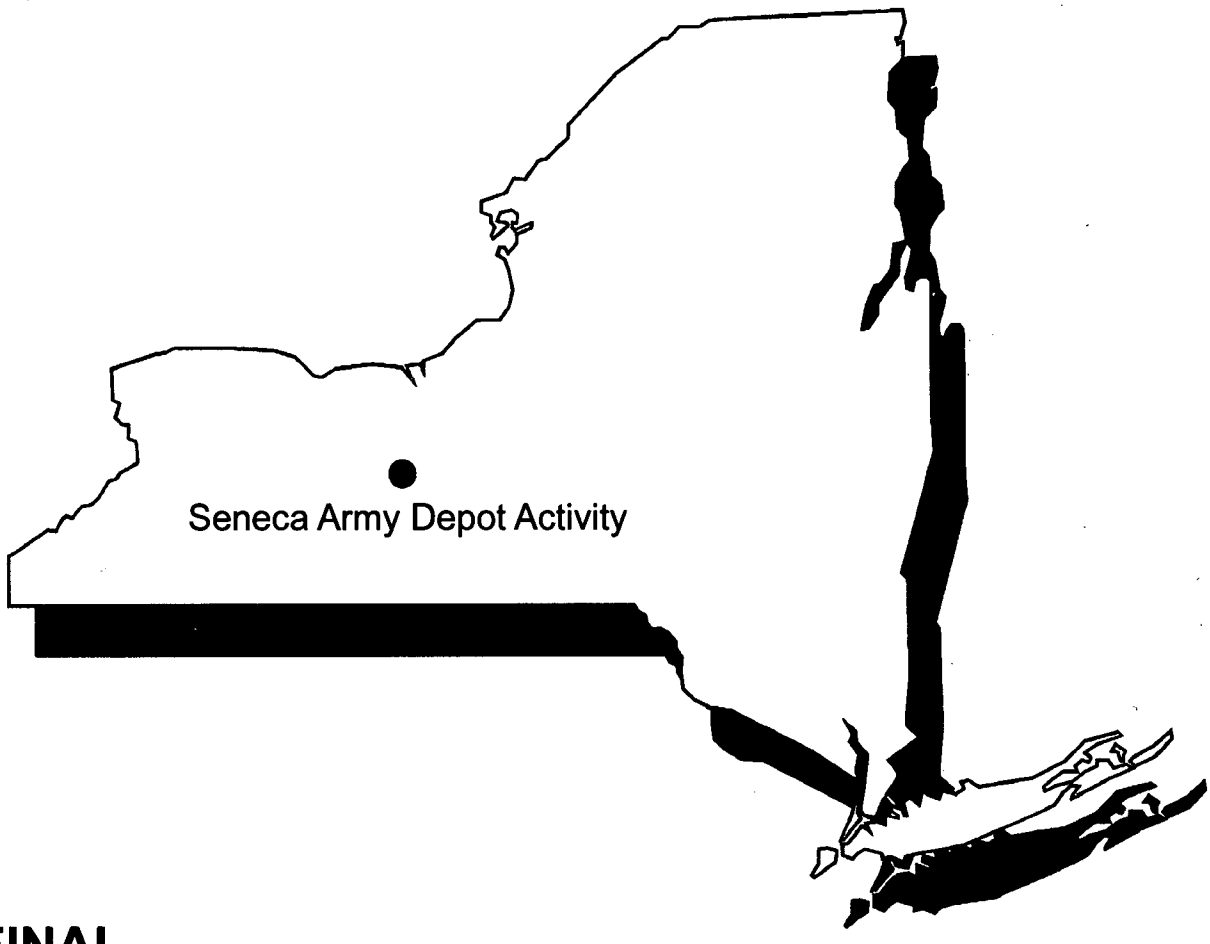
US Army, Engineering & Support Center
Huntsville, AL

Seneca Army Depot Activity
Romulus, NY



FINAL
RECORD OF DECISION
THE RADIOACTIVE WASTE BURIAL SITES (SEAD-12) AND THE MIXED WASTE STORAGE FACILITY (SEAD-72) SENECA ARMY DEPOT ACTIVITY

Contract No. W912DY-08-D-0003
Task Order No. 0013
EPA Site ID# NY0213820830
NY Site ID# 8-50-006

327411

PARSONS
MARCH 2015

FINAL
RECORD OF DECISION

FOR

THE RADIOACTIVE WASTE BURIAL SITES (SEAD-12) AND THE MIXED WASTE STORAGE FACILITY (SEAD-72)

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Prepared for:

SENECA ARMY DEPOT
5786 State Route 96
Romulus, New York 14541

and

UNITED STATES ARMY CORPS OF ENGINEERS

US Army Engineering
and Support Center
4820 University Square
Huntsville, Alabama 35816

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Contract Number: W912DY-08-D-0003
Delivery Orders: 0013
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March 2015

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ACRONYMS AND ABBREVIATIONS

AEC	Atomic Energy Commission
AOC(s)	Area(s) of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
AWQS	Ambient Water Quality Standard
BCT	Base Clean-up Team
BRA	Baseline Risk Assessment
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminant of Concern
COPC	Contaminants of Potential Concern
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbon
CSM	Conceptual Site Model
DCE	dichloroethene
DCGL	Derived Concentration Guideline Levels
DoD	Department of Defense
DOT	Department of Transportation
ECL	Environmental Conservation Law
EM	Electromagnetic
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
ESI	Expanded Site Inspection
FFA	Federal Facilities Agreement
FS	Feasibility Study
ft.	foot or feet (dependent on context)
GA	NYSDEC groundwater classification for a source that is suitable for drinking water
GW	groundwater
HHRA	Human Health Risk Assessment
HI(s)	Hazard Index (Indices)

ACRONYMS AND ABBREVIATIONS (continued)

HQ	Hazard Quotient
IC	Institutional Control
LUC(s)	Land Use Control(s)
LRA	Local Redevelopment Authority
LTM	Long-Term Monitoring
MARSSIM	Multi Agency Radiation Survey and Site Investigation Manual
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
mrem/yr	millirems per year
NA	No Action
NCP	National Contingency Plan or National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
NGVD	National Geodetic Vertical Data
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
NTCRA	non-time critical removal action
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	Polycyclic Aromatic Hydrocarbon
Pb	Lead
PCB	Polychlorinated Biphenyls
Ra	Radium
RAB	Restoration Advisory Board
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RfD	Reference Dose

ACRONYMS AND ABBREVIATIONS (continued)

RI	Remedial Investigation
RME	Reasonable Maximum Exposure
ROD	Record of Decision
RSL	Regional Screening Level
SCIDA	Seneca County Industrial Development Agency
SCO	Soil Cleanup Objective
SEAD	Acronym for the Seneca Army Depot used to designate SWMU numbers
SLERA	Screening Level Ecological Risk Assessment
SRI	Supplemental Remedial Investigation
SVOC(s)	Semivolatile Organic Compound(s)
SWMU	Solid Waste Management Unit
TAGM	Technical and Administrative Guidance Memorandum
TBC	To Be Considered
TCE	Trichloroethene
TIC	Tentatively Identified Compound
TOG	Technical and Operation Guidance
TRC	Technical Review Committee
TSDF	Treatment, Storage and Disposal Facility
UCL	upper confidence limit
VOC(s)	Volatile Organic Compound(s)
WRS	Wilcoxon Rank Sum
µg/kg	micrograms per kilogram
µg/L	micrograms per liter

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1.0 DECLARATION OF THE RECORD OF DECISION

Areas of Concern Name and Location

SEAD-12 – The Radioactive Waste Burial Sites

SEAD-72 – The Mixed Waste Storage Facility (Building 803)

Seneca Army Depot
5786 State Route 96
Romulus, New York 14541
EPA Site ID: NY0213820830; NY Site ID: 8-50-006

Statement of Basis and Purpose

This Record of Decision (ROD) documents the U.S. Army's (Army's) and the U.S. Environmental Protection Agency's (EPA's) selected remedies for the Radioactive Waste Burial Sites (SEAD-12) and the Mixed Waste Storage Facility (SEAD-72) located at the Seneca Army Depot (SEAD or the Depot) in the Towns of Varick and Romulus in Seneca County, New York. The remedy selected for each of the identified areas of concern (AOCs) was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended, 42 U.S.C. Section 9601, *et seq.*, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, and regulation under the Resource Conservation and Recovery Act (RCRA). The Director of the Emergency and Remedial Response Division, Environmental Protection Agency (ERRD) has been delegated the authority to approve this ROD. The Base Realignment and Closure (BRAC) Environmental Coordinator and the Chief of the Base Realignment and Closure Division have been delegated the authority to approve this ROD for the Army.

This ROD is based on the Administrative Record that has been developed in accordance with Section 113(k) of CERCLA. The Administrative Record is available for public review at the Seneca Army Depot Activity, 5786 State Route 96, Building 123, Romulus, New York, 14541. The Administrative Record Index identifies each of the items considered during the selection of the remedial actions for these historic Solid Waste Management Units (SWMUs). This index is included in **Appendix A**.

Through the New York State Department of Environmental Conservation (NYSDEC), the State of New York, concurs with the selected remedy. The NYSDEC concurrence letter is provided in **Appendix B** of this ROD.

Assessment of Areas of Concern

The Army and EPA have concluded that the majority of land within SEAD-12 is suitable for unrestricted use and unlimited exposures with no further action required, with the exception of groundwater and soil within a small portion of SEAD-12. Land that underlies two unoccupied buildings (Buildings 813 and 814) and that is in the vicinity of former monitoring well MW12-37, is contaminated with volatile organic compounds (VOCs), primarily trichloroethene (TCE) at levels exceeding federal and state groundwater drinking water standards and state soil cleanup objective (SCO) levels. Based upon the soil data collected at the buildings' edges during the interim removal action, it is likely that VOCs beneath the buildings

remain at sufficient concentrations to pose a potential risk to future users or occupants of the land via vapor intrusion. The response action selected in this ROD is necessary to protect human health and the environment from actual or threatened releases of hazardous substances into the (indoor air) environment from the AOC, or from actual or threatened releases of pollutants or contaminants, which may present an imminent and substantial endangerment to public health or welfare.

The Army and EPA have concluded SEAD-72 is suitable for unrestricted use and unlimited exposures with no further action required.

Description of the Selected Remedy

In response to this future-use concern, the selected remedy for this portion of SEAD-12 addresses contaminated soil and groundwater, and includes:

- subject to the limitations set forth in the following paragraph, the implementation, monitoring, and maintenance of an environmental land use control (LUC) restricting access to and use of the existing vacant Buildings 813/814 and the construction of inhabitable structures (temporary or permanent) above the area and within a fifty foot perimeter of Buildings 813/814 and fifty foot radius from MW12-37 where TCE-contaminated soil was previously identified, and where contaminated groundwater may exist; and
- the implementation, monitoring, and maintenance of a LUC that prohibits access to and use of groundwater in the vicinity of Buildings 813/814.

The extent of the land within SEAD-12 affected by the selected remedy is shown on **Figure 1-1**. The selected remedy is meant to protect a future user of this area. Because VOCs can naturally attenuate over time, and occupancy of the area is not currently anticipated, residual contamination may dissipate in the intervening time period. At a future time, when occupancy of existing or newly constructed buildings is under consideration, the restricted use may be removed, with the concurrence from the Army, EPA and NYSDEC, if monitoring conducted at that time by a future user indicates that exposure through vapor intrusion is not a concern.

Statutory Requirements

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

Statutory Preference for Treatment

The selected remedy does not satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element for reasons explained in the Decision Summary.

Five-Year Review Requirements

Five-year reviews will be conducted until the remediation goals are achieved to ensure that the selected remedy is, or will be, protective of human health and the environment. Five-year reviews are already required for other areas of the Depot.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record file for the Site.

- Chemicals of concern and their respective concentrations may be found in the "Site Characteristics" section;
- Baseline risk represented by the chemicals of concern may be found in the "Summary of Site Risks" section;
- A discussion of cleanup levels for chemicals of concern may be found in the "Remedial Action Objectives" section;
- A discussion of source materials constituting principal threats may be found in the "Principal Threat Waste" section;
- Current and reasonably anticipated future land use assumptions are discussed in the "Current and Potential Future Site and Resource Uses" section;
- A discussion of potential land uses that will be available at the Site as a result of the Selected Remedy is found in the "Current and Potential Future Site and Resource Uses" section;
- Estimated capital, annual operation and maintenance (O&M), and total present worth costs are discussed in the "Description of Alternatives" section; and
- Key factor(s) that led to selecting the remedy (i.e., how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) may be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

The foregoing represents the selection of a remedial action by the U.S. Department of the Army and the U.S. Environmental Protection Agency, with the concurrence of the New York State Department of Environmental Conservation.

Concur and recommend for immediate implementation:

Stephen M. Absolom

3/20/2015

Stephen M. Absolom
Date

BRAC Environmental Coordinator

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The foregoing represents the selection of a remedial action by the U.S. Department of the Army and the U.S. Environmental Protection Agency, with the concurrence of the New York State Department of Environmental Conservation.

Concur and recommend for immediate implementation:

James E. Briggs

25 March 2015

James E. Briggs
Acting Chief, Consolidations Branch

Date

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The foregoing represents the selection of a remedial action by the U.S. Department of the Army and the U.S. Environmental Protection Agency, with the concurrence of the New York State Department of Environmental Conservation.

Concur and recommend for immediate implementation:

March 30, 2015

Walter E. Mugdan

Date

Director, Emergency and Remedial Response Division

U.S. Environmental Protection Agency, Region II

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2.0 AOCS NAME, LOCATION, AND DESCRIPTION

The Seneca Army Depot previously occupied approximately 10,600 acres of land in Seneca County in the Towns of Romulus and Varick, in Seneca County, New York. The property was acquired by the United States Government in 1941 and was operated by the Department of the Army from that time until approximately September 2000 when the installation closed. Prior to the acquisition of the land and the construction of the Depot, the land was used primarily for agricultural, farming, and residential purposes.

A location map for SEAD is provided as **Figure 2-1**. The remainder of the land bounding the Depot is sparsely populated residential areas and farm and agricultural property. SEAD is located in an uplands area, which forms a divide that separates two of New York's Finger Lakes; Cayuga Lake on the east and Seneca Lake on the west.

SEAD-12 (Radioactive Waste Burial Sites)

The Radioactive Waste Burial Sites (SEAD-12) is located in the north-central portion of the former Seneca Army Depot also known as the high security area and referred to as the "Q Area". SEAD-12 originally began as the investigation of two separate areas, formerly designated as SEAD-12A (Radioactive Waste Burial Site northeast corner of the Q Area) and SEAD-12B (Radioactive Waste Burial Site – northeast of Buildings 803, 804, and 805 within the Q Area). Locations of these two historic AOCs are shown in **Figure 2-2**. The SEAD-12 remedial investigation covered 624 acres of the Q Area including the burial areas noted above. SEAD-12A encompassed an area measuring approximately 1,500 feet long by 900 feet wide that was suspected to have included up to five separate small burial pits. SEAD-12B encompassed an area measuring 300 feet long by 300 feet wide, and it was suspected to have included a 5,000 gallon storage tank and a small dry waste pit.

After the completion of an expanded site inspection (ESI) of SEAD-12A and SEAD-12B in 1995, the bounds of SEAD-12 were expanded based on the similarity of the chemicals found at the two historic SEADs and the general history of the overall Q Area, which suggested that similar constituents were likely to exist throughout the larger area. Building 715 and the portion of Reeder Creek that is adjacent to SEAD-12 were also included in the RI at SEAD-12. Building 715 is a wastewater treatment plant that received wastewater from the buildings within the Q Area during the period of their Army use. This facility currently receives wastewater from the Hillside Children's Center, which is now located in the SEAD's former Troop Area to the north and west of SEAD-12. Reeder Creek receives the surface water runoff from SEAD-12, and other locations within the former Depot, as well as the wastewater discharge from Building 715.

SEAD-12 excludes the area of SEAD-63, the Miscellaneous Components Burial Site, which is also located within the Q Area along its western boundary. A non-time critical removal action (NTCRA) was performed at SEAD-63 in 2004, resulting in the removal of 5,100 tons of soil and debris. A ROD for SEAD-63 was signed by the Army and the EPA, with concurrence from the NYSDEC, in September 2006 selecting no further action for that AOC.

SEAD-72 (Building 803)

SEAD-72, the former Mixed Waste Storage Facility (Building 803) is located in the northern portion of SEAD-12, between Service Road No. 1 and the Q Area's outer perimeter security fence line near (west of) the intersection of Service Road No. 1 and Patrol Road. The Army designated Building 803 to store mixed chemical and radiological waste generated at SEAD prior to off-site shipment and subsequent disposal.

During its use, Building 803 met the requirements for a mixed waste storage facility as defined in Title 6 New York Codes, Rules, and Regulations (6 NYCRR) Part 373. This facility was designated as a RCRA unit in SEAD's New York State Part 373 Hazardous Waste Management Facility RCRA Permit Application and was a unit that remained regulated under RCRA interim status provisions (Facility Number NY0213820830) pending final decontamination, verification sampling and analysis, and closure. The building is two stories tall, with the upper level measuring approximately 35 feet by 25 feet in size. Mixed wastes were stored within the storage vaults in new, removable head type, 55-gallon drums that conformed to appropriate Department of Transportation (DOT) specifications for containers holding hazardous waste during transport. The mixed waste consisted of solvent-wetted paper wipes (solvents that may have been used included isopropanol, Freon®, TCE, acetone, and toluene) that were used to clean low-level radioactive components. The wipes were segregated by solvent type, bagged, sealed with tape, double bagged, sealed with tape again, labeled for identification, and then placed in a drum. The drums would be stored in one of four vaults constructed inside Building 803 until they were shipped off-site under manifest. At any one time, Building 803 could hold up to 96 drums (24 per cell), if the drums were double stacked in each vault. Building 803 was cleared of drummed hazardous waste in 1996 and was left empty. The building has remained vacant since that time.

Habitat and Ecological Community Characterization

The majority of SEAD-12 falls into the vegetation classification of successional old field; other vegetation classifications found at lesser levels in SEAD-12 include successional shrub and successional southern hardwoods. The successional old field vegetation provides excellent habitat for the white-tailed deer which are often observed foraging in areas adjacent to forest and shrub communities. Other species commonly observed in this habitat included eastern cottontail rabbit, numerous songbirds, red fox, and raccoon. Successional shrub is very popular with songbirds, common and white white-tailed deer, raccoon, and eastern cottontail rabbit. The wildlife found in the successional southern hardwoods habitat included common white-tailed deer, black-capped chickadee, tufted titmouse, northern cardinal, northern flicker, downy woodpecker, raccoon, opossum, eastern gray squirrel, and the white white-tailed deer.

Several channelized streams and excavated drainage ditches are found throughout SEAD-12. No flow was observed in any of these streams or ditches and most of these streams and ditches do not have permanent water throughout the year.

A list of potential rare, threatened, or endangered plant species that have been identified as potentially or actually present within the limits of Seneca County is available through the New York Natural Heritage Program. The New York Natural Heritage Program reported confirmation that bald eagle activity was

documented at the Depot in spring 2008. The documentation of the 2008 sightings was the only one on file. No other site-specific information pertinent to the occurrence of rare, threatened, or endangered plants on the land of the former SEAD was found in the literature.

All SEAD-12 areas have been altered to varying degrees by management practices, whether from mission-related maintenance activities within the last 40 years, or from historical farming practices. With the on-going closure of the SEAD, some management activities such as mowing have been reduced or terminated. All wetlands within the 0.5-mile radius have been altered significantly by previous land management practices. Natural creeks have been straightened and channelized, and former wetland areas have been drained and filled. Several channelized streams and excavated drainage ditches are found throughout the AOC. Only the largest of the ditches had standing water present, and no flow was observed. These large ditches were vegetated with cattail, purple loosestrife, golden rod, and other herbaceous species. Many of the ditches support common upland ruderal species and likely only function as conveyance systems during severe storms.

A shallow emergent marsh is located adjacent to the large man-made pond on the eastern side of the 0.5-mile radius AOC. There was no standing water in the wetland at the time of the AOC assessment, but the soil was moist throughout. Vegetation in the marsh included cattail, willow, and purple loosestrife. Ephemeral marshes such as this one are especially important to piscivorous avifauna species for foraging habitat.

The Seneca Army Depot has a network of paved and gravel roads. The roads provide basking areas for species during cooler weather, and therefore offer prey opportunities for certain predators. No habitat utilization of the buildings was observed. The building exteriors are well-maintained and secure. It is unlikely that the buildings provide any wildlife habitat other than very small rodents. Railroad tracks run from the southeast corner of SEAD-12, along the eastern perimeter, and turn west, ending at a loading dock south of Building 816. The railroad tracks are not currently in use and were observed to be hunting grounds of red-tailed hawks and great horned owls during the field visits. These birds occupied prominent perches adjacent to railroad corridors frequently during the field visits. Railroad tracks apparently serve as trails for nocturnal creatures, as tracks and scat of skunk, raccoon, fox, and opossum were observed frequently. The poor rooting substrate of the granite railroad bed suppress vegetation along the tracks and shoulders. At the time of operation, routine herbicide application (discontinued at SEAD-12 in 1995) also helped suppress vegetation along the tracks and shoulders.

Hydrogeology and Hydrology

Regionally, the geologic cross-sections suggest that a groundwater divide exists approximately half way between the two Finger Lakes - Cayuga Lake on the east and Seneca Lake on the west. SEAD is located on the western slope of this divide and therefore regional groundwater flow is expected to be primarily westward towards Seneca Lake.

The predominant surficial geologic unit present at SEAD-12 and SEAD-72 is Pleistocene-age till. A thin zone of weathered gray shale was encountered below the till. The bedrock underlying the AOCs is gray

Devonian shale bedrock. In developed areas, the till or weathered bedrock (where the till has been removed) is overlain by fill material consisting of reworked till. Topsoil covers much of the SEAD-12 area.

Depth to groundwater ranged from about 2 ft to approximately 11 ft at the AOCs. Groundwater flow is predominantly to the west and northwest across SEAD-12 and SEAD-72.

Surface topography at the AOCs is relatively flat-lying, sloping gently to the west and northwest. Surface water within SEAD-12 occurs as seasonal flow within drainage ditches and seasonal streams. Surface water flow is generally to the west. In the northeast portion of SEAD-12, a natural unnamed creek flows to the northwest across the AOC. East of Service Road No. 1, this unnamed creek exists as a natural seasonal stream. The unnamed creek flows into Reeder Creek west of SEAD-12, which discharges into Seneca Lake. Reeder Creek also accumulates the surface water flow from the southern portion of SEAD-12. A natural seasonal marsh area occurs near the eastern portion of the unnamed creek. This marsh tends to remain wet, but does dry out during dry summer months.

3.0 HISTORY AND ENFORCEMENT ACTIVITIES

3.1 LAND USE

SEAD is located approximately 40 miles south of Lake Ontario between Cayuga Lake to the east and Seneca Lake to the west. The area immediately surrounding SEAD is characterized as sparsely populated agricultural, farmland, and residential property. Population centers in the immediate vicinity of SEAD consist of the Towns of Romulus and Varick. Land use in the region surrounding SEAD is mainly agricultural with some minor forestry and public recreational components. Agricultural land use consists of active use, including cropland and cropland pasture, and inactive use including land devoted to forest regeneration and land presently being developed. Public and semi-public land use includes Sampson State Park, Willard Psychiatric Center, and the Central School in the Town of Romulus.

Prior to the acquisition of the land and construction of SEAD in 1941, the property was privately owned and was used principally as homesteads, farmland, and for other agriculture. Between 1941 and 2000, SEAD was owned by the United States Government and operated by the Department of the Army. The Depot began its primary mission of receipt, maintenance, and supply of ammunition in 1943. After the end of World War II, the Depot's mission shifted from supply to storage, maintenance, and disposal of ammunition. As the "Q" Area facilities became operational, SEAD-12 and SEAD-72 were operated by the Atomic Energy Commission (AEC) up until 1962. After 1962, all activities at SEAD-12 and SEAD-72 were transferred to the Army. SEAD was selected for closure by the Department of Defense (DoD) in 1995, and SEAD's military mission terminated in September 1999 and the installation was closed in September 2000.

To address employment and economic impacts associated with the SEAD's closure, the Seneca County Board of Supervisors established the Seneca Army Depot Local Redevelopment Authority (LRA) in October 1995. The primary responsibility assigned to the LRA was to prepare a plan for redevelopment of the SEAD 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. In 2005, after it had acquired land at the former Depot from the Army, the Seneca County Industrial Development Agency (SCIDA) revised the planned use designations of land in many portions of the former Depot. **Figure 3-1** depicts the intended future land uses for SEAD, as modified by the SCIDA. As indicated in **Figure 3-1**, the proposed future land use for SEAD-12 and SEAD-72 is for institutional/training/commercial. Since 1995, approximately 9,250 acres of the former Depot has been released to the SCIDA and other parties. Portions of SEAD-12 have been released and are currently used for commercial activity.

3.2 RESPONSE AND ENFORCEMENT HISTORY

SEAD Response and Enforcement History

SEAD was proposed for inclusion on the National Priorities List (NPL) in July 1989. In August 1990, the listing of SEAD as an NPL site was finalized in Group 14 on the Federal Section. After SEAD was listed on the NPL, the Army, EPA, and NYSDEC identified 57 SWMUs where data or information suggested,

or evidence existed to support, that hazardous substances had been handled and where releases to the environment may have occurred. Additionally, the EPA, NYSDEC, and the Army negotiated and finalized the FFA for the Site in 1993. The general purposes of the FFA were to:

- *"Ensure that the environmental impacts associated with past and present activities at the Site are thoroughly investigated and that appropriate remedial action is taken as necessary to protect human health and the environment;*
- *Establish a procedural framework and schedule for developing, implementing and monitoring appropriate response actions at the Site in accordance with CERCLA, the NCP, Superfund guidance and policy, RCRA, RCRA guidance and policy and applicable State law; and*
- *Facilitate cooperation, exchange of information and participation of the Parties in such actions."*[1]

The number of SWMUs was subsequently expanded to include 72 AOCs once the Army finalized the *SWMU Classification Report* (Parsons, 1994) for the Depot in 1994. Once the 72 SWMUs were listed, the Army recommended that they be identified as either areas requiring No Action or as AOCs, where additional investigation, study, or actions were needed. SWMUs listed as AOCs were then scheduled for investigations based upon data and potential risks to the environment. When the *SWMU Classification Report* was issued, SEAD-12 was classified as a Moderately Low Priority AOC and SEAD-72 was classified as a No Action AOC.

Once SEAD was added to the DoD's 1995 BRAC list, the Army's primary objective expanded from performing remedial investigations and completing necessary remedial actions to include the release of non-affected portions of the Depot to the surrounding community for their reuse for non-military purposes (i.e., industrial, municipal, and residential).

Response and Enforcement History

Building 803, the former Mixed Waste Storage Facility (SEAD-72)

The Seneca Army Depot was approved for Part A interim status as a hazardous waste treatment, storage, and disposal facility (TSDF) in 1980. In 1986, Building 803, the former Mixed Waste Storage Facility, was included as a mixed waste storage facility and operated under interim status until SEAD's mission terminated and the facility was closed. Under RCRA, all designated interim status units are subject to closure in accordance with RCRA requirements.

Between 1998 and 2001 radiological surveys were conducted in buildings located in the former Q Area, including Building 803 (SEAD-72), as part of the SEAD-12 RI. The radiological surveys were used for both characterization purposes and as the final status survey for decommissioning the facility. Based on the results of the radiological survey, conducted in accordance with the Multi Agency Radiation Survey and Site Investigation Manual (MARSSIM), the buildings (including Building 803) were found to have met unrestricted use release criteria.

[1] Federal Facility Agreement under CERCLA Section 120 in the Matter of Seneca Army Depot, Romulus, New York, Docket Number: II-CERCLA-FFA-00202, Section 3, Page 4, January 1993.

A RCRA Closure Plan for Building 803 was prepared by the Army and submitted to the NYSDEC and EPA for approval in October of 2005. Under this plan, the Army defined decontamination and verification procedures that would be completed to confirm that hazardous wastes did not remain within the building at levels in excess of RCRA criteria. The RCRA Closure Plan was approved by the NYSDEC in August of 2006. Per mutual agreement of all parties, closure of Building 803 in accordance with the approved plan was delayed until it could be completed along with the larger, SEAD-12 closure process.

RCRA Closure of SEAD-72 was performed during July 2009 simultaneous to the performance of the removal action of military-related items from burial pits in SEAD-12 (discussed below). During closure, the interior of Building 803 was cleaned by sweeping, vacuuming, and high-pressure washing of the inner walls, floors and ceiling. Subsequent to the completion of decontamination, verification samples were collected, analyzed, and compared to cleanup objectives specified in the approved closure plan to document the successful completion of the clean-closure process. The waste from closure was lead-based paint residue, dirt, and debris. The waste was disposed of at Seneca Meadows Landfill as non-hazardous waste. The RCRA Closure Report was first submitted to all parties in November 2009, and final regulatory approval was received from all parties in June 2009.

The scope of the pending RCRA unit closure at Building 803, the Mixed Waste Storage Facility is detailed in:

- Final RCRA Closure Report for the Mixed Waste Storage Facility, Building 803 (SEAD-72) (Parsons, 2005).

Radiological Waste Burial Sites (SEAD-12)

An ESI was conducted for SEAD-12A and SEAD-12B in 1994, and included the sampling and analyses of surface and subsurface soil, groundwater, surface water, and sediment. A RI was started at SEAD-12 in 1997 and the final RI Report was issued in 2002. The RI consisted of geophysical investigations; radiological investigations, including the building surveys mentioned above; a soil gas survey; test pitting; sampling and analysis of surface and subsurface soil, groundwater, surface water, and sediment; a baseline human health risk assessment (HHRA); an ecological investigation; and a screening-level ecological risk assessment (SLERA). As part of the geophysical survey completed at SEAD-12, four surface and 44 subsurface anomalies were identified and marked as locations that had a potential to contain buried metallic objects.

Site investigations conducted during the ESI and RI focused on the assessment of nine primary potential release areas listed as follows:

- Building 819 and EM-27;
- Building 815, Building 816, and EM-28;
- Disposal Pits A/B;
- Disposal Pit C;

- Dry Waste Disposal Pit;
- EM-5;
- EM-6;
- Class III Areas; and
- Wastewater Treatment Plant.

The investigations that have been performed at SEAD-12 and SEAD-72 are presented, discussed, and summarized in detail in the following reports:

SEAD-12

- Expanded Site Inspection (ESI) – Eight Moderately Low Priority AOCs SEADs 5, 9, 12 (A and B), 43, 56, 69, 44 (A and B), 50, 58, and 59 (Parsons Engineering Science, 1995);
- Final Remedial Investigation at the Radiological Waste Burial Sites (SEAD-12) (Parsons, 2002);
- Final Radiological Survey Report – SEAD-12 (Parsons, 2003);
- Final Supplemental Remedial Investigation (SRI) Report, Radiological Waste Burial Sites (SEAD-12) (Parsons, 2006);
- Final Feasibility Study (FS) Report, Radiological Waste Burial Sites (SEAD-12) (Parsons, 2008);
- Final Construction Completion Report (CCR), Removal Action at the Radiological Waste Burial Sites (SEAD-12) (Parsons, 2012); and
- Final Proposed Plan for Radiological Waste Burial Sites (SEAD-12) and Mixed Waste Storage Facility (SEAD-72) (Parsons, 2014).

4.0 COMMUNITY PARTICIPATION

The Army relies on public input to ensure that community concerns are considered during the selection of an effective remedy for each Superfund site. To this end, the RI Report, the FS Report, the Radiological Survey Report, the SRI Report, the Proposed Plan, the Building 803 Closure Plan and the supporting documentation have been made available to the public for a public comment period, which began on August 10, 2014 and concluded on September 9, 2014. These documents were made available to the public at the SEAD repository:

Seneca Army Depot Activity
Building 123
Romulus, New York 14541
(607) 869-1309
Hours are Mon-Thurs 8:30 am to 4:30 pm

A public meeting/poster session was held during the public comment period at the Seneca County Office Building on August 28, 2014 to present the conclusions of the RI, SRI, and FS to elaborate further on the basis for recommending the preferred remedial option, and to receive public comments. No comments were received, as noted in the Responsiveness Summary Section of the ROD, **Appendix C**.

The primary responsibility assigned to the LRA was the preparation of a plan for the redevelopment of the Depot. During the BRAC process, periodic presentations have been given to the LRA. In addition, SEAD Restoration Advisory Board (RAB) was established to facilitate the exchange of information between SEAD and the community. RAB members include the representatives from the Army, EPA, NYSDEC, New York State Department of Health (NYSDOH), and the community. After 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 Reuse Plan was subsequently approved by the Seneca County Board of Supervisors on October 22, 1996. The planned uses for portions of SEAD, including SEAD-12 and SEAD-72, were modified by the SCIDA in 2005. The planned future use of SEAD-12 and SEAD-72 changed from conservation/recreation to institutional/training/commercial. Portions of SEAD-12 have been release to the SCIDA and are currently used for commercial activity.

During the BRAC process there have been, and continue to be, periodic presentations to the RAB regarding the progress of SEAD-12 and SEAD-72 and other investigations related to the closure of SEAD.

5.0 SCOPE AND ROLE

At SEAD more than 8,500 acres of land have been transferred by the Army to new users. The goal is to transfer the entirety of SEAD to future users for beneficial reuse. The Army is addressing all SWMUs within SEAD to insure they are suitable for transfer. Prior to the transfer of any property at the Depot, the Army is required to ensure that the property is suitable for release and reuse at a level that is consistent with its intended foreseeable future use. If information or evidence exists to indicate that hazardous substances may be present at any location slated for transfer, the Army is obligated to conduct investigations needed to verify the presence/absence of hazardous substances, and assess the potential risks that may exist due to the presence of hazardous substances. These investigations and assessments are conducted under the oversight of, and subject to the review and approval of the EPA and the NYSDEC. The findings, results, and the conclusions of the investigations and assessments, and the subsequent land use decisions that are made based on the Army's investigations and assessments are also made available to the public for review and comment.

If the results and conclusions of the investigations and assessments of property at SEAD indicate that unacceptable risks to human health or the environment exist due to the continuing presence of hazardous substances, the Army is obligated to propose, design, implement, monitor, inspect, and report on the remedial actions used to eliminate, mitigate, or control the threat. The remedial actions are also subject to review and approval by EPA.

SEAD-12, the Radioactive Waste Burial Sites, and SEAD-72, the Mixed Waste Storage Facility, are located in an area of the former Depot where the current preferred future land use is defined by the SCIDA as institutional/training/commercial. Currently, a portion of SEAD-12 is used for commercial activity. At the completion of all response actions, SEAD-12 and SEAD-72 will be available for reuse via transfer to other public or private parties.

The Army and EPA expect this to be the final remedy for SEAD-12 and SEAD-72, inclusive of the 624 acres of Area Q investigated as part of these AOCs.

6.0 SUMMARY OF AOC CHARACTERISTICS

Analytical data collected during the 1995 ESI and 2002 RI are presented, summarized, and discussed for each potential release area in the SEAD-12 RI Report. Based on the investigation data and available documentation of activity associated with the former SWMU operations, three potential release areas (i.e., the Former Dry Waste Disposal Pit, Disposal Pit A/B, and Disposal Pit C) were considered impacted to the greatest extent by former activities performed in the SWMU. At two of these areas (i.e., Disposal Pit A/B and Disposal Pit C) military-related items were identified during test pitting operations during the ESI and RI. Analytical data for conventional chemical and radiological contaminants identified in soil from each of these three areas were combined with AOC-wide analytical results for conventional chemical and radiological contaminants in surface water, sediment, and groundwater and used as the basis of human health and ecological risk assessments conducted by the Army for SEAD-12. Based on the conclusions in the RI, a supplemental RI (SRI) was conducted in 2006 to further characterize TCE found north of Building 813 and conduct additional soil sampling at EM-5.

6.1 SEAD-12 CHEMICAL CHARACTERISTICS

Site investigation activities conducted at SEAD-12 included the collection of surface soil (top 0.2 feet of soil), subsurface soil (below 0.2 feet), groundwater, surface water, and sediment/"ditch soil" samples. Groundwater, surface water, and sediment samples were collected and analyzed as part of ESI, RI, and SRI efforts. Soil samples were also collected as part of ESI, RI, SRI, and during the removal action for military-related items and debris. Associated activities included geophysical investigations, radiological investigations, a soil gas survey, an ecological investigation, and location surveys. As part of the geophysical survey completed at SEAD-12, four surface and 44 subsurface anomalies were identified and marked as locations that had a potential to contain buried metallic objects. All investigation results from the ESI, RI, and SRI that represent the current AOC conditions are evaluated and summarized below.

Analytical data collected during the investigations were compared to prevailing State and Federal standards and reference values. State reference values and standards considered included New York's TAGM No. 94-HRW-4046 soil cleanup objectives, Title 6 NYCRR Subpart 375-6.8 Remedial Program SCOs for soil, New York's Ambient Water Quality Standards (AWQS) and Guidance Values and Groundwater Effluent Limitations (Technical and Operation Guidance Series [TOG] 1.1.1) for groundwater and surface water, and NYSDEC Technical Guidance for Screening Contaminated Sediments. The TAGM soil guidance values were replaced by New York's 6 NYCRR Subpart 375-6.8 regulations in 2006, and data comparisons are made only to the 6 NYCRR Subpart 375-6.8 SCOs in this ROD. Federal reference values considered during the evaluation of analytical data included Maximum Contaminant Limits (MCLs) for Drinking Water and EPA Regional Screening Level (RSL) values for Chemical Contaminants at Superfund Sites for residential soil and tap water.

6.1.1 SEAD-12 Soil Gas Survey

The soil gas survey performed in the vicinity of Buildings 813, 814, 815, and 817 was used as a preliminary screening tool to identify potential focus points for subsequent groundwater characterization. The soil gas survey involved the installation, sampling, and analysis of 52 soil gas samples for VOCs.

Toluene and TCE were detected in the soil gas samples collected from the Buildings 813/814 area. Soil gas was collected from beneath building slabs in the targeted buildings.

Based on the soil gas data, monitoring wells MW12-37, MW12-38, and MW12-39 were installed during the RI to investigate potential impacts in this area. The SRI was conducted in 2004 and 2005 to further investigate the extent of TCE found in groundwater in the Buildings 813/814 area.

6.1.2 SEAD-12 Soil Investigations

ESI and RI Soil Results

Table 6-1 presents a comparison of the ESI and RI soil analytical results to the NYSDEC Unrestricted Use SCOs and the EPA RSLs for Chemical Contaminants at Superfund Sites for residential soil. The table evaluates all of SEAD-12 soil data collected during the ESI and RI only. In order to evaluate SEAD-12 soil exposure point concentrations, the 95 percentile UCL of the arithmetic mean[2] (hereafter referred to as 95th UCL) was calculated for each chemical using the EPA ProUCL Version 4.00.02 program. The 95th UCL is considered a conservative estimate of the exposure point concentration (EPC) and is a more realistic representation of the exposure. As shown in **Table 6-1**, the 95th UCLs are all at or less than the NYSDEC Unrestricted Use SCO levels for all analytes, with the exception of cadmium and zinc.

The 95th UCL calculated for cadmium is 3 milligrams per kilogram (mg/kg) which exceeds its NYSDEC Unrestricted Use SCO of 2.5 mg/kg. The 95th UCL calculated for zinc is 217 mg/kg, above the NYSDEC Unrestricted Use SCO of 109 mg/kg. The average zinc concentration in SEAD-12 soil (114 mg/kg) is only slightly above the NYSDEC SCO. It should be noted that the Unrestricted Use SCOs for cadmium and zinc are not a risk-based criteria; rather, the published SCOs are the rural soil background concentration as determined by NYSDEC and the NYSDOH rural soil survey (NYSDEC and NYSDOH, 2006). As presented in the *New York State Brownfield Cleanup Program Development of Soil Cleanup Objectives Technical Support Document* (NYSDEC and NYSDOH, 2006), Table 5.6-1, the cadmium 95th UCL does not exceed the human health-based SCOs for restricted-residential (4.3 mg/kg) or commercial (9.3 mg/kg) scenarios. Additionally, the 95th UCL of zinc is lower than the human health-based SCO for the unrestricted use scenario (217 mg/kg vs. 1,100 mg/kg). Further, the baseline risk assessment indicates that cadmium and zinc in SEAD-12 soil do not pose significant risks to human health or the environment.

The 95th UCLs are lower than the EPA RSLs for all analytes except benzo(a)anthracene, benzo(a)pyrene, dibenz(a,h)anthracene, and arsenic. The 95th UCLs for benzo(a)anthracene, benzo(a)pyrene, dibenz(a,h)anthracene, and arsenic are 218 µg/kg, 132 µg/kg, 65 µg/kg, and 4 mg/kg, respectively, compared with their respective EPA RSLs of 150 µg/kg, 15 µg/kg, 15 µg/kg, and 0.39 mg/kg. The 95th UCLs for benzo(a)anthracene, benzo(a)pyrene, and dibenz(a,h)anthracene are below the NYSDEC

[2] Confidence limits for the mean (Snedecor and Cochran, 1989) are an interval estimate for the mean. Interval estimates are often desirable because the estimate of the mean varies from sample to sample. Instead of a single estimate for the mean, a confidence interval generates a lower and upper limit for the mean. The interval estimate gives an indication of how much uncertainty there is in our estimate of the true mean. The narrower the interval, the more precise is our estimate. The 95% upper confidence limit should approximately provide the 95% coverage for the unknown population mean (EPA, 2007).

Unrestricted Use SCOs. The 95th UCL of arsenic is consistent with the rural soil background concentration determined by NYSDEC and NYSDOH (i.e., 13 mg/kg).

SRI Soil Results

Two soil samples collected to characterize TCE concentrations underneath Building 813 exceeded the NYSDEC Unrestricted Use SCO and the EPA RSL for residential soil. All the other contaminants detected in soil remaining in the Buildings 813/814 area were lower than the NYSDEC Unrestricted Use SCOs and the EPA RSL for residential soil.

Removal Action Soil Results

Soil samples were collected from the base, sidewall, and perimeter of all excavations completed during the removal action at the burial pits to confirm that hazardous substances were not present at levels that were likely to present potential risk or hazards to human health or the environment. In addition, soil samples were also collected from an overburden soils stockpile that was set aside during the excavation of contaminated material and treated through tilling. After testing, it was used for backfill at two of the burial pit excavation sites. **Table 6-2** presents a summary of the analytical results reported for these soil samples and compares them to NYSDEC's Unrestricted Use SCOs and adjusted EPA RSLs for residential soil; only those compounds/analytes that were found at concentrations in excess of either of the comparator guidance values were included in **Table 6-2**. The EPA RSL for residential soils for chemicals that are known or suspected carcinogens were used at full published value, while for chemicals that are not known or suspected carcinogens, the values were "adjusted" by reducing them by a factor of 10 (i.e., RSL value/10 or RSL value x 0.1 = adjusted RSL value). This adjustment was done to simulate data pre-screening to risk assessments to identify contaminants that are carried through the assessment.

Six pesticides and five metals were detected in one or more of the soil samples at concentrations that exceeded their respective NYSDEC Unrestricted Use SCO levels. Of these 11 compounds, only nickel exhibited a 95th UCL value that was higher than its Unrestricted Use SCO value (i.e., 31 versus 30 mg/kg). Nickel's 95th UCL value reported for soils left at the burial pit sites is less than the EPA's adjusted RSL for residential soil (150 mg/kg).

Three semivolatile organic compounds (SVOCs), one pesticide, and six metals were found at concentrations in excess of EPA's adjusted RSL for residential soil in one or more of the soil samples from the burial pit sites. Of these 10 analytes, the 95th UCL value computed for each of the metals and one of the SVOCs [i.e., benzo(a)pyrene] also exceeded the adjusted screening value. However, each of the 95th UCLs computed for the metal analytes of interest at the burial pits site are lower than comparable values computed for regional background soils.

6.1.3 SEAD-12 Groundwater Investigation

ESI and RI Samples

During the ESI and RI, 89 groundwater samples (including field duplicates) were collected from SEAD-12 monitoring wells and analyzed for VOCs, SVOCs, pesticides/polychlorinated biphenyls (PCBs), and metals. In addition, 12 groundwater samples were collected for metal analysis from six upgradient

monitoring wells. During the SRI, 15 groundwater samples were collected from the temporary and permanent monitoring wells installed near Buildings 813/814 and analyzed for VOCs.

The maximum concentrations were compared to federal and state criteria including New York State Class GA Groundwater Standards. A summary of groundwater exceedances observed in SEAD-12 is presented in **Table 6-3**.

VOCs

Groundwater concentrations measured for cis-1,2-dichloroethene (cis-1,2,-DCE) and TCE surpassed the State's GA standards during the RI and the SRI in monitoring well MW12-37, which was previously located near Building 813. The detected TCE concentrations in the temporary wells during the SRI exceeded the EPA RSL for tap water. There were no other VOC exceedances of NYSDEC GA Standards, Federal Drinking Water Standards, or EPA RSLs for tap water in any of the other wells.

The concentrations reported for TCE in well MW12-37 (i.e., TCE detected at 1,600 µg/L and 2,400 µg/L) were the most significant groundwater exceedances detected during the RI and the SRI. Well MW12-37 was located north of Buildings 813 and 814 and south of the man-made drainage ditch. TCE was not detected in either of the adjacent permanent wells (MW12-38 or MW12-39) during the RI. Results obtained during the SRI further demonstrated that the presence of TCE in groundwater at MW12-37 was isolated, as TCE was infrequently detected in the temporary wells, and concentrations reported were below the State's standard. Elevated TCE concentrations were detected in soil in the area adjacent to MW12-37 and the northeast corner of Building 813; the soil was identified as the source of TCE contamination in groundwater and was excavated as part of the NTCRA. Since the soil source of the isolated TCE contamination in groundwater at MW12-37 was removed, VOC concentrations detected in MW12-37 no longer represent groundwater conditions at SEAD-12 and were not included in the summary table (**Table 6-3**).

SVOCs

Benzo(a)pyrene was detected twice in SEAD-12 groundwater (0.097 µg/L at MW12-40 and 0.058 µg/L at MW12-39). Both detects exceeded the State's GA Standard (i.e., the detection limit).

Bis(2-ethylhexyl)phthalate was detected three times in SEAD-12 groundwater (230 µg/L at MW12-19, 210 µg/L at MW12-22, 1.6 µg/L at MW12-8). It should be noted that bis(2-ethylhexyl)phthalate was only detected in these wells during the December 1999 sampling round, but not during the earlier round of sampling (April-May, 1999). The two detects at MW12-19 and MW12-22 exceeded the NYSDEC GA Standard (5 µg/L).

Pesticides and PCBs

None of the measured pesticide or PCB concentrations exceeded the groundwater standards or criteria used for this ROD.

Metals

Groundwater concentrations measured for antimony, iron, manganese, and sodium exceeded the NYSDEC GA Standards. The maximum detected antimony concentration exceeded the MCL value. Lead concentrations slightly exceeded the MCL (15 µg/L) in three samples collected from MW12-39, MW12B-2, and MW12B-3 (16.6 µg/L, 18.6 µg/L, and 18.8 µg/L, respectively). All thallium detects were above the MCL of 2 µg/L.

Further evaluation of the data (i.e., the frequency of detection and concentrations comparable with upgradient/side-gradient concentrations) indicates that antimony, iron, lead, manganese, sodium, and thallium concentrations in SEAD-12 groundwater are generally consistent with AOC upgradient/side-gradient conditions and, therefore, are not associated with any release at the AOC. Groundwater at SEAD-12 is not impacted by a release of antimony, iron, lead, manganese, sodium, or thallium. Detailed discussion is presented in the Final FS Report, Appendix C.

SRI Samples

A SRI was conducted during 2004 and 2005 to further investigate the extent of TCE found in groundwater in the Buildings 813/814 area and the level of ^{210}Pb present in the area of EM-5. The SRI was conducted to identify and assess possible contributing factors associated with these two anomalous RI findings.

Temporary monitoring wells were installed during the SRI in locations near Buildings 813 and 814 where high VOC concentrations were observed in the soil gas during the RI, as well as between monitoring wells MW12-37 and MW12-40 (the two wells where TCE was detected during the RI). Fifteen temporary and permanent monitoring wells were sampled during two separate sampling events conducted during the SRI and the collected samples were analyzed for VOCs. Only two VOCs, TCE and acetone, were detected in wells sampled during the first phase of SRI sampling (i.e., eight Phase I wells, TW12-1 and TW12-3 through TW12-9) and none of the detected VOCs were found at concentrations in excess NYSDEC Class GA Groundwater Standards. TCE was detected in wells TW12-1 and TW12-3 at concentrations of 4.1 µg/L (J[3]) and 4.2 µg/L (J), respectively. Both of these concentrations are below the State's GA Standard for TCE (i.e., 5 µg/L). Acetone was detected at a concentration of 47 µg/L (J) at TW12-9 and a concentration of 51 µg/L at TW12-4. There is no NYSDEC GA Standard for acetone, but these two detections were near the State's guidance value of 50 µg/L. No volatile tentatively identified compounds (TICs) were identified in any groundwater samples collected during the SRI.

Because there was no significant detection of TCE in the Phase I results, the Phase II temporary wells were generally positioned between Buildings 813/814 and the Phase I temporary well locations. The five Phase II wells installed, TW12-22 through TW12-26, were positioned to characterize the area adjacent to MW12-37, the only well where TCE was detected at levels above the State's GA standard, and the area adjacent to the TCE detection at TW12-1. Two permanent wells, MW12-37 and MW12-40, were also sampled during the Phase II temporary well sampling event. The only VOC detections observed during

[3] The letter "J" is used to qualify the presented result; it indicates that the concentration or presence of this compound is "estimated."

the Phase II SRI sampling event were for TCE and cis-1,2,-DCE in MW12-37. Both detections exceeded the State's GA Standards, with TCE detected at a concentration of 2,400 µg/L and cis-1,2-DCE at a concentration of 41 µg/L. The Phase II groundwater investigation results indicated that the TCE observed during the RI was still present, but was localized to the area adjacent to MW12-37. No contiguous or continuous plume was apparent in the vicinity of, or beyond, the two buildings and the well.

6.1.4 SEAD-12 Surface Water Investigation

ESI and RI Samples

During the ESI and RI, 52 surface water samples (including field duplicates) were collected from SEAD-12, while 12 additional samples were collected from locations downgradient of SEAD-12; all of these samples were analyzed for VOCs, SVOCs, pesticides/PCBs, and metals. In addition, nine upgradient surface water samples were collected for metal analysis.

Table 6-4 summarizes comparison of the SEAD-12 surface water concentrations and the NYSDEC AWQSs for Class C surface water.

SVOC concentrations in SEAD-12 surface water samples were all below the AWQS values except that two bis(2-ethylhexyl)phthalate exceedances were observed (1.2 µg/L at SW12-25 and 12 µg/L at SW12-44).

Six pesticides exceeded their respective AWQS Class C surface water values; however, most of the pesticide exceedances were lower than the laboratory reporting limits[4], which means the concentrations were very low and were estimated values.

Seven metals were found at concentrations above their respective NYSDEC AWQS comparative values for Class C surface water in the samples analyzed. The mercury levels detected were considered the most significant. Three of the four locations where the mercury standard was exceeded (surface water sample locations SW12A-2, SW12A-1, and SW12-16) occurred in the unnamed creek south of Disposal Pit A/B and Disposal Pit C, while the fourth location, surface water sample location SW12-35, was approximately 350 feet south of the creek.

SRI Samples

During the SRI, seven surface water samples were collected from the drainage ditch adjacent to Buildings 813/814 to assess whether or not the surface water was impacted by VOCs. No VOCs were detected in any of the SRI surface water samples. Surface water was not considered a media of concern.

6.1.5 SEAD-12 Sediment/Ditch Soil Investigation

ESI and RI Samples

During the ESI and RI, 54 sediment samples were collected from locations inside of SEAD-12 and 11 sediment samples were collected from locations downgradient of SEAD-12 (Reeder Creek); each of these samples were analyzed for VOCs, SVOCs, pesticides/PCBs, and metals. In addition, nine sediment

[4] Reporting limit is the lowest concentration or amount at which a target analyte can be accurately quantified.

samples were collected from upgradient locations (southern portion of SEAD-12) and within SEAD-12 for metal analysis. All the sediment samples were collected from the bottom of the drainage or creek ditches. The ditches were often dry and the collected samples could more appropriately be described as ditch soil, rather than being characterized as sediment.

The maximum concentrations for most polycyclic aromatic hydrocarbon (PAH) compounds and metals found at concentrations that exceeded comparative sediment values all occurred in one sample collected at location SD12-32, which was located just north of Buildings 815/816.

SRI samples

Seven ditch soil sample locations were investigated in the drainage ditch near Buildings 813/814. Acetone and toluene were the only VOCs detected in the ditch soil samples collected during the SRI. Acetone was detected in two out of eight ditch soil samples. The two detects were above the NYSDEC Unrestricted Use SCO (72 µg/kg and 110 µg/kg vs. 50 µg/kg); but both detects were below the reporting limits[5], which means the concentrations were very low and were estimated values. All detected toluene concentrations were lower than its respective NYSDEC Unrestricted Use SCO. Sediment/ditch soil was not considered a media of concern.

6.2 SEAD-12 RADIOLOGICAL IMPACTS

6.2.1 Buildings Final Status Survey

The radiological building survey conducted as part of the RI concludes that all buildings in SEAD-12 are in compliance with the NYSDEC cleanup guideline (i.e., 10 mrem/yr) identified in the NYSDEC *Cleanup Guidelines for Soils Contaminated with Radioactive Materials* (DSHM-RAD-05-01). Results of the radiological building survey are presented in the *Final Radiological Survey Report.*

6.2.2 Soil

At the conclusion of the RI, soil exceedances of radiological criteria were reported to exist at EM-5 and EM-6. As part of the RI radiological data evaluation process, site-specific data from EM-5 and EM-6 were initially statistically compared to SEAD-12 background radiological results, using the Wilcoxon Rank Sum (WRS) test. If the site-specific datasets were found to be different than background, they were then compared to background radiological levels plus DCGLs for residential exposures and to background levels plus DCGLs for worker exposures. All locations where background samples were collected for the establishment of the background radiological measurement datasets were outside and either up- or cross-gradient of SEAD-12. More detailed information regarding the background dataset and how it was used in the evaluation of radionuclide levels in soils is provided in the accepted Final RI Report (Parsons, 2002).

Based on this analysis process, soil radiological exceedances of the residential criteria at EM-5 and EM-6 were reported for four radionuclides: Bismuth-214 (^{214}Bi), Lead-210 (^{210}Pb), Lead-214 (^{214}Pb), and Radium-226 (^{226}Ra). Additionally, soil radiological exceedances were noted for the worker exposure scenarios due to ^{210}Pb and ^{226}Ra at EM-5, and ^{226}Ra at EM-6.

[5] Reporting limit is the lowest concentration or amount at which a target analyte can be accurately quantified.

During the FS, the WRS test results reported in the RI for ^{226}Ra at EM-5 and EM-6 were found to be in error due to a computation error, and the ^{226}Ra results for EM-5 and EM-6 were actually within background plus worker DCGL values.

^{226}Ra, ^{214}Pb, ^{214}Bi, and ^{210}Pb are all constituents of the Uranium-238 (^{238}U) decay chain, which is found naturally in soil. ^{238}U is known to be present in Marcellus Shale (i.e., Hamilton Group of Middle Devonian shale), which underlies most of western New York and the SEAD. Natural background levels in soils may have contributed to the noted background-plus-residential DCGL exceedances in various study areas in SEAD-12. Potential risks attributable to radionuclides found in the soil at specific release areas at concentrations statistically above background levels were assessed in the human health risk assessment that was conducted at the end of the SEAD-12 RI.

6.2.3 Groundwater

Fifteen radionuclides were detected in at least one of the 16 background groundwater samples characterized. Nineteen of 21 radionuclides were detected in at least one of the 92 groundwater samples collected within SEAD-12. Levels measured in two site samples and one background sample exceeded the proposed federal MCL (still pending) for Radon-222 (^{222}Rn, 300 pCi/L), with the background level being highest at 344 pCi/L. Based on the WRS test, only one radionuclide (^{228}Th) was found to have a population statistically different from the background dataset. Based on this finding, the potential risk associated with ^{228}Th in groundwater was evaluated in the human health risk assessment.

6.2.4 Surface Water

Background and SEAD-12 surface water samples were analyzed for 20 radionuclides. Twenty radionuclides were detected in at least one of the nine background samples characterized. Seventeen of the 20 radionuclide analytes were detected in at least one of the 51 surface water samples collected from locations within SEAD-12. Four of the SEAD-12 samples exceed the proposed Federal MCL for ^{222}Rn. The maximum detection was 401 pCi/L compared to the proposed MCL of 300 pCi/L. Based on the WRS test, five radionuclides (^{222}Rn, ^{227}Th, ^{230}Th, ^{232}Th, and $^{233/234}$U) have sample means statistically greater than the background dataset. Based on these determinations, the potential risks associated with ^{222}Rn, ^{227}Th, ^{230}Th, ^{232}Th, and $^{233/234}$U in surface water were evaluated in the human health risk assessment.

Fourteen radionuclides were detected in at least one of the 12 samples that were collected downstream of SEAD-12. None of the concentrations measured for radionuclides in downgradient samples exceeded established guidelines or standards for radionuclides in surface water. Based on the WRS test, three radionuclides (^{226}Ra, $^{233/234}$U, and ^{238}U) from downgradient samples have populations statistically higher than the background dataset. Based on these findings, the potential risks of ^{226}Ra, $^{233/234}$U, and ^{238}U in downgradient surface water were evaluated in the human health risk assessment.

6.2.5 Sediment

Fifteen of the 20 radionuclides characterized were detected in at least one of the nine background sediment samples collected as part of the SEAD-12 CERCLA investigations. Twenty-four of 26 radionuclides characterized were detected in one or more of the 53 sediment samples collected within

SEAD-12. Based on the WRS test, two radionuclides (Cesium-137 [^{137}Cs] and ^{238}U) have data statistically greater than the background dataset. Thirteen of the 19 radionuclides analyzed were detected in one or more of the 11 downgradient sediment samples. Based on the WRS test, three downgradient radionuclides (Cobalt-60 [^{60}Co], $^{233/234}$U, and ^{238}U) have data statistically greater than the background dataset. Based on these determinations, ^{60}Co, $^{233/234}$U, and ^{238}U in sediment were evaluated in the human health risk assessment.

6.3 SEAD-72 CHEMICAL CHARACTERISTICS

6.3.1 SEAD-72 Soil, Surface Water, Sediment, and Groundwater Chemical Characteristics

The soil, surface water, groundwater, and sediment located exterior of Building 803 (SEAD-72) was evaluated as part of the greater SEAD-12 CERCLA activities discussed above.

6.3.2 RCRA Closure of SEAD-72

In 2009, the Army conducted the RCRA Closure of SEAD-72 and demonstrated, via the collection, analysis, and assessment of decontamination verification samples that approved cleanup objectives had been achieved for Building 803, the former Mixed Waste Storage Facility (SEAD-72). Based on this determination, the Army submitted and certified the final RCRA Closure Report for the SWMU to the NYSDEC and the EPA.

6.4 SEAD-72 RADIOLOGICAL CHARACTERISTICS

In 1993, NYSDEC/NYSDOH conducted radiological monitoring at SEAD-72. The radiological measurements did not show any significant deviations from background levels.

As part of the SEAD-12 ESI and RI, Building 803 was scanned for radiological contamination using alpha, beta, and gamma radiation detection equipment. Wipe samples were also collected from the floor drains and vents in Building 803. The results of the scanning and wipe sample analysis indicate that Building 803 is compliant with the NYSDEC cleanup guideline (i.e., 10 millirems per year or mrem/yr) provided in the NYSDEC Cleanup Guidelines for Soils Contaminated with Radioactive Materials (DSHM-RAD-05-01). Elevated alpha and beta measurements were detected on one metal shelf in Room 6 during the building radiological survey. The Army removed and disposed of the shelf in 2004, in accordance with prevailing requirements and regulations.

6.5 SOIL EXCAVATIONS

Once it was determined that a continuous plume of TCE did not exist, the Army conducted soil excavations immediately around the affected monitoring well in an attempt to determine if it could identify the source of TCE and address it. Subsurface soil near a buried pipe contained up to 65,000 micrograms per kilogram (µg/kg) of TCE. This soil was excavated and isolated, and the Army expanded the lateral and vertical extent of the soil excavation until it was able to confirm that residual soil concentrations of TCE fell below the State of New York's Technical and Administrative Guidance (TAGM) #4046 soil cleanup objective level of 700 µg/kg, or until the remaining contaminated soil was immediately beneath Building 813, where its removal would have compromised the structural integrity of the building. As a result of this action, more than 230 cubic yards of TCE-contaminated soil were

excavated from locations surrounding the former well MW12-37 and between the northern edge of Building 813 and the surrounding man-made drainage ditch to the north and east of the building. The excavation in this area extended vertically to bedrock and horizontally to points on the west, north, east, and southeast where residual soil concentrations of TCE were found to be less than the cleanup level of 700 µg/kg.

The monitoring well MW12-37 was removed during the soil excavation and not replaced. The pipe discovered during the excavation and which appeared to be the likely source of the TCE, was also removed.

Excavations in the southwest portion of the work area terminated at the exterior edge of Building 813 due to concerns about undermining the building. Residual concentrations of TCE recorded below the northern footer of Building 813 were measured at 1,000 and 4,800 µg/kg. The excavations were conducted after the concurrence and approval of the NYSDEC and EPA. The excavated material was stockpiled on-site and sampled in the fall of 2004. Soil that met the cleanup criteria established at that time, the New York State TAGM values, was used as backfill. Soils with concentrations exceeding the TAGMs were staged and managed by tilling of the stockpiles (i.e., landfarming). After a period of approximately two years, VOC concentrations in the soil met the TAGMs and the soil was used as backfill on-site by 2006.

The Army also reassessed the RI determination that soil in the area of suspected historic release location EM-5 contained ^{210}Pb at levels above background and the derived concentrations guideline levels (DCGL[6]) for a site worker during the 2004/2005 SRI. DCGLs are the concentration of residual radioactivity distinguishable from background that, if uniformly distributed throughout a survey unit, would result in a total effective dose equivalent (TEDE) to an average member of a critical group equivalent to the allowable dose.

Ten soil locations were sampled during the SRI and analyzed for Radium-226 (^{226}Ra) and its decay products (e.g., ^{210}Pb) using Modified DOE EML HASL 300 Method, which had been recommended by the NYSDEC. ^{226}Ra is the parent of ^{210}Pb which, based on statistical analysis of data collected during the RI, was the only radiological contaminant of concern at EM-5. ^{210}Pb was not detected in any of the samples collected or analyzed during the SRI, and the uncertainties and detection limits associated with the SRI analyses were much lower than those reported for the RI analyses. Therefore, the SRI concluded that ^{210}Pb concentrations do not exceed background values at EM-5.

After the conclusion of the SRI, the Army conducted a Feasibility Study (FS) to assess and evaluate remedial alternatives that could be used to address the military-related items that were likely to buried in two of the burial pits (i.e., Disposal Pit A/B and C) and potential vapor intrusion and groundwater re-contamination concerns that remained in the vicinity of Buildings 813 and 814 as a result of being unable to excavate all TCE contaminated soil from under Building 813. During the FS, the Army evaluated the required no action alternative for both the military-related items and the residual TCE contamination.

[6] DCGLs are radionuclide concentrations in environmental media that correspond to a prevailing dose criterion, in this case the NYSDEC TEDE to an average member of the critical group of 10 millirem per year (TAGM 4003), as derived through human receptor exposure modeling.

Additionally, the Army evaluated an excavation and a capping alternative to address buried military-related items in Disposal Pits A/B and C combined with either an environmental easement/groundwater access/use LUC or a vapor intrusion survey coupled with a probable building demolition and soil excavation alternative to address the residual TCE contamination in the vicinity of Buildings 813/814 and former well MW12-37.

In the FS, the Army concluded that two remedial action combinations addressing military-related items at the disposal pits and the TCE-contaminated soil at Building 813/814 represented roughly equivalent solutions that could be readily implemented. These combinations included:

- Excavation and recovery of military-related items from Disposal Pits A/B and C. Implementation of a LUC that prohibits accessing or using groundwater in the area of Buildings 813/814 until groundwater standards were achieved, and prohibits access and use of existing Buildings 813/814 or the construction of new buildings in the area of the identified TCE contaminated soil until a soil vapor intrusion survey is conducted that supports occupancy of the existing or new buildings; or
- Excavation and recovery of military-related items from Disposal Pits A/B and C. Implementation of a groundwater access/use LUC in the area of Buildings 813/814 until groundwater standards are achieved, and the more immediate performance of the soil vapor survey followed by the demolition of Buildings 813 and 814, if necessary, to gain access to TCE-contaminated soil that would then be excavated, treated as necessary, and disposed off-site.

Of these alternatives, the latter was considered the better remedial alternative from a technical perspective, but also the more costly of the alternatives evaluated. The full evaluation completed in the FS led to the decision that then concluded in the FS that the additional costs were not warranted as the buildings were unoccupied, all utilities had been disconnected, and future use or occupation of the buildings is uncertain (Parsons, 2008).

After reviewing the FS, the Army elected to move forward with a NTCRA to address Disposal Pits A/B and C. The remedial alternative for SEAD-12 included the excavation of Disposal Pit A/B and C during which any military-related item identified was recovered and secured by the Army pending its subsequent demilitarization and final disposition in accordance with national security and environmental regulations and statutes. During the excavation and recovery of military-related items, other debris and fill was inspected, characterized as warranted, and either returned to the burial pit location or treated as required, and transported off-site for disposal at a licensed landfill. The TCE contamination remaining in the vicinity of Buildings 813 and 814 was addressed by imposing a land use restriction that prohibited access to, or use of, the existing buildings, or construction and use of any new structures in a fifty foot radius of the existing buildings until a vapor intrusion study was conducted and showed that the area and buildings would not be unacceptably affected by vapor intrusion. The use of groundwater is restricted until groundwater standards are met or a vapor intrusion study determines there are no human health or environmental risks under the future reuse scenario. In addition, for SEAD-72, the Army conducted and verified the successful completion of RCRA Closure operations required at the former SWMU.

In April of 2009, the Army submitted a work plan for the performance of the removal action for the military-related debris, and implemented the work plan between July and November of 2009. During this effort, the Army excavated approximately 5,400 cubic yards of soil, debris, and fill from four excavations within the footprints of burial pits A, B, and C. Of the total quantity of material excavated, approximately 5,400 tons of waste and debris was transported to an off-site landfill for disposal as cover material or as mixed debris, 122 tons of assorted scrap metals were recycled at a metal recycling facility, and 13.25 tons of military-related items were secured by the Army, demilitarization confirmed, and disposed of at an off-site permitted disposal facility. In addition, as part of the removal action, contaminant concentrations in soil located at the excavation sites were characterized by the collection and analysis of excavation confirmation samples, and these new data were compared to State of New York Unrestricted Use SCOs[7], and used as the basis of a revised human health risk assessment for these locations at SEAD-12.

The results of the direct comparison of soil data to New York Unrestricted Use SCOs indicated that while individual sample concentrations of particular contaminants may exceed State SCO levels, the appropriate upper confidence limit (UCL) of the arithmetic mean (i.e., 95th percentile UCL or 95th UCL) of the soil dataset was generally consistent with or below State limits or statistically equivalent to background concentrations for metals. Furthermore, the results of the revised risk assessment indicated that soils remaining at the Disposal Pit excavation sites do not pose any unacceptable risk to any of the evaluated potential users or occupants of the site, including future adult, child, and lifetime residents once Risk Management and Uncertainty Analyses were completed.

The excavation walls, excavation floor, and excavated soils were surveyed for radiological and chemical contamination and were determined suitable for unrestricted use; as such, the excavated soil was returned to the excavation

The SEAD-12 Construction Completion Report (Parsons, 2012) provides details of the investigation and results. This report has been provided to the regulators for review and approval (Parsons, 2012).

[7] Applicable and current promulgated screening criteria were used for each investigation referenced in this document. TAGMs were the current screening criteria used during the RI and SRI. The RI was not reevaluated based on the newer NYSDEC SCOs; however, the FS used the NYSDEC SCOs for commercial use scenario as the evaluating criteria for developing alternative remedial action objectives for SEAD 12. Investigations performed after the 2008 FS used the newer 6 NYCRR Subpart 375-6 soil cleanup objectives.

7.0 SUMMARY OF HUMAN HEALTH AND ECOLOGICAL RISKS

Human health and ecological risk assessments were performed for SEAD-12 media using the analytical data developed during the AOC investigations, as discussed above. Details of the human health and ecological risk assessments for SEAD-12 are presented in the RI report, which is available in the Administrative Record file. A summary of pertinent information is provided below.

7.1 HUMAN HEALTH RISK ASSESSMENT

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance exposure at a site in the absence of any actions to control or mitigate them under current- and future-land uses. The baseline human health risk assessment for SEAD-12 was conducted in accordance with the EPA (1989) Risk Assessment Guidance for Superfund (RAGS) and the supplemental guidance and updates to the RAGS. Technical judgment, consultation with EPA staff, and review of recent publications were used in the development of the risk assessment. The results of the risk assessment were used to identify whether a corrective action may be warranted at the AOC.

A four-step process was used to assess SEAD-12 human health risks at these locations and is summarized in the following subsections. The human health risk assessment methodology is shown in **Figure 7-1**. The human-health estimates are based on current reasonable maximum exposure (RME) scenarios and were developed by taking into account various conservative estimates about the frequency and duration of an individual's exposure to the contaminants of potential concern (COPCs) in the various media at SEAD-12, as well as the toxicity of these contaminants.

7.1.1 Hazard Identification

This step identifies the COPCs at the AOC in the primary concern media (i.e., soils, sediment/ditch soils, groundwater, and surface water).

The contaminant sources at SEAD-12 were the military-related items and other debris associated with the historic waste burial activity within the AOC. The primary release mechanisms from the sources included resuspension and deposition of soil particles, surface water runoff, and the infiltration of precipitation through the source areas. Potentially affected media at SEAD-12 were soil, groundwater, surface water, and sediment/ditch soil. COPCs including VOCs, SVOCs, pesticides, PCBs, and metals were identified for the affected media.

7.1.2 Exposure Assessment

In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Factors relating to the exposure assessment include, but are not limited to, the concentrations to which people may be exposed and the potential frequency and duration of exposure. Using these factors, a "reasonable maximum exposure" (RME) scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

As part of the Exposure Assessment component of the risk assessment, a conceptual site model (CSM) was developed for SEAD-12, which considered the COPCs identified at the AOC, the media affected, the

most probable future receptors, and the duration each receptor would be exposed to hazardous substances identified in the area.

Conceptual Site Model

Potential sources of contamination, exposure pathways, and receptors for SEAD-12 are depicted graphically in the CSM shown in **Figure 7-2**. The CSM provides an overall assessment of the primary and secondary sources of contamination found at the AOC, and the corresponding release mechanisms and the affected media. The CSM also identifies the potential human receptors and the associated pathways of exposure to the affected media.

Human Receptors

The baseline risk assessment evaluated the potential health effects resulting from hazardous substance exposure for the following six receptor groups:

- current site worker;
- future park worker;
- current/future construction worker;
- future recreational visitor (child),
- off-site wader (child);
- future adult and child resident (for hazard assessment); and
- future lifetime resident (for chemical carcinogenic risk assessment) and future resident farmer (for the radiological carcinogenic risk assessment).

In 2005, after the completion of the RI, the planned future use of SEAD-12 changed (i.e., from conservation/recreation to institutional/training/commercial). As a result of this change, the park worker and recreational visitor were no longer considered potential future receptors; rather, a training officer or commercial worker (hereafter referred to as training officer) and child trespasser/visitor (hereafter referred to as child trespasser) were considered potential future receptors at SEAD-12 within this Record of Decision. The exposure assumptions for the park worker and recreational visitor have been used to represent exposure assumptions for the training officer and the child trespasser. This approach is appropriate because the body weight and body surface area are similar for the park worker and the training officer and for the recreational visitor and child trespasser. The exposure (e.g., exposure duration, frequency, and intensity) are also similar for the park worker and the training officer and for the recreational visitor and child trespasser. Therefore, the risk results presented in the RI report for the park worker and recreational visitor are used to assess risks to the potential training officer and child trespasser.

In addition, a future 30-year resident (for COPCs) and a future 30-year resident farmer (which assumes consumption of homegrown produce, meats, and dairy products affected by site COPCs) has been evaluated to assess potential risks and hazards to receptors under the unrestricted use scenario. The

residential receptors were considered to assess whether unrestricted (i.e., residential) land use may be an appropriate future land use. Both the resident and resident farmer scenarios assume that six years of the 30-year duration are experienced as a child, 0 to 6 years of age, while 24 years of the 30-year exposure period are lived as an adult (age 18 to 42 years).

Exposure Pathways

Exposure pathways evaluated included inhalation of ambient dusts, inhalation of groundwater, ingestion of soil and sediment/ditch soil, intake of groundwater, and dermal contact with soil, groundwater, surface water, and sediment/ditch soil.

Exposure Point Concentrations

Separate sets of soil exposure point concentrations were derived for each impacted area (Disposal Pit A/B, Disposal Pit C, and the Former Dry Waste Disposal Pit) and were evaluated separately to estimate risks associated with soil exposure pathways. For surface water, sediment, and groundwater, a single set of exposure point concentrations was derived for each medium from all available SEAD-12 data and added to the risk generated from the area-specific soil exposure. For the off-site wader, downgradient sediment and surface water data were used to generate a set of exposure point concentrations for this scenario.

The human health risk assessment included in the RI 2002 Report used chemical and radiological data collected between 1994 and 2002. Since the completion of the RI, the SEAD-12 removal action, which focused on the recovery of military-related items from former Disposal Pit sites A/B and C, was completed. The removal action excavated and shipped off-site for disposal much of the contaminated material identified during the RI. As such, previous levels of risks and hazards estimated for chemical and radiological contaminants in soil at the conclusion of the RI were no longer accurate. To more accurately assess the potential risks and hazards that remain at SEAD-12, the human health risk assessment was updated. The complete updated risk assessment is provided as Appendix H of the Final Construction Completion Report (Parsons, 2012).

The datasets that have changed as a result of the removal action are the site-specific chemical and radiological soil datasets that were used for Disposal Pits A/B and C. Datasets for groundwater, surface water, and sediment remain unchanged.

The datasets for the updated risk assessment included analytical results from the RI or ESI which were outside removal action excavation areas combined with new analytical data collected during post-excavation confirmatory sampling and backfill characterization sampling.

7.1.3 Toxicity Assessment

In this step, the types of adverse health effects associated with contaminant exposures and the relationship between magnitude of exposure and severity of adverse health effects are determined. Potential health effects are contaminant-specific and may include the risk of developing cancer over a lifetime, or non-cancer health effects such as changes in the normal functions of organs within the body (e.g., changes in

the effectiveness of the immune system). Some contaminants are capable of causing both cancer and non-carcinogenic health effects.

7.1.4 Risk Characterization

This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of risks. Under current EPA guidelines, the likelihood of carcinogenic and non-carcinogenic effects due to exposure to site-related chemicals is considered separately. Non-carcinogenic hazards were assessed by the calculation of a hazard quotient (HQ), which is an expression of the daily intake of a chemical divided by its Reference Dose (RfD). An HQ that exceeds 1 indicates the potential for non-carcinogenic effects to occur. A HI was then calculated for non-carcinogenic effects posed by more than one chemical and by multiple exposure pathways by summing up the HQs.

The likelihood of an individual developing cancer is expressed as a probability. For example, a 1×10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk," or one additional cancer may be seen in a population of 10,000 people as a result of exposure to contaminants under the conditions explained in the Exposure Assessment. Carcinogenic risks were evaluated using a Cancer Slope Factor, which is a measure of the cancer-causing potential of a chemical. Cancer Slope Factors are multiplied by daily intake estimates to generate an upper-bound estimate of excess lifetime cancer risk. For known or suspected carcinogens, EPA has defined an acceptable cancer risk range of 1×10^{-6} to 1×10^{-4} (one-in-one million to one-in-ten thousand) or less.

7.1.5 Post-Removal Action Human Health Risk Assessment

At the conclusion of the SEAD-12 removal action, the potential cancer risks and non-carcinogenic HIs at the affected excavation sites (i.e., Disposal Pits A/B and C) based on the collection and analysis of new soil data were assessed. In addition, the evaluation included the cancer risks attributable to radiological contaminants in soil following the removal action for Disposal Pits A/B and C. The results indicated that the soils at the excavation sites were suitable for unrestricted use and unlimited exposures under the future resident farmer scenario.

Table 7-1 summarizes risks calculated for exposures to SEAD-12 impacted media (soil, groundwater, surface water, and sediment/ditch soil). Cancer risks and non-cancer hazard indices for all future receptors under the institutional/training/commercial scenario are within EPA's acceptable risk range (i.e., not greater than $10^{-4} - 10^{-6}$ for cancer risks and an HI of 1 for non-cancer hazard indices).

The initial BRA indicated that the excess cancer risks and the non-cancer hazard indices for the future resident were above the EPA target risk range. However, further evaluation of the preliminary results as part of the risk management and uncertainty analysis portions of the risk assessment process indicated that the noted excess risks were associated with specific hazardous substances that were infrequently detected in sampled media at very low, estimated concentrations.

The apparent elevated risk values result primarily due to the exposure of the child or lifetime resident's exposure to chemical, and not radiological, constituents. The three most significant exposure pathways which contribute to the child resident's elevated non-carcinogenic HI level are dermal contact with surface water (1.6), ingestion of groundwater (0.55), and dermal contact with groundwater (0.42). The

lifetime resident's cancer risk is impacted by their dermal contact with groundwater (4.3E-04) and their dermal contact with surface water (2.5E-04).

With reference to the child resident's non-carcinogenic HI, the chemicals responsible for the 1.6 HI reported for dermal contact with surface water included aroclor-1242 and chrysene. Aroclor-1242 was detected in two surface water samples and chrysene was detected in one surface water sample collected during the RI. Neither of these compounds is very soluble in surface water, so it is likely that there detection in any surface water sample is the result of the presence of soil particles in the sample that was being analyzed. Furthermore, the single chrysene detection was reported as an estimated concentration and was only found in the identified duplicate of a sample-duplicate pair. The base sample reported a non-detect value. Finally, both of the Aroclor-1242 results were found in surface water sample locations that are isolated from the Disposal Pit locations and where it is unlikely that surface water runoff from the disposal pits could have entered the affected drainage channels. The single chrysene detection was found at a sample location that is hydraulically upgradient of the Disposal Pit sites, so it is likely that this material, if actually present, was released from a location not associated with the disposal pit operations.

Dermal contact to groundwater containing di-n-octylphthalate was the next highest contributor to the elevated HI that is noted for the child resident. This compound was detected in six out of 89 groundwater samples characterized during the RI, each time in a different well, and always at concentrations that were reported as estimated values. These wells are spread throughout the SEAD-12 site, although each of these wells was sampled at least twice during the RI, the phthalate was only detected in one of the two samples. Similarly, while ingestion of groundwater containing total DCE was also noted as a contributor to the child's elevated HI, it was only detected in one well, once, and neither of its isomers (cis- and trans-1,2-dichloroethene) were found or noted in any other well at the SEAD-12 site. The single sample DCE was found in was collected from MW12-37, which was previously located next to Building 813/814 where a TCE plume was found. This plume was remediated during the supplemental RI that was completed in 2004 and 2005.

Therefore, based on this information the noted elevated non-carcinogenic HI reported for the child resident over-estimates the true level of potential hazard that is present in the area.

The resident's excess lifetime cancer risk results primarily due to dermal contact with groundwater (4.3E-06) and dermal contact with surface water (2.5E-06), both of which contain carcinogenic PAH (cPAH) compounds. As noted above, it is unlikely that cPAHs are readily soluble in either surface water or groundwater, so it is more probable that their presence in the samples collected during the RI results from the capture of some amount of particulate that has these material sorbed onto the particles captured during the sampling process. Closer examination of the groundwater data indicate that four cPAHs contribute to the estimated cancer risk. Three were detected once each from a single well, while the other cPAH was detected in two samples collected from two separate wells. All of the reported concentrations in groundwater were estimated values, and for benzo(a)pyrene which was detected twice, it was not detected in the wells when they were sampled the second time. The three cPAHs are the primary contributors to the noted carcinogenic risk arising from dermal contact with surface water, and again each of these was only detected in one sample (all collocated).

The removal of these overestimates of carcinogenic risks for the lifetime resident reduces the estimated level of carcinogenic risk to a level on the order of 10^{-5}, which is consistent with the EPA's acceptable risk range. The recalculated risks are presented in **Table 7-1**. As a result, it is concluded that the residual contaminants at SEAD-12 are not expected to pose significant risks to potential future residential receptors.

7.1.6 Assessment of Vapor Intrusion

With no future planned use of Buildings 813/814, a risk assessment was not performed to evaluate potential risks via the indoor air exposure pathway. Currently, the vapor intrusion exposure pathway is not complete as the buildings are vacant and there is no current planned use of the facility. The vapor intrusion pathway could be complete in the future, if the existing buildings were occupied, or if new permanent or temporary facilities were constructed in the area of the previously identified TCE and dichloroethene contamination. If any of these occupancy scenarios were to occur, it would be appropriate to assess the potential for vapor intrusion exposure at that time.

7.1.7 Human Health Risk Assessment Uncertainties

Analysis of uncertainties focuses on determining whether the available data are representative of contaminant concentrations and site conditions, and whether features of sampling, analyses, or statistical treatment of the data result in an over- or underestimation of potential risk. The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis;
- fate and transport modeling;
- exposure parameter estimation; and
- toxicological data.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is uncertainty as to the actual levels present. Environmental chemistry analysis error can stem from several sources, including the errors inherent in the analytical methods and characteristics of the matrix sampled.

Fate and transport modeling is also associated with a certain level of uncertainty. Factors such as the concentrations in the primary medium, rates of transport, ease of transport, and environmental fate all contribute to the inherent uncertainty in fate and transport modeling.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals.

These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the risk assessment provides upper-bound estimates of the risks to populations near the AOC, and is highly unlikely to underestimate actual risks related to the AOC.

More specific information concerning public health and environmental risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the RI report.

The primary uncertainties associated with the risk assessment for the AOC include environmental chemistry sampling and analysis.

7.1.8 Human Health Risk Assessment Conclusion

In summary, soil in the Former Dry Waste Disposal Pit area, Disposal Pit A/B, and Disposal Pit C and groundwater, sediment, and surface water at SEAD-12 do not pose unacceptable risks to the human health of potential future residents or the anticipated future users of the AOC (i.e., institutional/training/commercial activity). Residual VOC contamination in soil does not pose a direct-contact hazard but has the potential to pose a future vapor intrusion exposure. The vapor intrusion pathway is not complete; however, the potential exists for the vapor intrusion pathway to be completed if any of the occupancy scenarios described above were to take place in proximity to the identified VOC-contaminated area[s].

7.2 SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

As part of the RI, a SLERA was conducted. The SLERA process is shown in **Figure 7-3**. The results of the SLERA indicate that soil, surface water, or sediment at SEAD-12 does not significantly impact ecological receptors in the area (i.e., short-tailed shrew, meadow vole, red-tailed hawk, great blue heron, mourning dove, largemouth bass, amphibian, and invertebrates). No COCs were identified for SEAD-12 soil, sediment, or surface water.

For the area designated as Disposal Pit C, the results suggest a potential for adverse ecological effects due to the presence of zinc. A further evaluation of the data indicates that the contamination is above background in three distinct areas represented by soil samples from locations TP12-7BA, TP12-7BB, and TP12A-7 for one area, TP12-7AA for another area, and TP12A-4 for the final area. Other samples for zinc in Disposal Pit C are below background and indicate that contamination outside these areas do not have the potential for adverse ecological effects. All zinc concentrations detected in Disposal Pit C soil are below the NYSDEC SCO for commercial use scenario. SEAD-12 is not expected to support, sustain, or attract ecological receptors based on its planned future use, and therefore is not expected to be a wildlife habitat. The presence of ecological receptors is expected to be generally curtailed in these areas where habitat conditions are poor and human activity levels are sufficiently disruptive to discourage wildlife use. Therefore, no further action is warranted at Disposal Pit C to mitigate potential risks to ecological receptors.

7.3 SUMMARY OF HUMAN HEALTH AND ECOLOGICAL RISKS

In summary, the areas evaluated in the BRA (i.e., the Former Dry Waste Disposal Pit area, Disposal Pit A/B, and Disposal Pit C) and the other media evaluated at SEAD-12 (i.e., groundwater, sediment, and surface water) do not pose significant risks to human health based on the future use of the AOC (i.e., institutional/training/commercial activity). Further, these areas and media do not pose significant risks to potential residential receptors. In addition, SEAD-12 does not pose significant risks to ecological receptors.

A potential risk is assumed to exist in the vicinity of the previously noted TCE contamination that was identified in the soil and groundwater in the immediate vicinity of Buildings 813/814 and former well MW12-37.

7.4 BASIS FOR ACTION

The areas evaluated in the post-RI and updated BRAs (i.e., the Former Dry Waste Disposal Pit area, Disposal Pit A/B, and Disposal Pit C) and the other media evaluated at SEAD-12 (i.e., groundwater, sediment, and surface water) do not pose unacceptable risks or threats to future residential or more likely institutional/training/commercial users of the property. In addition, SEAD-12 does not pose unacceptable risks to ecological receptors.

A risk assessment was not performed to evaluate potential risks via indoor air exposure pathway at Buildings 813/814. Currently, the vapor intrusion exposure pathway is not complete as the buildings are vacant, the surrounding land is unused, and use is not anticipated in the near future. To assure that SEAD-12 will not pose a future unacceptable risk if Building 813 or 814 were to be occupied, or if any building overlying the current buildings' footprints or on adjacent land were to be constructed, an investigation of vapor intrusion potential and indoor air quality would be needed to assess and estimate potential risks from VOC vapor intrusion.

Based upon the results of the RI, SRI, the SEAD-12 removal action, the successful completion and verification of the SEAD-72 RCRA Closure, and the risk assessments as are summarized above, the Army and the EPA have determined that no further CERCLA action is warranted at any locations in SEAD-12 and SEAD-72, exclusive of the area underlying and surrounding Buildings 813/814 where a future vapor intrusion risk analysis would be warranted prior to occupation.

8.0 REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards such as ARARs and risk-based levels established in the risk assessment. These objectives are also based upon the current and intended future land use, which is institutional/training/commercial activity for SEAD-12 and SEAD-72.

Remedial action objectives have been developed that consist of media-specific objectives for protection of human health and the environment. NYSDEC's General Remedial Program goal is to restore a specific site to pre-disposal conditions, to the extent feasible. Unrestricted land use was considered at SEAD-12 and SEAD-72 to compare the costs of remediating the AOCs to this level of use versus the costs to implement a more restricted land use. Unrestricted use was also considered to comply with Army guidance, which states that alternatives consistent with property use without any restriction should be considered to compare life-cycle institutional control costs with more conservative cleanup alternatives (DAIM-BO, "*Army Guidance for Using Institutional Controls in the CERCLA Process*").

Remedial action objectives are specific goals to protect human health and the environment; they specify the contaminant(s) of concern, the exposure route(s), receptor(s), and acceptable contaminant level(s) for each exposure route. These objectives are based on risk levels established in the risk assessment and should comply with ARARs, unless a waiver is necessitated. A list of ARARs is provided in **Appendix D**.

Results of the CERCLA risk assessment for SEAD-12 indicate that soil in the three most impacted areas (Disposal Pit A/B; Disposal Pit C; and the Former Dry Waste Disposal Pit) and other environmental media (groundwater, sediment, surface water) do not pose unacceptable risks to human health or the ecological receptors based on the unrestricted use scenario. Therefore, no further CERCLA action is warranted at any location within SEAD-12, exclusive of the area where Buildings 813/814 are located.

On this basis, the remedial action objectives established for SEAD-12 are as follows:

- Prevent potential exposure to VOCs in the indoor air:
  - Within existing Buildings 813/814 or;
  - In potential newly constructed buildings above the area where TCE-contaminated groundwater and soil were identified **(Figure 1-1)**, including, without limitation, above the footprints of the existing buildings.
- Prevent access to and use of groundwater contaminated with COCs, generally expected to be found within 50 feet outside the perimeter of Buildings 813 and 814, until groundwater standards are achieved **(Figure 1-1)**.

No further action is required for SEAD-72. Results of the CERCLA risk assessment for SEAD-72 indicate that the AOC does not pose unacceptable risks to human health or the ecological receptors based on the unrestricted use scenario.

9.0 DESCRIPTION OF SEAD-12 ALTERNATIVES

CERCLA § 121(b)(1), 42 U.S.C. § 9621 (b)(1) and the NCP require that each selected remedy be protective of human health and the environment, be cost effective and use permanent solutions, alternative treatment technologies or resource recovery options to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a site. CERCLA Section 121(d), 42 U.S.C. Section 9621 (d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4), 42 U.S.C. Section 9621 (d)(4).

Two remedial alternatives were considered for addressing the potential for VOC vapor intrusion into Buildings 813/814 or any newly constructed buildings in the area shown in **Figure 1-1**:

- An environmental easement to place restrictions on Buildings 813/814 and the surrounding area; and
- A requirement for a vapor intrusion study followed by a probable action that would vacate the need for land use controls (i.e., building demolition and soil excavation and disposal).

Detailed descriptions of the remedial alternatives for SEAD-12 can be found in the FS report. The FS report presents and evaluates remedial alternatives for Buildings 813/814 intermingled with varying remedial alternatives that were considered at that time for Disposal Pits A/B and C where military-related items were presumed to be buried. The removal action for military-related items at Disposal Pits A/B and C has been completed, as is summarized in the Parsons (2012) *SEAD-12 Construction Completion Report* and above in this Record of Decision, and therefore no additional work is needed for these locations.

Therefore, the alternatives considered for the area of Buildings 813 and 814 and the land in the vicinity of former monitoring well MW12-37 are:

- Alternative 1: No Action
- Alternative 2: Environmental Easement and LUC on Buildings 813/814
- Alternative 3: Vapor Intrusion Study followed by demolition of Buildings 813/814 and TCE-contaminated soil excavation and disposal, if necessary, to achieve unrestricted use of the property.

Detailed descriptions of the SEAD-12 remedial alternatives considered to address the contamination associated with the AOC are presented below. The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy or procure contracts for design and construction. Once all alternatives have been identified and described, each of the alternatives is evaluated against the NCP's evaluation criteria which include:

- Overall protection of human health and the environment;
- Compliance with ARARs;

- Long-term effectiveness and permanence;
- Reduction in toxicity, mobility, or volume of contamination through treatment;
- Short-term effectiveness;
- Implementability;
- Cost;
- State acceptance; and
- Community acceptance.

The comparative evaluation of the varying alternatives is summarized in **Section 10** of this Record of Decision.

9.1 SEAD-12 ALTERNATIVE 1: NO ACTION

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative does not include any physical remedial measures that address the problem of contamination at the AOC.

Because this alternative would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the alternative be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove, treat, or contain the contaminated media.

SEAD-12, Alternative 1 Costs

Capital Cost:	$0
Annual Long-Term Monitoring (LTM) Cost:	$0
Present-Worth Cost of LTM:	$0
Construction Time:	0 month

9.2 SEAD-12 ALTERNATIVE 2: ENVIRONMENTAL EASEMENT AND LUC ON BUILDINGS 813/814

Alternative 2 involves imposing an environmental easement on Buildings 813 and 814 and an area extending i) fifty feet from the perimeter of Building 813/814 and ii) fifty feet from monitoring well MW12-37 ("LUC-zone") and a groundwater LUC affecting the land and buildings within the LUC-zone (**Figure 1-1**). The restrictions provided in the LUC will a) prohibit human habitation or other use of Building 813/814 unless, and until, an investigation of vapor intrusion potential and indoor air quality has been performed and it has been determined that the use or occupation of Building 813/814 or any other temporary or permanent structure to be constructed in the LUC-zone will not present an unacceptable human health risk on account of air quality from potential vapor intrusion; and b) prohibit the access to or use of groundwater in the LUC-zone until such time as groundwater standards are achieved. The groundwater restriction would remain in effect until data were provided to the Army, EPA, and NYSDEC that indicated that groundwater quality

in the described area met GA standards. The remaining land within SEAD-12 would be released for unrestricted use and unlimited exposures.

SEAD-12, Alternative 2 Costs	
Annual LTM Cost	$6,000
Five-Year Review Cost	$40,000
Present-Worth Cost of LTM:	$74,460
Completion Time:	1 month

The present worth cost is calculated using a discount rate of seven percent (7%) and a 30-year time interval.

9.3 SEAD-12 ALTERNATIVE 3: VAPOR INTRUSION AND BUILDINGS 813/814 DEMOLITION

Alternative 3 involves the performance of a vapor intrusion study and, if necessary, the completion of a remedial action (i.e., LTM of groundwater, building demolition and soil excavation and disposal) that would alleviate the future need for land use controls in the area. Alternative 3 would restore SEAD-12 for unrestricted use by future property users.

The vapor intrusion study would be conducted to determine whether the potential for vapor intrusion to the indoor and outdoor environment exists, and to evaluate other contributing factors that may play a role in the volatile vapors inside of Buildings 813 and 814, if any. The vapor intrusion study would start with a standard building inventory inspection. Following the inspection, any sources or potential sources of volatile vapors that were discovered would be removed from the buildings and surrounding area (or otherwise mitigated) to the extent practicable. Direct measurements of VOC concentrations present in vapors beneath the building foundations (i.e., sub slab vapors) along with indoor and outdoor air would be obtained. Inspections and sampling would be conducted in accordance with protocols and procedures provided in *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH, 2006).

If warranted, based on the vapor intrusion investigation results, Buildings 813 and 814 would be demolished. The buildings would be demolished to the slab or to the existing grade using conventional demolition techniques. Soil underneath the foundation of Building 813 where elevated TCE concentrations were previously detected would be excavated. Confirmatory samples would then be collected to ensure that the residual VOC concentrations are consistent with NYSDEC Unrestricted Use SCOs. The demolition material would be sorted, as necessary, and loaded out for disposal or recycling. The volume of demolition debris would be reduced to the greatest level practical prior to off-site disposal. The excavated debris and soil would be sampled, analyzed, treated, and segregated, as necessary, prior to its disposal at a licensed landfill.

SEAD-12, Alternative 3 Costs

Buildings 813/814 Demolition and Soil Excavation Volume	1,100 cubic yards
Capital Cost:	$440,000
Annual LTM Cost:	$20,000[8]
Present-Worth Cost of LTM:	$82,000[9]
Total Cost	$522,000
Construction Time:	5 months

The present worth cost is calculated using a discount rate of seven percent (7%) and a 5-year time interval.

[8] Semi-annual (twice per year) monitoring for VOCs only.
[9] Five years of semi-annual (twice per year) monitoring for VOCs only at annual rates of 7 percent.

10.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely, overall protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, cost, and state and community acceptance. The evaluation criteria are described below.

- Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
- Compliance with ARARs addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.
- Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.
- Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.
- Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.
- Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.
- Cost includes estimated capital and operations maintenance and monitoring costs, and net present-worth costs.
- State acceptance indicates if, based on its review of the RI/FS and ROD, the state concurs with the preferred remedy at the present time.
- Community acceptance will be assessed in the ROD and refers to the public's general response to the alternatives described in the ROD and the RI/FS reports.

A comparative analysis of these alternatives based upon the evaluation criteria noted above follows.

10.1 OVERALL PROTECTIVENESS OF HUMAN HEALTH AND THE ENVIRONMENT

Alternative 1 does not provide good long-term protectiveness of human health and the environment because it does not reduce the magnitude of potential risks and does not provide adequate or reliable controls for continued protection of human health or the environment.

Alternatives 2 and 3 provide long-term protection of human health and the environment. The environmental easement and groundwater LUC on Buildings 813/814 and land within the LUC-zone presented in Alternative 2, and the vapor intrusion study and potential building demolition presented in Alternative 3, would prevent potential exposure to indoor air that may potentially be impacted by VOCs contained in the soil underneath the buildings through vapor intrusion.

10.2 COMPLIANCE WITH ARARS

There are currently no promulgated federal standards for hazardous substance levels in soils. Instead, risked-based decisions are used to determine if cleanup is warranted. The baseline risk assessment indicates the SEAD-12 media, exclusive of some soil and possibly groundwater underlying Buildings 813 and 814 and the LUC-zone, do not pose unacceptable levels of risk or potential health hazard to human or ecological receptors.

The State of New York has promulgated lists of soil cleanup objectives (SCOs) for specific contaminants and for varying future property uses to assess residual levels of contamination in soil at hazardous waste sites located within the state's boundaries.

Analytical data from soil samples collected within SEAD-12 have been compared to New York State Unrestricted Use SCOs and the results of this comparison indicate that while individual samples may have specific contaminants at concentrations in excess of prescribed SCOs, area-wide estimates of the 95th percentile upper confidence limit of the arithmetic mean (95th UCL) of the sample population are generally lower than NYSDEC Unrestricted Use SCOs with the exception of cadmium and zinc. The 95th UCLs for cadmium and zinc in SEAD-12 soil are above their NYSDEC Unrestricted use SCOs. However, the NYSDEC Unrestricted Use SCOs for cadmium and zinc are the rural soil background concentrations as determined by NYSDEC and NYSDOH rural soil survey. The 95th UCLs for cadmium and zinc in SEAD-12 are lower than the NYSDEC human health-based SCOs for the unrestricted use scenario. Furthermore, based on the results of the risk assessment, cadmium and zinc in SEAD-12 soil do not pose significant risks to potential receptors (including residents) within the AOC.

The NYSDEC cleanup guideline (i.e., 10 millirem/yr) provided in the NYSDEC (2005) *Cleanup Guidelines for Soils Contaminated with Radioactive Materials* (DSHM-RAD-05-01) was used to evaluate potential radiological constituent impacts at SEAD-12. The AOCs conditions are in compliance with the NYSDEC cleanup guideline.

There are currently no chemical specific ARARs for sediment in the State of New York; NYSDEC guidelines for sediment are considered TBCs for SEAD-12.

Surface water sample results were compared to the NYSDEC Ambient Water Quality Standards (TOGS, 1.1.1, Class C Standards). Surface water is only found intermittently in the man-made drainage ditches and the unnamed creek at SEAD-12, and thus the surface water is not classified by NYSDEC because it is a sporadic event, and it is not present in an established stream, creek, pond, or lake. However, because the drainage ditches and creek form a portion of the headwaters for Reeder Creek, the lower portion of which is designated as Class C surface water by NYSDEC, the Class C standards were used to provide a

basis of comparison for the on-site chemical data. The Class C standards are not strictly applicable to the surface water in the drainage ditches and the unnamed creek, and thus are treated as TBCs.

NYSDEC has promulgated groundwater standards, which are applicable to SEAD-12 groundwater. In addition, the drinking water standards issued by EPA and NYSDOH are considered relevant and appropriate for SEAD-12 groundwater. Several metals were identified in groundwater samples at levels exceeding the EPA and NYSDOH guidance values at SEAD-12. However, the levels of these metals are generally consistent with the upgradient or side-gradient groundwater quality. Therefore, the current proposed remedies do not consider any form of groundwater treatment.

Off-site disposal of debris and soil generated during the SEAD-12 removal action of military-related items and SEAD-72 RCRA Closure was evaluated in accordance with RCRA and solid waste management criteria. Solid and liquid wastes and other debris generated during the two actions were assessed by collecting and analyzing samples of the generated wastes for total hazardous substance concentrations hazardous waste characteristics. Resultant data were provided to the recipient off-site authorities (off-site landfill and local sewer authority) for assessment and approval versus their permitted limitations and identified RCRA Hazardous Waste Characteristics (e.g., Toxicity Characteristic, Ignitability, Corrosivity, Reactivity).

10.3 LONG-TERM EFFECTIVENESS AND PERMANENCE

Alternative 3 is assessed as the most effective alternative for eliminating potential long-term threats from vapor intrusion and soil and groundwater re-contamination since Buildings 813/814 would be demolished and the impacted soil underneath the buildings would be excavated, if warranted. Alternative 2 would provide for the long-term protection of potential receptors from exposure to indoor air by establishing the environmental easement and prohibiting the access to or use of Buildings 813/814 or construction of new structures in the LUC-zone until a vapor intrusion survey was conducted and the results were evaluated, reported, and approved by the Army, EPA, and NYSDEC. Further, Alternative 2 would restrict the use of, and access to, groundwater in the vicinity of the vacant buildings and former monitoring well until new groundwater quality data was provided and indicated that it has achieved the State's GA groundwater standards, and is therefore suitable for use. However, since the extent and severity of soil contamination beneath Building 813 would remain uncertain, there is a potential that soil and groundwater contamination beyond the currently identified extents (i.e., soil under the northern edge of Building 813) could reoccur over time. Available data from this area suggests that such re-contamination is unlikely as the transmissivity of groundwater and soil media throughout this area have been shown to be low, as is demonstrated by the limited dispersion of TCE and its breakdown products (e.g., dichloroethene, vinyl chloride) in the groundwater and surface water, and the isolated locations where it was found in soils beyond Building 813. Alternative 1, the no-action alternative, does not provide long-term protection of human health or the environment.

The relative rankings of the alternatives based on permanence are the same as the rankings for long-term effectiveness. Since Alternative 3 includes building demolition and impacted soil excavation for unrestricted use, it was ranked higher than Alternative 2, which requires an environmental easement for the AOC. Alternative 1 is not permanent due to potential exposure to indoor air in Buildings 813/814.

10.4 REDUCTION IN TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

Alternatives 1 and 2 do not reduce the volume, toxicity, or mobility of the contaminants that remain at the AOC. Alternative 3 may provide a greater reduction of contaminant mobility compared to Alternatives 1 and 2 as contaminated soil found beneath Buildings 813/814 may be excavated and disposed of at a licensed landfill if the buildings are demolished. Alternative 3 would increase the VOC impacted soil volume as a result of excavation process.

10.5 SHORT-TERM EFFECTIVENESS

Alternative 1 ranks highest for short-term protection of human health and the environment since the alternative does not implement a remedy; therefore, there are no adverse impacts on human health and the environment as a result of the remedy.

Alternative 2 ranks nearly as high as Alternative 1 as the alternative does not require any construction of remedial systems and, therefore, poses the least risk to the community and on-site workers. Further, it does not create any additional adverse environmental impacts. LUCs would be implemented and maintained quickly with minimal impact or adverse impacts on the community, site workers or the environment.

Alternative 3 ranks lowest in this category as it potentially includes the demolition of Buildings 813/814. Alternative 3 could pose some additional short-term hazards to neighboring workers and the community through dermal contact, ingestion, or inhalation of contaminants during the excavation, loading, transporting, and unloading operations that are needed to complete the construction efforts. Further, noise from the heavy equipment used for building demolition, excavation, loading, and hauling could also impact nearby employees of neighboring industries and companies, and local residents. In addition, interim and post remediation sampling activities would pose potential risks to field workers. Potential risks to nearby employees of local companies and nearby residents could be controlled by developing and implementing sound engineering controls, health and safety procedures, monitoring practices.

Since soil would be transported off-site under Alternative 3, there would be an increase in traffic on the roads within and surrounding the Depot and the receiving landfills. This could translate into an increased likelihood of vehicular accidents, and potential releases of soil and debris containing hazardous constituents at other locations along the driving routes. Alternative 3 also involves varying amounts of soil disturbance that could affect the surface water hydrology in the areas being excavated. The disturbance of soil associated with Alternative 3 across larger surfaces also increases the likelihood of soil erosion and transport, both via surface water flow and as fugitive dusts. Therefore, appropriate silt and dust containment measures would be implemented and monitored during the excavation, loading, and hauling activities.

10.6 IMPLEMENTABILITY

Alternative 1, the no-action alternative, would be the easiest alternative to implement, since there are no actions to undertake. However, the administrative feasibility of the alternative is not considered favorable since extensive coordination with local, state, and regional agencies would be required in the attempt to support and justify no remedial action at SEAD-12.

Alternative 2 would be slightly more difficult to implement than Alternative 1 because it requires the implementation, maintenance, oversight, and annual reporting of the continuing effectiveness of the environmental easement and the preparation, submittal, and approval of an environmental easement implementation plan.

Alternative 3 would be more difficult to implement than Alternative 2. Nonetheless, technologies for the building demolition, soil excavation, and characterization, transport, and disposal of excavated soil under Alternative 3 are mature and readily available. In addition, a licensed off-site landfill capable of accepting the building debris and soil from SEAD-12 would be needed for Alternative 3.

10.7 COST

Capital costs, operating costs, and administrative costs were estimated for Alternatives 1, 2, and 3. Capital costs include those costs for professional labor, construction and equipment, field work, monitoring and testing, and treatment and disposal. Operating costs include costs for administrative and professional labor, monitoring, and utilities. Administrative costs include the costs for land use restrictions. The present worth cost associated with all alternatives is calculated using a discount rate of seven percent (7%) and a 30-year time interval for Alternative 2 and five years for Alternative 3. The estimated capital, operation, maintenance, and monitoring, and the present-worth costs are presented below.

Alternative	Capital Cost	Annual LTM Costs	Total Present-Worth Costs
1	$0	$0	$0
2	$0	$6,000	$74,460
3	$440,000	$20,000	$522,000

Alternative 1 (No Action) is the least costly alternative and incurs no cost for SEAD-12. The costs for the Buildings 813/814 area remediation are $74,460 and $522,000 for Alternative 2 and Alternative 3, respectively.

10.8 STATE ACCEPTANCE

NYSDEC concurs with the selected remedy (i.e., Alternative 2) for SEAD-12.

10.9 COMMUNITY ACCEPTANCE

The Army solicited input from the community on the remedial alternatives proposed for SEAD-12 and the no action determination for SEAD-72. No public comments received on the Proposed Plan.

11.0 SELECTED REMEDY

The Army and EPA have concluded that the majority of land within SEAD-12 is suitable for unrestricted use and unlimited exposures with no further action required. The exception is groundwater and soil within the LUC-zone. The LUC-zone includes a small portion of SEAD-12 being the area equal to i) fifty feet from the perimeter of Building 813/814 and ii) fifty feet from monitoring well MW12-37 where contamination by VOCs, primarily TCE, is at levels exceeding federal and state groundwater drinking water standards and state SCO levels. VOCs remain at sufficient concentrations to pose a potential risk via vapor intrusion to future users or occupants of the buildings or land. The response action selected in this ROD is necessary to protect human health and the environment from actual or threatened releases of hazardous substances into the environment from the AOC, or from actual or threatened releases of pollutants or contaminants, which may present an imminent and substantial endangerment to public health or welfare.

The Army and EPA have concluded SEAD-72 is suitable for unrestricted use and unlimited exposures with no further action required.

Description of the Selected Remedy

In response to this future-use concern, the selected remedy for this portion of SEAD-12, Alternative 2, addresses contaminated soil and groundwater and includes:

- the implementation, monitoring, and maintenance of an environmental land use control (LUC) restricting access to and use of the existing vacant Buildings 813/814 and the construction of inhabitable structures (temporary or permanent) above the area where TCE-contaminated soil was previously identified, and where contaminated groundwater may exist; and
- the implementation, monitoring, and maintenance of a LUC that prohibits access to and use of groundwater in the vicinity of Buildings 813/814.

The extent of the land within SEAD-12 affected by the selected remedy includes the area that is i) fifty feet from the perimeter of Building 813/814 and ii) fifty feet from the location of the former monitoring well MW12-37 (LUC-zone) (**Figure 1-1**). The selected remedy is meant to protect a future user of this area. Because VOCs can naturally attenuate over time, and occupancy of the area is not currently anticipated, residual contamination may dissipate prior to occupancy. At a future time, when occupancy of existing or newly constructed buildings is under consideration, the restricted use may be removed with the concurrence from Army, EPA and NYSDEC, if monitoring conducted at that time indicates that exposure through vapor intrusion is not a concern.

The environmental easement, the implementing document granted upon property transfer out of federal ownership, will state that the future property owner will perform an investigation of vapor intrusion potential and indoor air quality with the results of the surveys reviewed and approved by the Army, EPA, and NYSDEC before the buildings, or any newly constructed buildings in the designated area may be occupied. The groundwater access and use restriction, established by the environmental easement, will be maintained and in effect until a future property owner demonstrates with new analytical data provided to,

and approved by the Army, EPA, and NYSDEC to indicate that groundwater in the LUC-zone (e.g., vicinity of Building 813 and 814, and former well MW12-37) meets GA groundwater standards.

To implement the selected remedy for SEAD-12, which includes the imposition of LUCs at SEAD-12, a LUC RD Plan will be prepared consistent with Paragraphs (a) and (c) of the New York State ECL Article 27, Title 13, Section 1318: Institutional and Engineering Controls. The LUC RD Plan will include: a Site Description; the Institutional Control (IC) Land Use Restrictions; the LUC Mechanism to ensure that the land use restrictions are not violated in the future; implementation and maintenance actions, including periodic inspections; periodic certifications that the institutional engineering controls are in-place and being maintained by the owner or persons implementing the remedy; and, Reporting/Notification requirements. In addition, the Army will prepare an environmental easement for SEAD-12, consistent with New York ECL Article 71, Title 36: Environmental Easements, in favor of the State of New York and the Army, which will be recorded at the time of the property's transfer from Federal ownership. The easement from the United States of America will provide that the Army will be signatory for the environmental easement and USEPA will be a third party beneficiary of the easement. A schedule for completion of the draft SEAD-12 LUC RD Plan will be completed within 21 days of the ROD signature, consistent with Section 14.4 of the FFA. In accordance with the FFA and CERCLA §121(c), the remedial action (including ICs) will be reviewed no less often than every 5 years. After such reviews, modifications may be implemented to the remedial program, if appropriate.

The Army shall implement, inspect, report, and enforce the LUC described in this ROD in accordance with the approved LUC RD. Although the Army may later transfer these responsibilities to another party by contract, property transfer agreement, or through other means, the Army shall retain ultimate responsibility for remedy integrity.

The LUC Performance Objectives for land in the vicinity of Buildings 813 and 814 are:

- Prohibit the use of existing Buildings 813 and 814 and/or the construction of new inhabitable structures (temporary or permanent) above the area where there is the potential for TCE contaminated groundwater and/or soil, until a vapor intrusion study is conducted in the building(s) or in the restricted area and shows that potential risks from VOC intrusion does not pose unacceptable risk or hazard levels to future users or occupants of the structures or the land;
- Prohibit access to and use of the groundwater in the LUC-zone until groundwater standards are achieved; and
- Prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities and playgrounds until soil and groundwater standards for unrestricted use and unlimited exposure are achieved.

The Army will maintain and enforce the LUCs until the concentration of hazardous substances in soil and groundwater are at such levels to allow for unrestricted use and exposure or until the property is transferred. The LUC will be implemented through an environmental easement which documents and transfers the LUC objectives and responsibilities to the future owners. The environmental easement will be recorded and identified in the Deed when the property is transferred.

The selected remedy for SEAD-72, the former Mixed Waste Storage Facility (Building 803) is No Further Action (NFA). Prior to the preparation and submittal of this ROD, the Army conducted and documented the effectiveness of the required RCRA Closure of Building 803 in accordance with the previously submitted and approved Closure Plan (Parsons, 2010). Closure of Building 803 is required under RCRA, which is an applicable or relevant and appropriate requirement (ARAR) under CERCLA. At SEAD-72, no further action is required.

STATUTORY DETERMINATIONS

CERCLA Section 121(b)(1) mandates that a remedial action must be protective to human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at the Site. CERCLA 121(d) further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA 121(d)(4). For the reasons discussed below, the Army and EPA have determined that the selected remedy meets the requirements of CERCLA Section 121.

Protection of Human Health and the Environment

The selected remedy will protect human health and the environment because it will mitigate the potential for exposure through a vapor intrusion pathway. Institutional controls will assist in protecting human health and the environment over both the short and long-term by helping to control and limit the potential for exposure to hazardous substances.

Compliance with ARARs

The selected remedy will comply with all federal and state requirements that are applicable or relevant and appropriate (ARAR) to its implementation. There are no Federal or state chemical-specific ARARs for vapor intrusion. A comprehensive ARAR discussion is included in the RI/FS and a complete listing of ARARs is included in **Appendix D** of this Record of Decision.

Cost Effectiveness

A cost-effective remedy is one which has costs that are proportional to its overall effectiveness (NCP Section 300.430(f)(1)(ii)(D)). Overall, effectiveness is based on the evaluations of long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness. The Army and EPA evaluated the "overall effectiveness" of those alternatives that satisfied the threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume though treatment; and short-term effectiveness). Overall effectiveness was then compared to those alternatives' costs to determine cost-effectiveness.

Based on the comparison of overall effectiveness to cost, the selected remedy meets the statutory requirement that Superfund remedies be cost-effective (NCP Section 300.430(f)(1)(ii)(D)) in that it is the least-costly alternative which will be protective of human health.

Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to Maximum Extent Practicable

The Army and EPA have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at SEAD-12. The selected remedy provides the better balance of trade-offs with respect to the five balancing criteria. The selected remedy satisfies the criteria for long-term effectiveness and permanence.

Preference for Treatment as a Principal Element

The selected remedy does not satisfy the statutory preference for the use of remedies that employ treatment that reduces toxicity, mobility or volume as a principal element to address the Site. The Army and EPA have concluded that further efforts to satisfy this preference are not warranted.

Five Year Review Requirements

Because the remedy results in hazardous substances, pollutants, or contaminants remaining above levels that allow for unlimited use and unrestricted exposure, the Army and EPA agree that a five-year review will be required for the selected remedy.

12.0 DOCUMENTATION OF SIGNIFICANT CHANGES

No comments submitted during the public comment period. The Army and EPA have determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, are necessary.

13.0 STATE ROLE

(Reserved)

TABLES

TABLES

Table 6-1
SEAD-12 Soil Sample Results - ESI and RI Data Only - Total Soil
Record of Decision for SEAD-12 and 72
Seneca Army Depot Activity

Parameter	Units	Number of Analyses [1]	Number of Detections [1]	Frequency of Detection [1]	Maximum Detected Concentration [1]	ProUCL Recommended 95th UCL Concentration [2]	Unrestricted Use SCO [3]	Number of Exceedances	95th UCL Exceeds Action Level	Adjusted RSL for Residential Soil [4]	Number of Exceedances	95th UCL Exceeds Action Level
Acetone	UG/KG	295	87	29 5%	160	12	50	9	--	6,100,000	0	--
Methylene chloride	UG/KG	295	15	5 1%	180	7	50	4	--	11,000	0	--
Total Xylenes	UG/KG	293	5	1 7%	520	15	260	1	--	63,000	0	--
4-Methylphenol	UG/KG	290	8	2 8%	930	29	330	1	--	31,000	0	--
Benzo(a)anthracene	UG/KG	290	124	42 8%	6,200	218	1,000	4	--	150	12	YES
Benzo(a)pyrene	UG/KG	291	131	45 0%	5,400	132	1,000	4	--	15	49	YES
Benzo(b)fluoranthene	UG/KG	290	143	49 3%	4,800	124	1,000	5	--	150	14	--
Benzo(k)fluoranthene	UG/KG	288	122	42 4%	6,100	138	800	7	--	1,500	4	--
Chrysene	UG/KG	290	161	55 5%	6,800	229	1,000	4	--	15,000	0	--
Dibenz(a,h)anthracene	UG/KG	288	43	14 9%	1,500	65	330	4	--	15	21	YES
Indeno(1,2,3-cd)pyrene	UG/KG	288	95	33 0%	3,000	82	500	6	--	150	10	--
4,4'-DDD	UG/KG	294	16	5 4%	51	2	3	11	--	2,000	0	--
4,4'-DDE	UG/KG	294	24	8 2%	490	2	3	10	--	1,400	0	--
4,4'-DDT	UG/KG	294	26	8 8%	110	2	3	16	--	1,700	0	--
Alpha-BHC	UG/KG	291	6	2 1%	51	3	20	3	--	77	0	--
Aroclor-1254	UG/KG	294	12	4 1%	3,000	80	100	6	--	220	6	--
Aroclor-1260	UG/KG	294	6	2 0%	440	33	100	2	--	220	1	--
Dieldrin	UG/KG	294	6	2 0%	40	4	5	5	--	30	1	--
Endrin	UG/KG	294	14	4 8%	20	3	14	3	--	1,800	0	--
Aluminum	MG/KG	294	294	100 0%	21,200	11,416		0	--	7,700	238	YES
Antimony	MG/KG	87	18	20 7%	7	0 69		0	--	3	1	--
Arsenic	MG/KG	294	294	100 0%	11	4	13	0	--	0	294	YES
Cadmium	MG/KG	294	39	13 3%	94	3	2 5	12	YES	7	6	--
Chromium	MG/KG	294	294	100 0%	83	18	30	4	--	12,000	0	--
Cobalt	MG/KG	294	294	100 0%	36	10 58		0	--	2	294	YES
Copper	MG/KG	294	294	100 0%	215	26	50	8	--	310	0	--
Iron	MG/KG	294	294	100 0%	53,400	23,019		0	--	5,500	294	YES
Lead	MG/KG	294	294	100 0%	431	33	63	16	--	40	21	--
Manganese	MG/KG	294	294	100 0%	4,110	579	1,600	7	--	180	288	YES
Mercury	MG/KG	294	109	37 1%	1	0 07	0 18	8	--	2	0	--
Nickel	MG/KG	294	274	93 2%	201	30 0	30	93	--	150	1	--
Silver	MG/KG	294	25	8 5%	12	0 30	2	1	--	39	0	--
Vanadium	MG/KG	294	294	100 0%	36	18 89		0	--	1	294	YES
Zinc	MG/KG	294	294	100 0%	6,080	217	109	42	YES	2,300	2	--

Notes
(1) Total soil dataset from SEAD-12 ESI and RI investigations (not including SRI or removal action results)
(2) EPA ProUCL V 4 00 02 was used to generate recommended upper confidence limit value
(3) New York State Unrestricted Use Soil Cleanup Objectives (SCOs) 6 NYCRR Part 375-6 8(a) Online resource availabe at http //www dec ny gov/regs/15507 html
(4) Adjusted EPA Regional Screening Levels for Residential Soil Non-carcinogenic values are reduced by a factor of 10 (value / 10 or 0 1 x value = adjusted value) to simulate risk assessment pre-screening Online resource availabe at http //www epa gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/

Table 6-2
Post Removal Action Confirmatory Soil Sample Results - Total Soil
Record of Decision for SEAD-12 and 72
Seneca Army Depot Activity

Parameter	Units	Number of Analyses [1]	Number of Detections [1]	Frequency of Detection [1]	Maximum Detected Concentration [1]	ProUCl Recommended 95th UCL Concentration [2]	Unrestricted Use SCO [3]	Number of Exceedances	95th UCL Exceeds Action Level	Adjusted RSL for Residential Soil [4]	Number of Exceedances	95th UCL Exceeds Action Level
Benzo(a)anthracene	UG/KG	97	11		190	63 7	1,000	0	--	150	3	--
Benzo(a)pyrene	UG/KG	97	11		140	55 4	1,000	0	--	15	11	YES
Benzo(b)fluoranthene	UG/KG	97	10		170	71 2	1,000	0	--	150	2	--
4,4'-DDD	UG/KG	97	1		6 9	CC	3 3	1	--	2,000	0	--
4,4'-DDE	UG/KG	97	3		5 9	1 2	3 3	2	--	1,400	0	--
4,4'-DDT	UG/KG	97	3		9 8	2 0	3 3	2	--	1,700	0	--
Alpha-BHC	UG/KG	97	5		210	10 9	20	2	--	77	2	--
Beta-BHC	UG/KG	97	1		63	CC	36	1	--	270	0	--
Delta-BHC	UG/KG	97	3		61	5 7	40	1	--	NA	--	--
Aluminum	MG/KG	97	97		35,100	12,195	NA	0	--	7,700	92	YES
Arsenic	MG/KG	97	97		12 2	4 56	13	0	--	0 39	97	YES
Chromium	MG/KG	97	97		51 2	19 4	30	2	--	12,000	0	--
Cobalt	MG/KG	97	97		29	10	NA	0	--	2 3	97	YES
Copper	MG/KG	97	97		61 4	25 0	50	1	--	310	0	--
Iron	MG/KG	97	97		56,400	22,423	NA	0	--	5,500	97	YES
Manganese	MG/KG	97	97		1,650	556	1,600	2	--	180	97	YES
Nickel	MG/KG	97	97		75	31	30	37	YES	150	0	--
Vanadium	MG/KG	97	97		68	22	NA	0	--	0 55	97	YES
Zinc	MG/KG	97	97		154	65 6	109	2	--	2,300	0	--

Notes
(1) Post removal action confirmatory soil data only
(2) EPA ProUCL V 4 00 02 was used to generate recommended upper confidence limit value
(3) New York State Unrestricted Use Soil Cleanup Objectives (SCOs) 6 NYCRR Part 375-6 8(a) Online resource availabe at http //www dec ny gov/regs/15507 html
(4) Adjusted EPA Regional Screening Levels for Residential Soil Non-carcinogenic values are reduced by a factor of 10 (value / 10 or 0 1 x value = adjusted value) to simulate risk assessment pre-screening Online resource availabe at http //www epa gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/

NA = Not Available or Not Applicable
CC = Cannot calculate 95th UCL value due to limited detected data set

Table 6-3
Summary of SEAD-12 Groundwater Compared to Regulatory Guidance Values
Record of Decision for SEAD-12 and 72
Seneca Army Depot Activity

Parameter	Unit	Maximum Level Detected [1]	Frequency of Detection [1]	Number of Times Detected [1]	Number of Analyses [1]	NYSDEC GA Groundwater Standard [2]	Number of Times Exceeded [3]	Primary Drinking Water Standard [4]	Number of Times Exceeded [3]	Maximum Level in Upgradient/Side-gradient Wells
Volatile Organic Compounds										
Trichloroethene	UG/L	4.2	4%	4	103	5	0	5	0	NA
Semivolatile Organic Compounds										
Bis(2-ethylhexyl)phthalate	UG/L	230	3%	3	87	5	2	NA		NA
Benzo(a)pyrene	UG/L	0.097	2%	2	87	ND	2	0.2	0	NA
Indeno(1,2,3-cd)pyrene	UG/L	0.1	1%	1	87	NA		NA		NA
Metals										
Antimony	UG/L	43.2	8%	7	89	3	3	6	1	2.7
Iron	UG/L	20700	93%	83	89	300	43	NA		1,320
Iron+Manganese [5]	UG/L	21500	100%	89	89	500	40	NA		1,406
Lead	UG/L	18.8	13%	12	89	25	0	15	3	ND
Manganese	UG/L	3280	99%	88	89	300	12	NA		86.6
Sodium	UG/L	408000	100%	89	89	20000	22	NA		26,400
Thallium	UG/L	7	43%	38	89	NA		2	38	4.5

Notes:

1. Groundwater data from Remedial Investigation Report (Parsons, 2002) Table 4-X and the Supplemental Remedial Investigation Report (Parsons, 2006) Table 3-1. It should be noted that MW12-37 and the surrounding impacted soil were removed during the SRI; therefore, groundwater results for MW12-37 were not included in the evaluation.
2. NYSDEC Class GA Groundwater Standard (TOGS 1.1.1, June 1998, 1999, 2000, 2004)
3. Only detects were evaluated for standard/criteria exceedances
4. Federal Drinking Water Regulations Maximum Contaminant Level (MCL).
   On-line resources available at http://www.epa.gov/safewater/contaminants/index.html#listmcl.
5. Iron+Manganese is a combined parameter for NYS GA groundwater guidance value. If either iron or manganese was detected, the sample was counted as detected for Iron+Manganese.

ND = Not Detected NA = Not Available

Table 6-4
Exceedance Summary - Surface Water and Sediment
Record of Decision for SEAD-12 and 72
Seneca Army Depot Activity

Compound	Surface Water					Sediment					
		Downgradient		SEAD-12				Downgradient		SEAD-12	
	Criteria [1] (ug/L)	No. of Criteria Exceedances	Max value (ug/L)	No. of Criteria Exceedances	Max value (ug/L)	Criteria [2]	Units	No. of Criteria Exceedances	Max value	No. of Criteria Exceedances	Max value
VOCs											
1,2-Dichloroethene (total)											
Cis-1,2-Dichloroethene											
Toluene						2 7 [a]	ug/Kg			8	20
Trichloroethene											
SVOCs											
Anthracene						5 8 [a]	ug/Kg	5	160	26	830
Bis(2-Ethylhexyl)phthalate	0.6			2	12						
Benzo(a)anthracene						0 648 [a]	ug/Kg	8	1500	39	3100
Benzo(a)pyrene						70 2 [b]	ug/Kg	3	1300	21	3300
Benzo(b)fluoranthene						70 2 [b]	ug/Kg	4	1200	24	3200
Benzo(k)fluoranthene						70 2 [b]	ug/Kg		-	15	2700
Chrysene						70.2 [b]	ug/Kg	4	1400	23	3200
Fluorene						0 432 [a]	ug/Kg	4	59	20	340
Ideno(1,2,3-cd)pyrene						70 2 [b]	ug/Kg	2	670	18	2000
Naphthalene						1 6 [a]	ug/Kg	4	16	7	49
Pyrene						51 9 [a]	ug/Kg	5	2000	30	5400
PESTICIDES/PCBs											
4,4'-DDD						0 54 [b]	ug/Kg	2	3 7	6	110
4,4'-DDE	0 000007			1	0.0056	0 54 [b]	ug/Kg	2	4	10	76
4,4'-DDT	0.00001			1	0.062	0 54 [b]	ug/Kg			7	200
Aldrin	0 001			1	0 0041						
Arochlor-1242					0 44						
Arochlor-1254						0 0432 [b]	ug/Kg			4	1200
Arochlor-1260						0 0432 [b]	ug/Kg			2	37
Endosulfan I						1 62 [b]	ug/Kg			2	3.6
Heptachlor	0 0002			3	0 0063						
Heptachlor epoxide	0 0003			2	0.0033	0 0432 [b]	ug/Kg			3	11
Hexachlorobenzene	0 00003	1	0 013	3	0 02						

Table 6-4
Exceedance Summary - Surface Water and Sediment
Record of Decision for SEAD-12 and 72
Seneca Army Depot Activity

Compound	Surface Water					Sediment					
		Downgradient		SEAD-12				Downgradient		SEAD-12	
	Criteria [1] (ug/L)	No. of Criteria Exceedances	Max value (ug/L)	No. of Criteria Exceedances	Max value (ug/L)	Criteria [2]	Units	No. of Criteria Exceedances	Max value	No. of Criteria Exceedances	Max value
METALS											
Aluminum	100			19	3430						
Antimony						2 [c]	mg/Kg			1	2 8
Arsenic						6 [c]	mg/Kg	3	7 6	10	19 1
Cadmium						0 6 [c]	mg/Kg			8	9
Chromium						26 [c]	mg/Kg	2	37 1	9	130
Cobalt	5			1	6						
Copper	17 36			2	27.6	16 [c]	mg/Kg	9	36 8	49	1160
Iron	300			12	6830	20000 [c]	mg/Kg	8	43000	38	85900
Lead	8 7			4	35 4	31 [c]	mg/Kg			8	215
Manganese						460 [c]	mg/Kg	4	947	25	14000
Mercury	0 0007			5	0 11	0 15 [c]	mg/Kg	1	0 27	7	1 7
Nickel						16 [c]	mg/Kg	9	58 9	51	126
Silver	0.1			6	1 6	1 [c]	mg/Kg			1	1.5
Sodium											
Zinc						120 [c]	mg/Kg	3	196	35	2650

Notes

1 New York State Ambient Water Quality Standards, Class C for Surface Water For copper and lead, the standards were calculated assuming a hardness of 217 mg/L, which was the average hardness detected in SEAD-12 surface water

2 Criteria values for sediment were the lowest of

a NYS Benthic Aquatic Life Chronic Toxicity Criteria

b NYS Human Health Bioaccumulation Criteria

c NYS Lowest Effect Level

3 Groundwater criteria was GA = NYSDEC Class GA Groundwater Standard (TOGS 1 1 1, June 1998, 1999, 2000, 2004)

4 Surface water data from Remedial Investigation Report (Parsons, 2002) Table 4-S and Table 4-T No VOCs were detected in any surface water samples collected during the SRI

5 Sediment data from Remedial Investigation Report (Parsons, 2002) Table 4-V and Table 4-W

6 Groundwater data from Remedial Investigation Report (Parsons, 2002) Table 4-X and the Supplemental Remedial Investigation Report (Parsons, 2006) It should be noted that MW12-37 and the surrounding impacted soil were removed during the SRI, therefore, groundwater results for MW12-37 were not included in the evaluation

Table 7-1
Total Cancer Risk and Non-carcinogenic Hazard for Chemical and Radiological Pathways
Record of Decision for SEAD-12 and SEAD-72
Seneca Army Depot Activity

Potential Area of Concern	Risk Scenerio	Chemical Total Cancer Risk (1)	Radiological Total Cancer Risk	Chemical and Radiological Total Cancer Risk	Total Non-Cancer Hazard Index
Disposal Pits A/B	Future Resident	7 0E-04	1 1E-05	7 1E-04	2 8E0 [4]
	Future Resident (recal)	1 5E-6 [2]	1 1E-5 [3]	1 3E-5 [2,3]	3 0E-2 [2,4]
	Current Worker	3 6E-08	4E-7 [3]	4 4E-7 [3]	2 1E-04
	Future Park Worker	2 0E-05	3E-6 [3]	2 3E-5 [3]	1 2E-01
	Future Recreational Child	2 0E-05	2E-7 [3]	2 0E-5 [3]	3 1E-01
	Current/Future Construction Worker	4 7E-08	2E-7 [3]	2 5E-7 [3]	1 1E-02
Disposal Pits C	Future Resident	7 0E-04	4 1E-5 [3]	7 4E-04	3E0 [4]
	Future Resident (recal)	6 3E-6 [2]	4 1E-5 [3]	4 7E-5 [2,3]	2 8E-2 [2,4]
	Current Worker	2 2E-07	9E-7 [3]	1 1E-6 [3]	2 6E-04
	Future Park Worker	2 2E-05	1E-5 [3]	3 2E-5 [3]	1 2E-01
	Future Recreational Child	2 0E-05	2E-6 [3]	2 2E-5 [3]	3 1E-01
	Current/Future Construction Worker	1 7E-07	5E-7 [3]	6 7E-7 [3]	1 0E-02
Former Dry Waste Disposal Pit	Future Resident	7 0E-04	3 0E-05	7 3E-04	2E0 [4]
	Future Resident (recal)	4 3E-05	3 0E-05	7 3E-05	6 1E-1 [4]
	Current Worker	2 0E-08	<1E-15	2 0E-08	2E-03
	Future Park Worker	2 0E-05	1 6E-05	3 6E-05	8E-02
	Future Recreational Child	2 0E-05	1 2E-06	2 1E-05	2E-01
	Current/Future Construction Worker	4 0E-08	3 3E-06	3 3E-06	7E-02
Downgradient	Off-Site Wader (Child)	1 0E-06	5 7E-09	1 0E-06	8E-04

Notes

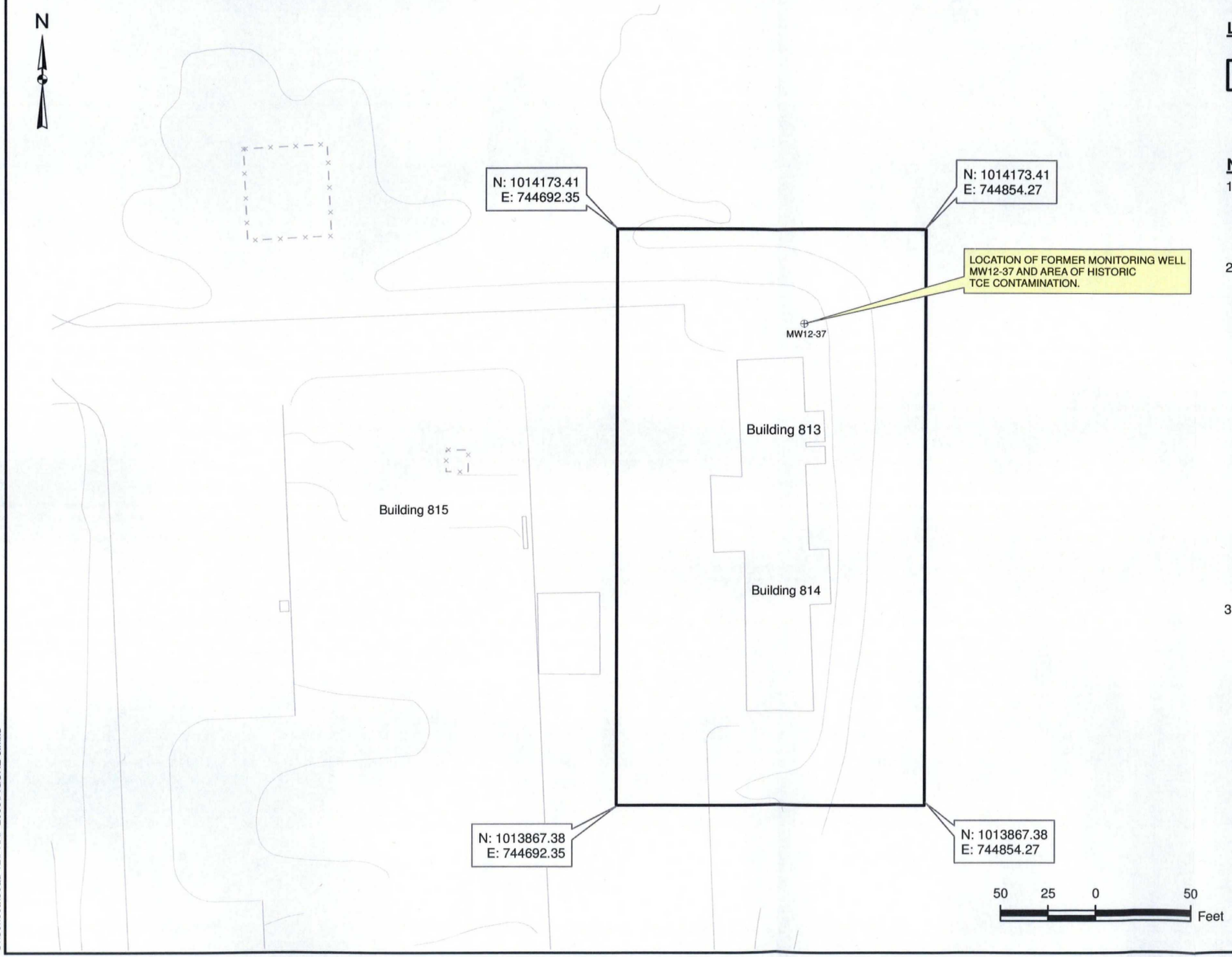
(1) Chemical Reasonable Maximum Exposure risk values are presented

(2) The non-cancer hazard indices and excess cancer risks initially calculated for future resident were above the EPA target risk range, however, the risks for future residents are considered highly uncertain and probably overestimated as is discussed The risks were recalculated not including benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, and di-n-octylphthalate as groundwater COPCs and benzo(a)pyrene, Aroclor-1242, and chrysene as surface water COPCs, and the risks were recalculated and the post COPC elimination results are presented The non-cancer hazard indices and excess cancer risks were recalculated based on Risk Management and Uncertainty discussions referenced in the text

(3) Excludes radiological component or cancer risk attributable to soils at Disposal Pit

(4) Hazard index for residential child is presented

FIGURES



LEGEND:

PROPOSED LIMITS OF LAND USE CONTROL (LUC)

NOTES:

1. THE PROPOSED LIMITS OF THE LAND USE CONTROL (LUC) WERE DELINEATED BASED ON GROUNDWATER DATA COLLECTED DURING THE RI AND SRI.

2. THE PROPOSED LUC WOULD LIMIT USE AND ACCESS TO BUILDINGS 813/814 OR THE CONTRUCTION OF INHABITABLE STRUCTURES (TEMPORARY OR PERMANENT) ABOVE THE AREA WHERE TRICHLOROETHENE CONTAMINATED GROUNDWATER AND SOIL WERE IDENTIFIED UNTIL A VAPOR INTRUSION STUDY IS CONDUCTED IN THE BUILDING(S) OR IN THE RESTRICTED AREA AND SHOWS THAT RESIDUAL CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS, IF PRESENT, DO NOT POSE RISK TO FUTURE OCCUPANTS OF THE STRUCTURES; AND THE IMPLEMENTATION, MONITORING, AND MAINTENANCE OF A LUC TO PROHIBIT ACCESS TO AND USE OF GROUNDWATER IN THE VICINITY OF BUILDINGS 813/814 AND FORMER MONITORING WELL MW12-37 UNTIL GROUNDWATER STANDARDS ARE ACHIEVED.

3. HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) NEW YORK STATE PLANE CENTRAL ZONE (FT.)

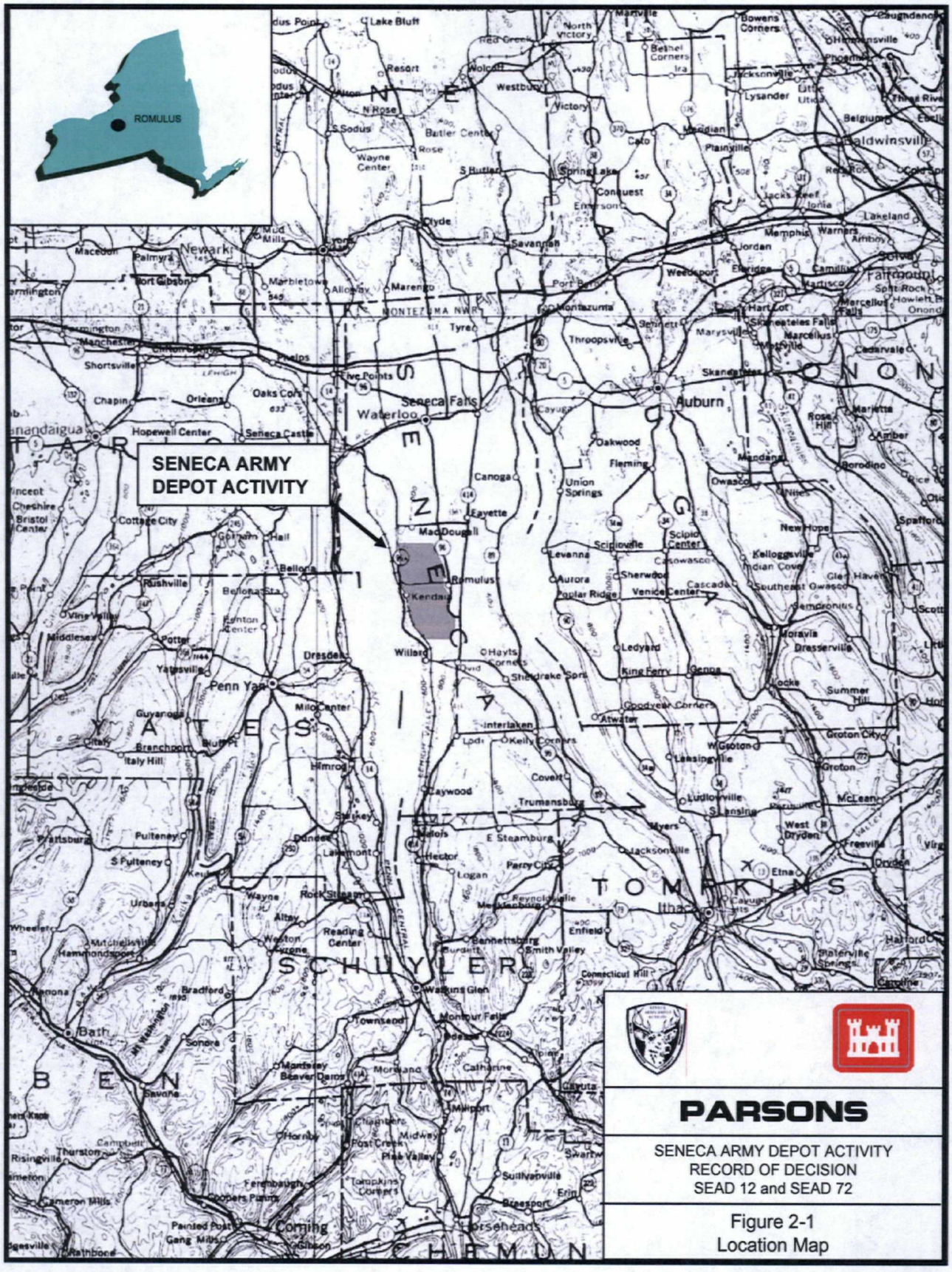
PARSONS

SENECA ARMY DEPOT ACTIVITY
RECORD OF DECISION FOR
SEAD-12 AND SEAD-72

FIGURE 1-1
EXTENT OF
LAND USE CONTROL

SCALE: 1" = 50' | DATE MAR. 2015

O:\Seneca\Sead-12\PRAP 2008\FIGURE 6.mxd



PARSONS

SENECA ARMY DEPOT ACTIVITY
RECORD OF DECISION
SEAD 12 and SEAD 72

Figure 2-1
Location Map

739000 739500 740000 740500 741000 741500 742000 742500 743000 743500 744000 744500 745000 745500 746000

1016500 1016000 1015500 1015000 1014500 1014000 1013500 1013000 1012500 1012000 1011500 1011000

FORMER WASTEWATER TREATMENT PLANT

APPROXIMATE LOCATION OF SEAD-12B

DRY WASTE DISPOSAL PIT

DISPOSAL PIT C

APPROXIMATE LOCATION OF SEAD-72, BLDG. 803 MIXED WASTE STORAGE FACILITY

DISPOSAL PIT A/B

APPROXIMATE LOCATION OF SEAD-12A

BLDG. 815

BLDG. 813

EM-27

BLDG. 814

EM-5

EM-27

BLDG. 816

BLDG. 819

EM-6

N

LEGEND

- ROADS
- DRAINAGE
- WATER
- FENCE
- ELEV. CONTOUR (5 FT. INTERVALS)
- POTENTIAL RELEASE AREA

600 300 0 600 Feet

PARSONS

SENECA ARMY DEPOT ACTIVITY
RECORD OF DECISION
SEAD-12 AND SEAD-72

FIGURE 2-2
SEAD-12 AND SEAD-72
SITE PLAN

SCALE: 1" = 600'	DATE: OCTOBER 2008	REV: .

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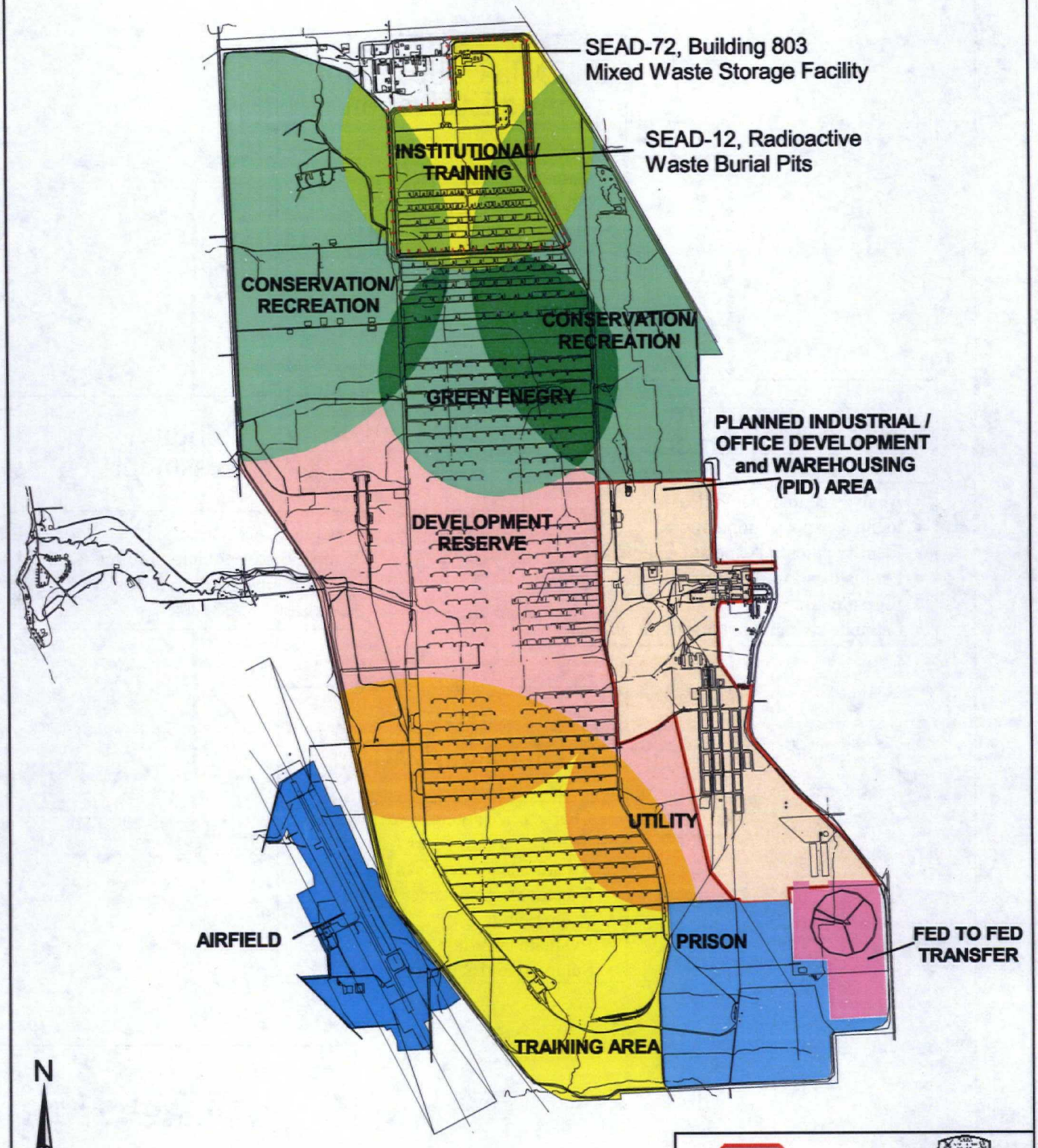

PARSONS

SENECA ARMY DEPOT ACTIVITY
Record of Decision for SEADs 12 and 72

Figure 3-1
SEDA Future Land Use and
Locations of SEADs 12 and 72

September 2008

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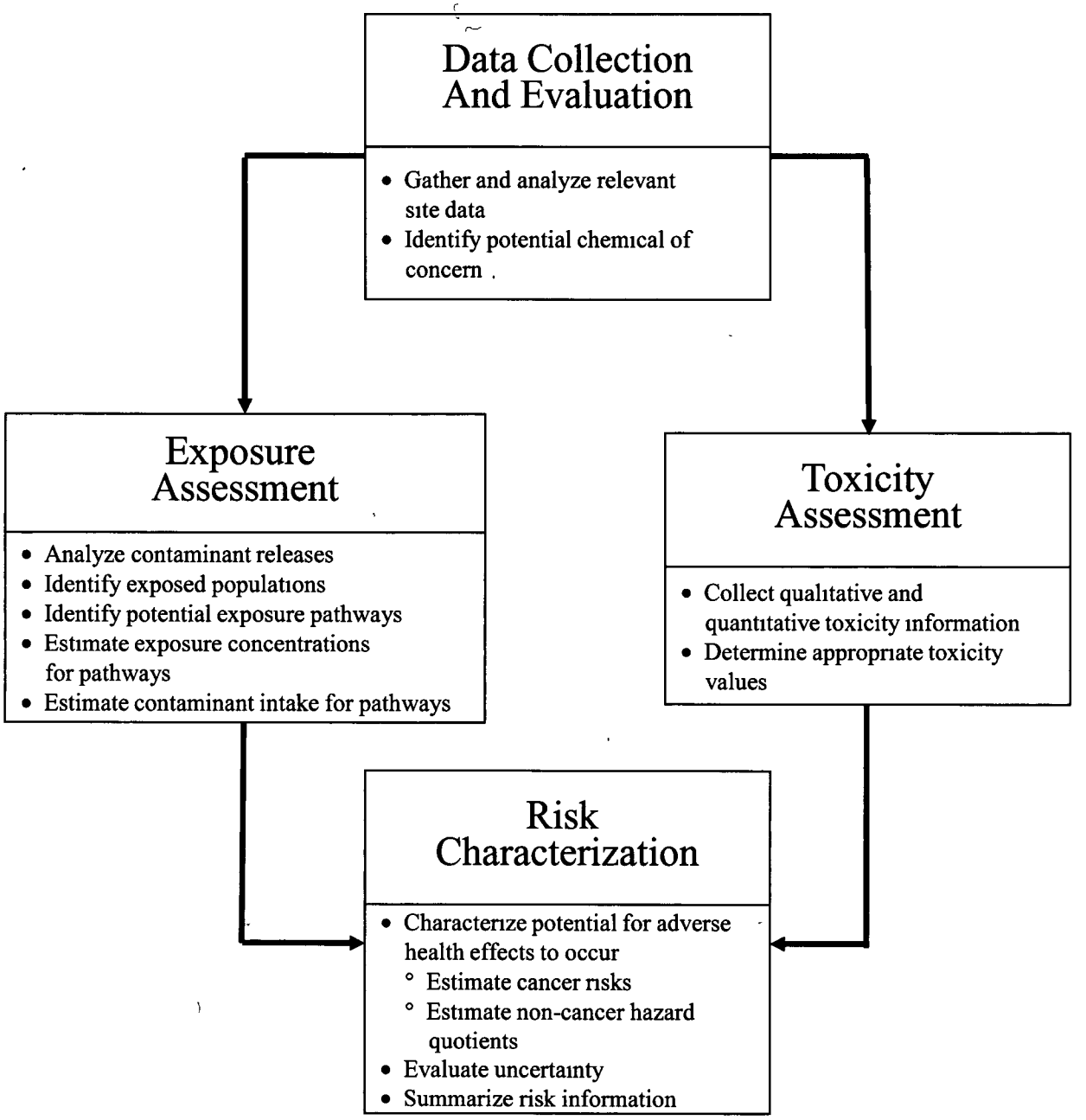


Source: US EPA 1989

PARSONS

Seneca Army Depot Activity

Record of Decision
SEAD-12

Figure 7-1
HUMAN HEALTH RISK ASSESSMENT METHODOLOGY

Figure 7-3 Screening Level Ecological Risk Assessment Process

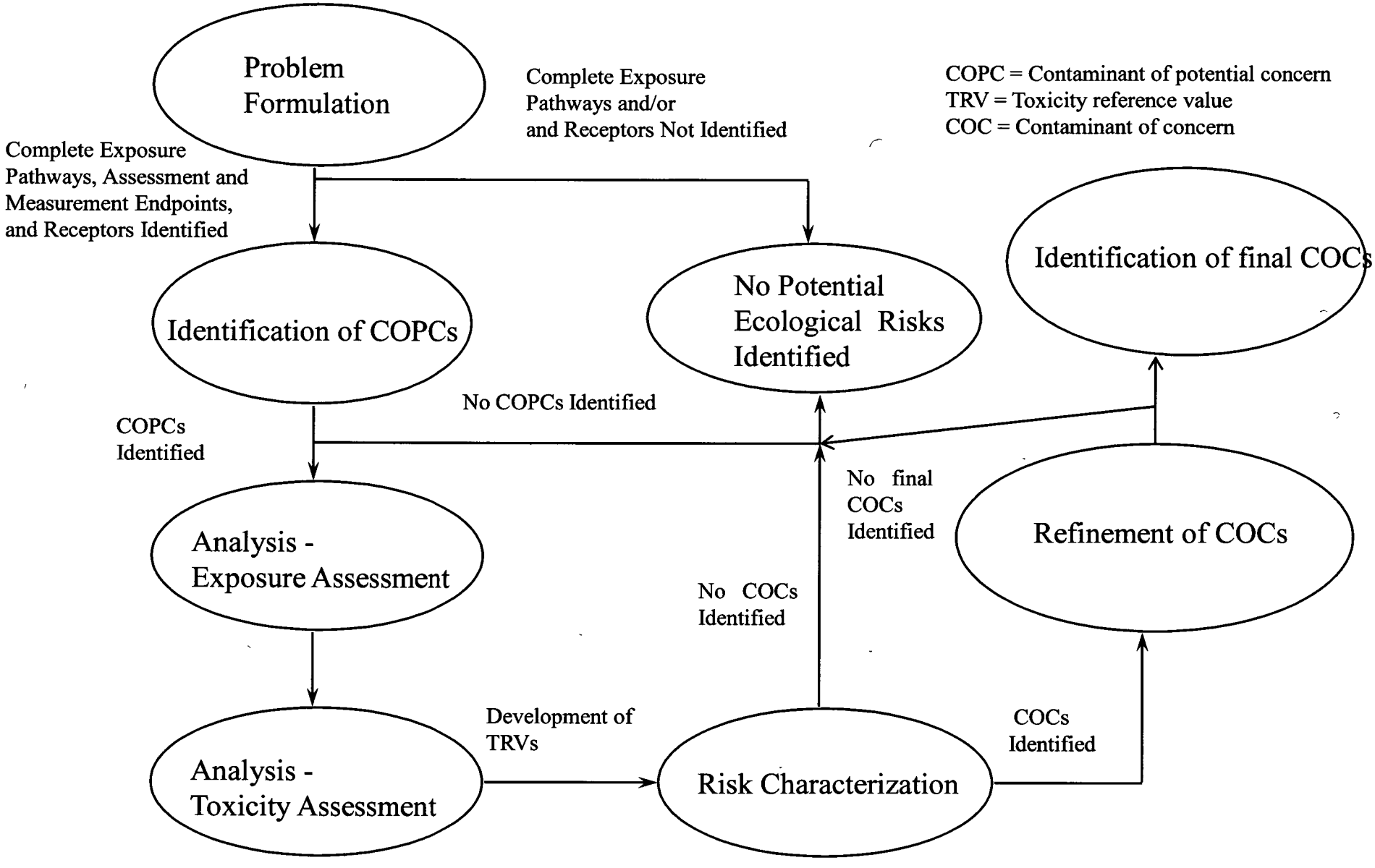
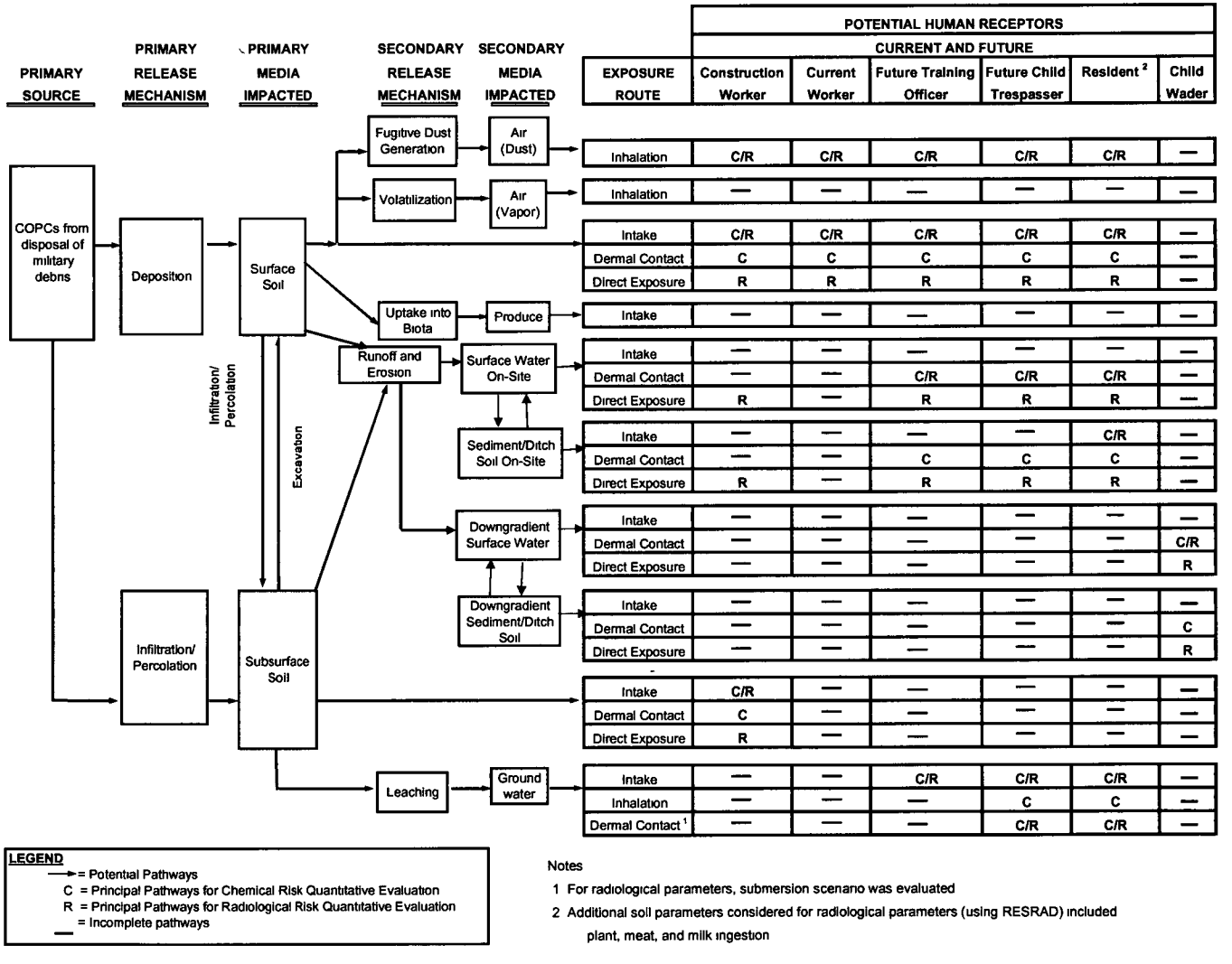


Figure 7-2
Conceptual Site Model
SEAD-12
Seneca Army Depot Activity



Notes

1 For radiological parameters, submersion scenario was evaluated

2 Additional soil parameters considered for radiological parameters (using RESRAD) included plant, meat, and milk ingestion

APPENDICES

APPENDICES

Appendix	Title
A	Administrative Record
B	Letter of Concurrence
C	Public Comments and Responsiveness Summary
D	List of ARARs

A

APPENDIX A

ADMINISTRATIVE RECORD

ADMINISTRATIVE RECORD

RADS 01 001 SEAD 12 SEAD 63 Project Scoping Plan for Performing a CERCLA RI/FS at Building 804 and the Associated Radioactive Waste Burial Sites Seneca Army Depot Activity (Pre Draft) August 1995

RADS-01 001 SEAD 12 SEAD-48 SEAD 63 Project Scoping Plan for Performing a CERCLA RI/FS at Building 804 and the Associated Radioactive Waste Burial Sites (SEAD 12) Pitchblende Storage Igloos (SEAD 48) and the Miscellaneous Components Burial Site (SEAD 63) (Draft) December 1995

RADS 01-001 SEAD 12 and SEAD 63 Project Scoping Plan for Performing a CERCLA RI/FS at Building 804 and the Associated Radioactive Waste Burial Sites (SEAD 12) and the Miscellaneous Components Burial Site (SEAD 63) (Draft Final) November 1996

RADS 01-001 SEAD 12 and SEAD 63 Project Scoping Plan for Performing a CERCLA RI/FS at Building 804 and the Associated Radioactive Waste Burial Sites (SEAD 12) and the Miscellaneous Components Burial Site (SEAD 63) (Final) June 1998

RADS 01 001 Supplement to Appendix F of the Project Scoping Plan for Performing a CERCLA RI/FS at Building 804 and Associated Radioactive Waste Burial Sites (SEAD 12) June 1999

RADS 01 004 Remedial Investigation Report at the Radiological Waste Burial Sites (SEAD 12) Volumes I II (Appendices A G) and 3 (Appendices H M (Draft) May 2000

RADS 01 004 Remedial Investigation Report at the Radiological Waste Burial Sites (SEAD 12) Volumes I II (Appendices A G) and III (Appendices H N (Draft Final) January 2001 Volumes I and III corrected February 2001

RADS 01 004 Remedial Investigation Report at the Radiological Waste Burial Sites (SEAD 12) Volumes I II (Appendices A G) and III (Appendices H – N) (Final Revised) February 2002

RADS 01 004 Work Plan for Supplemental Remedial Investigations at the Radioactive Waste Burial Sites (SEAD 12) [CD] (Final) March 2004

RADS 01 004 Supplemental Remedial Investigation at the Radioactive Waste Burial Sites (SEAD 12) (Pre draft) March 2005

RADS 01 004 Supplemental Remedial Investigation at the Radioactive Waste Burial Sites (SEAD 12) (Draft) May 2005

RADS 01 004 Supplemental Remedial Investigation at the Radioactive Waste Burial Sites (SEAD 12) (Draft Final) February 2006

RADS 01 004 Supplemental Remedial Investigation at the Radioactive Waste Burial Sites (SEAD 12) (Final) October 2006

RADS 01 005 Radiological Survey Report – SEAD 12 Class 1 and Class 2 Buildings Volume 1 Report and Volume 2 Appendices (Draft) July 2000

RADS 01 005 Radiological Survey Report – SEAD 12 Phase I and II Surveys Volumes I Report II (Appendices A I) III (Appendices J and K) IV (Appendices L P) (Draft) August 2002

RADS 01 005 Radiological Survey Report – SEAD 12 Phase I and II Surveys Volumes I Report II (Appendices A I) III (Appendices J and K) IV (Appendices L Q) [CD Appendix O] (Final) March 2003

RADS 01 006 Derived Concentration Guideline Level (DCGL) Development for Radiological Surveys in Class 1 Buildings at SEAD 12 January 2000

RADS 01 007 Feasibility Study Report at the Radiological Waste Burial Sites (SEAD 12) (Draft) May 2002

RADS 01 007 Feasibility Study Report at the Radiological Waste Burial Sites (SEAD 12) [CD] (Draft Final) March 2007

RADS 01 007 Feasibility Study Report at the Radiological Waste Burial Sites (SEAD 12) [CD] (Final) January 2008

RADS 01 012 RCRA Closure Plan Building 803 Mixed Waste Storage Facility Solid Waste Management Unit (SEAD 72) (Draft) December 2004

RADS 01 012 RCRA Closure Plan Building 803 Mixed Waste Storage Facility Solid Waste Management Unit (SEAD 72) [CD] (Final) October 2005

RADS 01 014 Monitoring Well Abandonment Work Plan (SEAD 12) (Draft) March 2005

RADS 01 016 Draft Work Plan for Removal Action at the Radiological Waste Burial Sites (SEAD 12) [CD] Seneca Army Depot Activity May 2009

RADS 01 017 Draft Completion Report Removal Action at the Radiological Waste Burial Sites (SEAD 12) [CD] Seneca Army Depot Activity April 2010

RADS 01 017 Draft Completion Report Former Mixed Waste Storage Facility Bldg 803 (SEAD 72) [CD] Seneca Army Depot Activity November 2009

RADS 01 017 Draft Final Completion Report Former Mixed Waste Storage Facility Bldg 803 (SEAD 72) [CD] Seneca Army Depot Activity March 2010 [CD]

RADS 01 018 Final Closure Report The Former Mixed Waste Storage Facility Building 803 (SEAD 72) [CD] Seneca Army Depot Activity July 2010

RADS 01 019 Draft Final Construction Completion Report Removal Action at the Radiological Waste Burial Sites (SEAD 12) [CD] Seneca Army Depot Activity July 2010

SEAD 01 009 Expanded Site Inspection Eight Moderately Low Priority Areas of Concern SEADs 5 9 12 (A and B) 43 56 69 44 (A and B) 50 58 and 59 (Draft Final 2 Vols) December 1995

SEAD 03 002 Proposed Plan for the Radiological Waste Burial Sites (SEAD 12) (Draft) June 2008

SEAD 03 002 Draft Final Proposed Plan for the Radiological Waste Burial Sites (SEAD12) and the Mixed Waste Storage Facility (SEAD 72) [CD] Seneca Army Depot Activity November 2008

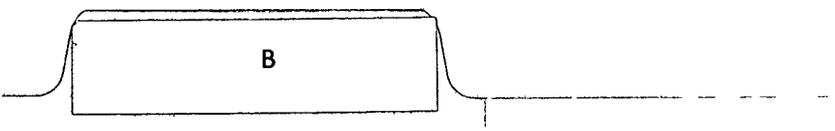
SEAD 03 002 Revised Draft Final Proposed Plan for the Radiological Waste Burial Sites (SEAD 12) and the Mixed Waste Storage Facility (SEAD 72) [CD] Seneca Army Depot Activity March 2009

SEAD 03 002 Revised Draft Final Proposed Plan for the Radiological Waste Burial Sites (SEAD 12) and the Mixed Waste Storage Facility (SEAD 72) [CD] Seneca Army Depot Activity May 2009

SEAD 03 002 Revised Draft Final Proposed Plan for the Radiological Waste Burial Sites (SEAD 12) and the Mixed Waste Storage Facility (SEAD 72) [CD] Seneca Army Depot Activity April 2010

SEAD 03 002 Revised Draft Final Proposed Plan for the Radiological Waste Burial Sites (SEAD 12) and the Mixed Waste Storage Facility (SEAD 72) [CD] Seneca Army Depot Activity July 2010

SEAD 07 001 Federal Facility Agreement under CERCLA Section 120 Feb 1993


B

APPENDIX B

LETTER OF CONCURRENCE

New York State Department of Environmental Conservation
Division of Environmental Remediation
Office of the Director 12th Floor
625 Broadway Albany New York 12233 7011
Phone (518) 402 9706 **Fax** (518) 402 9020
Website www dec ny gov

Joe Martens
Commissioner

SENT VIA EMAIL ONLY

September 26 2014

Mr Walter E Mugdan Director
Emergency & Remedial Response Division
US Environmental Protection Agency
290 Broadway 19th Floor
New York NY 10007 1866

Re Seneca Army Depot Activity Site No 850006
SEAD 12 and 72
Final Record of Decision

Dear Mr Mugdan

The New York State Department of Environmental Conservation (DEC) and the New York State Department of Health (DOH) have reviewed the Final Record of Decision (ROD) for SEAD 12 and SEAD 72 at the Seneca Army Depot Activity Romulus New York The Department concurs with the remedy selection in the September 2014 ROD

The selected remedy for SEAD 12 and 72 includes the following components

- an environmental easement on Buildings 813 and 814 prohibiting their use or any newly constructed permanent or temporary building overlying their footprint until additional data is provided to document potential vapor intrusion in the building the indoor air quality and the potential risk or hazard to future receptors within the building(s)
- an environmental easement for groundwater use that would prohibit the access to and use of groundwater in the vicinity of Buildings 813/814 and former monitoring well MW12 37 The groundwater restriction would remain in effect until data were provided to the Army EPA and NYSDEC that indicated that groundwater quality in the described area met GA standards

The remaining land within SEAD 12 would be released for unrestricted

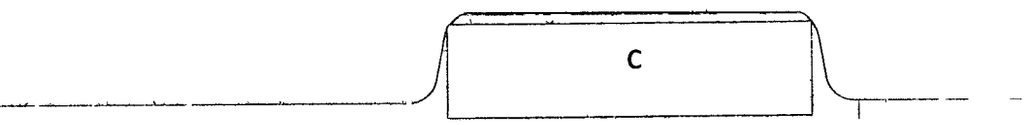
Please feel free to contact Ms Melissa Sweet at 518 402 9614 or by email at melissa sweet@dec ny gov if you have any questions

Sincerely

Robert W Schick P E Director
Division of Environmental Remediation

ec Stephen Absolom CIV (US) (stephen m absolom civ@mail mil)
Douglas Garbarini EPA
John Malleck EPA
Julio Vazquez EPA

Krista Anders DOH
Justin Deming DOH
Mark Sergott DOH
Jim Harrington DOH
John Swartwout DOH
Melissa Sweet DOH
Bart Putzig DEC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APPENDIX C

PUBLIC COMMENTS AND RESPONSIVENESS SUMMARY

PUBLIC COMMENTS AND RESPONSIVENESS SUMMARY

THE RADIOACTIVE WASTE BURIAL SITES (SEAD 12)

SENECA ARMY DEPOT SUPERFUND SITE

INTRODUCTION

A responsiveness summary is required by Superfund policy It provides a summary of citizen s comments and concerns received during the public comment period and the Army s responses to those comments and concerns

OVERVIEW

Since the inception of this project the Army has implemented an active policy of involvement with the local community This involvement has occurred through the public forum provided by regular meetings of the Base Clean up Team (BCT) During these meetings representatives of the community the Army and the regulators are brought together in a forum where ideas and concerns are voiced and addressed The BCT has been routinely briefed by the Army in regards to the progress and the results obtained during both the investigation and remedial alternative selection process In addition to regular project specific briefings the Army has provided experts in various fields related to the CERCLA program that have provided lectures intended to educate the general public in the various technical aspects of the CERCLA program at SEAD Lectures have been conducted on risk assessments both human health and ecological remedial alternatives such as bioventing and natural attenuation institutional controls and the feasibility study process

BACKGROUND ON COMMUNITY INVOLVEMENT

Initially during the years from 1991 through 1995 the Army formed and solicited community involvement through quarterly meetings with the Technical Review Committee (TRC) The TRC was comprised of community leaders with an active interest in the on goings of the CERCLA process at the depot These meetings were open to the public and were announced in the local newspaper and the radio Following inclusion of the depot on the final BRAC closure list in late 1995 the Army transitioned from the TRC and formed the BCT The BCT was comprised of several of the TRC members with the addition of additional Army and regulatory representatives The BCT increased the frequency of the meetings to a monthly basis Since the formation of the TRC and the BCT the Army has met with the local community members on a regular basis and has discussed the finding of both the RI and the FS In addition the proposed plan has been presented to the BCT

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The RI report the SRI report the FS report and the Proposed Plan for SEAD 12 were released to the public for comment These documents were made available to the public in the administrative record file at the information repositories at Building 123 within the Seneca Army Depot Activity 5786 State Route

96 Romulus New York 14541 0009 The public comment period on these documents was held from August 10 2014 to September 9 2014 The notice of availability for the above referenced documents was published in the Finger Lake Times during this time period

On August 28 2014 the Army the EPA and the NYSDEC conducted a public meeting at the Hero s Conference Room located at the Seneca County Office Building in Waterloo NY to inform local officials and interested citizens about the Superfund process to review current and planned remedial activities at the AOC and to respond to any questions from area residents and other attendees The meeting included poster board presentations and provided an opportunity for the public to speak to Army EPA and NYSDEC representatives involved in the process The public was given the opportunity to provide formal comments that would be documented and become part of the official record for the selected remedy

SUMMARY OF COMMENTS AND RESPONSES

No formal comments were received from the community during the public meeting There is no official transcript since no comments were provided

APPENDIX D

LIST OF ARARS

Chemical Specific ARARs and TBCs

New York has published Remedial Program Requirements which include numeric soil cleanup objectives for five categories of future land use (i e Unrestricted Residential Restricted Residential Commercial and Industrial) as well as procedures for proposing alternative cleanup objectives for waste sites located within its bounds As the requirements allow for the selection of varying levels of cleanup for the development of alternative soil cleanup objective values and for the selection of final remedies based on the consideration of alternative protocols or procedures the requirements are designated as ARARs

Groundwater at SEAD and at SEAD 12 is classified by NYSDEC as Class GA As a result the groundwater quality standards for a Class GA groundwater are ARARs for SEAD 12 groundwater Exceedances of the GA standards for some metals were observed in groundwater samples collected from SEAD 12 The noted groundwater exceedances found at SEAD 12 are not associated with the historic activities conducted at the AOC The observed contaminants are associated with the native soils of the depot and the poor regional groundwater quality that exists throughout SEAD The overburden is comprised principally of a clay silt mixture that results in a very low yielding groundwater flow system The groundwater is susceptible to entrainment of soil fines and particles

The intended use of groundwater that is classified as GA in New York is as drinking water As a potential supply of drinking water the maximum contaminant levels (MCLs) established under the Safe Drinking Water Act are ARARs for GA groundwater Exceedances of the MCLs were observed in groundwater samples collected from SEAD 12

There are no mapped or regulated surface water bodies located within SEAD 12 The surface water that does exist is generally intermittent and associated with storm event runoff from the AOC and surrounding areas However because the drainage ditches and creek form a portion of the headwaters for Reeder Creek the lower portion of which is designated as Class C surface water by NYSDEC the Class C standards were used to provide a basis of comparison for the on site chemical data The Class C standards are not strictly applicable to the surface water in the drainage ditches and the unnamed creek and thus are treated as TBCs

The sediment found in the drainage ditches at SEAD is the result of overland flow and the erosion and subsequent accumulation of native soil debris and dead vegetation The man made drainage ditches located throughout the Depot were subject to a periodic inspection and maintenance (i e dredging) program during the active days of the military operation Drainage ditches found around the AOC are generally void of fish and aquatic animal life The sediment screening values presented in the NYSDEC Technical Guidance for Screening Contaminated Sediments are considered as TBCs

Federal Location Specific ARARs

RCRA Location and 100 year Floodplains Requirements (40 CFR 264 18(b))

Clean Water Act section 404 and the associated regulations (i e 40 CFR part 230)

Federal Action Specific ARARs

RCRA Closure and Post Closure Standards (40 CFR 264 subpart G)