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July 27, 2006

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

Subject: **Submittal of Draft Final Proposed Plan for No Action / No Further Action SWMUs (SEAD-58 and SEAD-63) and Submittal of Draft Record of Decision for No Action / No Further Action SWMUs (SEAD-58 and SEAD-63)**
Contract DACA87-02-D-0005, Delivery Order 28
Seneca Army Depot Activity; File No. 1017A

Dear Mr. Nohrstedt:

Parsons Infrastructure & Technology Group Inc. (Parsons) is pleased to submit the Draft Final Proposed Plan is for No Action / No Further Action for SWMUs SEAD-58 and SEAD-63; and the Draft Record of Decision (ROD) for No Action / No Further Action for SWMUs SEAD-58 and SEAD-63 located at the Seneca Army Depot Activity located in Romulus, New York.

Comments on the Draft Proposed Plan for No Action / No Further Action for SWMUs SEAD-58 and SEAD-63, which was submitted on October 3, 2005, were received from NYSDEC on February 21, 2006 and from USEPA on March 16, 2006 and May 30, 2006. The Army's responses to comments are included in this package, and they are attached as Appendix D of the ROD.

The work was performed in accordance with the Scope of Work (SOW) for Delivery Order 26 and Delivery Order 28 under Contract DACA87-02-D-0005.

Parsons appreciates the opportunity to provide the Army with this document. Should you have any questions, please do not hesitate to call me at (617) 449-1570 to discuss them.

Sincerely,

Jeffrey Adams
Project Manager

Enclosures

cc: Mr. S. Absolom, SEDA
Mr. R. Battaglia, CENAN
Mr. K. Hoddinott, USACHPPM (PROV)
Mr. C. Boes, USAEC

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July 27, 2006

Mr. Julio F. Vazquez, Project Manager
U.S. Environmental Protection Agency, Region II
Superfund Federal Facilities Section
290 Broadway, 18th Floor
New York, NY 10007-1866

Mr. Kuldeep K. Gupta, P.E.
NYSDEC
Division of Environmental Remediation
Remedial Bureau A, Section C
625 Broadway
Albany, NY 12233-7015

Ms. Charlotte Bethoney
Bureau of Environmental Exposure Investigation
Flanigan Square, Room 300
547 River Street
Troy, NY 12180

Subject: **Submittal of Draft Final Proposed Plan for No Action / No Further Action SWMUs (SEAD-58 and SEAD-63) and Submittal of Draft Record of Decision for No Action / No Further Action SWMUs (SEAD-58 and SEAD-63);**
Seneca Army Depot Activity; NYS ID#8-50-006; CERCLIS ID# NY0213820830

Dear Mr. Vazquez/Mr. Gupta/Ms. Bethoney:

Parsons Infrastructure & Technology Group Inc. (Parsons) is pleased to submit the Draft Final Proposed Plan is for No Action / No Further Action for SWMUs SEAD-58 and SEAD-63; and the Draft Record of Decision (ROD) for No Action / No Further Action for SWMUs SEAD-58 and SEAD-63 located at the Seneca Army Depot Activity located in Romulus, New York.

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Jeffrey Adams
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Enclosures

cc: Mr. J. Nohrstedt, CEHNC
Mr. S. Absolom, SEDA
Mr. K. Hoddinott, USACHPPM (PROV)
Mr. C. Boes, USAEC
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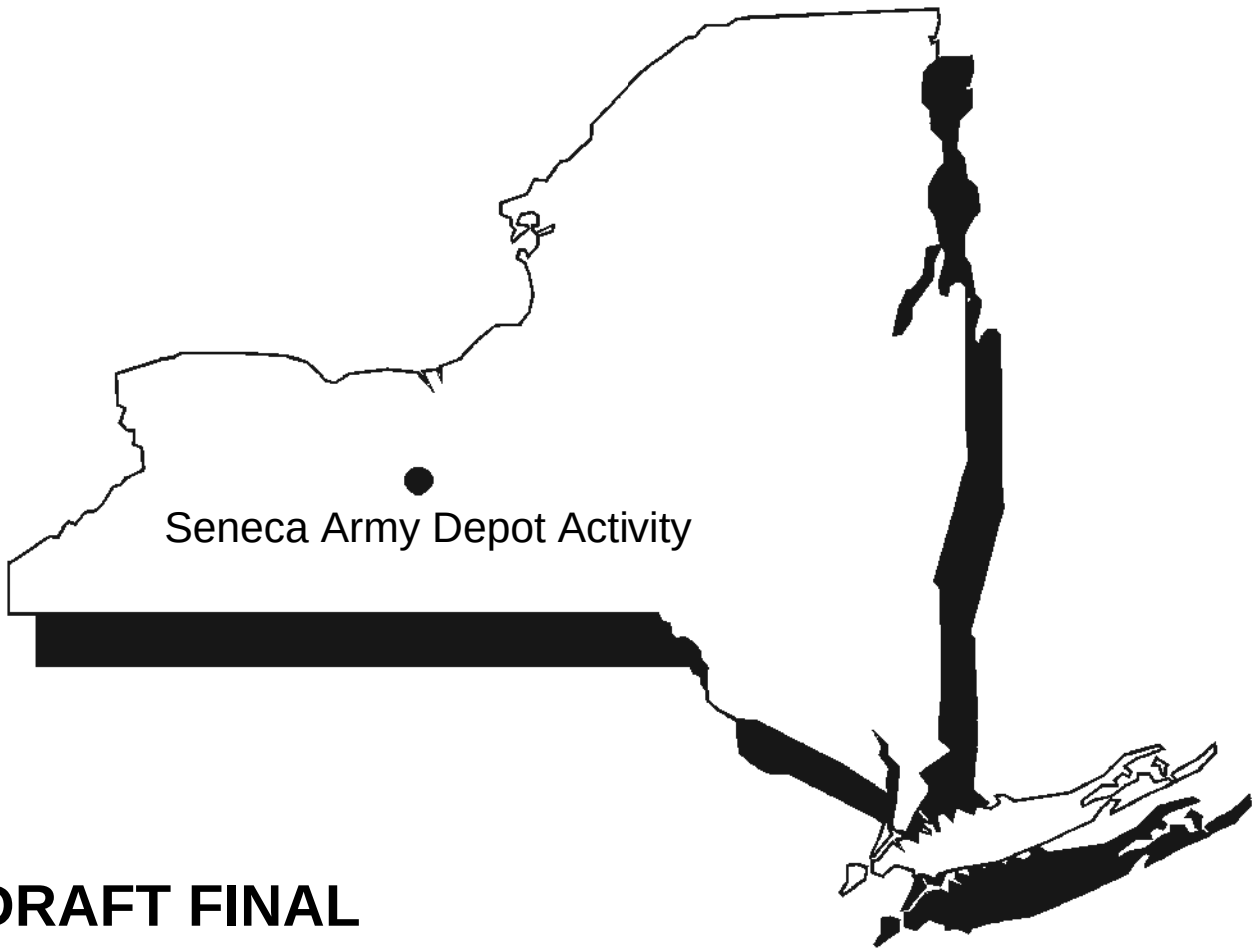
Mr. J. Fellinger, USEPA Contractor

US Army, Engineering & Support Center
Huntsville, AL

Seneca Army Depot Activity
Romulus, NY



DRAFT FINAL
PROPOSED PLAN
NO ACTION / NO FURTHER ACTION

FOR SWMUs SEAD-58 and SEAD-63
SENECA ARMY DEPOT ACTIVITY (SEDA)

EPA Site ID# NY0213820830
NY Site ID# 8-50-006
CONTRACT NO. DACA87-02-D-0005
DELIVERY ORDER NO. 0028

PARSONS
August 2006

DRAFT FINAL Proposed Plan
No Action/No Further Action for SWMUs (SEAD-58 and SEAD-63) at the SENECA Army Depot Activity (SEDA)
Romulus, New York

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Romulus, New York

August 2006

##

1 PURPOSE OF PROPOSED PLAN

This Proposed Plan presents and summarizes data and information that the United States Army (Army) has assembled in support of its assertion that two solid waste management units (SWMUs), known as SEAD-58, Debris Area near Booster Stations 2131, and SEAD-63, Miscellaneous Components Burial Site, within the former Seneca Army Depot Activity (SEDA or the Depot) require No Action (NA) and No Further Action (NFA), respectively, because threats to human health or the environment resulting from petroleum products and hazardous substances do not exist. The Proposed Plan identifies the Army's and the U.S. Environmental Protection Agency's (USEPA's) preferred and recommended remedial option for the two SWMUs, and provides the justification and rationale for their recommended alternative at each SWMU. Representatives of the Army developed the Proposed Plan in cooperation with the USEPA, Region 2 and the New York State Department of Environmental Conservation (NYSDEC).

The Army is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Section 300.430(f) of the National Contingency Plan (NCP). This Proposed Plan is being provided to inform the public of the Army's preferred and recommended remedial alternative. The Proposed Plan is intended to solicit public review and comment of available information and data, and to specify the Army's preferred remedial option for the two SWMUs. The Army's preferred remedy for SEAD-58 is No Action (NA); and for SEAD-63, where a removal action was performed, the preferred remedy is No Further Action (NFA). The Army will select a final remedy for the SWMUs only after careful consideration of all comments received during the public comment period, and subsequent to final consultation with the USEPA and NYSDEC. Information, provided herein, was presented to and discussed with representatives of USEPA and NYSDEC and serves as the basis of the Army identifying these SWMUs as requiring NA or NFA. The Army has recommended NA or NFA as the preferred remedial alternatives for these sites since one or more of the following conditions have been met by the SWMUs:

1. Evaluation of historic records and information indicate that there is no evidence or indication of petroleum product or hazardous substance release to the environment. In many cases, petroleum products and hazardous substances have not been handled or used at the site.

This information was presented to and discussed with representatives of USEPA and NYSDEC and served as the basis of the Army initially identifying this site as a NA SWMU in the SWMU Classification Report, *Final* (Parsons 1994).

2. Evaluation of historic records and information indicate that there is no evidence or indication that either solid wastes or hazardous wastes were present, managed, or disposed of at the site. The Army has identified all known or potential risks to the environment, and where these potential risks had an identifiable location, these were defined as a "site" and/or a "Solid Waste Management Unit" (SWMU) for purposes of regulatory review.

3. Based on the analysis of collected sampling data, the Army has determined that there are no instances where hazardous substances have been detected, or if hazardous chemicals have been detected in specific media, the concentrations at which they have been found do not exceed promulgated regulatory criteria defined [e.g., New York Class C surface water criteria, New York GA Groundwater Standards, federal Maximum Contaminant Levels (MCLs), etc.] by the State of New York or the federal government.

4. If data indicates that hazardous chemicals are present above criteria limits, the results of a human health risk assessment indicate that the land encompassed by the identified SWMU is suitable for unrestricted use (residential use).

The distinction separating a NA site from a NFA site is that no historic remedial action, such as a former tank removal, spill cleanup operation, or limited excavation, has ever been performed at the site. Sampling, chemical analyses, and risk assessments may have been completed for either NA or NFA sites, but in addition some form of historic remedial measure has been performed at a NFA site.

2 COMMUNITY ROLE IN THE SELECTION PROCESS

The Army, the USEPA, and the NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each SWMU. A public comment period began on March 6, 2006 and ran until April 6, 2006 to provide an opportunity for public participation in the remedy selection process for SEAD-58 and SEAD-63. A public meeting was scheduled and held on April 3, 2006 at Building 125, Seneca Army Depot Activity the beginning at 9:00 a.m.

At the public meeting, the results of the investigations and the remedial actions (RAs) conducted at the SWMUs (as applicable) were presented. The Army provided a summary of the preferred remedy for each SWMU. During the presentation, the Army invited the public to participate in a question-and-answer period, during which time the public was allowed to ask questions or submit written comments on the Proposed Plan.

Verbal and written comments received from the public during the public meeting will be documented in the Responsiveness Summary section of the Record of Decision (ROD) document. The ROD formalizes the selection of the remedy.

Written comments may be sent to:

Mr. Stephen Absolom
BRAC Environmental Coordinator
Building 123
5786 State Route 96
PO Box 9
Seneca Army Depot Activity
Romulus, New York 14541-0009

Information and data summarized within this Proposed Plan for the two SWMUs are presented and described in greater detail within the "Non-Time Critical Removal Action Miscellaneous Components Burial Site (SEAD-63)" (Plexus, 2005); the "Decision Document – Mini Risk Assessment (SEAD-9, 27, 28,

32, 33, 34, 43, 44A, 44B, 52, 56, 58, 62, 64A, 64B, 64C, 64D, 66, 68, 69, 72, and 120B), *Final*" (Parsons, 2002); and the "Action Memorandum for the Miscellaneous Components Burial Site (SEAD-63), *Final*" (Parsons, 2001); which should be reviewed and consulted.

The public is encouraged to schedule a time to review the project documents at the SEDA repository (location provided below) to develop a better understanding of each of the listed SWMUs and the investigations and studies that have been conducted.

Seneca Army Depot Activity
Building 123
5786 State Route 96
Romulus, New York 14541-0009
(607) 869-1309
Hours: Mon – Thurs. 8:30 a.m. – 2:30 p.m.

3 SITE BACKGROUND

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

The SEDA is located in an uplands area, which forms a divide separating two of the New York Finger Lakes, Cayuga Lake on the east and Seneca Lake on the west. The elevation of the facility is approximately 600 feet (ft.) above Mean Sea Level (MSL).

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

Once the SEDA was listed on the NPL, the Army, the USEPA, and NYSDEC identified 57 SWMUs where historic data or information suggested, or evidence existed to support, that hazardous substances or hazardous wastes had been handled and may have been released and migrated into the environment. Each of these sites was identified in the "Federal Facilities Agreement" (FFA) signed by the three parties in 1993 (USEPA, NYSDEC, and Army, 1993). This list of SWMUs was subsequently expanded to include 72 sites when the Army completed the "SWMU Classification Report, *Final*" (Parsons, 1994), which was required under the terms of the FFA. The SEDA was a generator and Treatment, Storage and Disposal Facility (TSDF) and thus, subject to regulation under the Resource Conservation and Recovery Act (RCRA). Under the RCRA permit system, corrective action is required at all SWMUs, as needed.

Remedial goals are the same for CERCLA and RCRA; thus, when the 72 SWMUs were classified in the "SWMU Classification Report, *Final*" (Parsons, 1994), the Army recommended that they be listed either as areas requiring NA or as Areas of Concern (AOCs). SWMUs listed as AOCs in the "SWMU Classification Report, *Final*" (Parsons, 1994) were scheduled for further investigations based upon data and potential risks to the environment.

In 1995, the SEDA was designated for closure under the Department of Defense's (DoD's) Base Realignment and Closure (BRAC) process. With the SEDA's inclusion on the BRAC list, the Army's emphasis expanded from expediting necessary investigations and remedial actions at prioritized sites to include the release of non-affected portions of the Depot to the surrounding community for their reuse for non-military purposes (i.e., industrial, municipal, and residential). The designated reuse of the Depot has recently been revised by Seneca County Industrial Development Agency (SCIDA) and is reflected in **Figure 1.**

Since the inclusion of the SEDA in the BRAC program, approximately 8,000 acres have been released to the community. An additional 250 acres of land have been transferred to the U.S. Coast Guard for continued operation of a LORAN Station.

4 SITE DESCRIPTIONS

4.1 SEAD-58: Debris Area Near Booster Station 2131

The Debris Area Near Booster Station 2131 (SEAD-58), shown in **Figure 2**, is located in the western-central portion of the Depot, approximately 335 ft. northeast of Booster Station 2131. The site has two distinct areas separated by a drainage swale that runs east-west. The larger area, located about 50 ft. north of the drainage swale, is circular and 300 ft. in diameter. The smaller area encompasses an area approximately 125 ft. by 175 ft. and is located just south of the drainage swale.

Topography in the area is very flat with evidence of stressed vegetation and many exposed root systems with underlying growth. The drainage swale makes vehicular access to the south area difficult. A rock wall lines the south side of the swale, and is about 2 ft. in height. A small stream runs east-west, south of the smaller area.

The Seneca County Board of Supervisors established Seneca Army Depot Local Redevelopment Authority (LRA) in October 1995. The primary responsibility assigned to the LRA was to prepare a plan for redevelopment of the SEDA property. Following a comprehensive planning process, a *Reuse Plan and Implementation Strategy for Seneca Army Depot* was completed and adopted by the LRA on October 8, 1996. The Seneca County Board of Supervisors subsequently approved this *Reuse Plan* on October 22, 1996. The LRA proposed Conservation/Recreation as the future land use for SEAD-58. In 2005, SCIDA revised the future land use for SEAD-58 as Development Reserve. The Development Reserve classification assumes the area will be used for light industrial activities.

The Booster Station 2131 is a pump house used to pump drinking water from the lake to the on-site reservoir. Interviews with former SEDA personnel have indicated that unknown debris and wastes have been dumped in this area. It was rumored that DDT, a contact insecticide, may have been included in the materials disposed of at SEAD-58. However, there are no written records available that support this rumor and the 1994 Expanded Site Investigation (ESI) did not find evidence of DDT in samples from the soil, groundwater, surface water, or ditch soil.

4.2 SEAD-63: Miscellaneous Components Burial Site

SEAD-63, shown in **Figure 2**, is approximately 480 ft. by 300 ft. in size and is bounded by paved roads on the north, south, and west and by open grassland to the east. The area is undeveloped with vegetation covering much of the ground. In 2004 a removal action was carried out; impacted soil and buried objects were removed and the area was backfilled with clean soil and returned to the original grade. The topography of SEAD-63 is generally flat with a slight westward slope. Drainage ditches are located adjacent to Patrol Road and the east-west trending roads that bound the area to the north (i.e., Service Road 3) and south (unnamed road). A light ground depression, sloping south to north, is located in the northeastern quadrant of the area. Reeder Creek is located south of SEAD-63, flowing west before turning northward and running west of the site with the closest point of the creek approximately 1,500 ft. southwest of the site.

Prior to 2004, the area was mostly undeveloped except for a grass-covered bunker in the southeast corner and an elevated former machine-gun turret constructed of soil in the northwest corner. Previously, a noticeable feature within the area was a crushed shale road that entered from Patrol Road and led to a crushed shale pad that measured about 100 ft. by 100 ft. In general, the western half of the area was less vegetated than the eastern side and appeared to have been physically worn by vehicular traffic.

The LRA proposed Conservation/Recreation as the future land use for SEAD-63; and the Seneca County Board of Supervisors approved the *Reuse Plan* in October 22, 1996. In 2005, SCIDA revised the future land use for the area as Institutional Training. The Institutional Training classification assumes the area will be used in a similar manner as light industrial areas.

SEAD-63 was used between the 1950s and 1980s as a disposal area for classified parts. SEDA base personnel excavated multiple disposal pits along a north-south line measuring approximately 200 ft. long. The individual pits measured between 10 ft. and 30 ft. in length and were likely to have been excavated down to the surface of the underlying weathered shale bedrock. SEDA personnel associated with the SWMU prior to the termination of SEDA's military mission identified the types of materials disposed at this site as metal parts. The SWMU Classification Report states that "inert materials" were buried within the disposal pits.

5 PREVIOUS INVESTIGATIONS AND SITE ACTIVITIES

5.1 SEAD-58: Debris Area near Booster Station 2131

The investigation at SEAD-58 consisted of an ESI performed in 1994. Data from the ESI served as the basis of a mini risk assessment that was performed to assess potential risks. Complete analytical results from the ESI and the results of the mini risk assessment are presented in *Decision Document – Mini Risk Assessment SEAD 9, 27, 28, 32, 33, 34, 43, 44A, 44B, 52, 56, 58, 62, 64A, 64B, 64C, 64D, 66, 68, 69, 70, and 120B*, *Final* (Parsons, 2002). A brief summary of the investigation performed is presented below. The results of the mini risk assessment are presented later in this section, following the summary of the investigation.

Supporting Investigation and Analysis

Eighteen soil samples, four groundwater samples, and six surface water and sediment samples were collected at SEAD-58 for chemical analysis during the ESI. All of the samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), Target Analyte List (TAL) metals, and cyanide according to the NYSDEC Contract Laboratory Protocol (CLP) Statement of Work (SOW). A summary of the soil, groundwater, surface water, and sediment results can be found in **Tables 1** to **4**. The compound 4,4'-DDT rumored to have been disposed at SEAD-58 was not detected in any sample collected during the ESI.

Soil

Eighteen soil samples were analyzed from SEAD-58. Arsenic, copper, magnesium, sodium, and zinc exceeded their respective NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 cleanup objective level values once, while potassium exceeded its TAGM value three times, as shown in **Table 1**. The arsenic, copper, sodium, and zinc levels were only slightly greater than their respective TAGM values. Magnesium was detected in sample TP58-1-1 at a depth of 2.5 ft. and at a level that was 1.5 times the TAGM.

Groundwater

Aluminum, iron, and manganese exceeded their respective NYSDEC Class GA Groundwater Standard or USEPA Secondary Drinking Water Regulation (non-enforceable guideline) values in all four of the groundwater samples collected at SEAD-58 (**Table 2**). The maximum concentrations of these four metals were detected at MW58-3, which is the furthest downgradient well.

Surface Water

Aluminum and iron were detected at concentrations that exceeded the NYSDEC Ambient Water Quality Standard (AWQS) for Class C surface water (**Table 3**) in one or more of the six surface water samples collected at SEAD-58. The aluminum criterion was

exceeded in five of the six samples though the only exceedance of significance, 421 µg/L, was detected at sample location SW58-4-1. The one iron exceedance was detected at this same sample location.

Sediment

Cadmium, chromium, copper, iron, manganese, nickel, and zinc were detected at concentrations that exceeded the NYSDEC Lowest Effective Level (LEL) criteria (**Table 4**) in one or more of the six sediment samples collected from SEAD-58. Cadmium, chromium, and zinc were detected in one sample each at levels slightly greater than their criteria. The manganese criterion was exceeded in three of the six samples by less than twice the criteria. Copper and nickel exceeded their criteria in all six samples, though the greatest exceedance for each was slightly more than twice the criterion. Iron was detected at concentrations greater than its criteria in all six samples, though the greatest exceedance was slightly less than 1.5 times the criteria.

Mini Risk Assessment

A mini risk assessment was conducted to estimate the risks associated with current and future site conditions. A mini risk assessment is a conservative, screening risk assessment tool used to assess the human health and ecological risk that could result from the site if no remedial action were taken. Maximum site concentrations were used as the exposure point concentrations (EPCs). Due to the conservative nature of the mini risk assessment, it is likely that a more traditional risk assessment would estimate lower risks.

The mini risk completed for SEAD-58 was performed in 2002, and considered receptors expected to use the site based on its planned future use documented then, which was Conservation/Recreation land. In 2005, the SCIDA revised its planned future use to Development Reserve, which would require a less rigorous cleanup as recontamination is more likely to occur due to future operations. Nevertheless, since the 2002 risk assessment results indicate that the site is suitable for release anticipating a more restrictive future use, the 2002 results are used to support the Army's recommendation that the site is suitable for a NA determination.

The receptors used in the 2002 risk assessment were a park worker, a recreational visitor – child, and a construction worker. The following exposure pathways were evaluated: inhalation of dust, ingestion of soil, and dermal contact to soil, surface water, and sediment.

The total cancer risk from all exposure routes was below the USEPA acceptable level for all three receptors. The total non-cancer hazard index (HI) from all exposure routes was less than 1.0 for all three receptors. A summary of the mini risk assessment results can be found in **Table 5**.

An ecological risk assessment was completed and no chemicals of concern (COCs) were identified.

5.2 SEAD-63: Miscellaneous Components Burial Site

Work performed at SEAD-63 included a Non-Time Critical Removal Action (NTCRA) in 2004, a Remedial Investigation (RI) in 1997, and an ESI in 1994. The NTCRA activities included excavation of impacted soil and buried debris, confirmatory sampling and analysis of soil and groundwater, and backfilling excavated areas with clean soil. The RI activities included sampling and analysis of sediment and surface water, as well as a radiological survey. Activities performed during the ESI included test pit excavation and sampling and chemical analysis of soil, groundwater, surface water, and sediment. Data from the ESI and RI were used as the basis of a mini risk assessment that was conducted for the site in 2001 and 2002. A brief synopsis of the investigations performed is summarized below. The results of the mini risk assessment are presented later in this section, following the summary of the investigations.

Non-Time Critical Removal Action - 2004

The Army acknowledged that the presence of buried objects at SEAD-63, including some buried components that may have been classified or sensitive, was of potential concern because their nature was unknown. The uncertainty of the nature of the buried material and their potential sensitivity provided the basis for the Army's removal action conducted in 2004. The goals for the proposed NTCRA were to mitigate the source of heavy metals and possible radionuclides through the removal of debris and soils, thereby reducing the chance of further contamination of soils and groundwater at SEAD-63.

The NTCRA was based on the findings of the RI, ESI, and the mini risk assessment that were performed earlier at the site. Results of all of these prior efforts were combined and presented in an Engineering Evaluation/Cost Analysis (EE/CA) as part of an Action Memorandum, which documented the basis of the Army's recommended NTCRA.

Results of the removal action are discussed below. Complete analytical results from the NTCRA are presented in *Non-Time Critical Removal Action Miscellaneous Components Burial Site (SEAD-63),* (Plexus, 2005).

The NTCRA was conducted to remove buried debris (mainly military components) and to address cadmium exceedances identified within the burial pits at SEAD-63. As part of the removal action, groundwater samples were collected at three overburden monitoring wells on-site; debris and fill material were excavated from the burial pits and segregated into three waste streams [classified military parts, four-inch plus material (rock and debris), and four-inch minus material (fill)]; confirmatory samples were collected and analyzed to ensure that project cleanup goals were achieved; excavated material was field screened, sampled and analyzed, and the resulting data were compared to chemical and physical RCRA hazardous waste criteria as well as background radiological levels; the site was backfilled and re-graded; and more than 5,100 tons of solid waste were transported to the Ontario County Landfill for disposal.

Figure 3 shows the extent of the excavations performed at SEAD-63, and shows the locations from which final confirmatory soil samples were collected. The largest of the excavations shown on this figure encompass the area where all of the historic disposal pits were located. This excavation was terminated once native materials or bedrock were encountered.

Soil

The SEAD-63 burial pits were excavated until either native soil or bedrock was observed, as determined by visual inspection. The excavated debris and soil totaling over 5,131 tons were segregated into 4-inch plus (~987 tons) or 4-inch minus (~4,144 tons) material. No radiological sources were identified, and on-site radiological screening and laboratory analyses of the excavated and segregated materials confirmed its classification as non-radioactive, non-RCRA hazardous solid waste.

After the excavation and removal activities were completed, confirmatory soil samples were collected from the perimeter and bottom of the excavation and were analyzed for cadmium. Samples were collected at a rate of one sample per 900 square feet (sf) at the bottom of the excavation and one sample per 30 linear ft. along the excavation sidewalls. Results were compared to the site cleanup goal of 2.3 mg/Kg of cadmium. Confirmatory soil sample results were below the defined site cleanup goal.

All excavated pits were backfilled to original grade with clean soil from SEDA once results were obtained from the laboratory to confirm that the cleanup goal had been achieved. A summary of the confirmatory soil results obtained from the NTCRA is presented in **Table 6**.

Groundwater

The three existing overburden monitoring wells located at SEAD-63 were resampled during the NTCRA. Low–flow sampling techniques were used during the NTCRA to minimize suspended solids in the groundwater. The groundwater samples were submitted to the laboratory for radioactivity analysis and compared to NYSDEC AWQS criteria; one sample upgradient of SEAD-63 was collected as background, or reference point. The groundwater analytical results were below groundwater quality criteria and the background results for radioactivity, and it was concluded that groundwater is not impacted by site activities and does not require further monitoring.

Site Investigations (ESI and RI) – 1994 and 1997

Complete analytical results from the ESI and RI are presented in the EE/CA for SEAD-63 in the *Action Memorandum for the Miscellaneous Components Burial Site (SEAD-63), Final* (Parsons, 2001).

Soil

Twelve test pits were excavated at SEAD-63 as part of the ESI in 1994. The excavated material from the test pits included miscellaneous military components and was continuously screened for organic vapors and radioactivity. No readings above background levels were observed during the excavations.

The soil analysis results from the test pits indicated that soils were impacted by cadmium in several areas at SEAD-63 (**Table 7**). Cadmium concentrations in three test pit samples exceeded the associated TAGM cleanup objective value of 2.3 mg/Kg, with a maximum concentration of 24 mg/Kg. Mercury was detected in one test pit sample (TP63-3) at a concentration of 0.49 mg/Kg, exceeding the TAGM cleanup value of 0.1 mg/Kg. The average concentrations of both cadmium and mercury in SEAD-63 soils exceeded twice the average background concentration for the Depot.

Groundwater

Three monitoring wells were installed and sampled at SEAD-63 during the ESI. Radioactivity analysis results indicated that the groundwater at MW63-3 (located hydraulically downgradient of the disposal pits) may be impacted by gross alpha and gross beta radiation. The level of gross alpha radiation in this well was an order of magnitude above the NYSDEC AWQS Class GA and federal drinking water criteria.

In addition, gross alpha radiation levels exceeded the NYSDEC AWQS in MW63-1, the background location for the purpose of the ESI. Gross beta radiation levels detected in the groundwater samples collected from groundwater monitoring wells MW63-3 and MW63-1 may have been similarly impacted, though the elevated gross beta radiation levels may have been due to the high nephelometric turbidity units (NTUs) found in the groundwater samples. The NYSDEC AWQS for gross beta radiation was not exceeded.

Other constituents detected above their respective criteria values included phenol, iron, manganese, and sodium (**Table 8**). Concentrations measured for iron and manganese detected in the SEAD-63 groundwater were generally consistent with their concentrations found at SEDA specific background wells.

Surface Water/Sediment

Four surface water and sediment samples were collected during the ESI and 18 surface water and sediment samples were collected during the RI.

Results of the investigations indicated that surface water at SEAD-63 has been impacted by SVOCs (**Table 9**). Two SVOCs were detected at levels exceeding the NYSDEC AWQS for Class C surface water. One PCB, Aroclor-1260, was detected in three samples at concentrations exceeding its AWQS value of 0.0001 μg/L with a maximum detection of 0.75 μg/L. Two pesticides, heptachlor and heptachlor epoxide, exceeded their respective AWQS values

once. In addition, five metals were detected above their respective NYSDEC AWQS Class C surface water.

Radionuclides present in background surface water locations were detected at SEAD-63. In addition, Co-60, Ra-226, Th-230, and U-233/234 were also detected at SEAD-63. The maximum and average values of the radionuclides detected at SEAD-63 were greater than the maximum and average concentrations found in the background. Gross alpha and gross beta levels were significantly greater at SEAD-63 in at least one surface water location (SW63-2) than at background locations; however, the elevated levels at SW63-2 are believed to be associated with the high turbidity of this sample. Statistical comparison of the SEAD-63 and background data sets indicates that Ac-227, Radon 222, tritium, U-235, and U-238 were elevated above background.

Sediment sample results indicated that sediments at SEAD-63 had been impacted by polycyclic aromatic hydrocarbons (PAHs) and pesticides at concentrations above their respective NYSDEC guidance values (**Table 10**). In addition, eight metals were detected at concentrations above their respective LEL guidance values.

All radionuclides detected at SEAD-63, except for Pb-210, were consistent with radionuclides found in background sediment samples. Although the maximum values detected in the SEAD-63 samples exceeded the maximum values of the background samples, average values were comparable. In comparison to the NYSDEC TAGM Cleanup Guideline for Soils Contaminated with Radioactive Material (NYSDEC, 1993), radionuclides distinguishable from background in the sediment do not exhibit a dose equivalent greater than the ten milliRems per year (mrem/yr) cleanup guideline based on residual radioactive (RESRAD) modeling.

Radiological Survey

A radiological survey was conducted at SEAD-63 as part of the 1997 RI. The survey was conducted using an AN/PDR-77 Radiac Set and measured total counts per minute of low energy gamma radiation from the grounds of SEAD-63. Fifty percent of the grounds were covered by the survey as outlined in the RI Project Scoping Plan for SEAD-63. The results of this survey did not indicate that there were any hot spot areas within the grounds of SEAD-63 that required further investigation or an upgrade in classification.

Mini Risk Assessment

A risk analysis was completed for SEAD-63 in 2001 and 2002, and considered receptors expected to use the site based on its planned use documented then, which was Conservation/Recreational land. In 2005, the SCIDA revised its planned future use at SEAD-63 to Institutional Training, which would require a less rigorous cleanup as recontamination is more likely to occur due to future operations. Nevertheless, since the prior risk assessment results indicate that the site is suitable for release anticipating a more restrictive use; these results are used to support the Army's recommendation that the site is suitable for a NFA recommendation.

The receptors evaluated in the 2001/2002 risk assessment were a park worker, a recreational visitor – child, and a construction worker. The following exposure pathways were evaluated: inhalation of dust; ingestion of soil; dermal contact to soil, groundwater, surface water, and sediment; and ingestion of groundwater.

A summary of the human health risk assessment results are presented in **Table 11**. All non-cancer risks were less than 1.0, with HIs for the park worker, recreational visitor – child, and construction worker of 0.2, 0.4, and 0.3, respectively. Cancer risks for the three receptors were within USEPA acceptable range of 10^{-4} to 10^{-6}. Cancer risk values for the park worker, recreational visitor – child, and construction worker were $5x10^{-5}$, $8x10^{-5}$, and $8x10^{-8}$, respectively.

Each of these is within the USEPA recommended range of acceptable risk.

For comparison purposes, risk to a future resident was also evaluated. The non-cancer risk to a resident adult was less than 1, while the non-cancer risk to a resident child had a HI of 2.0. The total lifetime cancer risk for a resident was $1x10^{-4}$, which is at the upper limit of USEPA's normal acceptance range (10^{-4} to 10^{-6}).

The predominant contributor to the resident child's elevated HI is manganese in ingested groundwater. However, the concentration of manganese contained in the groundwater in the vicinity of SEAD-63, and that which was used for the mini-risk calculations, is consistent with SEDA-specific background groundwater quality for this compound.

The predominant contributors to the resident's elevated lifetime cancer risk are the levels benzo(a)pyrene and dibenz(a,h)anthracene found in surface water samples. Generally, PAHs are not very soluble in surface water, so there presence is presumed to result from their association with entrained soil particles and particulates carried by storm-event run-off flow into the man-made drainage culverts and infiltration galleries that surround the site. Once carried into the drainage ditches and infiltration galleries, these soil particles are deposited and mix with the soil and sediments that underlie the ditches and culverts. As sediment or surface soil, the probable contribution of the PAHs to the lifetime resident's cancer risk is significantly reduced, as is exhibited by the resident's lifetime dermal exposure to sediment ($4x10^{-6}$) and soil ($1x10^{-8}$) or the ingestion of soil ($3x10^{-7}$).

Again, the planned future use for SEAD-63 does not include residential activities, so the summary of potential residential risk is provided as background information only.

An ecological risk assessment was completed at SEAD-63 in 2001, and hazard quotients (HQs) calculated for seven SVOCs indicated that potential risks may exist for selected mammalian and avian species. A closer review of these data indicated that the potential threats were due to isolated hot spots of SVOC impacted soil located in the drainage ditches, which could be addressed during the proposed removal action. A NTCRA was performed by Plexus Scientific Corporation in 2004 at SEAD-63, which included the removal of the top 6-inches of soil in the drainage ditches. The removal of impacted soil from the ditches eliminated the potential risk to the environment identified in the mini risk assessment.

Based upon the results from the NTCRA, the source of any potential ecological risk was removed from SEAD-63, and thus, no further remedial action is necessary to ensure protection of human health or the environment.

6 SUMMARY OF THE REMEDIAL GOALS AND PROPOSED ACTION

The selected remedy for any site should, at a minimum, eliminate or mitigate all significant threats to the public health or the environment presented by the hazardous waste present at the site. The Army believes that its proposal of NA at SEAD-58 and its proposal of NFA at SEAD-63, along with the supportive information and data presented and summarized in this Proposed Plan, satisfy this condition.

SEAD-58: Debris Area near Booster Station 2131

Based on the findings of the investigation and mini risk assessment completed, the Army has selected NA as the remedy for SEAD-58. This selection is based on the Army's determination that the site does not pose a significant threat to human health or the environment.

SEAD-63: Miscellaneous Components Burial Site

Based on the Army's completion of a removal action and the findings of the previous investigations, the Army has selected NFA as the remedy for SEAD-63. This selection is based on the Army's determination

that the site does not pose a significant threat to human health or the environment.

7 REFERENCES

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USEPA, 1999 - A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents, USEPA 540-R-98-031, OSWER 9200.1-23P, PB98-963241, July 1999.

GLOSSARY

Ambient Water Quality Standards (AWQS)
Standards and guidance values developed by New York State for specific classes of fresh and saline surface waters and fresh groundwaters for protection of the best uses assigned to each class.

Area of Concern (AOC)
Areas of Concern (AOCs) include both solid waste management units where releases of hazardous substances may have occurred and locations where there has been a release or threat of a release in the environment of a hazardous substance, pollutant or contaminant (including radionuclides) under CERCLA.

Army Corps of Engineer (USACE)
The engineering organization of the U.S. Army. The districts involved in the Seneca Army Depot Activity project include the New York District (CENAN), the New England District (CENED), and the Engineering and Support Center, Huntsville (CEHNC).

Base Realignment and Closure (BRAC)
A congressionally mandated process that involves closure of military bases. The goal of BRAC is to transition the former bases from military uses to civilian reuse, with the intent of minimizing the negative effects of base closure by spurring economic development and growth. The SEDA was listed as a base to be closed in October 1995. Base closure is in the process of being performed.

Cadmium
Cadmium is a heavy metal that accumulates in the environment. *See also Heavy Metals.*

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA:

Established prohibitions and requirements concerning closed and abandoned hazardous waste sites;

Provided for liability of persons responsible for releases of hazardous waste at these sites; and

Established a trust fund to provide for cleanup when no responsible party could be identified.

The law authorizes two kinds of response actions:

Short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response.

Long-term remedial response actions, that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening. These actions can be conducted only at sites listed on USEPA's National Priorities List (NPL).

CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the NPL.

CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

Cleanup
Cleanup is the term used for actions taken to deal with a release or threat of release of a hazardous substance that could affect humans and or the environment. The term sometimes is used

interchangeably with the terms remedial action, removal action, response action, or corrective action.

Closure (Department of Defense)
Under the Department of Defense's definition, closure means that all missions of the base will cease or be relocated. All personnel (military, civilian, and contractor) will either be eliminated or relocated. The entire base will be excessed and the property disposed.
(Reference:
http://www.hqda.army.mil/acsimweb/brac/braco.htm)

Community Environmental Response Facilitation Act (CERFA – Public Law 102-426)
The Community Environmental Response Facilitation Act (CERFA) was passed by Congress in 1992, and amended Section 9620(h) of CERCLA, which addresses Federal real property transfers. In enacting the legislation Congress stated that the closure of Federal facilities has an adverse impact on local economies and that delays in remediating contaminated real property add to this burden by delaying the conversion of such property to productive uses. The statute applies to real property owned by the Department of Defense and on which the U.S. plans to terminate Federal government operations, as well as to real property that has been used as a military installation and which is being closed or realigned pursuant to base closure. Federal entities with control over such properties must identify those upon which no hazardous substances or petroleum products/derivatives were stored for more than one year, released, or disposed of by examining relevant sources of data such as property deeds, aerial photographs, or other similar documents. Subsequent transfers or sales of the identified properties by the limited states must contain assurances that the U.S. will assume full responsibility for any response or corrective action that may become necessary after the transfer of property is completed. Where hazardous substances or petroleum products/derivatives were stored for more than one year, released, or disposed of on the U.S.-owned real property, the Federal entity with control of the property must notify the state of any lease entered into by the controlling Federal entity that will remain in effect after operations cease. The notification must be sent to the state prior to the signing of the lease, and must inform the state of the name of the lessee, and a description of the uses permitted under the condition of the lease. (Reference:
http://www.ntc.blm.gov/learningplace/res_CERFA.html)

Completion Report
A report that documents and certifies that conditions found at an Area of Concern (AOC) do not constitute a threat to public health, welfare or the environment and that further remedial measures are not necessary. Such documentation shall meet, to the extent practicable and as necessary under the specific facts pertaining to the AOC, the requirements of USEPA's RCRA Facility Investigation Guidance, USEPA's Guidance for Conducting RI/FSs under CERCLA, and any subsequent amendments to these documents and all other applicable federal or state guidance.

Contaminant
A contaminant is any physical, chemical, biological, or radiological substance or matter present in any media at concentrations that may result in adverse effects on air, water, or soil.

Contract Laboratory Program (CLP)
The USEPA's program that approves laboratories that provide chemical testing services of known quality using a wide range of standard methods and maintaining consistent quality control.

Detection Limit
The lowest concentration of a chemical that can be distinguished reliably from a zero concentration.

Disposal
Disposal is the final placement or destruction of toxic, radioactive or other wastes; surplus or banned pesticides or other chemicals; polluted soils; and

drums containing hazardous substances from removal actions or accidental release. Disposal may be accomplished through the use of approved secure landfills, surface impoundments, land farming, deep well injection, or ocean dumping.

Environmental Protection Agency (USEPA)
The Federal regulatory agency responsible for enforcing the environmental rules and regulations of the United States. Representatives from the USEPA Region 2, which includes New York State, are involved in the review and oversight of the environmental work being conducted at the Seneca Army Depot Activity.

Expanded Site Investigation (ESI)
An expanded investigation that typically includes media sampling and analyses. An ESI is performed following a Preliminary Site Investigation to obtain more information regarding the concentrations of pollutants at a site.

Exposure Pathway
An exposure pathway is the route of contaminants from the source of contamination to potential contact with a medium (air, soil, surface water, or groundwater) that represents a potential threat to human health or the environment. Determining whether exposure pathways exist is an essential step in conducting a baseline risk assessment. *See also Baseline risk Assessment.*

Federal Facilities Agreement (FFA) also known as the Interagency Agreement (IAG)
An agreement signed between USEPA, NYSDEC and the Army that describes the process for identifying, investigating and remediating sites at the Seneca Army Depot Activity.

GA Groundwater Standard
A water quality standard promulgated by the NYSDEC that establishes a minimum quality of a groundwater supply that could be used as a source of drinking water.

Groundwater
Groundwater is the water that flows beneath the earth's surface that fills pores between such materials as sand, soil, or gravel and that often supplies wells and springs.

Hazardous Substance
A hazardous substance defined by CERCLA section 101(14) references the following environmental statues: CWA sections 311 and 307(a), CAA section 112, RCRA section 3001, and TSCA section 7.

Heavy Metal
The term heavy metal refers to a group of toxic metals including arsenic, chromium, copper, lead, mercury, silver, and zinc. Heavy metals often are present at industrial sites at which operations have included battery recycling and metal plating.

Inorganic Compounds
An inorganic compound is a compound that generally does not contain carbon atoms (although carbonate and bicarbonate compounds are notable exceptions). Examples of inorganic compounds include various metals.

Maximum Contaminant Level (MCL)
Established under the Safe Drinking Water Act as concentrations of pollutants considered protective for drinking water.

Mean Sea Level (MSL)
The average height of the sea surface, based upon hourly observation of the tide height on the open coast or in adjacent waters that have free access to the sea. In the United States, it is defined as the average height of the sea surface for all stages of the tide over a nineteen year period. Mean sea level, commonly abbreviated as MSL and referred to simply as 'sea level,' serves as the reference surface for all altitudes in upper atmospheric studies.
(Reference:
http://earthobservatory.nasa.gov:81/Library/glossary.php3?xref = mean%20sea%20level)

Monitoring Well

A monitoring well is a well drilled at a specific location on or off a hazardous waste site at which groundwater can be sampled at selected depths and studied to determine the direction of groundwater flow and the types and quantities of contaminants present in the groundwater.

National Contingency Plan (NCP)

The NCP, formally the National Oil and Hazardous Substances Contingency Plan, is the major regulatory framework that guides the Superfund response effort. The NCP is a comprehensive body of regulations that outlines a step-by-step process for implementing Superfund responses and defines the roles and responsibilities of USEPA, other federal agencies, states, private parties, and the communities in response to situations in which hazardous substances are released into the environment. *See also Superfund.*

National Priorities List (NPL)

The NPL is USEPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response under Superfund. Inclusion of a site on the list is based primarily on the score the site receives under the HRS. Money from Superfund can be used for cleanup only at sites that are on the NPL. EP A is required to update the NPL at least once a year. *See also Hazard Ranking System and Superfund.*

Nephelometric Turbidity Unit (NTU)

A measurement unit of turbidity in water. Small particles of soil particles, such as clay or silt, become suspended with a water sample and increase the turbidity of the sample. This increase in turbidity has been identified as a source of increased metals concentration in samples. This effect is especially noticeable for groundwater samples collected within the clay-rich glacial till at the SEDA.

New York State Department of Environmental Conservation (NYSDEC)

NYSDEC's missions include detecting and controlling sources of pollution, protecting and managing New York's natural resources, informing and educating the public about environment, natural resources, and government's actions to protect them.

No Action (NA)

A NA site has had no historic remedial action, such as a former tank removal, spill cleanup operation, or limited excavation, has ever been performed at the site. Sampling, chemical analyses, and risk assessments may have been completed for a NA site.

No Further Action (NFA)

A NFA site has had historic remedial action, such as a former tank removal, spill cleanup operation, or limited excavation, has ever been performed at the site. Sampling, chemical analyses, and risk assessments may have been completed for a NFA site, but in addition some form of historic remedial measure has been performed at a NFA site.

Non-Time Critical Removal Action (NTCRA)

A NTCRA can be used to eliminate possible threats, and to expedite the closure process and lessen, and perhaps eliminate, any possible threats, current or future that these sites may pose to human health and the environment when at least six months is available for planning prior to start of onsite activities.

NYCRR

The New York State compilation of Codes, Rules, and Regulations.

Organic Chemical or Compound

An organic chemical or compound is a substance produced by animals or plants that contains mainly carbon, hydrogen, and oxygen.

Pesticide

A pesticide is a substance or mixture of substances intended to prevent or mitigate infestation by, or

destroy or repel, any pest. Pesticides can accumulate in the food chain and or contaminate the environment if misused.

Polychlorinated Biphenyl (PCB)

PCBs are a group of toxic, persistent chemicals, produced by chlorination of biphenyl, that once were used in high voltage electrical transformers because they conducted heat well while being fire resistant and good electrical insulators. These contaminants typically are generated from metal degreasing, printed circuit board cleaning, gasoline, and wood preserving processes. Further sale or use of PCBs in the United States was banned in 1979.

Polycyclic Aromatic Hydrocarbon (PAH)

A PAH is a chemical compound that contains more than one fused benzene ring. They are commonly found in petroleum fuels, coal products, and tar.

Proposed Plan

The Proposed Plan is the first step in the remedy selection process. The Proposed Plan provides information supporting the decisions of how the preferred alternative was selected. It summarizes the site information and how the alternatives comply with the requirements of the NCP and CERCLA. The Proposed Plan is provided to the public for comment. The responses to the Proposed Plan comments are provided in the ROD.

Record of Decision (ROD)

A ROD is a legal, technical, and public document that explains which cleanup alternative will be used at a Superfund NPL site. The ROD is based on information and technical analysis generated during the remedial investigation and feasibility study (RI/FS) and consideration of public comments and community concerns. *See also Preliminary Assessment and Site Investigation and Remedial Investigation and Feasibility Study.*

Release

A release is any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, leaching, dumping, or disposing into the environment of a hazardous or toxic chemical or extremely hazardous substance, as defined under RCRA. *See also Resource Conservation and Recovery Act.*

Remedial Action (RA)

A RA is the actual construction or implementation of a remedy at a site or portion thereof.

Remedial Investigation and Feasibility Study (RI/FS)

The RI/FS is the step in the Superfund cleanup process that is conducted to gather sufficient information to support the selection of a site remedy that will reduce or eliminate the risks associated with contamination at the site. The RI involves site characterization through collection of data and information necessary to characterize the nature and extent of contamination at the site. The RI also determines whether the contamination presents a significant risk to human health or the environment. The FS focuses on the development of specific response alternatives for addressing contamination at a site.

Resource Conservation and Recovery Act (RCRA)

RCRA is a federal law enacted in 1976 that established a regulatory system to track hazardous substances from their generation to their disposal. The law requires the use of safe and secure procedures in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent the creation of new, uncontrolled hazardous waste sites.

Risk Assessment

The process of assessing and analyzing threats that contaminants found at a site pose to surrounding populations and the environment. The resulting analysis is used as a preliminary, conservative estimate of the potential level of threat that is posed so that appropriate and cost-effective countermeasures can be identified and implemented.

Sediment Guideline
Technical guidance provided by NYSDEC, the Division of Fish and Wildlife, that describes allowable sediment quality for a variety of chemicals. The values provided in this document have been adopted as screening levels for comparison to site data. Exceedances of these values provide that basis for further evaluation and decision making.

Semivolatile Organic Compound (SVOC)
SVOCs, composed primarily of carbon and hydrogen atoms, have boiling points greater than 2000^{o}C. Common SVOCs include PCBs and phenol. *See also Phenol and Polychlorinated Biphenyl.*

Seneca Army Depot Activity (SEDA)
A 10,634-acre military facility, constructed in 1941, located in central New York responsible for storage and management of military commodities, including munitions. The depot ceased military operations in 2000. Environmental cleanup activities will continue until all sites have been addressed.

Seneca County Board of Supervisors
The board that oversees Seneca County's governmental affairs.

Significant Threat
The term refers to the level of contamination that a state would consider significant enough to warrant an action. The thresholds vary from state to state.

Soil Boring
Soil boring is a process by which a soil sample is extracted from the ground for chemical, biological, and analytical testing to determine the level of contamination present.

Solid Waste Management Unit (SWMU)
A SWMU is a RCRA term used to describe a contiguous area of land on or in which where solid waste, including hazardous waste, was managed. This includes landfills, tanks, land treatment areas, spills and other areas where waste materials were handled. Identification of all SWMUs at SEDA was performed as part of the RCRA Part B Permit Application process.

Subsurface
Underground, or beneath the surface.

Surface Water
Surface water is all water naturally open to the atmosphere, such as rivers, lakes, reservoirs, streams, and seas.

Superfund
Superfund is the trust fund that provides for the cleanup of hazardous substances released into the environment, regardless of fault. The Superfund was established under CERCLA and subsequent amendments to CERCLA. The term Superfund also is used to refer to cleanup programs designed and conducted under CERCLA and its subsequent amendments. *See also Comprehensive Environmental Response, Compensation, and Liability Act.*

Target Compound List (TCL)
The Target Compound List is a list of organic compounds that are required to be analyzed when performing analytical procedures. The list includes volatile organic compounds, semivolatile organic compounds, pesticides, and PCBs.

Technical Administrative Guidance Memorandum (TAGM)
TAGMs are technical guidance publications provided by NYSDEC that describes various processes and procedures recommended by NYSDEC for the investigation and remediation of hazardous waste sites. One TAGM, No. 4046, provides guideline values for recommended soil cleanup levels at waste sites.

Volatile Organic Compound (VOC)
A VOC is one of a group of carbon-containing compounds that evaporate readily at room temperature. Examples of VOCs include trichloroethane; trichloroethylene; and BTEX. These

contaminants typically are generated from metal degreasing, printed circuit board cleaning, gasoline, and wood preserving processes.

TABLE 1
Summary of Soil Analytical Results - SEAD-58
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC TAGM 4046 [2]	Number of Exceedances	Number of Detects	Number of Analyses
VOCs							
Methylene chloride	ug/Kg	64	17%	100	0	3	18
SVOCs							
Bis(2-Ethylhexyl)phthalate	ug/Kg	260	72%	50,000	0	13	18
Chrysene	ug/Kg	18	6%	400	0	1	18
Di-n-octylphthalate	ug/Kg	81	6%	50,000	0	1	18
Fluoranthene	ug/Kg	26	11%	50,000	0	2	18
Pyrene	ug/Kg	22	11%	50,000	0	2	18
Pesticides/PCBs							
Endosulfan I	ug/Kg	1.3	6%	900	0	1	18
Metals							
Aluminum	mg/Kg	19,100	100%	19,300	0	18	18
Antimony	mg/Kg	0.36	11%	5.9	0	2	18
Arsenic	mg/Kg	9	100%	8.2	1	18	18
Barium	mg/Kg	111	100%	300	0	18	18
Beryllium	mg/Kg	0.85	100%	1.1	0	18	18
Cadmium	mg/Kg	0.92	100%	2.3	0	18	18
Calcium	mg/Kg	106,000	100%	121,000	0	18	18
Chromium	mg/Kg	28.6	100%	29.6	0	18	18
Cobalt	mg/Kg	15.8	100%	30	0	18	18
Copper	mg/Kg	33.4	100%	33	1	18	18
Iron	mg/Kg	32,300	100%	36,500	0	18	18
Lead	mg/Kg	22.5	67%	24.8	0	12	18
Magnesium	mg/Kg	34,100	100%	21,500	1	18	18
Manganese	mg/Kg	959	100%	1,060	0	18	18
Mercury	mg/Kg	0.07	83%	0.1	0	15	18
Nickel	mg/Kg	44.8	100%	49	0	18	18
Potassium	mg/Kg	3,230	100%	2,380	3	18	18
Selenium	mg/Kg	1	22%	2	0	4	18
Sodium	mg/Kg	189	94%	172	1	17	18
Vanadium	mg/Kg	29.5	100%	150	0	18	18
Zinc	mg/Kg	117	100%	110	1	18	18

Notes:
(1) Only compounds that were detected were included in this list of parameters.
(2) NYSDEC Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046, Revised January 24, 1994, which are a To Be Considered (TBC) criteria.

TABLE 2
Summary of Groundwater Analytical Results - SEAD-58
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	Criteria Level [2]		Number of Exceedances	Number of Detects	Number of Analyses
Metals								
Aluminum	ug/L	7,160	100%	50	(a)	4	4	4
Arsenic	ug/L	2.1	25%	3		0	1	4
Barium	ug/L	235	100%	1,000		0	4	4
Beryllium	ug/L	0.41	50%	4	(b)	0	2	4
Calcium	ug/L	171,000	100%		(c)	0	4	4
Chromium	ug/L	12.3	100%	50		0	4	4
Cobalt	ug/L	9.2	75%		(c)	0	3	4
Copper	ug/L	9	100%	200		0	4	4
Iron	ug/L	14,500	100%	300		4	4	4
Lead	ug/L	4.4	75%	25		0	3	4
Magnesium	ug/L	29,800	100%		(c)	0	4	4
Manganese	ug/L	677	100%	50	(a)	4	4	4
Mercury	ug/L	0.04	25%	0.7		0	1	4
Nickel	ug/L	20.5	100%	100		0	4	4
Potassium	ug/L	6,150	100%		(c)	0	4	4
Sodium	ug/L	7,180	100%	20,000		0	4	4
Vanadium	ug/L	10.8	100%		(c)	0	4	4
Zinc	ug/L	37.2	100%	300		0	4	4

Notes:

(1) Only compounds that were detected were included in this list of parameters.

(2) NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1, Revised June 2004), except as noted below.

a) USEPA Secondary Drinking Water Regulation, non-enforceable (EPA 822-B-00-001, Summer 2000)

b) USEPA Maximum Contaminant Limit announced 10/31/01. Source http://www.epa.gov/safewater/arsenic.html

c) No standard

TABLE 3
Summary of Surface Water Analytical Results - SEAD-58
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC AWQS Class C [2]	Number of Exceedances	Number of Detects	Number of Analyses
Metals							
Aluminum	ug/L	421	100%	100	5	6	6
Barium	ug/L	36.5	100%	NS	0	6	6
Calcium	ug/L	82,000	100%	NS	0	6	6
Chromium	ug/L	0.75	67%	140	0	4	6
Copper	ug/L	3.8	100%	17.36	0	6	6
Iron	ug/L	598	100%	300	1	6	6
Lead	ug/L	1.1	17%	8.7	0	1	6
Magnesium	ug/L	11,700	100%	NS	0	6	6
Manganese	ug/L	74.4	100%	NS	0	6	6
Mercury	ug/L	0.06	67%	0.77	0	4	6
Nickel	ug/L	2.6	67%	100.16	0	4	6
Potassium	ug/L	2,610	100%	NS	0	6	6
Sodium	ug/L	13,400	100%	NS	0	6	6
Thallium	ug/L	2.7	33%	8	0	2	6
Vanadium	ug/L	0.9	17%	14	0	1	6
Zinc	ug/L	10.6	100%	159.6	0	6	6

Notes:
(1) Only compounds that were detected were included in this list of parameters.
(2) NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1, Revised June 2004), Class C Surface Water.
Hardness dependent values assumed a hardness of 217 mg/L.
NS = No standard

TABLE 4
Summary of Sediment Analytical Results - SEAD-58
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC Lowest Effective Level [2]	Number of Exceedances	Number of Detects	Number of Analyses
SVOCs							
4-Methylphenol	ug/Kg	120	17%		0	1	6
Anthracene	ug/Kg	30	17%		0	1	6
Benzo(a)anthracene	ug/Kg	92	50%		0	3	6
Benzo(a)pyrene	ug/Kg	110	67%		0	4	6
Benzo(b)fluoranthene	ug/Kg	130	67%		0	4	6
Benzo(ghi)perylene	ug/Kg	110	50%		0	3	6
Benzo(k)fluoranthene	ug/Kg	100	67%		0	4	6
Bis(2-Ethylhexyl)phthalate	ug/Kg	100	67%		0	4	6
Chrysene	ug/Kg	110	67%		0	4	6
Di-n-butylphthalate	ug/Kg	130	50%		0	3	6
Dibenz(a,h)anthracene	ug/Kg	63	33%		0	2	6
Fluoranthene	ug/Kg	180	100%		0	6	6
Indeno(1,2,3-cd)pyrene	ug/Kg	110	67%		0	4	6
Phenanthrene	ug/Kg	120	100%		0	6	6
Phenol	ug/Kg	36	17%		0	1	6
Pyrene	ug/Kg	210	100%		0	6	6
Metals							
Aluminum	mg/Kg	20,100	100%		0	6	6
Antimony	mg/Kg	0.37	50%	2	0	3	6
Arsenic	mg/Kg	5.9	100%	6	0	6	6
Barium	mg/Kg	142	100%		0	6	6
Beryllium	mg/Kg	0.98	100%		0	6	6
Cadmium	mg/Kg	0.7	100%	0.6	1	6	6
Calcium	mg/Kg	70,500	100%		0	6	6
Chromium	mg/Kg	28.2	100%	26	1	6	6
Cobalt	mg/Kg	11.6	100%		0	6	6
Copper	mg/Kg	37	100%	16	6	6	6
Iron	mg/Kg	29,300	100%	20,000	6	6	6
Lead	mg/Kg	28.8	100%	31	0	6	6
Magnesium	mg/Kg	12,100	100%		0	6	6
Manganese	mg/Kg	735	100%	460	3	6	6
Mercury	mg/Kg	0.12	100%	0.15	0	6	6
Nickel	mg/Kg	33.5	100%	16	6	6	6
Potassium	mg/Kg	3,170	100%		0	6	6
Selenium	mg/Kg	0.89	83%		0	5	6
Sodium	mg/Kg	134	17%		0	1	6
Thallium	mg/Kg	0.55	33%		0	2	6
Vanadium	mg/Kg	33.7	100%		0	6	6
Zinc	mg/Kg	131	100%	120	1	6	6

Notes:
(1) Only compounds that were detected were included in this list of parameters.
(2) NYSDEC Technical Guidance for Screening Contaminated Sediments - January 1999

TABLE 5
Calculation of Total Non-Carcinogenic and Carcinogenic Risks - SEAD-58
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

RECEPTOR	EXPOSURE ROUTE	HAZARD INDEX	CANCER RISK
PARK WORKER	Inhalation of Dust in Ambient Air	7E-11	4E-14
	Ingestion of Soil	1E-05	9E-10
	Dermal Contact to Soil	NQ	NQ
	Dermal Contact to Surface Water	2E-04	NQ
	Dermal Contact to Sediment	5E-04	6E-08
	TOTAL RECEPTOR RISK	*8E-04*	*6E-08*
RECREATIONAL VISITOR (CHILD)	Inhalation of Dust in Ambient Air	3E-11	3E-15
	Ingestion of Soil	7E-06	1E-10
	Dermal Contact to Soil	NQ	NQ
	Dermal Contact to Surface Water	9E-04	NQ
	Dermal Contact to Sediment	2E-03	5E-08
	TOTAL RECEPTOR RISK	*3E-03*	*5E-08*
CONSTRUCTION WORKER	Inhalation of Dust in Ambient Air	1E-09	2E-14
	Ingestion of Soil	9E-05	3E-10
	Dermal Contact to Soil	NQ	NQ
	TOTAL RECEPTOR RISK	*9E-05*	*3E-10*

NQ - Not quanitfied due to lack of toxicity data.

Table 6
Summary of NTCRA Soil Analytical Results - SEAD-63

Parameter	Cleanup Goal[1]		Total Number of Samples Collected	Number of Exceedances of Cleanup Goal[1]	Sidewall Samples		Floor Samples		All Samples		
	NYDEC TAGM	SEAD Background			Average Concentration	Maximum Concentration	Average Concentration	Maximum Concentration	Average Concentration	Maximum Concetration	
Inorganics (%-dry weight):											
Percent Moisture	N/A	N/A	29	N/A	17.7	28.8	18.3	21.5	17.1	28.8	
Metals (mg/Kg-dry weight):											
Aluminum	SB	19,200	29	**4**	15790	22100	13900	14800	14747	22,100	
Antimony	SB	5.9	29	**9**	5.9	6.8	5.9	6.0	5.8	6.8	
Arsenic	75 or SB	8.24	29	**1**	5.9	11.2	5.7	7.9	5.8	11	
Barium	300 or SB	117.75	29	**8**	115	223	96	118	104	223	
Beryllium	0.16 or SB	1.1	29	**2**	0.8	1.6	0.7	0.8	0.8	1.6	
Cadmium	1 or SB	2.3	29	0	0.4	0.7	0.4	0.8	0.3	0.8	
Calcium	SB	120500	29	0	16414	101000	8440	24200	20413	101,000	
Chromium	10 or SB	29.325	29	**5**	26	35	24	26	25	35	
Cobalt	30 or SB	19.05	29	0	12	20	12	13	12	20	
Copper	25 or SB	29.588	29	**16**	32	82	32	38	32	82	
Iron	2000 or SB	35550	29	**3**	29220	39500	27920	31400	28314	39,500	
Lead	SB	21.48	29	**4**	17	57	16	19	17	57	
Magnesium	SB	21500	29	1	9115	59900	5756	6200	8617	59,900	
Manganese	SB	1056	29	**3**	586	1900	542	843	560	1,900	
Mercury		0.095	29	**1**	0.0	0.2	0.0	0.0	0.0	0.2	
Nickel	13 or SB	48.88	29	**6**	41	71	43	48	41	71	
Potassium	SB	2342.5	29	**3**	1857	3230	1644	2060	1721	3,230	
Selenium	2 or SB	2	29	0	0.9	1.5	0.4	0.5	0.8	1.5	
Silver	SB	0.8	29	**7**	0.5	2.1	1.7	2.1	0.7	2.1	
Sodium	SB	170.25	29	**3**	82	186	93	155	93	207	
Thallium	SB	0.668	29	*29*	1.5	1.7	1.5	1.5	1.5	1.7	
Vanadium	150 or SB	31.9	29	**3**	27	35	24	28	25	35	
Zinc	20 or SB	108.95	29	**3**	81	120	86	102	81	120	
Polychlorinated biphenyls (µg/Kg-dry weight):											
Aroclor 1016	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1221	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1232	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1242	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1248	1000 or 10000**	90	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1254	1000 or 10000**	176	29	0	30.1	35	30.2	32	29.8	35	u
Aroclor 1260	1000 or 10000**	176	29	0	30.1	35	30.2	32	29.8	35	u
Pesticides (µg/Kg-dry weight):											
4,4´-DDD	2900	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
4,4´-DDE	2100	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
4,4´-DDT	2100	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Aldrin	41	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
alpha-BHC	110	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
alpha-Chlordane	540***	90	29	0	1.0	1.1	1.0	1	1.0	1.1	u
beta-BHC	200	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
delta-BHC	300	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Dieldrin	44	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endosulfan I	900	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Endosulfan II	900	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endosulfan sulfate	1000	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endrin	100	19	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endrin aldehyde		2	29	0	1.9	2.2	1.9	2	1.9	2.2	u
Endrin ketone	N/A	18	29	0	1.9	2.2	1.9	2	1.9	2.2	u
gamma-BHC	60	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
gamma-Chlordane	540	90	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Heptachlor	100	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Heptachlor epoxide	20	9	29	0	1.0	1.1	1.0	1	1.0	1.1	u
Methoxychlor	Total VOCs < 10 mg/Kg	90	29	0	9.6	11	9.6	10	9.5	11	u
Technical Chlordane	540***		29	0	30.1	35	30.2	32	29.9	35	u
Toxaphene		176	29	0	30.1	35	30.2	32	29.9	35	u

Table 6
Summary of NTCRA Soil Analytical Results - SEAD-63

Parameter	Cleanup Goal[1]		Total Number of Samples Collected	Number of Exceedances of Cleanup Goal[1]	Sidewall Samples		Floor Samples		All Samples		
	NYDEC TAGM	SEAD Background			Average Concentration	Maximum Concentration	Average Concentration	Maximum Concentration	Average Concentration	Maximum Concetration	
Semi-Volatile Organic Compounds (µg/Kg-dry weight):											
1,2,4-Trichlorobenzene			29	0	299	340	300	310	297	340	u
1,2-Dichlorobenzene			29	0	299	340	300	310	297	340	u
1,2-Diphenylhydrazine (as Azobenzene)			29	0	299	340	300	310	297	340	u
1,3-Dichlorobenzene			29	0	299	340	300	310	297	340	u
1,4-Dichlorobenzene			29	0	299	340	300	310	297	340	u
2,4,5-Trichlorophenol	100		29	0	299	340	300	310	297	340	u
2,4,6-Trichlorophenol			29	0	299	340	300	310	297	340	u
2,4-Dichlorophenol	400		29	0	299	340	300	310	297	340	u
2,4-Dimethylphenol			29	0	299	340	300	310	297	340	u
2,4-Dinitrophenol	200 or MDL		29	0	597	690	600	620	592	690	u
2,4-Dinitrotoluene		65	29	0	299	340	300	310	297	340	u
2,6-Dinitrotoluene	1000	65	29	0	299	340	300	310	297	340	u
2-Chloronaphthalene			29	0	299	340	300	310	297	340	u
2-Chlorophenol	800		29	0	299	340	300	310	297	340	u
2-Methylnaphthalene	36400		29	0	299	340	300	310	297	340	u
2-Methylphenol	100 or MDL		29	0	299	340	300	310	297	340	u
2-Nitroaniline	430 or MDL		29	0	597	690	600	620	592	690	u
2-Nitrophenol	330 or MDL		29	0	299	340	300	310	297	340	u
3,3´-Dichlorobenzidine	N/A		29	0	299	340	300	310	297	340	u
3-Nitroaniline	500 or MDL		29	0	597	690	600	620	592	690	u
4,6-Dinitro-2-methylphenol			29	0	597	690	600	620	592	690	u
4-Bromophenyl phenyl ether			29	0	299	340	300	310	297	340	u
4-Chloro-3-methylphenol	240 or MDL		29	0	597	690	600	620	592	690	u
4-Chloroaniline	220 or MDL		29	0	299	340	300	310	297	340	u
4-Chlorophenyl phenyl ether			29	0	299	340	300	310	297	340	u
4-Methylphenol	900		29	0	299	340	300	310	297	340	u
4-Nitroaniline			29	0	597	690	600	620	592	690	u
4-Nitrophenol	100 or MDL		29	0	597	690	600	620	592	690	u
Acenaphthene	50000****		29	0	299	340	300	310	297	340	u
Acenaphthylene	41000****		29	0	299	340	300	310	297	340	u
Anthracene	50000****		29	0	299	340	300	310	297	340	u
Benz(a)anthracene	224 or MDL		29	0	299	340	300	310	297	340	u
Benzo(a)pyrene	61 or MDL		29	0	299	340	300	310	297	340	u
Benzo(b)fluoranthene	1100		29	0	299	340	300	310	297	340	u
Benzo(g,h,i)perylene	50000****		29	0	299	340	300	310	297	340	u
Benzo(k)fluoranthene	1100		29	0	299	340	300	310	297	340	u
Benzoic acid	2700		29	0	597	690	600	620	592	690	u
Benzyl alcohol			29	0	597	690	600	620	592	690	u
Bis(2-chloroethoxy)methane			29	0	299	340	300	310	297	340	u
Bis(2-chloroethyl)ether			29	0	299	340	300	310	297	340	u
Bis(2-chloroisopropyl)ether			29	0	299	340	300	310	297	340	u
Bis(2-ethylhexyl)phthalate	50000****		29	0	287	340	300	310	289	340	u
Butyl benzyl phthalate	50000****		29	0	299	340	300	310	297	340	u
Carbazole			29	0	299	340	300	310	297	340	u
Chrysene	400		29	0	299	340	300	310	297	340	u
Dibenz(a,h)anthracene	14 or MDL		29	0	299	340	300	310	297	340	u
Dibenzofuran	6200		29	0	299	340	300	310	297	340	u
Diethyl phthalate	7100		29	0	299	340	300	310	297	340	u
Dimethyl phthalate	2000		29	0	299	340	300	310	297	340	u
Di-n-butyl phthalate	8100		29	0	299	340	300	310	297	340	u
Di-n-octyl phthalate	50000****		29	0	299	340	300	310	297	340	u
Fluoranthene	50000****		29	0	299	340	300	310	297	340	u
Fluorene	50000****		29	0	299	340	300	310	297	340	u
Hexachlorobenzene	410		29	0	299	340	300	310	297	340	u
Hexachlorobutadiene			29	0	299	340	300	310	297	340	u
Hexachlorocyclopentadiene			29	0	299	340	300	310	297	340	u

Table 6
Summary of NTCRA Soil Analytical Results - SEAD-63

Parameter	Cleanup Goal[1]		Total Number of Samples Collected	Number of Exceedances of Cleanup Goal[1]	Sidewall Samples		Floor Samples		All Samples		
	NYDEC TAGM	SEAD Background			Average Concentration	Maximum Concentration	Average Concentration	Maximum Concentration	Average Concentration	Maximum Concetration	
Hexachloroethane			29	0	299	340	300	310	297	340	u
Indeno(1,2,3-cd)pyrene	3200		29	0	299	340	300	310	297	340	u
Isophorone	4400		29	0	299	340	300	310	297	340	u
Naphthalene	13000	366	29	0	299	340	300	310	297	340	u
Nitrobenzene	200 or MDL	368	29	0	299	340	300	310	297	340	u
N-Nitrosodi-n-propylamine		366	29	0	299	340	300	310	297	340	u
N-Nitrosodiphenylamine		366	29	0	299	340	300	310	297	340	u
Pentachlorophenol	1000 or MDL	1758	29	0	597	690	600	620	592	690	u
Phenanthrene	50000****	368	29	0	299	340	300	310	297	340	u
Phenol	30 or MDL	366	29	0	299	340	300	310	297	340	u
Pyrene	50000****	372	29	0	299	340	300	310	297	340	u
Volatile Organic Compounds (VOCs) (µg/Kg-dry weight):											
1,1,1,2-Tetrachloroethane	600		29	0	27.8	36	27.8	32	27.1	36	u
1,1,1-Trichloroethane	800	7	29	0	27.8	36	27.8	32	27.1	36	u
1,1,2,2-Tetrachloroethane	600	7	29	0	27.8	36	27.8	32	27.1	36	u
1,1,2-Trichloroethane		7	29	0	27.8	36	27.8	32	27.1	36	u
1,1-Dichloroethane	200	7	29	0	27.8	36	27.8	32	27.1	36	u
1,1-Dichloroethene	400	7	29	0	27.8	36	27.8	32	27.1	36	u
1,1-Dichloropropene			29	0	27.8	36	27.8	32	27.1	36	u
1,2,3-Trichlorobenzene			29	0	27.8	36	27.8	32	27.1	36	u
1,2,3-Trichloropropane	400		29	0	27.8	36	27.8	32	27.1	36	u
1,2,4-Trichlorobenzene	3400		29	0	27.8	36	27.8	32	27.1	36	u
1,2,4-Trimethylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
1,2-Dibromo-3-chloropropane			29	0	138.5	180	136	160	134.8	180	u
1,2-Dibromoethane			29	0	27.8	36	27.8	32	27.1	36	u
1,2-Dichlorobenzene	7900		29	0	27.8	36	27.8	32	27.1	36	u
1,2-Dichloroethane	100	7	29	0	27.8	36	27.8	32	27.1	36	u
1,2-Dichloropropane		7	29	0	27.8	36	27.8	32	27.1	36	u
1,3,5-Trimethylbenzene		65	29	0	27.8	36	27.8	32	27.1	36	u
1,3-Dichlorobenzene	1600		29	0	27.8	36	27.8	32	27.1	36	u
1,3-Dichloropropane	300		29	0	27.8	36	27.8	32	27.1	36	u
1,4-Dichlorobenzene	8500		29	0	27.8	36	27.8	32	27.1	36	u
2,2-Dichloropropane			29	0	27.8	36	27.8	32	27.1	36	u
2-Butanone	300	7	29	0	138.5	180	136	160	134.8	180	u
2-Chlorotoluene			29	0	27.8	36	27.8	32	27.1	36	u
2-Hexanone			29	0	278	360	278	320	271.4	360	u
4-Chlorotoluene			29	0	27.8	36	27.8	32	27.1	36	u
4-Isopropyltoluene			29	0	27.8	36	27.8	32	27.1	36	u
4-Methyl-2-pentanone	1000		29	0	278	360	278	320	271.4	360	u
Acetone	200	22	29	0	138.5	180	136	160	134.8	180	u
Benzene	60	7	29	0	27.8	36	27.8	32	27.1	36	u
Bromobenzene			29	0	27.8	36	27.8	32	27.1	36	u
Bromochloromethane		7	29	0	27.8	36	27.8	32	27.1	36	u
Bromodichloromethane			29	0	27.8	36	27.8	32	27.1	36	u
Bromoform		7	29	0	55.45	72	55.4	64	54.1	72	u
Bromomethane			29	0	55.45	72	55.4	64	54.1	72	u
Carbon disulfide	2700	7	29	0	55.45	72	55.4	64	54.1	72	u
Carbon tetrachloride	600	7	29	0	27.8	36	27.8	32	27.1	36	u
Chlorobenzene	1700	7	29	0	27.8	36	27.8	32	27.1	36	u
Chloroethane	1900	7	29	0	55.45	72	55.4	64	54.1	72	u
Chloroform	300	7	29	0	27.8	36	27.8	32	27.1	36	u
Chloromethane			29	0	55.45	72	55.4	64	54.1	72	u
cis-1,2-Dichloroethene		7*****	29	0	27.8	36	27.8	32	27.1	36	u
cis-1,3-Dichloropropene		7	29	0	27.8	36	27.8	32	27.1	36	u
Dibromochloromethane	N/A	7	29	0	27.8	36	27.8	32	27.1	36	u
Dibromomethane			29	0	27.8	36	27.8	32	27.1	36	u
Dichlorodifluoromethane			29	0	55.45	72	55.4	64	54.1	72	u
Ethylbenzene	5500	7	29	0	27.8	36	27.8	32	27.1	36	u
Freon-113	6000		29	0	27.8	36	27.8	32	27.1	36	u
Hexachlorobutadiene			29	0	55.45	72	55.4	64	54.1	72	u

Table 6
Summary of NTCRA Soil Analytical Results - SEAD-63

Parameter	Cleanup Goal[1]		Total Number of Samples Collected	Number of Exceedances of Cleanup Goal[1]	Sidewall Samples		Floor Samples		All Samples		
	NYDEC TAGM	SEAD Background			Average Concentration	Maximum Concentration	Average Concentration	Maximum Concentration	Average Concentration	Maximum Concetration	
Isopropylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
m,p-Xylene	1200*	7*	29	0	27.8	36	27.8	32	27.1	36	u
Methyl tert-butyl ether		6	29	0	27.8	36	27.8	32	27.1	36	u
Methylene chloride	100	7	29	0	53.15	72	55.4	64	52.6	72	u
Naphthalene			29	0	55.45	72	55.4	64	54.1	72	u
n-Butylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
n-Propylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
o-Xylene	1200*	7*	29	0	27.8	36	27.8	32	27.1	36	u
sec-Butylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
Styrene		7	29	0	27.8	36	27.8	32	27.1	36	u
tert-Butylbenzene			29	0	27.8	36	27.8	32	27.1	36	u
Tetrachloroethene	1400	7	29	0	27.8	36	27.8	32	27.1	36	u
Toluene	1500	7	29	0	27.8	36	27.8	32	27.1	36	u
trans-1,2-Dichloroethene	300	7*****	29	0	27.8	36	27.8	32	27.1	36	u
trans-1,3-Dichloropropene		7	29	0	27.8	36	27.8	32	27.1	36	u
Trichloroethene	700	7	29	0	27.8	36	27.8	32	27.1	36	u
Trichlorofluoromethane			29	0	55.45	72	55.4	64	54.1	72	u
Vinyl chloride	200	7	29	0	27.8	36	27.8	32	27.1	36	u

NOTES:

5.80 - Blue-colored value indicates exceedance of the higher of New York State Department of Environmental Conservation (NYSDEC) TAGM soil cleanup goal or Seneca Army Depot Activity (SEDA) background

1.4 - Gray-shading indicates Practical Quantitation Limit (PQL) exceeds cleanup goal

* NYSDEC TAGM soil cleanup goal for total (m,p,o)-Xylenes is 1,200 µg/Kg
** 1,000 µg/Kg for surface soil, 10,000 µg/Kg for subsurface soil
*** NYSDEC TAGM soil cleanup goal for total Chlordane is 540 µg/Kg
**** Value indicated, and total SVOCs <500,000 µg/Kg
***** Value for total 1,2-dicchloroethenes

"**MDL**" means Minimum Detection Limit
"**TAGM**" means Technical and Administrative Guidance Memorandum #4046 - Determination of Soil Cleanup Objectives and Cleanup Goals (NYSDEC)
"**µg/Kg**" means micrograms/Kilogram
"**mg/Kg**" means milligrams/Kilogram
"**SB**" means Site Background
"**N/A**" means Not Applicable (NYSDEC TAGM criterion)
"**J**" is a Quality Control (QC) qualifier indicating detection below PQL
"**u**" is a QC qualifier indicating the compound was Not Detected, or ND, at or above the MDL
"**R**" is a QC qualifier tagged by the Data Validator indicating a Relative Percent Difference (RPD) outside accepted recovery limits

TABLE 7
Summary of ESI Soil Analytical Results - SEAD-63
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC TAGM 4046 [2]	Number of Exceedances	Number of Detects	Number of Analyses
VOCs							
Acetone	ug/Kg	160	8%	200	0	1	12
Benzene	ug/Kg	4	17%	60	0	2	12
Methyl ethyl ketone	ug/Kg	46	8%	300	0	1	12
Toluene	ug/Kg	23	17%	1,500	0	2	12
Total Xylenes	ug/Kg	14	17%	1,200	0	2	12
SVOCs							
Benzo(a)anthracene	ug/Kg	30	8%	224	0	1	12
Benzo(a)pyrene	ug/Kg	45	17%	61	0	2	12
Benzo(b)fluoranthene	ug/Kg	38	17%	1,100	0	2	12
Benzo(ghi)perylene	ug/Kg	31	8%	50,000	0	1	12
Benzo(k)fluoranthene	ug/Kg	43	17%	1,100	0	2	12
Bis(2-Ethylhexyl)phthalate	ug/Kg	1,100	92%	50,000	0	11	12
Chrysene	ug/Kg	31	17%	400	0	2	12
Di-n-butylphthalate	ug/Kg	87	8%	8,100	0	1	12
Dibenz(a,h)anthracene	ug/Kg	28	8%	14	1	1	12
Fluoranthene	ug/Kg	63	17%	50,000	0	2	12
Indeno(1,2,3-cd)pyrene	ug/Kg	37	8%	3,200	0	1	12
Phenanthrene	ug/Kg	31	8%	50,000	0	1	12
Pesticides/PCBs							
4,4'-DDD	ug/Kg	2	8%	2,900	0	1	12
4,4'-DDE	ug/Kg	4.4	17%	2,100	0	2	12
4,4'-DDT	ug/Kg	3.3	8%	2,100	0	1	12
Metals							
Aluminum	mg/Kg	18,000	100%	19,300	0	12	12
Antimony	mg/Kg	0.29	17%	5.9	0	2	12
Arsenic	mg/Kg	6.1	100%	8.2	0	12	12
Barium	mg/Kg	115	100%	300	0	12	12
Beryllium	mg/Kg	0.8	100%	1.1	0	12	12
Cadmium	mg/Kg	24	100%	2.3	3	12	12
Calcium	mg/Kg	41,500	100%	121,000	0	12	12
Chromium	mg/Kg	43.5	100%	29.6	2	12	12
Cobalt	mg/Kg	14.4	100%	30	0	12	12
Copper	mg/Kg	49.6	100%	33	6	12	12
Iron	mg/Kg	34,300	100%	36,500	0	12	12
Lead	mg/Kg	38.3	100%	24.8	3	12	12
Magnesium	mg/Kg	9,400	100%	21,500	0	12	12
Manganese	mg/Kg	728	100%	1,060	0	12	12
Mercury	mg/Kg	0.49	92%	0.1	1	11	12
Nickel	mg/Kg	48.4	100%	49	0	12	12
Potassium	mg/Kg	2,160	100%	2,380	0	12	12
Selenium	mg/Kg	1.6	100%	2	0	12	12
Sodium	mg/Kg	132	83%	172	0	10	12
Thallium	mg/Kg	0.51	33%	0.7	0	4	12
Vanadium	mg/Kg	28.4	100%	150	0	12	12
Zinc	mg/Kg	108	100%	110	0	12	12

Notes:

(1) Only compounds that were detected were included in this list of parameters. All soil samples were collected during the 1994 ESI at SEAD-63.

(2) NYSDEC Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046, Revised January 24, 1994, which are a To Be Considered (TBC) criteria.

TABLE 8
Summary of ESI Groundwater Analytical Results - SEAD-63
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	Criteria Level [2]	Number of Exceedances	Number of Detects	Number of Analyses
SVOCs							
Phenol	ug/L	2	33%	1	1	1	3
Metals							
Aluminum	ug/L	747	100%	NS	0	3	3
Barium	ug/L	83	100%	1,000	0	3	3
Calcium	ug/L	295,000	100%	NS	0	3	3
Chromium	ug/L	1.1	100%	50	0	3	3
Cobalt	ug/L	6.2	100%	NS	0	3	3
Copper	ug/L	2.6	100%	200	0	3	3
Iron	ug/L	1,260	100%	300	3	3	3
Lead	ug/L	1.1	33%	25	0	1	3
Magnesium	ug/L	54,600	100%	NS	0	3	3
Manganese	ug/L	1,070	100%	300	3	3	3
Nickel	ug/L	10.6	100%	NS	0	3	3
Potassium	ug/L	5,340	100%	NS	0	3	3
Sodium	ug/L	146,000	100%	20,000	1	3	3
Vanadium	ug/L	1.5	100%	NS	0	3	3
Zinc	ug/L	11.6	100%	300	0	3	3

Notes:
(1) Only compounds that were detected were included in this list of parameters.
All groundwater samples were collected during the 1994 ESI at SEAD-63.
(2) NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1, Revised June 2004).
NS = No standard

TABLE 9
Summary of ESI and RI Surface Water Analytical Results - SEAD-63
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYS AWQS Class C [2]	Number of Exceedances	Number of Detects	Number of Analyses
VOCs							
Chloroform	ug/L	0.8	9%	NS	0	2	22
Toluene	ug/L	1	5%	NS	0	1	22
SVOCs							
4-Methylphenol	ug/L	0.22	5%	NS	0	1	22
Benzo[a]pyrene	ug/L	1	5%	NS	0	1	22
Benzo[b]fluoranthene	ug/L	0.9	5%	NS	0	1	22
Benzo[ghi]perylene	ug/L	0.8	5%	NS	0	1	22
Benzo[k]fluoranthene	ug/L	1	5%	NS	0	1	22
Bis(2-Ethylhexyl)phthalate	ug/L	68	9%	0.6	2	2	22
Butylbenzylphthalate	ug/L	0.23	36%	NS	0	8	22
Di-n-butylphthalate	ug/L	0.15	59%	NS	0	13	22
Dibenz[a,h]anthracene	ug/L	0.8	5%	NS	0	1	22
Diethyl phthalate	ug/L	0.29	27%	NS	0	6	22
Fluoranthene	ug/L	0.7	9%	NS	0	2	22
Indeno[1,2,3-cd]pyrene	ug/L	0.9	5%	NS	0	1	22
Pentachlorophenol	ug/L	1	5%	0.4	1	1	22
Phenanthrene	ug/L	0.057	5%	NS	0	1	22
Phenol	ug/L	0.8	9%	5	0	2	22
Pyrene	ug/L	0.5	9%	NS	0	2	22
Pesticides/PCBs							
Aroclor-1260	ug/L	0.75	14%	0.0001	3	3	22
Endosulfan sulfate	ug/L	0.014	5%	NS	0	1	22
Endrin ketone	ug/L	0.046	23%	NS	0	5	22
Heptachlor	ug/L	0.0036	5%	0.001	1	1	22
Heptachlor epoxide	ug/L	0.003	5%	0.001	1	1	22
Metals							
Aluminum	ug/L	3,630	68%	100	10	15	22
Arsenic	ug/L	3.8	5%	190	0	1	22
Barium	ug/L	91.4	100%	NS	0	22	22
Beryllium	ug/L	0.19	27%	1.1110	0	6	22
Cadmium	ug/L	0.78	9%	1.8628	0	2	22
Calcium	ug/L	220,000	100%	NS	0	22	22
Chromium	ug/L	5.6	23%	347.2701	0	5	22
Cobalt	ug/L	7.2	18%	5	1	4	22
Copper	ug/L	7.9	32%	20.2877	0	7	22
Iron	ug/L	9,050	73%	300	7	16	22
Lead	ug/L	20	9%	7.1638	1	2	22
Magnesium	ug/L	33,700	100%	NS	0	22	22
Manganese	ug/L	2,300	100%	NS	0	22	22
Mercury	ug/L	0.1	14%	NS	0	3	22
Nickel	ug/L	18.8	41%	154.4886	0	9	22
Potassium	ug/L	11,600	100%	NS	0	22	22
Silver	ug/L	0.89	9%	0.1	2	2	22
Sodium	ug/L	59,300	100%	NS	0	22	22
Thallium	ug/L	1.9	5%	8	0	1	22
Vanadium	ug/L	8.9	18%	14	0	4	22
Zinc	ug/L	99	100%	141.3798	0	22	22

Notes:
(1) Only compounds that were detected were included in this list of parameters.
Four surface water samples were collected during the 1994 ESI and 18 surface water samples were collected during the 1997 RI.
(2) NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations
(TOGS 1.1.1, Revised June 2004), Class C Surface Water.
Hardness dependent values assumed a hardness of 217 mg/L.
NS = No standard

TABLE 10
Summary of ESI and RI Sediment Analytical Results - SEAD-63
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

Parameter [1]	Units	Maximum Value	Frequency of Detection	NYSDEC Sediment Criteria [2]		Number of Exceedances	Number of Detects	Number of Analyses
VOCs								
Acetone	ug/Kg	150	41%			0	9	22
Methyl ethyl ketone	ug/Kg	35	9%			0	2	22
Toluene	ug/Kg	14	5%	1,656	(b)	0	1	22
SVOCs								
2-Methylnaphthalene	ug/Kg	14	9%	1,149	(b)	0	2	22
Acenaphthene	ug/Kg	80	14%	4,732	(b)	0	3	22
Acenaphthylene	ug/Kg	82	14%			0	3	22
Anthracene	ug/Kg	250	41%	3,617	(b)	0	9	22
Benzo(a)anthracene	ug/Kg	1,800	95%	44	(a)	12	21	22
Benzo(a)pyrene	ug/Kg	2,900	95%	44	(a)	13	21	22
Benzo(b)fluoranthene	ug/Kg	5,300	95%	44	(a)	14	21	22
Benzo(ghi)perylene	ug/Kg	2,700	95%			0	21	22
Benzo(k)fluoranthene	ug/Kg	570	68%	44	(a)	10	15	22
Bis(2-Ethylhexyl)phthalate	ug/Kg	110	55%	6,743	(b)	0	12	22
Butylbenzylphthalate	ug/Kg	22	23%			0	5	22
Carbazole	ug/Kg	430	45%			0	10	22
Chrysene	ug/Kg	2,300	95%	44	(a)	13	21	22
Di-n-butylphthalate	ug/Kg	19	45%			0	10	22
Di-n-octylphthalate	ug/Kg	19	5%			0	1	22
Dibenz(a,h)anthracene	ug/Kg	1,200	50%			0	11	22
Dibenzofuran	ug/Kg	36	9%			0	2	22
Diethyl phthalate	ug/Kg	92	36%			0	8	22
Fluoranthene	ug/Kg	4,100	95%	34,476	(b)	0	21	22
Fluorene	ug/Kg	110	14%	270	(b)	0	3	22
Indeno(1,2,3-cd)pyrene	ug/Kg	2,500	95%	44	(a)	10	21	22
Naphthalene	ug/Kg	23	9%	1,014	(b)	0	2	22
Phenanthrene	ug/Kg	1,400	100%	4,056	(b)	0	22	22
Phenol	ug/Kg	11	5%	17	(b)	0	1	22
Pyrene	ug/Kg	3,200	95%	32,482	(b)	0	21	22
Pesticides/PCBs								
4,4'-DDD	ug/Kg	3.9	5%	0.338	(a)	1	1	22
4,4'-DDE	ug/Kg	9.2	14%	0.338	(a)	3	3	22
4,4'-DDT	ug/Kg	8.3	9%	0.338	(a)	2	2	22
Aroclor-1260	ug/Kg	44	5%	0.02704	(a)	1	1	22
Endosulfan I	ug/Kg	7.5	9%	1.014	(b)	2	2	22
Endosulfan sulfate	ug/Kg	12	9%			0	2	22
Endrin ketone	ug/Kg	9.4	5%			0	1	22
Metals								
Aluminum	mg/Kg	16,700	100%			0	22	22
Arsenic	mg/Kg	6.8	100%	6	(c)	1	22	22
Barium	mg/Kg	107	100%			0	22	22
Beryllium	mg/Kg	0.8	100%			0	22	22
Cadmium	mg/Kg	0.83	18%	0.6	(c)	2	4	22
Calcium	mg/Kg	211,000	100%			0	22	22
Chromium	mg/Kg	24.4	100%	26	(c)	0	22	22
Cobalt	mg/Kg	14.4	100%			0	22	22
Copper	mg/Kg	42.6	100%	16	(c)	19	22	22
Cyanide	mg/Kg	2.1	5%			0	1	22
Iron	mg/Kg	29,700	100%	20,000	(c)	9	22	22
Lead	mg/Kg	46.2	100%	31	(c)	5	18	18
Magnesium	mg/Kg	16,100	100%			0	22	22
Manganese	mg/Kg	995	100%	460	(c)	9	22	22
Mercury	mg/Kg	0.13	27%	0.15	(c)	0	6	22
Nickel	mg/Kg	44.2	100%	16	(c)	20	22	22
Potassium	mg/Kg	2,570	100%			0	22	22
Selenium	mg/Kg	2.1	27%			0	6	22
Sodium	mg/Kg	578	82%			0	18	22
Thallium	mg/Kg	2.3	14%			0	3	22
Vanadium	mg/Kg	28	100%			0	22	22
Zinc	mg/Kg	534	100%	120	(c)	5	22	22

Notes:
(1) Only compounds that were detected were included in this list of parameters.
All sediment samples were collected during the 1994 ESI and 1997 RI at SEAD-63.
(2) NYSDEC Technical Guidance for Screening Contaminated Sediments - January 1999
a) Human Health Bioaccumulation Criteria
b) Benthic Aquatic Life Chronic Toxicity Criteria
c) Lowest Effect Level

TABLE 11
Calculation of Total Non-Carcinogenic and Carcinogenic Risks - SEAD-63
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

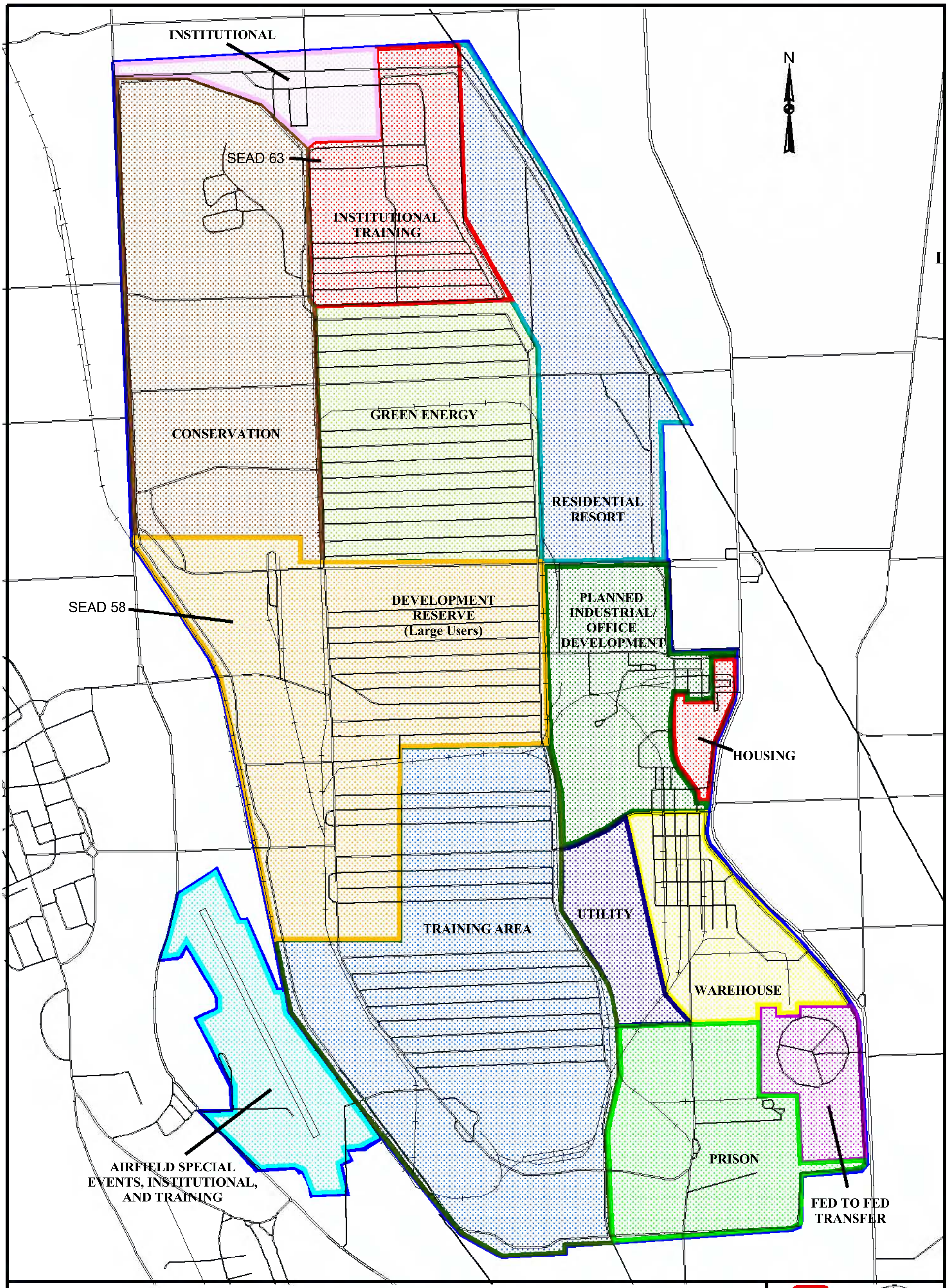
RECEPTOR	EXPOSURE ROUTE	HAZARD INDEX	CANCER RISK
PARK WORKER	Inhalation of Dust in Ambient Air	7E-07	1E-09
	Ingestion of Soil	1E-03	5E-08
	Dermal Contact to Soil	4E-04	8E-08
	Ingestion of Groundwater	1E-01	NQ
	Dermal Contact to Surface Water	4E-03	5E-05
	Dermal Contact to Sediment	1E-03	1E-06
	TOTAL RECEPTOR RISK	*2E-01*	*5E-05*
RECREATIONAL VISITOR (CHILD)	Inhalation of Dust Ambient Air	1E-06	5E-10
	Ingestion of Soil	4E-03	4E-08
	Dermal Contact to Soil	4E-04	2E-08
	Ingestion of Groundwater	3E-01	NQ
	Dermal Contact to Groundwater	5E-02	NQ
	Dermal Contact to Surface Water	4E-02	8E-05
	Dermal Contact to Sediment	1E-02	3E-06
	TOTAL RECEPTOR RISK	*4E-01*	*8E-05*
CONSTRUCTION WORKER	Inhalation of Dust in Ambient Air	9E-05	3E-08
	Ingestion of Soil	2E-01	4E-08
	Dermal Contact to Soil	2E-02	1E-08
	TOTAL RECEPTOR RISK	*3E-01*	*9E-08*

NQ - Not quanitfied due to lack of toxicity data.

TABLE 11
Calculation of Total Non-Carcinogenic and Carcinogenic Risks - SEAD-63
Proposed Plan for NA/NFA Sites
Seneca Army Depot Activity

RECEPTOR	EXPOSURE ROUTE	HAZARD INDEX	CANCER RISK
ADULT RESIDENT (Hazard Index)	Inhalation of Dust Ambient Air	3E-06	
	Ingestion of Soil	2E-03	
	Dermal Contact to Soil	3E-04	
	Ingestion of Groundwater	6E-01	See risk below
	Dermal Contact to Groundwater	1E-01	
	Dermal Contact to Surface Water	5E-03	
	Dermal Contact to Sediment	1E-03	
	TOTAL RECEPTOR RISK	*7E-01*	
CHILD RESIDENT (Hazard Index)	Inhalation of Dust Ambient Air	7E-06	
	Ingestion of Soil	2E-02	
	Dermal Contact to Soil	2E-03	
	Ingestion of Groundwater	1E+00	See risk below
	Dermal Contact to Groundwater	2E-01	
	Dermal Contact to Surface Water	4E-02	
	Dermal Contact to Sediment	1E-02	
	TOTAL RECEPTOR RISK	*2E+00*	
RESIDENT (Total Lifetime Cancer Risk)	Inhalation of Dust Ambient Air		8E-09
	Ingestion of Soil		3E-07
	Dermal Contact to Soil		1E-08
	Ingestion of Groundwater	See risk above	NQ
	Dermal Contact to Groundwater		NQ
	Dermal Contact to Surface Water		1E-04
	Dermal Contact to Sediment		4E-06
	TOTAL RECEPTOR RISK		*1E-04*

NQ - Not quanitfied due to lack of toxicity data.



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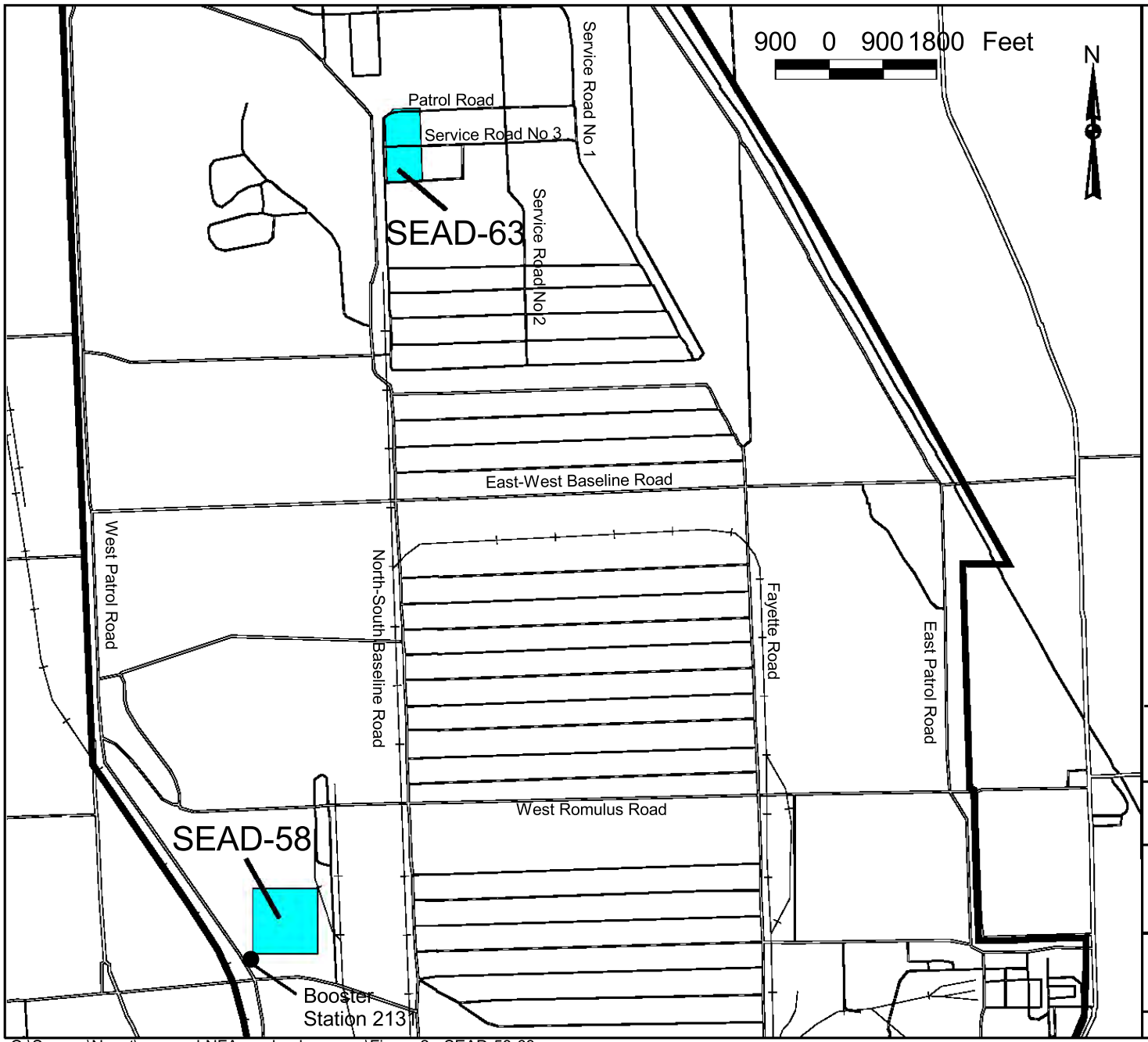
Seneca Army Depot Activity
Proposed Plan NA and NFA
SEADs 58 and 63

Figure 1
Future Land Use and
NA/NFA Site Locations

Scale - 1:3400 | OCTOBER 2005

O:\Seneca\Noact\prap-rod-NFA newlanduses.apr\Figure 1 - Land Use & Site Locations



SEDA Boundary

SEAD Boundary

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Seneca Army Depot Activity
Proposed Plan NA and NFA
SEADs 58 and 63

Figure 2
Locations of SEAD-58 and SEAD-63

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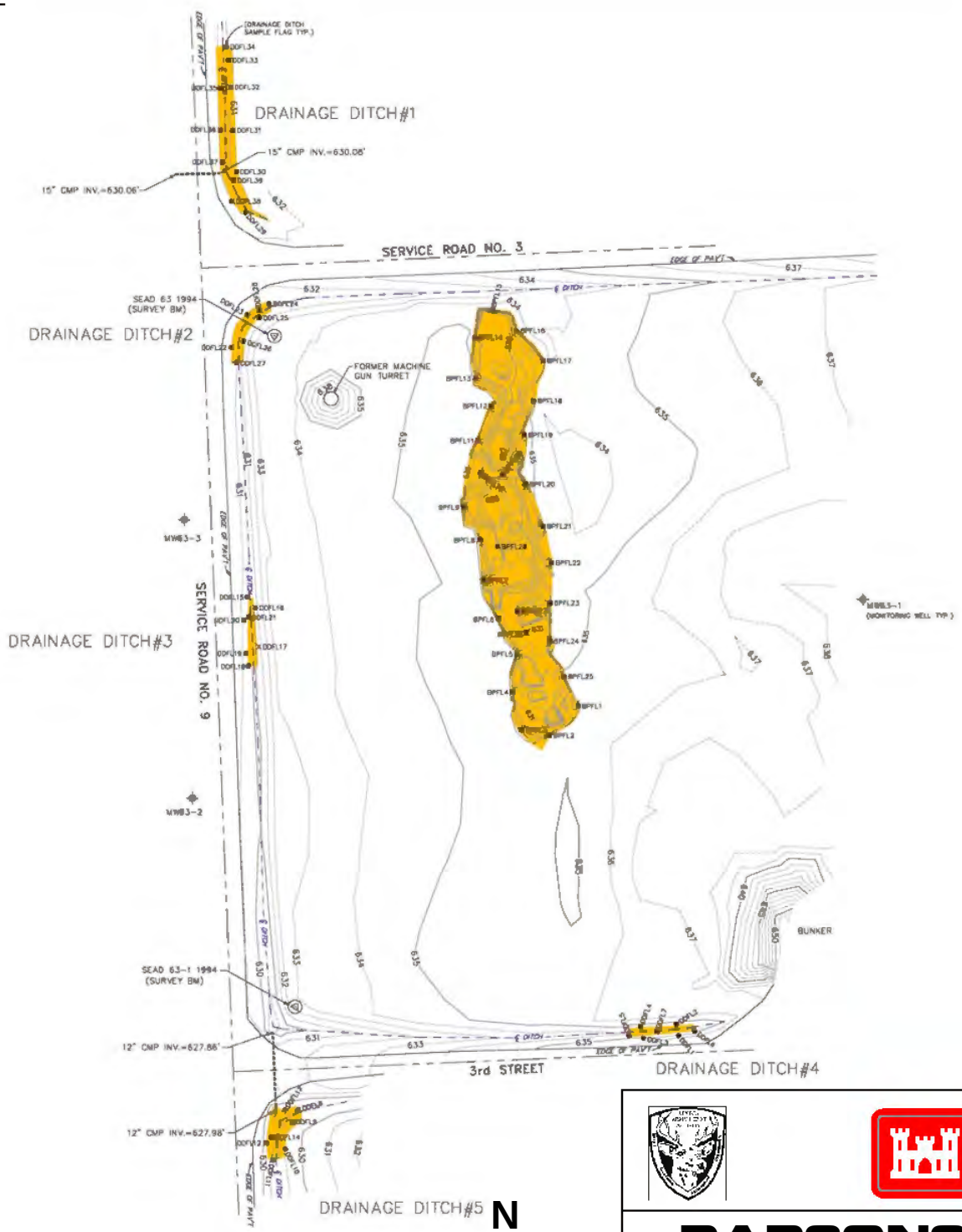
O:\Seneca\Noact\prap-rod-NFA newlanduses.apr\Figure 2 - SEAD-58-63



Map graphic copied from:
"Non-Time Critical Removal Action
Miscellaneous Components Burial Site (SEAD-63)"
Plexus Scientific Corporation, February 2005

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Figure 3
SEAD-63 Extent of Excavation and Location of Confirmation Samples

Scale: 1inch equals approximately 85 feet.