives, (2) providing receipt, storage, and distribution of items that support special weapons, and (3) performing depot-level maintenance, demilitarization, and surveillance on conventional ammunition and special weapons.

SEDA was included on the National Priorities List in 1989. Consequently, all work on this project will be performed in accordance with Comprehensive Environmental Response and Liability Act (CERCLA) guidance and the *Federal Facilities Agreement Under CERCLA Section 120, Seneca Army Depot, Romulus, New York* (USEPA, US Department of the Army, and NYSDEC, 1993).

2.3 SEAD-63 DESCRIPTION

2.3.1 Site Description

SEAD-63 is located on the east side of North-South Baseline Road in the northwestern part of SEDA (Figure 2-2). The site is approximately 480 by 300 feet and is bounded by paved roads on the north, south and west and by open grassland to the east (Figure 2-3). The SEAD-63 site is mostly undeveloped except for a grass-covered bunker in the southeast corner and an elevated soil area in the northwest corner that formerly supported a machine-gun turret. A crushed shale road enters the site via Patrol Road. In general, the western half of the site is less vegetated and has been physically worn by vehicular traffic. The site is located within a secure, double-fenced area within SEDA.



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

LEGEND

AOC BOUNDARY(APPROXIMATE)

QAREA BOUNDARY

NORTH

ROMULUS

YERKES ROAD

LORAN TOWER

DUCK POND

KENDIG CREEK

SEAD-12(APPROXIMATE EXTENTS OF AOC

SEAD-12A

SEAD-12B

Q AREA

SEAD-48 (APPROXIMATE AOC BOUNDARY)

SILVER CREEK

SENECA ARMY DEPOT ACTIVITY

REEDER CREEK

SEAD-63

KENDIA CREEK

CONRAIL

MILITARY RESERVATION BOUNDARY

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY

ENGINEERING EVALUATION / COST ANALYSIS
SEAD-63 MISCELLANEOUS COMPONENTS BURIAL SITE

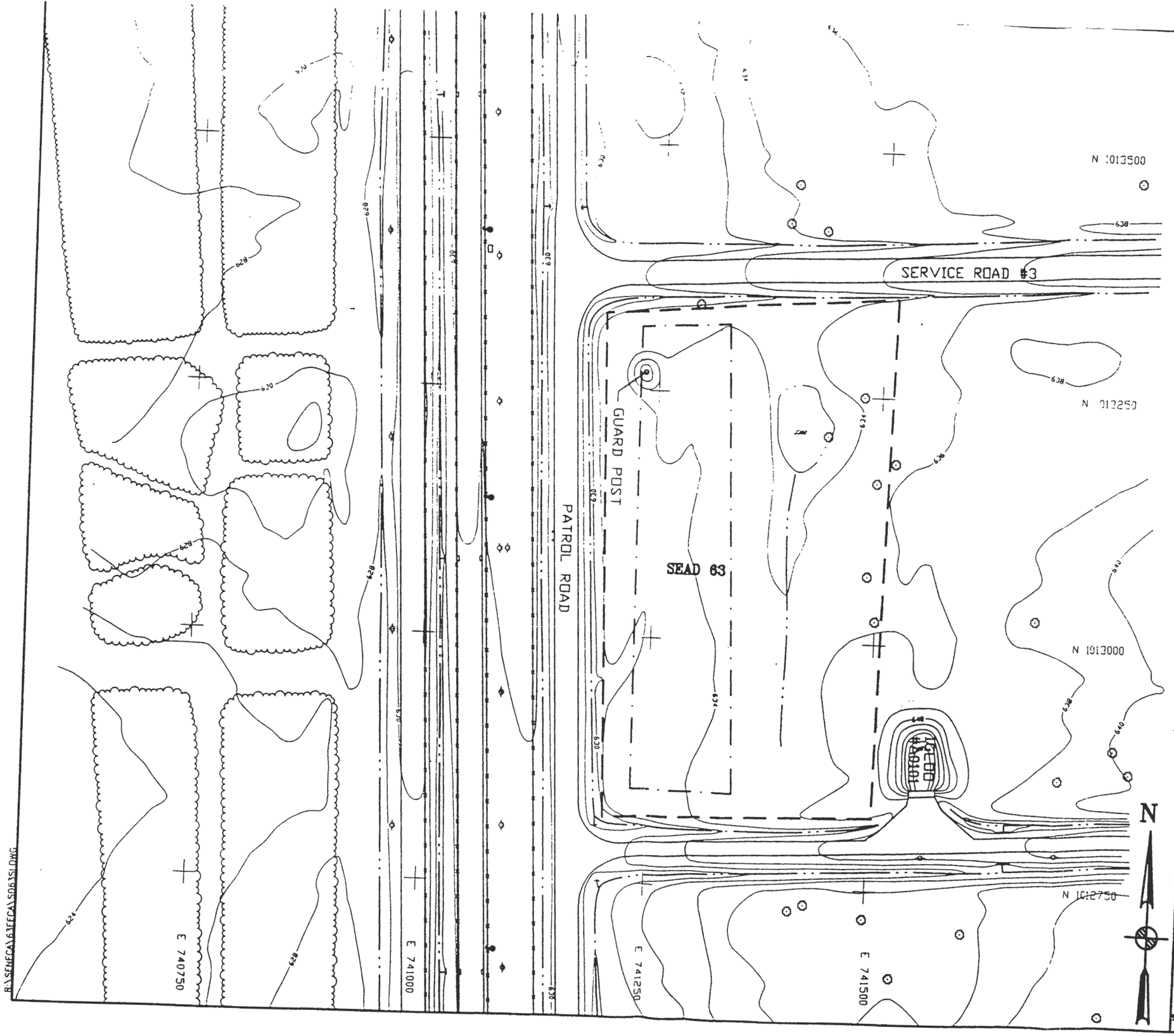
DEPT ENVIRONMENTAL ENGINEERING | DWG NO 727651-02001

FIGURE 2-2

SENECA ARMY DEPOT ACTIVITY
MAP

SCALE NA | DATE SEPTEMBER 1999

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



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENTS
- 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

APPROXIMATE AOC BOUNDARY

APPROXIMATE EXTENT OF OPERATIONS PAD (FROM SEDA SITE MAPS)

50 0 50 100
(feet)

PARSONS
PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
ENGINEERING EVALUATION / COST ANALYSIS
SEAD-63 MISCELLANEOUS COMPONENTS BURIAL SITE

DEPT. ENVIRONMENTAL ENGINEERING | Dwg. No. 734364-01001

FIGURE 2-3
SEAD-63
SITE PLAN

SCALE AS NOTED | DATE SEPTEMBER 1996 | REV A

Topography on site is generally flat with only a small westward slope. Drainage ditches adjacent to Patrol Road and the east-west trending roads that bound the site to the north and south. A slight ground depression, sloping south to north, is located in the northeastern portion of the site. Reeder Creek is located approximately 1,500 feet southwest of the site where it flows west into Seneca Lake. The site was used during the 1950s and 1960s as a disposal area for classified military parts. Multiple disposal pits were between 10 and 30 feet long and were likely to have been excavated to depths down to the surface of the weathered shale about eight to nine feet below ground surface (BGS). The EE/CA reported SEDA personnel having identified the types of materials disposed at this site as inert metal parts (also referred to therein as "miscellaneous components").

2.3.2 Site Geology

Fill material, till, weathered gray shale and competent gray shale were all encountered on site during drilling and test pitting conducted during the ESI. A thin topsoil layer (0.1 to 0.9 feet) was present in all three soil boring locations and 10 of the 12 test pit locations. Fill material was encountered in five test pits and drums of metal parts were observed in one test pit. The fill consisted of waste material with till, gravel, sized shale fragments and sand. The waste material consisted of miscellaneous components.

The till was characterized as brown or olive gray silt and very fine sand with small (less than one-inch) fragments of shale. Clay lenses were observed occasionally. Larger shale fragments were encountered in some of the soil borings. The till was observed to be 5.0 to 6.9 feet thick in the three soil borings performed at SEAD-63.

The weathered shale that forms the transition between till and competent shale was observed in all three of the soil borings and ranged in thickness from 1.3 to 3 feet.

Competent gray shale was observed in all three borings. The depths to bedrock ranged from 8.0 to 8.3 feet below ground surface. Competent shale was inferred by auger refusal in all three borings.

2.3.3 Site Hydrology and Hydrogeology

Surface runoff from precipitation is controlled by local topography and drainage ditches along the northern, western and southern boundaries of the site.

Three monitoring wells were installed at the site as part of the ESI (Parsons Engineering-Science, Inc., 1995a), and ground-water levels were measured in each of the wells. These data suggest the primary ground-water flow direction is primarily to the west. No appreciable changes in ground-water flow direction were observed during the month from June 25 to July 26, 1994 at SEAD-63.

2.3.4 Site Contamination Assessment

Site contamination assessment activities conducted during the ESIs included geophysical surveys, test pitting, drilling of soil borings and monitoring well installations, groundwater level measurements, the collection and laboratory analysis of soil and groundwater samples, and a radiological survey.

2.3.4.1 Geophysics

Geophysical surveys and test pits were performed during the ESI (Parsons Engineering Science, Inc., 1995a) to identify the SEAD-63 burial pits. Seismic refraction profiles showed 6 to 9 feet of unconsolidated overburden overlying bedrock. The elevations of the bedrock surface indicate that the bedrock sloped to the west, generally following surface topography.

A square-shaped conductivity anomaly was detected during an electromagnetic (EM) survey; the anomaly correlated to the suspected miscellaneous components burial pits at SEAD-63. The in-phase response of the EM-31 survey better defined the boundaries of the suspected burial pits. A later EM-31 survey performed during Remedial Investigation (RI) fieldwork confirmed the findings of the earlier survey (see Figure 2-4).

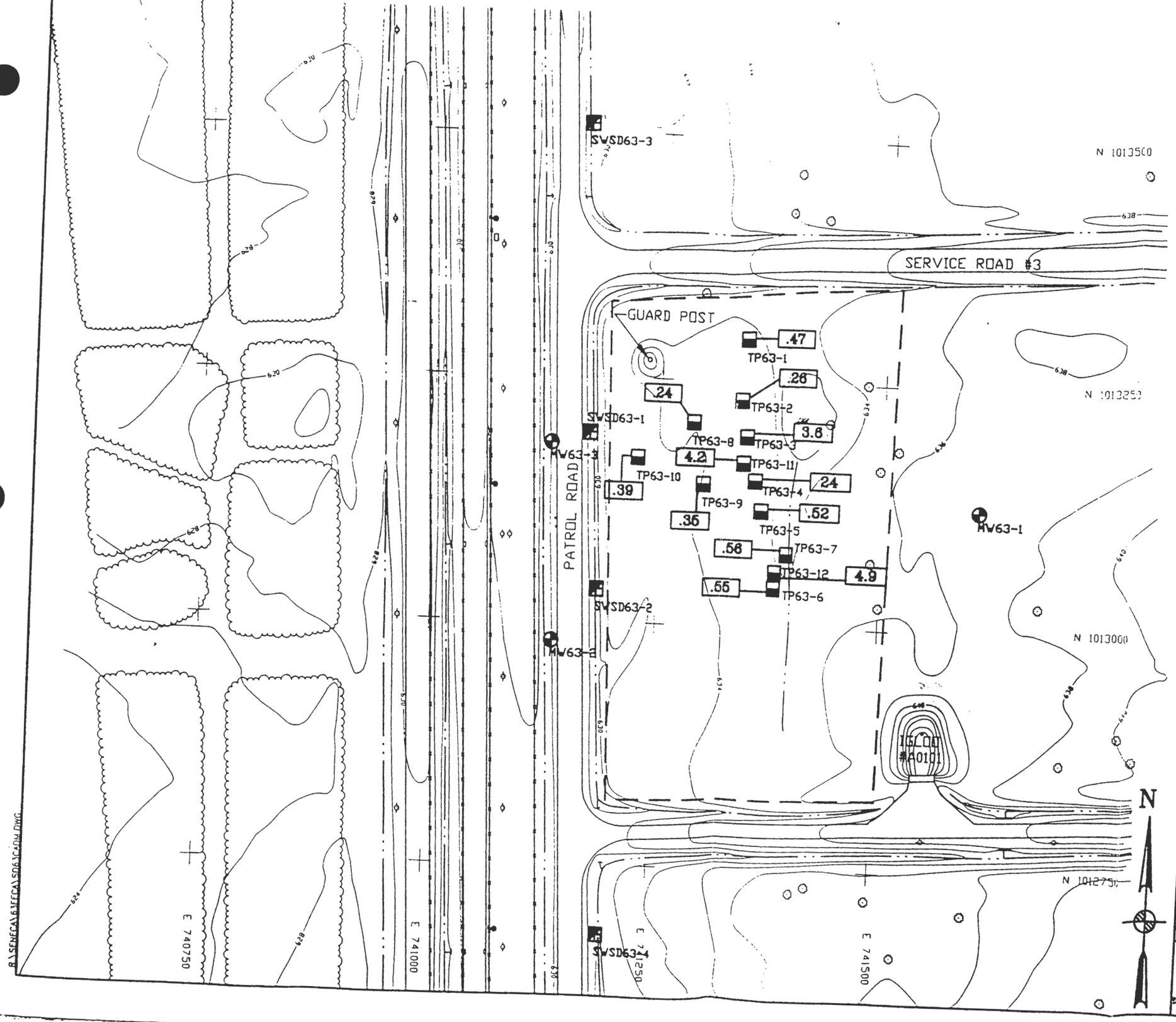
2.3.4.2 Test Pitting

Twelve test pits were excavated in SEAD-63 during the ESI (1996) to characterize the source of the geophysical anomalies. Miscellaneous military parts were found in several of the test pits excavated in the area of the suspected burial pits. Each of these excavations was characterized by dark gray shale gravel fill overlying the burial pits. The base of the pits could not be determined in any of these excavations due to the presence of perched water layer within the buried materials. Components found in these test pits included battery assemblies, accelerometers, lock mechanisms, fire/safe pins, baroswitches, wiring and quick connects. Two drums in good condition were found in one test pit. The one drum opened contained electronic components; no liquids were present.

None of the organic vapor and radiation (alpha, beta and gamma meters) field screening measurements performed in the drum and test pits exceeded background levels.

2.3.4.3 Radiological Survey

According to the EE/CA, a radiological survey covering 50 percent (%) of the grounds of SEAD-63 was performed as part of RI field investigation, performed in 1997 prior to the Army's decision to proceed with a Removal Action at SEAD-63. No hot spot areas were detected during that survey of low energy gamma emitters that required further investigation. All readings were reported to be within 50% of background levels. The EE/CA indicated that levels greater than 200-300% of background may indicate the need for additional surveying and investigation.



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENTS
- RAILROAD
- 768 — GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- CORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- ⊠ SURVEY MONUMENT
- MONITORING WELL
- TEST PIT
- SURFACE WATER/SEDIMENT
- 24 CADMIUM (mg/kg)
- APPROXIMATE AOC BOUNDARY

50 0 50 100
(feet)

PARSONS
PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE
SENECA ARMY DEPOT ACTIVITY
ENGINEERING EVALUATION / COST ANALYSIS
SEAD-63 MISCELLANEOUS COMPONENTS BURIAL SITE

DEPT: ENVIRONMENTAL ENGINEERING | Proj. No. 734364-01001

FIGURE 2-4
CADMIUM IN SUBSURFACE SOILS

SCALE: AS NOTED | DATE: SEPTEMBER 1990 | REV: A

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2.3.4.4 Laboratory Analysis Results for Environmental Samples

Soil

Soil, ground-water, surface-water and sediment samples were collected during the ESI (1996). Cadmium was detected in soil samples collected from three test pits at concentrations exceeding the NYSDEC *Technical and Administrative Guidance Memorandum* (TAGM) # *4046* (NYSDEC, 1993) value of 2.46 milligrams per kilogram (mg/Kg) by an order of magnitude. Mercury was detected in one test pit sample above the 0.1 mg/Kg TAGM # 4046 value. Figure 2-4 shows the locations and concentrations of cadmium detected in soil samples.

Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and pesticides were detected at low concentrations. Of those classes of compounds, only one SVOC, dibenzo(a,h)anthracene, exceeded its TAGM, 0.014 mg/Kg or the Method Detection Limit (by a factor of two).

A statistical comparison of soil radionuclide data indicated that SEAD-63 levels were indistinguishable from background. Therefore, soils at SEAD-63 did not exhibit a dose equivalent above the NYSDEC *Technical and Administrative Guidance Memorandum # 4003* (NYSDEC, 1994) value of 10 mrem/yr (milli roentgen equivalent man per year) above background.

Ground Water

One SVOC and a number of metals were detected in ground-water samples. Phenol was detected at a concentration twice the *New York State Ambient Water Quality Standard* (NYS AWQS) of 1 milligram per liter (mg/ℓ). Iron and manganese were detected above the NYS AWQS in all of the ground-water samples collected at SEAD-63.

Gross alpha radiation in a ground-water sample collected from monitoring well MW63-3, located hydraulically downgradient of the disposal pits, exceeded the NYS AWQS and federal drinking water standard by an order of magnitude. However, gross alpha radiation levels also exceeded the NYS AWQS in MW63-1, located hydraulically upgradient of the burial pits. The ESI also concluded that gross beta radiation levels in both MW63-1 and MW63-3, which did not exceed the NYS AWQS, may be due to high turbidity levels in the unfiltered samples. SEAD-63 ground-water samples had turbidity readings ranging from 60 to 115 Nephelometric turbidity units (NTUs). The turbidity of background samples, which where collected using low flow pump purging and sampling techniques that minimize turbidity, ranged from 4.3 to 40 NTUs.

Surface Water

Two SVOCs (phthalates) and several metals were detected in surface-water samples at concentrations exceeding NYS AWQS. Several radionuclides,

including Cobalt-60, Radium-226, Thorium-230 and Uranium-233/234, were detected in surface-water samples. These constituents were detected in background (upstream) sample locations as well as those at SEAD-63, although the maximum and average concentrations at SEAD-63 were greater than the maximum and average concentrations upstream of the site. Gross alpha and gross beta levels were greater at SEAD-63 in at least one surface-water sampling location (SW63-2) than upstream; however, the ESI (1996) concluded that result may have been impacted by high turbidity levels. Statistical comparison of the SEAD-63 and background data sets indicated that Actinium-227, Radon-222, Tritium, Uranium-235 and Uranium-238 are elevated above background. There are no NYS AWQS for radionuclides in Class C surface waters.

Sediment

The ESI (1996) reported that sediment in drainage ditches at the site SVOCs, mostly polycyclic aromatic hydrocarbons (PAHs) and pesticides. The PAHs benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)anthracene, chrysene, benzo(a)pyrene and ideno(1,2,3-cd)pyrene were detected at concentrations exceeding NYSDEC *Technical Guidance for Screening Contaminated Sediments* (NYSDEC, 1999) by a factor of two to three. No pesticides or Polychlorinated biphenyls were detected above the NYSDEC sediment criteria. Copper, manganese, nickel and zinc were detected at concentrations at least twice their respective NYSDEC sediment criteria.

All radionuclides detected at SEAD-63, except for Lead-210, were also detected in background sediment samples. Although the maximum values detected in the SEAD-63 samples exceeded the maximum values of upstream sampling locations, average concentrations were comparable. Wilcoxon ran sum tests indicated that Cesium-117, Thorium-220, Uranium-233/234 and Uranium-238 were elevated above background levels. There are no NYSDEC sediment criteria for these radionuclides. However, in comparison to the NYSDEC TAGM cleanup guideline for soils contaminated with radioactive material, radionuclides distinguishable from background in the sediment did not exhibit a dose equivalent greater than the 10 mrem/yr cleanup guideline based on RESRAD modeling.

3. OBJECTIVES

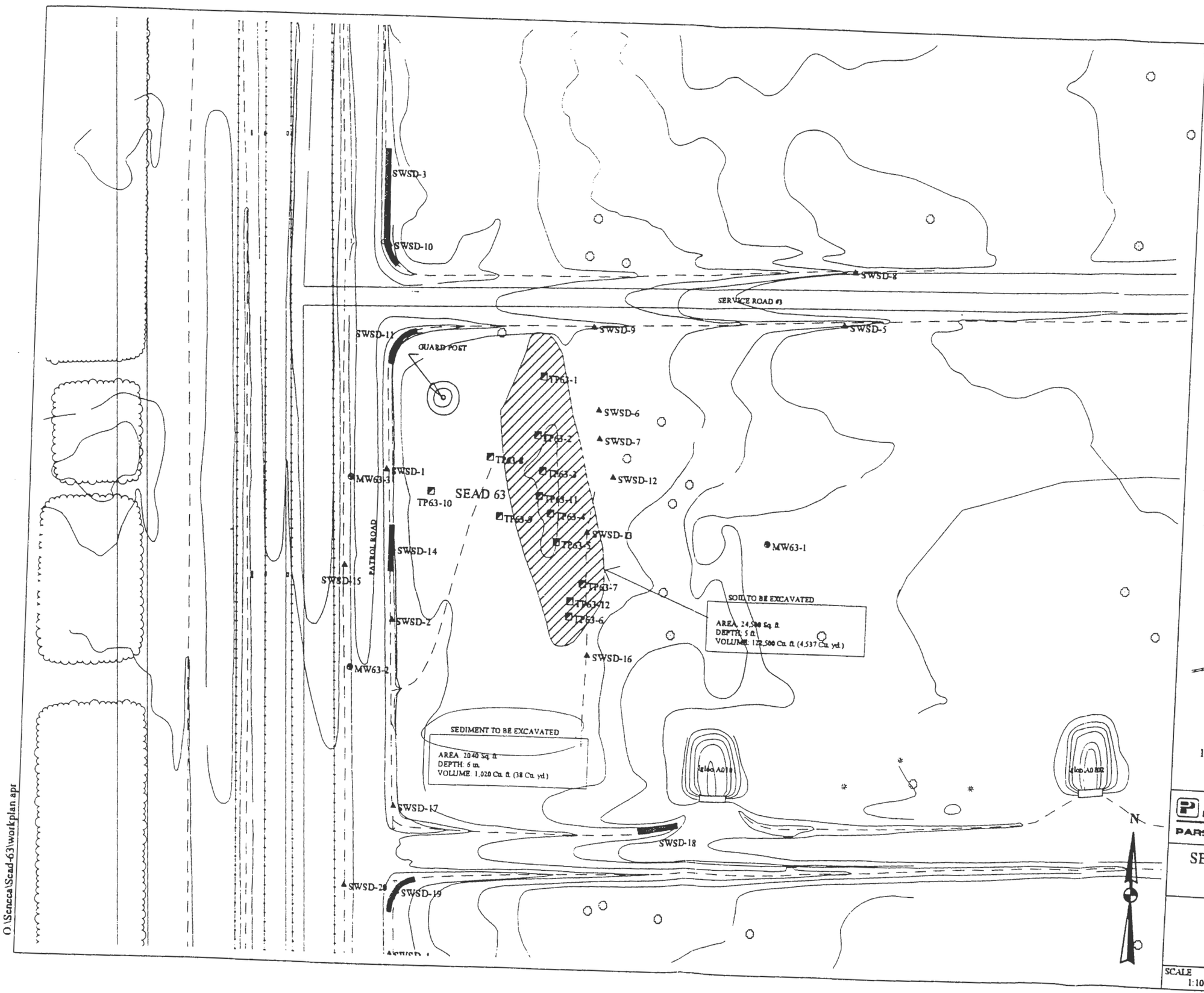
Plexus Scientific Corporation (Plexus) was tasked under US Army Corps of Engineers (USACE) Contract Number DACA31-01-D-0032, Delivery Order Number 0007, to perform the SEAD-63 NTCRA. The primary objective of the NTCRA is to remove the miscellaneous components from the SEAD-63 burial pits, eliminating a contamination source and reducing potential further soil and groundwater contamination. The location of the burial pits is shown in Figure 3-1.

Other NTCRA objectives include:

- Removing contaminated soil associated with the buried miscellaneous components in and immediately surrounding the burial pits that exceeds cleanup goals;
- Removing sediment from portions of the drainage ditches at the perimeter of the SEAD-63 site (see Figure 3-1); and
- Installing monitoring wells for future ground-water monitoring at SEAD-63.

The *Action Memorandum* and EE/CA concluded that cadmium is the only metallic constituent of concern in soil at SEAD-63. Table 3-1 summarizes soil cleanup goals for SEAD-63 identified in the *Action Memorandum* and EE/CA, based on both a streamlined risk evaluation and TAGM values. The streamlined risk evaluation was based on the assumption that all constituents at the site other than cadmium remain at their present levels. The 50 mg/Kg risk-based value for cadmium in soil represents the highest concentration that could exist at the site, all other constituents being present at their current levels, and still result in acceptable human and ecological risk. While the 50 mg/Kg risk-based number is significantly higher than the 2.46 mg/Kg TAGM value, the EE/CA and *Action Memorandum* adopted the more conservative TAGM value as the soil cleanup goal for cadmium. The EE/CA also indicated this (TAGM) value will be evaluated based on the results of confirmatory (limits of excavation) sampling.

The ESI (1996) indicated that radionuclides are not present in soil at SEAD-63 above background levels. As indicated in the *Action Memorandum* and EE/CA, site-specific soil cleanup goals for radioactivity will be established using RESRAD only if sampling results to confirm the limits of soil excavation indicate the presence of radionuclides above background levels. The RESRAD model uses dose assessment methodology to derive site-specific derived concentration guideline levels (DCGLs). DCGLs would be used in accordance with the *Multi-Agency Radiological Survey and Site Investigation Manual* (MARSSIM) to determine if the site may be released for unrestricted use following soil excavation. Preliminary DCGLs were developed in the EE/CA using RESRAD and site-specific information for SEAD-63 and based on an exterior dose limit of 10 mrem/yr above background in accordance with TAGM 4003 (see Table 3-1).



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PARSONS

PARSONS ENGINEERING SCIENCE, INC.

SENECA ARMY DEPOT ACTIVITY

SEAD -63

REVISED ACTION MEMORANDUM

FIGURE 3-1

SOIL AND SEDIMENT AREAS TO BE EXCAVATED

SCALE	DATE	REV
1:100	MAY 2001	SHEET 1 OF 1

Table 5-1
Preliminary Clean Up Goals for Soil
SEAD-63 Action Memorandum
Seneca Army Depot Activity, Romulus, NY

Clean up Goals for Chemicals of Concern

Cadmium	50 mg/kg [1b]

Clean up Goals for Radionuclides

	Background	Preliminary DCGL - pCi/g [3]			
Isotope	Screening Level [2]	Park Wkr [4]	Rec Child [5]	Const. Wkr [5]	Residential [6]
Ac-227	0.4	10.52	15.86	3.412	1.6
Cs-137	0.7	8.473	9.759	6.839	12.2
Co-57	0.1	56.06	64.56	45.31	94.2
Co-60	0.305	1.771	2.04	1.432	3
Lead-210	4.3	151	1156	22.57	2.79
Pm-147					49350
Pu-239/240	0.2	260	2820	34.83	20
Ra-226	2.315	2.55	2.944	2.033	0.12
Ra-228	2.645	4.765	5.517	3.749	2.35
Th-228		2.791	3.225	2.211	3.89
Th-230	1.75	924.6	9481	110.9	0.33
Th-232	1.81	192	2813	22.25	1.3
Tritium	16.51	52930	2148000	52020	80
U-233/234	1.14	2048	21860	24.92	38.5
U-235	0.305	36.68	42.88	27.09	6.7
U-238	1.21	191.3	238.6	104.2	73.6

(1a) Based on TAGM value.; 1b) based on health risk calculation
(2) Background Screening Level set to 95th percentile value. If 95th percentile exceeded the max value (due to high SQLs), the maximum value was used instead.
(3) Derived using RESRAD and a dose equivalent of 10 mrem/yr. Assumed an impacted area (above background) of 3439 m2.
(4) The Preliminary DCGLs derived for SEAD-63 for the Construction Worker scenerio included the following pathways: dermal contact to soil, inhalation of dust in ambiant air, and soil ingestion.
(5) The Preliminary DCGLs derived for SEAD-63 for the Park Worker and the Recreational scenerios included the following pathways: dermal contact to soil, inhalation of dust in ambi soil ingestion, and ingestion of groundwater.

The *Approval Memorandum* and EE/CA do not specify numerical cleanup criteria but recommend removal of surface sediment (i.e., 0-6 inches BGS) from portions of drainage ditches at and adjacent to the SEAD-63 site. Accordingly, surface sediment will be removed to a six-inch depth from the locations identified in Figure 3-1 at the direction of the USACE's on-site representative. Numerical cleanup goals for drainage ditch sediment will not be used on this project. Post excavation samples will be collected from the drainage ditches, however, and submitted for laboratory analysis.

4. SCOPE OF WORK

As outlined in the *Approval Memorandum*, EE/CA and USACE's Delivery Order, the scope of the NTCRA is to:

- Excavate and remove the SEAD-63 burial pits, including both miscellaneous components and soil exceeding cleanup goals for chemical constituents;
- Separate the miscellaneous components from the excavated soil;
- Facilitate the Army's inspection of the excavated components, and segregate, package and turn over those components the Army determines it needs to later "demil;"
- Remove the remaining components and dispose off site at appropriate facilities;
- Remove the excavated soil and dispose off site at appropriate landfills following laboratory analyses of representative samples and waste profiling;
- Excavate surface sediment from those areas of adjacent drainage ditches identified in the *Approval Memorandum* and EE/CA and dispose off site at appropriate facilities;
- Collect and perform confirmation laboratory analysis of soil samples from the former burial pits to verify cleanup goals for chemical constituents have been met at the limits of excavation;
- Perform a MARSSIM FSS to verify the limits of excavation of the former burial pits meet soil radiological cleanup goals;
- Restore the site to original grade;
- Advance four soil borings, and install and develop overburden ground-water monitoring wells in each of the borings for later post-closure monitoring (by others); and
- Document the results of the above efforts in a Removal Action Completion Report.

5. PROJECT APPROACH AND SUPPORT ACTIVITIES

Plexus' approach to the SEAD-63 NTCRA was developed based on the following assumptions:

(1) Radioactivity is not likely present in SEAD-63 soil at concentrations above background levels, and

(2) While it is possible a small portion of the miscellaneous components in the SEAD-63 burial pits could contain radioactive sources, or that a small portion of them could be radioactively-contaminated, the vast majority if not all of the components are believed to be non-radioactive.

The primary focus of the NTCRA is to remove primarily non-contaminated debris (miscellaneous components) buried at SEAD-63, and remove surrounding soil containing chemical constituents with concentrations exceeding TAGM cleanup goals, primarily cadmium. Provisions are made in this WP and the supporting project planning documents for the contingent management of radioactive sources in miscellaneous components, radioactive-contaminated components, and radioactive-contaminated soil.

5.1 PROJECT APPROACH

Our approach to managing the SEAD-63 NTCRA is described below. Work will be performed in three mobilizations.

The first mobilization, performed in advance of the Removal Action, will consist of collecting and submitting low turbidity ground-water samples from the three existing SEAD-63 monitoring wells for off-site laboratory analysis. Ground-water samples collected from the SEAD-63 monitoring wells during the ESI were very turbid and turbidity levels varied. Those variable turbidity levels may have contributed to the ESI's potentially inaccurate conclusion that radioactivity is higher in ground water downgradient than upgradient of the SEAD-63 site. A low-flow sampling round may confirm that radioactivity is not a concern in ground water at the SEAD-63 site. This conclusion will be of value in planning subsequent dewatering and excavation of the burial pits.

The second mobilization will include:

- Initial mobilization of equipment, personnel and materials, and site preparation activities;
- Excavating debris and soil from the disposal pits;
- Performing field screening (for elevated gross gamma activity) during excavation, and sampling for rush cadmium analyses by an off-site laboratory to guide excavation;

- Performing gross gamma activity field screening of excavated material to ensure radioactivity is not present, and to aid in separating radioactive from non-radioactive material if elevated radioactivity is detected;
- Operating a screen plant to physically segregate debris from soil excavated from the disposal pits;
- Facilitating physical examination and segregation of debris by the Army who will determine, based on their knowledge of military components, if radioactive sources are present inside certain components and if certain components will be retained by the Army for further demil'ing;
- Placing debris the Army determines require demil'ing into containers and moving the containers of material on site to a place designated by the Army;
- Placing radioactive materials in appropriate containers if any is found;
- Temporary stockpiling and covering piles of excavated soil as well as debris that does not require demil'ing;
- Sampling the excavated soil and debris for waste disposal characterization laboratory analyses;
- Confirmation sampling of the limits of excavation and laboratory analyses, including the FSS; and
- Sampling and laboratory analysis to confirm gravel from an off-site borrow source to be used for later backfilling the excavation is uncontaminated.

We will remobilize to the site a third and final time following receipt of laboratory analytical results confirming that cleanup goals have been met and off-site facilities have approved the excavated materials for disposal. The third mobilization will include:

- Loading and transporting the excavated debris and soil for disposal at appropriate off-site facilities;
- Backfilling and machine-compacting the excavation with gravel delivered from a USACE-approved off-site borrow source;
- Installing four ground-water monitoring wells at locations at the site to be identified by the USACE;
- Removing temporary facilities and re-grading support zone areas; and
- Reseeding the top of the excavation and select support zone areas with a seed mix approved by the USACE; and
- Demobilizing equipment and personnel from the site.

A Removal Action Close-out Report will be prepared following project completion.

5.1.1 Mobilization and Site Preparation

Plexus will initially mobilize to the site in the spring of 2004 following USACE approval of this WP and supporting project planning documents, and subcontractor procurement. Mobilization and site preparation activities will include:

1) Mobilization – Equipment, personnel and materials will be mobilized to the site. Equipment will include:

- Excavator
- Screen plant
- Dozer
- Dewatering (trash) pump
- Frac tank
- Construction trailer
- Electric generator
- Port-a-john
- Air sampling pumps, dust meters and tripods
- Two Sodium Iodide gamma scintillation detectors (either 2"x2" or 3"x3") coupled to Ludlum 2221 meters, or equivalent meters
- Two Ludlum 44-9 GM probes coupled to Model 3 survey meters, or equivalent probes and meters
- One Ludlum 43-89 alpha/beta scintillator coupled to a Ludlum 2224-1, or equivalent probe and meter
- Three SKC personnel air samplers, or equivalent
- Ludlum 2929 with 43-10-1 alpha/beta sample counter, or equivalent
- Hand-held global positioning system unit

Materials brought to the site will include:

- Straw bales and silt fence
- Fuel for equipment and the generator
- Snow fencing
- Signs
- Sand and polyethylene for constructing decon and temporary waste storage pads
- Gravel from an off-site borrow source
- Personal protective equipment
- Sampling materials and bottles
- Water level meter
- Seed
- Supporting chemical and radiological sampling supplies (e.g., rad rope, smears and envelopes, nitrile gloves, soil sampling equipment, etc.)

Personnel mobilized to the site will include:

- Superintendent who will also double as the lead (excavator and dozer) equipment operator
- One person who will serve as both a CQC Systems Manager/Site Safety and Health Officer

- Screen plant operator
- One to two laborers to assist in screen plant operation and assist the Army in sorting/packaging debris
- One or two Health Physics Technicians (Rad Tech) to perform field radiological screening, and sampling both waste materials and limits of excavation

2) Performing Background Air Monitoring – Background air monitoring will be performed prior to beginning earthwork to establish criteria for comparing field measurements to, and prove out field instrumentation to be used during air monitoring during the project.

3) Verify Utilities – Prior to initiating earthwork, we will check drawings provided by the SEDA and/or contact the public utility service to identify locations of subsurface utilities at and immediately adjacent to the SEAD-63 site.

4) Install Siltation Controls – Hay bales and silt fencing will be installed at key locations along the perimeter drainage ditches to prevent silting of downstream areas. These controls will be removed and disposed off site at the end of field work.

5) Construct Temporary Safety Fence – Temporary fencing (i.e., orange snow fence) and signage will be installed at key locations at the site to prevent unauthorized access by non-project personnel. This is in addition to two layers of access-controlled fencing that surround the facility and area of the facility SEAD-63 is located within. Additional temporary (snow) fencing will installed around the burial pits to limits. Safety hazard warning signs will also be installed as appropriate.

6) Locate the Approximate Limits of the Trenches to be Excavated – A subcontract land surveyor will stake the limits of anomalies previous geophysical surveys identified as referenced during the EE/CA.

7) Construct Temporary Pads for Waste Stockpiles and Equipment Decontamination – Temporary pads will constructed to prevent contaminated water runoff and run-on of clean storm water into the waste stockpile areas, minimizing cross-contamination. A temporary decontamination equipment decontamination pad will also be constructed. Storage and decon pad construction details are described in Section 5.2.

5.1.2 Excavating & Segregating Debris from Soil

The USACE has requested that all debris and soil excavated at SEAD-63 be disposed off site, other than debris requiring further demil'ing by the Army. Debris will be segregated from soil in excavated material to allow the Army to

evaluate what may require further demil'ing. Segregating debris will also allow it to be checked for the possible presence of radioactive sources and screened to assess whether any is radioactively contaminated. The identification of any identified radioactive sources and/or radioactive contaminated debris will allow for its segregation from non-radioactive material for appropriate packaging, transport and off-site disposal at licensed disposal facility(s).

Excavation and segregation of debris and soil will proceed as described below.

1) Remove Topsoil – Topsoil over the burial pits will be removed and temporarily stockpiled for later off-site disposal, following laboratory analysis confirming the topsoil meets cleanup goals. Topsoil will be segregated from fill material excavated from the burial pits as it's less likely topsoil is contaminated, facilitating cost-effective off-site disposal.

2) Excavate Burial Pits and Surface Sediment from Drainage Ditches - Soil and components in and immediately surrounding the burial pits (Figure 3-1) will be excavated and temporarily stockpiled on lined pads. The initial limit of excavation will be just beyond the visible limits of the trenches, judged by change in soil type, color and compaction from fill materials to natural soils. We also will excavate surface (the upper six inches of) sediment from the approximate areas of the drainage ditches shown in Figure 3-1. Approximately 4,540 cubic yards (CY) of soil and debris (in-place volume) will be excavated from the burial pits, and about 40 CY of sediment (in-place volume) will be excavated from the drainage ditches.

   To minimize potential remobilizations, limits of the burial pit excavation will be preliminarily confirmed by: (a) having the Rad Tech conduct field screening on soils for the presence of elevated gamma radiation, and (b) performing rush laboratory analysis of soil samples for cadmium.

3) Segregate Miscellaneous Components from Soil in Excavated Material – Large components (i.e., drums, large pieces of metal) will be removed from the burial pits, placed on lined pads and kept segregated from soil. Soil mixed with loose components will be excavated from the trenches and placed on lined pads, staged for later segregation. Debris exceeding four inches in diameter will be separated from excavated soil using a portable screen plant. The USACE selected screen size of four inches to screen out debris. Four inches is a typical diameter used to determine what can be disposed in landfills to avoid differential settlement without special processing.

4) Segregate and Screening of Soil – Soil will be screened during excavation based on field radiological measurements by the Rad Tech and visual appearance (i.e., evidence of staining or discoloration). Excavated soil will be temporarily stockpiled on lined pads, in piles of certain size as

agreed to by landfills potentially receiving the soil (i.e., estimated to be 200 to 500 tons each), segregated based on screening results and geographic location (i.e., trench location). Five-point composite samples will be collected from each soil stockpile and submitted for laboratory analysis to:

- Confirm field screening results, and
- Characterize waste in support of off-site disposal facilities' approval.

The soil stockpiles will be covered with polyethylene plastic or tarps until removed (at a later date) for loading, transport and off-site disposal.

5) Segregate Radioactive from Non-Radioactive Components – Non-radioactive will be separated from potentially-radioactive components, if any are present. The Rad Tech will perform surface scans and swipes/field analysis of representative components to assess potential for surface radioactive contamination. A US Army representative familiar with military commodities, supported by a Plexus laborer, will physically inspect components to segregate material with possible internal radioactive sources from the remaining components. Any observed radioactive sources will be segregated from other material for proper packaging and later disposal at the Barnwell, South Carolina (SC) radioactive waste landfill, using a US Army Joint Munitions Command (JMC) Certified Waste Broker, as necessary. Samples of potentially radioactive-contaminated items will be submitted for off-site laboratory analysis (for disposal characterization). Select samples of representative non-radioactive components will also be submitted for off-site laboratory analysis to confirm field screening results.

5.1.3 Confirming Limits of Excavation

Samples from the limits of the burial pit excavations will be collected and analyzed by an off-site laboratory to confirm that chemical cleanup goals have been met prior to backfilling. A MARSSIM-compliant FSS will be conducted at the limits of the burial pit excavations to verify that radioactivity levels are also below cleanup goals.

Cleanup goals were not developed in the *Approval Memorandum* or EE/CA for the drainage ditch sediment. Those documents specified excavation of the upper six inches of sediment from the entire width of the drainage ditch at the specific locations identified in Figure 3-1, with excavations ending at ESI sample locations outside the areas identified in the EE/CA for excavation. A MARSSIM-compliant FSS will be conducted at the limits of the drainage ditch excavations burial pit excavations to verify that radioactivity levels meet TAGM criteria. We will collect and submit bottom and sidewall samples from the drainage ditch excavations for off-site laboratory analysis for documentation purposes.

The trenches will be backfilled following USACE and NYSDEC approval of: (a) the FSS and chemical data confirming the limits of excavation, (b) that portion of excavated soil with laboratory data documenting that contaminant concentrations are below cleanup goals, and (c) laboratory data documenting that off-site borrow source gravel and topsoil have contaminant concentrations below cleanup goals. A land surveyor will establish the limits of excavation and sample locations in the field, for documentation purposes.

5.1.4 Waste Packaging, Transport and Off-Site Disposal

Plexus will remobilize to the site following receipt of laboratory analysis for backfill material, and excavated components and contaminated soil. Remobilization is required due to the long duration for off-site radiological laboratory analysis and waste profile acceptance by solid waste, Resource Conservation and Recovery Act (RCRA) hazardous, low level radioactive waste (LLRW), mixed waste and non-RCRA/Non-LLRW disposal facilities.

Components the on-site Army representative determines requires further "demil'ing" will be segregated from the remaining debris, placed into containers, and stored on site at locations designate by the Army for their later demil'ing and disposition.

If any are found, radioactive-contaminated debris will be packaged and transported for disposal as LLRW or mixed waste depending on chemical characteristics. Any radioactive sources will be packaged and transported to the Barnwell, South Carolina LLRW landfill for disposal using a U.S. Army JMC Certified Waste Broker, as necessary. Packaging and transport will depend on the quantity found on site. Any radioactive sources will likely be removed from debris and placed in 55-gallon steel drums for transport to Barnwell. Any debris with surface radiological contamination will be placed in drums, B-25 containers and/or intermodals for off-site disposal at a LLRW facility. Transport will be directly to disposal sites or via a licensed broker who may consolidate wastes.

At the request of the USACE, all excavated soil (i.e., both soil that is below as well as that exceeding cleanup goals) and the remaining (demil'd, non-radioactive) debris will be transported off site for landfill disposal. The vast majority, if not all, of this material will be disposed at a New York State landfill, e.g., Seneca Meadows Landfill, Waterloo, NY; High Acres Landfill, Perinton, NY; or the landfill in Model City, NY. Some or all of the soil may be beneficially reused at those landfills as daily cover material as concentrations of chemical constituents measured during past studies have been relatively low. Any soil determined to be RCRA characteristic-hazardous waste will be disposed at a RCRA hazardous waste landfill. Any soil determined to be LLRW and mixed waste soil will be disposed at a LLRW facility. We do not anticipate much, if any, of the soil will be RCRA hazardous or LLRW based on previous studies.

Vehicles transporting waste in bulk quantities will be weighed on a truck scale located on the SEDA facility to maximize transport efficiency (i.e., make full utilization of transport capacity) and ensure roadway load limits are not exceeded.

5.1.5 Monitoring Wells Installation

Up to four Polyvinyl chloride (PVC) monitoring wells will be installed to allow for future ground-water monitoring at SEAD-63. The four-inch diameter wells will be installed in 6-¼ inch inside diameter soil borings advanced at locations to be defined by the USACE. The borings will be advanced using hollow stem augers. Soil samples will be collected at five-foot intervals and continuously below six feet below ground surface (BGS) to determine where to set the well screen. Soil samples will be collected by driving split spoons in advance of the auger flights.

The well screen will be set to span the anticipated overburden water table. The well screen will be attached to thread-mounted riser pipe to a height of about three feet above ground surface; glues and solvents will not be used in constructing the wells. A water-tight cap will be placed on top of the riser pipe. A sand pack will be placed between the well screen and as auger flights are withdrawn to a height of about one foot above the top of the screened interval. A bentonite clay seal will be constructed above the sand pack to about 6 inches BGS as auger flights are removed. The seal will be constructed using bentonite chips hydrated with potable water obtained from an off-site source. A steel protective well casing with locking cap will be set in a concrete pad constructed above the bentonite seal to a height just above the surrounding ground surface.

Each of the new monitoring wells will be developed using a surge block and pump, removing a minimum of five volumes of standing water in each well. Water from well development will be collected and added to the frac tank for later disposition.

The location and elevation of the top of the inner riser pipe will be established using land surveying techniques. The elevation of the top of the riser pipe of each of the three existing SEAD-63 monitoring wells will be resurveyed during the same mobilization. Boring and well construction logs will be prepared for each monitoring well location.

5.1.6 Site Restoration

The excavated areas will be backfilled and machine-compacted in one-foot thick lifts to approximately the surrounding surface grade. Backfill will consist of gravel imported from off-site borrow source(s) following USACE approval of laboratory analytical results for borrow source samples. The gravel will be free of wood, debris, rubble, roots, stones larger than three inches, with less than 25% passing a 200 sieve.

At the request of the USACE, the backfilled site will be reseeded using a hay seed mix purchased from a local supplier. Support zone areas will also be re-graded and reseeded as necessary. Straw will be placed over seeded areas as needed to minimize erosion.

5.1.7 Removal Action Completion Report

Results and records of the removal action will be documented in a Completion Report for submittal to the USACE, NYSDEC and USEPA. The Completion Report will include:

- Description of the work performed
- Variations from the Removal Action Work Plan and associated project plans, if any;
- Quantities of excavated and segregated components and soil/fill material;
- Field screening and laboratory data for excavated materials and other wastes, the limits of excavation, and backfill material;
- Final Status Survey results;
- Soil boring and monitoring well construction logs;
- Land survey results documenting the final limits of excavation, location of sampling points at the limits of excavation, and the location and elevation of the top of the monitoring wells;
- Waste manifests and bills of lading/shipping documents;
- Air monitoring results;
- Other relevant data; and
- Certification by the project Professional Engineer.

5.2 SUPPORT ACTIVITIES

Activities conducted in support of the project are identified below:

5.2.1 Drainage Control

Run-on controls will be implemented during the removal action to prevent non-excavation related and non-contaminated surface water from entering work areas of the site. Ditches and/or berms will be constructed adjacent to upslope sides of the pads to divert run-on away from the pads. The ditches and berms will be constructed to facilitate discharge to historic surface water discharge points.

Runoff controls will be implemented to capture surface water in the work area. Excavated materials will be managed and temporarily stockpiled on lined pads to prevent the spread of contamination. Construction equipment will be decontaminated on a lined decon pad. The pads will consist of 40-millimeter polyethylene plastic sheeting placed over several inches of clean sand on the existing ground surface and covered with several inches of sand to protect the polyethylene. The pads will be slope to sump allow for the collection of runoff

either back into the former disposal pits and/or in sumps. Water from sumps will be pumped for discharge to the frac tank mobilized to the site to collect water later transport/treatment at an off-site facility.

5.2.2 Excavation Dewatering

Trash pump(s) will be used during excavation and backfilling activities as necessary to dewater the burial pits. The pumps will discharge collected water to the frac tank. A sample of the frac tank water will be collected at the end of the project or when full, and submitted for off-site laboratory analysis. Laboratory analysis results will be used to secure approval to discharge the water at a local POTW (publicly-owned treatment works), probably at one of the two Town of Romulus, County Water District treatment facilities.

5.2.3 Fugitive Dust Control and Air Monitoring

Necessary measures will be taken to minimize dust migration off site due to NTRA activities in accordance with NYSDEC TAGM HWR-89-4031, Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites. Ambient air monitoring consistent with TAGM HWR-89-4031 will be conducted in during removal action field work to verify that fugitive dust emission levels are within acceptable criteria. Daily ambient air monitoring will be performed at both upwind and downwind locations, with equipment calibration performed in accordance with manufacturer's instructions but no less frequent than weekly. Details of the planned air monitoring, including upwind and downwind particulate monitoring, are described in the Air Monitoring Plan that accompanies this WP.

5.2.4 Waste Disposal Coordination

Copies of permits and supporting information on waste transporters and off-site disposal facilities will be submitted to the COR along with waste disposal characterization results for review and approval, along with completed waste profile sheets. Waste manifests and shipping documents will be prepared in accordance with regulatory requirements for signature by the COR or authorized representative prior to scheduling transport and off-site disposal of excavated material and water.

5.2.5 Progress Reports

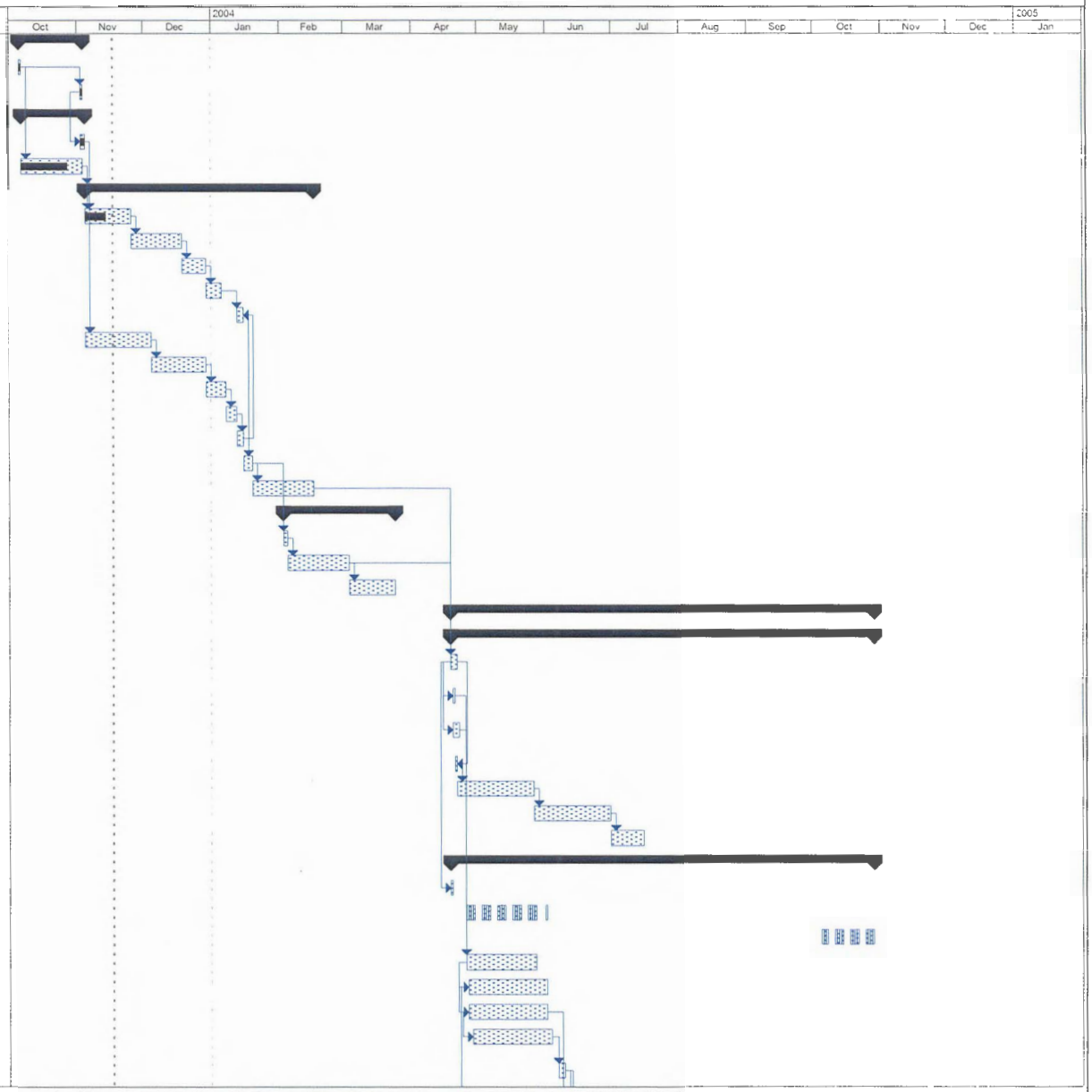
Weekly reports will be provided, documenting the progress during the fieldwork phase of the project. Daily CQC reports and monthly project summary reports will also be provided to the USACE.

6. WORK SEQUENCE AND SCHEDULE

The sequence and proposed Critical Path Method (CPM) schedule to execute the work outlined above is shown in Figure 6-1. The CPM schedule presented as Figure 6-1 is a living document and will change during the project.

Non-Time Critical Removal Action - SEAD-63
Seneca Army Depot, Romulus, New York
Figure 6-1 - Baseline Schedule

ID	Task Name	Duration	Start	Finish	Predecessors
1	**Notice to Proceed**	**21 days**	**Mon 10/6/03**	**Mon 11/3/03**	
2	Receive USACE Delivery Order	1 day	Mon 10/6/03	Mon 10/6/03	
3	USACE Approves WAD/WO Documentation	1 day	Mon 11/3/03	Mon 11/3/03	2
4	**Site Visit & Docs Review**	**21 days**	**Tue 10/7/03**	**Tue 11/4/03**	
5	Initial Site Visit/Meeting	2 days	Mon 11/3/03	Tue 11/4/03	3SS
6	Background Documents Review	4 wks	Tue 10/7/03	Mon 11/3/03	2
7	**Work Plans & Planning**	**68 days**	**Wed 11/5/03**	**Mon 2/16/04**	6
8	Prepare/Issue Draft Work Plans (WPs)	3 wks	Wed 11/5/03	Tue 11/25/03	6,5
9	USACE Review/Comment - Draft WPs	3 wks	Wed 11/26/03	Thu 12/18/03	8
10	Revise & Issue WPs (Proof Copy)	1 wk	Fri 12/19/03	Mon 12/29/03	9
11	USACE Review Proof Copy of WPs	3 days	Tue 12/30/03	Mon 1/5/04	10
12	Issue Final WPs to USACE & Regulators	3 days	Tue 1/13/04	Thu 1/15/04	11,17FF
13	Prepare Final Status Survey (FSS) Plan	4 wks	Wed 11/5/03	Thu 12/4/03	5
14	USACE Review/Comment Draft FSS Plan	3 wks	Fri 12/5/03	Mon 12/29/03	13
15	Revise/Issue FSS Plan (Proof Copy)	1 wk	Tue 12/30/03	Wed 1/7/04	14
16	USACE Review Proof Copy of FSS Plan	3 days	Thu 1/8/04	Mon 1/12/04	15
17	Issue Final FSS Plan to USACE & Regulators	3 days	Tue 1/13/04	Thu 1/15/04	16
18	USACE Approves Final WPs & FSS Plan	2 days	Fri 1/16/04	Mon 1/19/04	17,12
19	Subcontractors Procurement	4 wks	Tue 1/20/04	Mon 2/16/04	18
20	**Pre-RA Ground-water Characterization**	**37 days**	**Tue 2/3/04**	**Wed 3/24/04**	
21	Sample Existing SEAD-63 Monitoring Wells	2 days	Tue 2/3/04	Wed 2/4/04	18FS+2 wks
22	Radiological Lab Analysis-Ground-water Samples	4 wks	Thu 2/5/04	Wed 3/3/04	21
23	Data Validation	3 wks	Thu 3/4/04	Wed 3/24/04	22
24	**Removal Action**	**124 days**	**Mon 4/19/04**	**Thu 10/28/04**	
25	**Excavate Debris, Soil/Sediment**	**124 days**	**Mon 4/19/04**	**Thu 10/28/04**	
26	Mobilize Personnel, Trailer, Generator, Portajohn, Constr Eqpt, Frac Tank, Pumps	3 days	Mon 4/19/04	Wed 4/21/04	19,22
27	Surveyor Stake Trench Limits Based on Prior Geophysical Survey	1 day	Tue 4/20/04	Tue 4/20/04	26SS+1 day
28	Site Prep - Construct Erosion Controls, Construct Pads, Laydown Area, Etc	3 days	Tue 4/20/04	Thu 4/22/04	26SS+1 day
29	Sample Off-site Borrow Source	1 day	Wed 4/21/04	Wed 4/21/04	26FF
30	Laboratory Analysis - Borrow Source	4 wks	Thu 4/22/04	Wed 5/26/04	29
31	Data Validation Submit - Borrow Source	4 wks	Thu 5/27/04	Wed 6/30/04	30
32	USACE Review/Approve - Borrow Source	2 wks	Thu 7/1/04	Thu 7/15/04	31
33	Air Monitoring	124 days	Mon 4/19/04	Thu 10/28/04	
34	Baseline Air Monitoring	1 day	Mon 4/19/04	Mon 4/19/04	26SS
35	Air Monitoring - 1st Mobilization	21 days	Mon 4/26/04	Tue 6/1/04	
57	Air Monitoring - 2nd Mobilization	15 days	Tue 10/5/04	Thu 10/28/04	
73	Excavate Debris & Soil	20 days	Mon 4/26/04	Thu 5/27/04	28,27
74	Screen Plant - Separate Debris & Soil	20 days	Tue 4/27/04	Tue 6/1/04	73SS+1 day
75	Field (Rad) Scan, Sample Excavation Limits	20 days	Tue 4/27/04	Tue 6/1/04	73SS+1 day
76	Rush Lab Analysis (Cadmium) - Establish Preliminary Excavation Limits	20 days	Thu 4/29/04	Thu 6/3/04	75SS+2 days
77	Final Status Survey - Excavation Limits	3 days	Mon 6/7/04	Wed 6/9/04	76FS+1 day

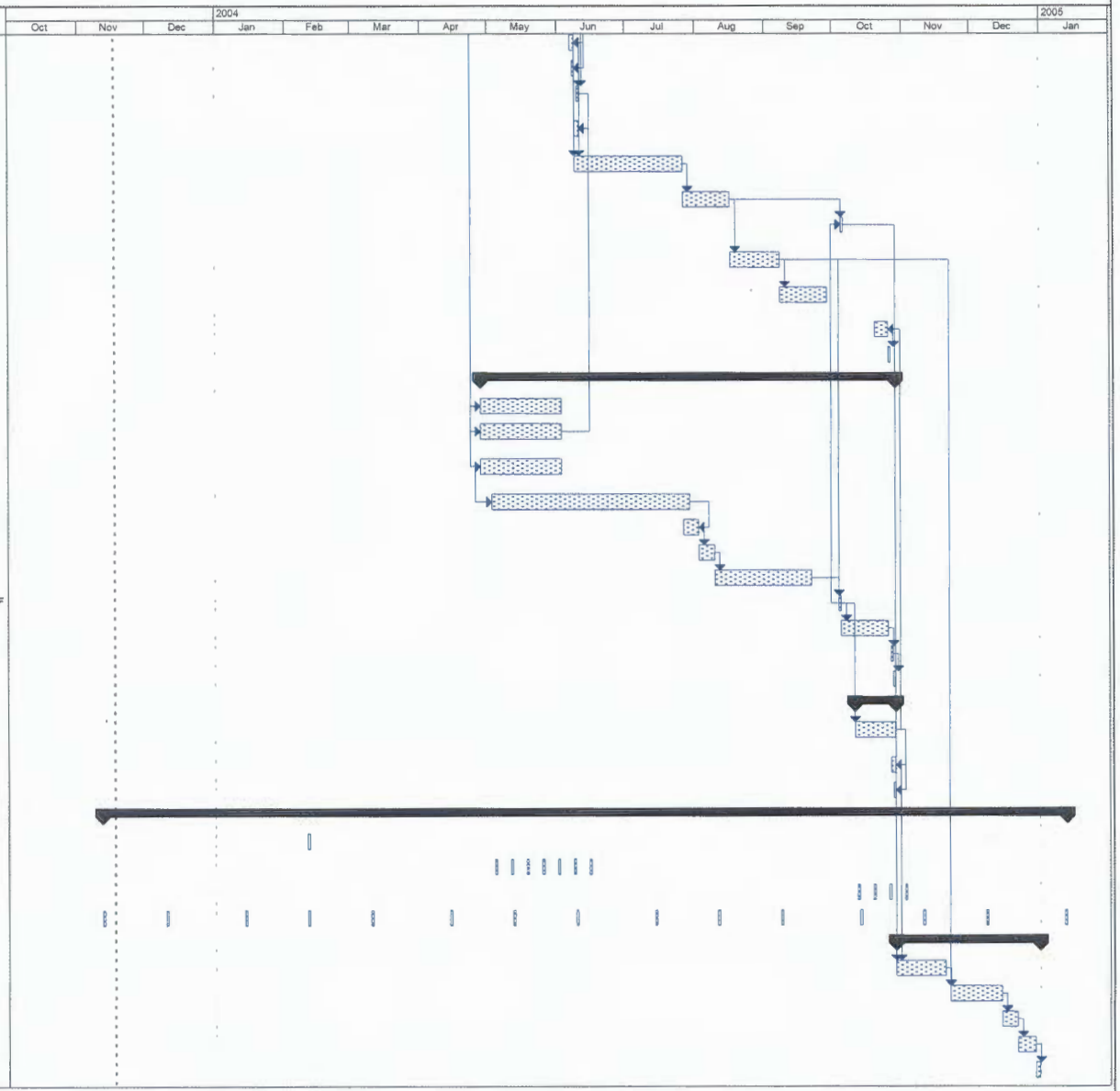


Project: Baseline - Rev 0
Date: Mon 11/17/03

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

Non-Time Critical Removal Action - SEAD-63
Seneca Army Depot, Romulus, New York
Figure 6-1 - Baseline Schedule

ID	Task Name	Duration	Start	Finish	Predecessors
78	Confirmation Sampling - Excavation Limits	2 days	Mon 8/7/04	Tue 8/8/04	77FF-1 day
79	Sample Frac Tank Contents	1 day	Tue 8/8/04	Tue 8/8/04	77FF-1 day
80	Land Survey - Limits of Excavation, Confirmation Soil Sampling Locations	1 day	Thu 8/10/04	Thu 8/10/04	77,78
81	Decon/Temporary Demobilize from Site (Except Trailer, Portajohn, Frac Tank)	2 days	Wed 8/9/04	Thu 8/10/04	91FF+1 day,80FF
82	Off-site Laboratory Analysis to Confirm Excavation Limits - Chemical & Rad	6 wks	Wed 8/9/04	Mon 7/26/04	75,78
83	Data Validation	3 wks	Tue 7/27/04	Mon 8/16/04	82
84	Land Survey - Limits of Excavation, Confirmation Soil Sampling Locations	1 day	Tue 10/5/04	Tue 10/5/04	83,97SS+1 day
85	Prepare & Submit Draft FSS Report/ Summarize Limits of Excavation Lab Results	3 wks	Tue 8/17/04	Tue 9/7/04	83
86	NYSDEC Reviews Limits of Excavation Data/FSS and Approves Backfilling	3 wks	Wed 9/8/04	Tue 9/28/04	85
87	Install & Develop Monitoring Wells	3 days	Wed 10/20/04	Mon 10/25/04	102FF-3 days
88	Land Survey - Monitoring Wells	1 day	Tue 10/26/04	Tue 10/26/04	87
89	**Waste Segregation & Disposal**	**118 days**	**Wed 4/28/04**	**Thu 10/28/04**	
90	Field Scan Separated Soil/Debris - Rad	20 days	Wed 4/28/04	Wed 6/2/04	74SS+1 day
91	Army Performs Demil Inspection, Examines Debris for Potential Rad Sources	20 days	Wed 4/28/04	Wed 6/2/04	74SS+1 day
92	Sample Soil & Debris - Waste Characterization	20 days	Wed 4/28/04	Wed 6/2/04	90SS
93	Off-site Lab Analysis-Waste Characterization	11 wks	Mon 5/3/04	Thu 7/29/04	92SS+2 days
94	Prepare/Submit Waste Profile Sheets	1 wk	Tue 7/27/04	Mon 8/2/04	93FF+2 days
95	USACE Approve Waste Profile Sheets	1 wk	Tue 8/3/04	Mon 8/9/04	94
96	Disposal Facility(s) Review/Acceptance	6 wks	Tue 8/10/04	Tue 9/21/04	95
97	Remobilize to Site	1 day	Mon 10/4/04	Mon 10/4/04	96FS+4 days,85F
98	Load/Remove Debris/Soil - Off-site Disposal	12 days	Tue 10/5/04	Mon 10/25/04	97
99	Ship Frac Tank Water for Off-Site Treatment	1 day	Wed 10/27/04	Wed 10/27/04	98FS+1 day
100	Decon & Remove Frac Tank	1 day	Thu 10/28/04	Thu 10/28/04	99
101	**Site Restoration**	**12 days**	**Mon 10/11/04**	**Thu 10/28/04**	
102	Backfill/Machine Compact Trenches, Remove/Grade Support Zone	12 days	Mon 10/11/04	Thu 10/28/04	97FS+3 days
103	Decon./Demobiliza Trailer, Const. Equipment	2 days	Wed 10/27/04	Thu 10/28/04	102FF
104	Re-seed & Place Straw	1 day	Thu 10/28/04	Thu 10/28/04	102FF
105	**Progress Reports**	**281 days**	**Wed 11/12/03**	**Wed 1/12/05**	
106	Pre-RA Ground-water Sampling Mobilization	1 day	Wed 2/11/04	Wed 2/11/04	
107	Weekly Reports - 1st RA Mobilization	25 days	Tue 5/4/04	Tue 6/15/04	
115	Weekly Reports - 2nd RA Mobilization	14 days	Tue 10/12/04	Tue 11/2/04	
120	Monthly Reports - Project	281 days	Wed 11/12/03	Wed 1/12/05	
136	**Removal Action Completion Report**	**42 days**	**Fri 10/29/04**	**Fri 12/31/04**	
137	Prepare Draft RA Completion Report	3 wks	Fri 10/29/04	Fri 11/19/04	103,84
138	USACE Review/Comments	3 wks	Mon 11/22/04	Tue 12/14/04	137,85
139	Revise & Reissue Completion FSS Reports	1 wk	Wed 12/15/04	Tue 12/21/04	138
140	USACE Review (Proof Copy)	1 wk	Wed 12/22/04	Wed 12/29/04	139
141	Issue Final Completion & FSS Reports	2 days	Thu 12/30/04	Fri 12/31/04	140



Project: Baseline - Rev 0
Date: Mon 11/17/03

Task
Critical Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Critical Task
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