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April 27, 2007

Mr. John Hill
U. S. Air Force Center for Environmental Excellence
HQ AFCEE/IWP
3300 Sidney Brooks
Brooks City-Base, TD 78235-5112

SUBJECT: Draft Final Proposed Plan for Two Areas of Concern Requiring Land Use Controls, SWMUs SEAD-121C, the Defense Reutilization and Marketing Office Yard and SEAD-121I, the Rumored Cosmoline Oil Disposal Area at Seneca Army Depot Activity; Contract FA8903-04-D-8675, Delivery Order 0031, CDRL A001D

Dear Mr. Hill:

Parsons is pleased to submit the Draft Final Proposed Plan for Two Areas of Concern Requiring Land Use Controls, SWMUs SEAD-121C, the Defense Reutilization and Marketing Office Yard, and SEAD-121I, the Rumored Cosmoline Oil Disposal Area at the Seneca Army Depot Activity (SEDA) in Romulus, New York.

This work was performed in accordance with the Scope of Work (SOW) for Contract No. FA8903-04-D-8675, Task Order No. 0031.

Parsons appreciates the opportunity to provide you with the Proposed Plan for this work. Should you have any questions, please do not hesitate to call me at (617) 449-1405 to discuss them.

Sincerely,

Todd Heino, P.E.
Project Manager

Enclosures

cc: S. Absolom, SEDA (3 paper copies, 1 electronic copy)
K. Hoddinott, USACHPPM (2 paper copies, 1 electronic copy)
C. Boes, USAEC (1 copy, electronic and paper)
R. Battaglia, USACE, NY District (1copy, electronic and paper)
T. Battaglia, USACE, NY District (1 copy, electronic and paper)
J. Nohrstedt, USACE, Huntsville (2 paper copies, 1 electronic copy)
Air Force email (letter only)

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April 27, 2007

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

Mr. Kuldeep K. Gupta, P.E.
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
Remedial Bureau A, Section C
625 Broadway
Albany, NY 12233-7015

Mr. Mark Sergott
New York State Department of Health
Bureau of Environmental Exposure Investigation, Room 300
547 River Street, Flanigan Square
Troy, New York 12180

SUBJECT: Draft Final Proposed Plan for Two Areas of Concern Requiring Land Use Controls, SWMUs SEAD-121C, the Defense Reutilization and Marketing Office Yard and SEAD-121I, the Rumored Cosmoline Oil Disposal Area at Seneca Army Depot Activity; EPA Site ID# NY0213820830 and NY Site ID# 8-50-006

Dear Mr. Vazquez/Mr. Gupta/Mr. Sergott:

Parsons is pleased to submit the Draft Final Proposed Plan for Two Areas of Concern Requiring Land Use Controls, SWMUs SEAD-121C, the Defense Reutilization and Marketing Office Yard and SEAD-121I, the Rumored Cosmoline Oil Disposal Area located at the Seneca Army Depot Activity (SEDA) in Romulus, New York (EPA Site ID# NY0213820830 and NY Site ID# 8-50-006). This document has been prepared in the new streamlined format as requested by the US Environmental Protection Agency.

An electronic copy of the complete Proposed Plan is enclosed with this submittal.

Should you have any questions, please do not hesitate to call me at (617) 449-1405 to discuss them.

Sincerely,

Todd Heino, P.E.
Program Manager

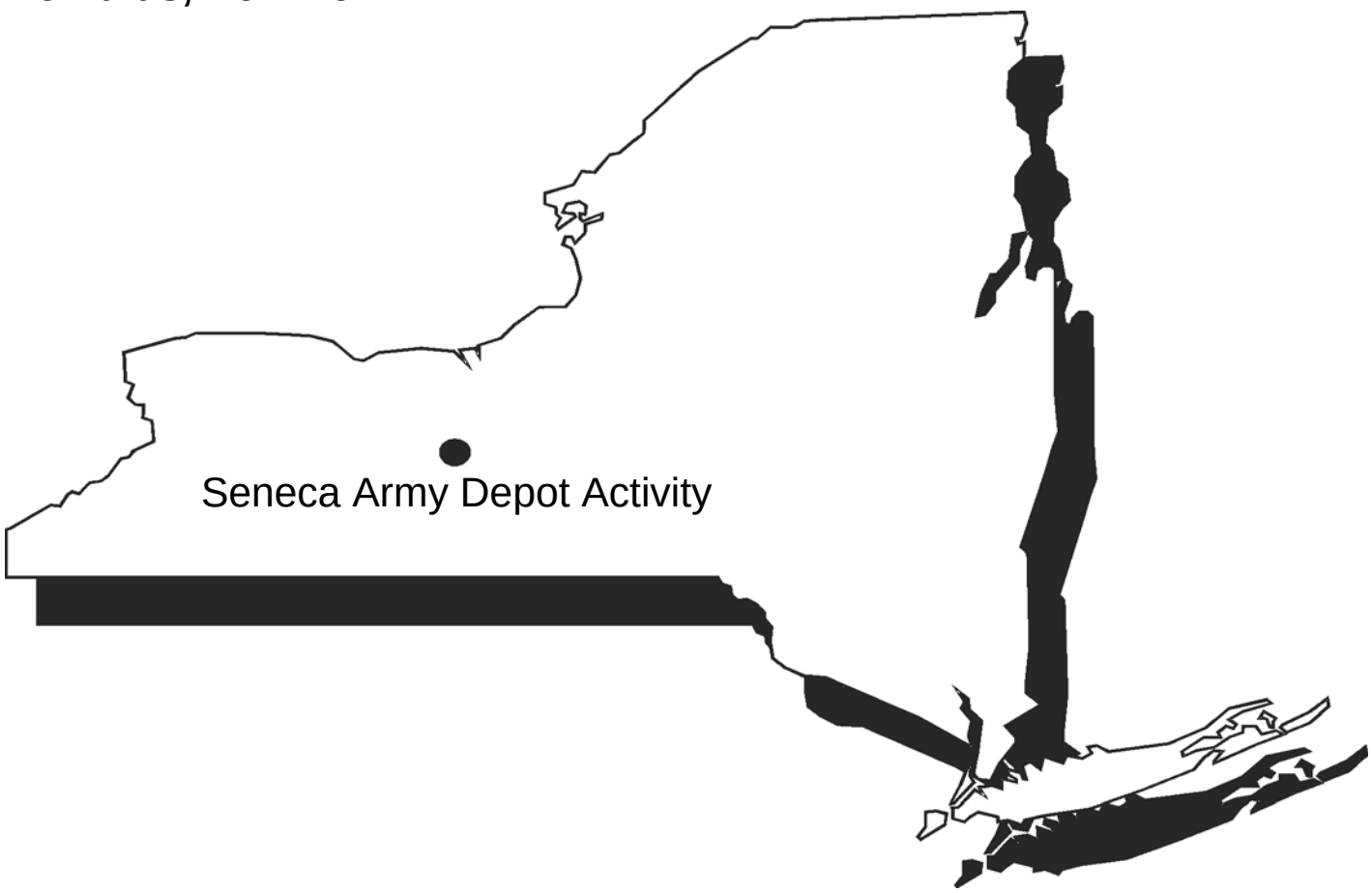
Enclosures

cc: J. Hill AFCEE
S. Absolom, SEDA
C. Boes, USAEC
T. Battaglia, USACE, NY District
Air Force email (letter only)
K. Hoddinott, USACHPPM
R. Battaglia, USACE, NY District
J. Fellinger, TechLaw
J. Nohrstedt, CENHC

US Army Corps of Engineers

Air Force Center for Environmental Excellence

Seneca Army Depot Activity
Romulus, New York



DRAFT FINAL PROPOSED PLAN

TWO AREAS OF CONCERN (AOCs) REQUIRING LAND USE CONTROLS (LUCs) SWMUs SEAD-121C, THE DEFENSE REUTILIZATION AND MARKETING OFFICE YARD, AND SEAD-121I, THE RUMORED COSMOLINE OIL DISPOSAL AREA SENECA ARMY DEPOT ACTIVITY

AFCEE CONTRACT NO. FA8903-04-D-8675
TASK ORDER NO. 0031
CDRL A001D

EPA SITE ID# NY0213820830
NY SITE ID# 8-50-006

PARSONS
APRIL 2007

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Proposed Plan – Draft Final

Two Areas of Concern (AOCs) Requiring Land Use Restrictions (LUCs), SWMUs SEAD-121C, the Defense Reutilization and Marketing Office (DRMO) Yard, and SEAD-121I, the Rumored Cosmoline Oil Disposal Area at the
SENECA ARMY DEPOT ACTIVITY (SEDA)
Romulus, New York

April 2007

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This Proposed Plan describes the remedial alternative selected for two areas of concern (AOCs), SEAD-121C (the former Defense Reutilization and Marketing Office [DRMO] Yard) and SEAD-121I (the Rumored Cosmoline Oil Disposal Area) at the Seneca Army Depot Activity (SEDA or Depot) Superfund Site, located in Seneca County, New York. This Proposed Plan was developed by the U.S. Army (Army) and the U.S. Environmental Protection Agency (EPA) in consultation with the New York State Department of Environmental Conservation (NYSDEC). The Army and the EPA are issuing this Proposed Plan as part of their public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Action (CERCLA) of 1980, as amended, and Sections 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The nature and extent of the contamination at the two AOCs is described in the April 2006 Remedial Investigation (RI) Report. The Army, EPA, and NYSDEC encourage the public to review this document to gain a more comprehensive understanding of the AOCs, the site and the Superfund activities that have been completed.

This Proposed Plan is being provided as a supplement to the RI Report to inform the public of the Army's, EPA's and NYSDEC's preferred remedy for the AOCs and to solicit public comments pertinent to the selected remedies. The preferred remedy for both AOCs is to formally impose and implement Land Use Controls (LUCs) that prohibit the use of the designated land for residential activities, and to prohibit access to and use of groundwater. Additionally, at SEAD-121I, the Army will maintain existing engineering controls (security fences) that surround strategic stockpiles of ore until this mission is terminated. The identified LUCs were previously established for three other AOCs (i.e., SEADs 27, 64A, and 66) that are located in proximity to SEADs 121C and 121I. At the time of the Army's, EPA's and NYSDEC's final determination for the other three SEADs, all parties agreed that the identified LUCs should be imposed on all land within the Planned Industrial / Office Development and Warehousing (PID) Area at the former Depot due to the anticipated future use of the land and the similarity of its known past uses by the Army and predecessors.

The remedy described in this Proposed Plan is the preferred remedy for both of the AOCs. Changes to the preferred remedy, or a change from the preferred remedy to another remedy, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedies will be made after the Army and the EPA have taken all public comments into consideration. The Army and the EPA are soliciting comments because the Army, EPA and NYSDEC may select a remedy other that the preferred remedy for either or both of the AOCs.

MARK YOUR CALENDAR

[Date] – [Date]:
Public comment period related to this Proposed Plan.

[Date] at 7:00 P.M.: Public meeting at the Seneca County Office Building, Village of Waterloo New York

The Army, EPA, and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the RI Report and this proposed plan have been made available to the public for a public comment period which begins on Date and concludes on Date 2.

A public meeting will be held during the public comment period at the Seneca County Office Building on Date 3 at 7:00 p.m. to present the conclusions of the RI, to elaborate further on the reasons for selecting the preferred remedy, and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document that formalizes the selection of the remedy.

Written comments on the Proposed Plan should be addressed to:

Mr. Stephen M. Absolom
BRAC Environmental Coordinator
Seneca Army Depot Activity
Building 123, P.O. Box 9
5786 State Route 96
Romulus, NY 14541-0009

SCOPE AND ROLE OF ACTION

The primary goal of this action is to enable the Army to transfer or lease the land occupied by the identified AOCs to other private or public parties for beneficial reuse. The historic use of this land was industrial and warehousing. The planned future use for land contained in these AOCs is Planned Industrial/Office Development/Warehousing, and these uses are consistent with the Town of Romulus' current zoning of the land within the PID Area.

Prior to transfer or lease of any property at the SEDA, the Army is required to ensure that the property is suitable for reuse. Information exists for SEADs 121C and 121I that indicates that hazardous substances are still present at these AOCs that pose potential risks to selected populations. Risk assessments based on exposure scenarios that are consistent with the planned future use of the land in the AOCs indicate that such uses are possible and appropriate given the residual levels of hazardous substances that remain at the AOCs. Therefore, the Army has determined that LUCs prohibiting residential activities, and access to and use of groundwater are needed to minimize any potential future health and environmental impacts at both AOCs. In addition, the Army has determined that existing engineering controls (i.e., security fences) that surround the strategic stockpiles of ferro-manganese ore must be maintained until the stockpile mission at the Depot is terminated.

SITE BACKGROUND

Site and AOC Descriptions

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

SEDA is located in an uplands area, which forms a divide separating two of New York's Finger Lakes; Cayuga Lake on the east and Seneca Lake on the west. Ground surface elevations are generally higher along the eastern and southern borders of the Depot, and lower along the northern and western borders. The approximate elevation at the southeastern corner of the SEDA site is 740 feet (ft), while the approximate elevation at the southwestern and northeastern corners is 650 ft. The approximate elevation at the southwestern corner of the Depot is 590 ft. Given this topographic profile, the primary direction of surface water flow throughout the SEDA is to the west towards Seneca Lake. Isolated portions of the Depot drain to the northeast (Seneca-Cayuga Canal) and east (Cayuga Lake). Primary surface water flow conduits to Seneca Lake are Reeder, Kendaia, Indian, and Silver Creeks, while Kendig Creek flows to the northeast and an unnamed creek flows away from the southeast corner of the Depot towards the east. Comparably, the predominant groundwater flow direction is to the west and southwest, although local variations exist at specific location throughout the Depot.

SEAD-121C and SEAD-121I are both located in the east-central portion of the former SEDA. Both AOCs are within the greater PID Area. Both AOCs are located at elevations above 720 ft.

SEAD-121C, the former DRMO Yard

SEAD-121C is a triangularly-shaped gravel lot located roughly 4,000 ft southwest of the former Depot's main entrance off State Route 96. The DRMO Yard is surrounded by a chain-linked fence and access into the AOC is controlled through a single, normally locked gate located at its southeast corner. The surface of the DRMO Yard is graded to allow surface water to drain toward the man-made ditches that bound the AOC on its northwest and south sides. The major pathway of surface water flow is to these drainage ditches, which then flow to the west towards a wetland area and the headwaters of Kendaia Creek.

Several other man-made features are prominent within the DRMO Yard; these include: one storage building; an earthen-bottomed, open storage cell in the southwest corner of the AOC; a rectangular-shaped, earthen-bottomed open, storage cell immediately adjacent to, and located halfway along the northwest perimeter fence of the AOC; and a multi-chambered, concrete slab, storage cell adjacent to the east perimeter fence, near the northern-most point of the DRMO Yard.

The DRMO Yard was used by the Army to store material that was no longer needed for national defense, or did not comply with legislative and regulatory requirements. The Activity using the yard was responsible for property reuse (including resale), hazardous property disposal (off-site, at licensed/permitted facilities), precious metals recovery and recycling program support.

SEAD-121I, the Rumored Cosmoline Oil Disposal Area

SEAD-121I consists of four rectangular-shaped, open grass and dirt covered areas that are bounded by 3rd and 7th Streets (north and south ends, respectively) and Avenues C and D (west and east sides, respectively). The northern end of SEAD-121I is located roughly 4,500 ft south-southwest of the Depot's main entry off State Route 96. The AOC extends roughly 2,500 to 3,000 ft to the south from this point, and the AOC measures approximately 300 to 400 ft in width throughout its length. This AOC is located 2,000 to 4,000 ft northwest of the topographic high point within the Depot.

Buried reinforced concrete storm drains convey runoff storm water from east to west through the AOC along 3rd St., 4th St., 5th St., 6th St., and 7th St.

A railroad spur line enters SEAD-121I from the south and extends to the northern end of the AOC where it terminates near the intersection of 3rd St. and Avenue C. Two sidings branch off the main spur line; one terminates in the first (north to south) block and the other terminates in the third (north to south) block. There are concrete loading docks located in the first and third blocks next to the railroad lines.

The Army indicates that the rail spur and sidings were used for delivery of equipment and machinery that was frequently packed in Cosmoline (oil). Cosmoline oil is a commonly used substance that prevents corrosion on metal parts and components. During delivery and unpacking of the equipment and machinery, oil from the packing may have been deposited on the ground.

The U.S. Government has historically staged strategic stockpiles of ferro-manganese ore in portions of SEAD-121I, and these stockpiles were present during the EBS and RI sampling events. These strategic stockpiles were located in the second and fourth blocks (north to south) of the AOC, along the western edge of the AOC close to Avenue C. Parallel rows of warehouses border the eastern and western sides of the AOC, across the bounding north-south running Avenue C and Avenue D.

Seneca Army Depot History

The U.S. Government purchased land for the Seneca Army Depot in Varick and Romulus, New York from approximately 150 families during June 1941. This land previously was used primarily for family homesteads, farming and agriculture. Once land was obtained, a work force numbering more than 7,000 at the peak of construction built the infrastructure of the Depot which included roads and rail lines; storage igloos; numerous buildings and structures that were used for administrative, maintenance, recreational, training, living, and support functions; and surrounded the entire facility with more than 20 miles of perimeter security fence, much of which was completed prior to the US's entry into World War II (WWII). The Depot began its primary mission of receipt, maintenance and supply of ammunition in 1943. After the end of WWII, the Depot's mission shifted from supply to storage, maintenance and disposal of ammunition.

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

Once listed on the NPL, the Army, EPA, and NYSDEC identified 57 solid waste management units (SWMUs)

where data or information suggested, or evidence existed to support, that hazardous substances or hazardous wastes had been handled and where releases to the environment may have occurred. Each of these sites was identified in the "*Federal Facilities Agreement under CERCLA Section 120; Docket Number: II-CERCLA-FFA-00202*" (FFA) signed by the three parties in 1993. The number of SWMUs was subsequently expanded to include 72 AOCs once the Army completed the required "*SWMU Classification Report.*"

The SEDA was a generator and treatment, storage and disposal facility (TSDF) for hazardous wastes and thus, subject to regulation under the Resource Conservation and Recovery Act (RCRA). Under the RCRA permit system, corrective action is required at all SWMUs, as needed. Remedial goals are the same for CERCLA and RCRA; thus, once the 72 SWMUs were listed, the Army recommended that they be identified as either areas requiring No Action or as Areas of Concern (AOCs). SWMUs listed as AOCs were scheduled for investigations based upon data and potential risks to the environment.

In 1995, the SEDA was designated for closure under the Department of Defense's (DoD's) 1995 Base Realignment and Closure (BRAC) process. In accordance with requirements of BRAC, the Army prepared an Environmental Baseline Survey (EBS) for SEDA. Under the EBS, all areas at the Depot were evaluated and subdivided into one of seven standard environmental categories consistent with the Community Environmental Response Facilitation Act (CERFA – Public Law 102-426) guidance and the DoD's "*BRAC Cleanup Plan Guidebook*" (DoD, 1993). Based on the findings and conclusions of the EBS, SEAD-121C and SEAD-121I were both designated as AOCs where additional information and data were required before the land could be offered for transfer and reuse.

Once SEDA was added to the 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 other, non-military purposes (i.e., industrial, municipal, and residential). The designated future use of land within the SEDA was first defined and approved by the Seneca County Local Redevelopment Authority in 1996. The planned use for various portions of the SEDA has been modified by Seneca County Industrial Development Agency (SCIDA) since 1996.

Since 1995, approximately 8,000 acres of the former Depot has been released to the SCIDA. An additional 250 acres of land at the Depot has been transferred to the U.S. Coast Guard for continued operation of a LORAN[i] Station. Finally, other property still owned by the federal government has been leased to private parties for beneficial reuse.

PREVIOUS INVESTIGATIONS AND ACTIVITIES

Two environmental investigations were conducted at SEAD-121C and SEAD-121I to characterize conditions present. First, the Army conducted a limited Environmental Baseline Survey (EBS) in 1998 and 1999 at each AOC to assess if hazardous substances were likely to be present. This work is summarized in the report "*Final Investigation of Environmental Baseline Survey Non-Evaluated Sites [SEAD-119A, SEAD-122 (A, B, C, D, E), SEAD-123 (A, B, C, D, E, F), SEAD-46, SEAD-68, SEAD-120 (A, B, C, D, E, F, G, H, I, J), and SEAD-121 (A, B, C, D, E, F, G, H, I)]."* Based on the results of the EBS, the Army subsequently conducted remedial investigations (RIs) at both AOCs during 2002 and 2003. The results of the RI are summarized in the report "*Remedial Investigation Report for Two EBS Sites in the Planned Industrial Development Area (SEAD-121C and SEAD-121I.*" As a result of these investigations, samples of soil (surface, subsurface, and ditch), surface water and groundwater were collected from one or both of the AOCs and analyzed for the full suite of Target Compound and Target Analyte List (TCL and TAL, respectively) parameters.

During the investigations, analytical data collected were compared to the prevailing state and federal standards and guidance criteria. Cleanup criteria and standards considered included New York's: Technical and Guidance Memorandum (TAGM) No. 94-HRW-4046 soil cleanup

objectives; Class GA Groundwater Quality Standards; and, Class C Surface Water Ambient Water Quality Standards. Federal criteria considered included EPA Region IX Preliminary Remediation Goals (PRGs) for residential soils and PRGs for Tap Water, as well as Maximum Contaminant Limits (MCLs) and Secondary Drinking Water Standards for Drinking Water. The state's TAGM #4046 values for soil have recently been superseded by a new set of soil cleanup criteria including: protection of groundwater; protection of ecological resources; unrestricted use; and four levels of restricted use (i.e., residential, restricted residential, commercial, and industrial). State guidance for hazardous waste sites requires that response actions evaluated for possible implementation include the no action alternative, one that focuses on returning the location to pre-use conditions (i.e., unrestricted use), and others as may be appropriate.

During the prior investigations, the Army determined that metals in the soil are the primary hazardous substances present at both of the AOCs. Concentrations identified for specific metals were shown to exceed cleanup objectives and guidance values defined by the federal and state government. Additionally, other selected organic chemicals have also been found at both AOCs at lower frequency, but at concentrations that exceed defined cleanup objectives and guidance values. Finally, groundwater at SEAD-121C, and episodic surface water flows at both SEAD-121C and SEAD-121I has been shown to contain hazardous substances at concentrations that exceed state standards and federal guidance values.

Specific hazardous substances of concern at SEAD-121C include benzene; the seven carcinogenic polycyclic hydrocarbons (cPAHs); dieldrin; three Aroclor congeners (1242, 1254, and 1260); and the metals arsenic, copper, lead and iron. Hazardous substances identified at SEAD-121I include the seven cPAHs; dieldrin and heptachlor epoxide; and the metals arsenic, chromium, iron, manganese, and thallium.

SEAD-121C, the DRMO Yard

Soil Investigations

Hazardous substances found in the soil at SEAD-121C, the DRMO Yard are listed and compared to applicable state and federal cleanup objectives in **Table 1**. This table also identifies the maximum concentration identified for a contaminant in the AOC soils, and the 95th Upper Confidence Limit on the Mean (95th UCL) value computed for the soil data set based on EPA's ProUCL Methodologies.

Hazardous Substance	95th UCL of the Mean (mg/Kg)*	NYSDEC Industrial Use (mg/Kg)*	Region IX Industrial Soil PRGs (mg/Kg)*
Benzene	0.18	89	1.4
Ethylbenzene	2.44	780	400
Benzo(a)anthracene	1.91	11	2.1
Benzo(a)pyrene	1.99	1.1	0.21
Benzo(b)fluoranthene	2.64	11	2.1
Benzo(k)fluoranthene	1.38	110	21
Chrysene	1.83	110	210
Dibenz(ah)anthracene	0.31	1.1	0.21
B(a)P Toxicity Equiv.	2.66	NA	NA
4,4`-DDD	0.006	180	10
4,4`-DDE	0.015	120	7
4,4`-DDT	0.015	94	7
Aldrin	0.004	1.4	0.1
Aroclor-1254	0.13	25	21
Aroclor-1260	0.03	25	21
Dieldrin	0.007	2.8	0.11
Endrin	0.004	410	1800
Arsenic	5.69	16	1.6
Barium	400	10000	67000
Cadmium	9.9	60	450
Chromium	27.0	6800	100000
Copper	1575	10000	41000
Lead	2278	3900	800
Mercury	0.11	5.7	NA
Nickel	44.3	10000	20000
Silver	3.6	6800	5100
Zinc	800	10000	100000

Key: * mg/Kg = milligrams per Kilogram; NA = Not Available

Forty-eight (48) surface soil (0 – 0.2 ft), 10 ditch soil (0 – 2 ft.) and 20 subsurface soils (> 2 ft.) were collected and analyzed as part of the investigation of soil at SEAD-121C. Soil samples showed levels of two volatiles organic compounds, six carcinogenic polycyclic aromatic

hydrocarbons (cPAHs), six pesticides, two PCBs, and 14 metals that exceeded the varying federal or state criteria values.

Generally, only trace levels of volatile organic compounds were found in soil samples at SEAD-121C. Concentrations noted for several of the identified compounds were consistent with laboratory contaminant levels. Benzene and ethylbenzene were both found in a single subsurface sample at elevated concentrations.

The cPAHs were found in all soils evaluated (i.e., surface, subsurface, and ditch), but the higher concentrations were generally detected in the surface soils. Three sample locations to the east of the DRMO Yard, along the access road, and one located halfway along the northwestern boundary fence that separates the DRMO Yard from the abutting drainage ditch showed the highest concentrations of cPAHs.

The highest concentrations of metals were generally collocated in surface soil samples collected from locations in the northeastern and southwestern corners of the former yard, where scrap metal collection areas were previously located. Metal species identified at the yard that could have pose potential risks to human health included arsenic, copper, iron and lead; subsequent risk assessments indicated that potential risks were within EPA's acceptable range.

Groundwater Investigation

Two temporary groundwater monitoring wells (i.e., MW121C-1 and MW121C–2) were installed and sampled using bailers during the EBS in 1998. Four permanent monitoring wells were installed, and two rounds (i.e., February and May of 2003) of groundwater samples were collected and analyzed at three of the permanent wells (MW121C-3, MW121C-4, and MW121C-6) using low flow sampling techniques during the RI. Samples could not be collected from the fourth permanent monitoring well (i.e., MW121C-5) during either of the 2003 sampling events because the well was found to be dry. Data collected during the EBS is considered suspect because bailers were used. Sampling with bailers is a more aggressive technique that stirs up silt and soil that is commonly found in wells, which can lead to false positive results for many compounds.

Groundwater data developed for SEAD-121C was compared to federal and state criteria including New York State Class GA Groundwater Standards, federal Maximum Contaminant Levels (MCLs), federal Secondary Drinking Water Standards (SEC), and EPA Region IX PRGs for Tap Water. The federal MCLs, SECs and the Region IX PRGs are considered TBC criteria because they pertain specifically to drinking water, and the groundwater at SEAD-121C is not used as a source of drinking water at the Depot. There is a separate municipal water distribution system within the PID area. The results of the groundwater sampling at SEAD-121C are presented in **Table 2**, below.

Table 2
Comparison of Measured Groundwater Concentrations at SEAD-121C and Cleanup Objectives

Hazardous Substance	EBS Maximum Groundwater Concentration (µg/L)*	RI Maximum Groundwater Concentration (µg/L)*	NYSDEC GA Groundwater Standard (µg/L)*	Federal MCL or Secondary Drinking Water Standard (µg/L)	EPA Region IX PRG for Tap Water (µg/L)*	Maximum Seneca Background Concentration (µg/L)*
1,2-Dichloro-Benzene	36	ND	3	0.6	370	NA
4,4'-DDD	0.81	ND	0.3	NA	0.28	NA
4,4'-DDE	0.3	ND	0.2	NA	0.2	NA
4,4'-DDT	0.56	ND	0.2	NA	0.2	NA
Alpha-BHC	0.059	ND	0.1	NA	0.011	NA
Beta-BHC	0.33	ND	0.04	NA	0.037	NA
Delta-BHC	0.16	ND	0.04	NA	NA	NA
Dieldrin	0.2	ND	0.004	NA	0.0042	NA
Heptachlor	0.14	ND	0.04	0.4	0.015	NA
Heptachlor epoxide	0.11	ND	0.03	0.2	0.0074	NA
Aluminum	5350	588	NA	50	36000	42400
Antimony	NA	8.4	3	6	15	52.7
Iron	5620	869	300	300	11000	69400
Manganese	1365	297	300	50	880	1120
Sodium	95200	58400	20000	NA	1200000	59400

Key: µg/L = micrograms per Liter; NA = Not Available; ND = Not Detected.

VOCs, pesticides and PCBs were not detected in groundwater samples characterized during the RI sampling program. Two SVOCs were detected in groundwater samples collected during the RI, but neither

was found at a concentration above any comparative criteria.

Nineteen (19) metals were detected in samples collected from the permanent wells at SEAD-121C during the RI. Aluminum, antimony, iron, manganese, and sodium exceeded their respective comparative criteria in at least two of the six groundwater samples characterized during the RI sampling events.

Surface Water Investigation

No permanent surface water body is located within the bounds of SEAD-121C. Drainage ditches are located exterior to the AOC, along its southern and northwestern bounds. The man-made drainage ditches convey storm and snow-melt runoff waters away from land located within the SEDA's former administrative, maintenance and warehousing areas, which are located to the north-northeast, east, and south-southeast, of SEAD-121C to Kendaia Creek that is located to the west. Surface water flow in the abutting drainage ditches is an episodic event; thus, there is no NYSDEC designation assigned to surface water (i.e., runoff) found in the channels. For comparative purposes, analytical results compiled for surface water samples were compared to New York State's Class C Ambient Water Quality Standards (AWQS) and to the EPA's Region IX PRGs for Tap Water for comparative purposes. The results of this comparison are shown in **Table 3**.

Table 3
Comparison of Measured Surface Water Concentrations at SEAD-121C and Cleanup Objectives

Hazardous Substance	Maximum Surface Water Concentration (μg/L)*	NYSDEC Class C Surface Water Standard (μg/L)*	EPA Region IX PRG for Tap Water (μg/L)*
Bis(2-ethylhexyl)phthalate	4.2	0.6	4.8
Aluminum	8760	100	36000
Arsenic	50.3	150	0.045
Barium	423	NA	2600
Beryllium	0.86	1100	73
Cadmium	19.5	3.84	18
Calcium	166000	NA	25000
Chromium	129	139.45	110
Cobalt	47	5	730
Copper	1160	17.32	1500
Iron	110000	300	11000
Lead	839	1.46	15
Magnesium	26200	NA	40000
Manganese	2380	NA	880
Mercury	2.1	0.0007	11
Nickel	154	99.92	730
Potassium	5350	NA	700000
Selenium	4.6	4.6	180
Silver	8	0.1	182
Sodium	123000	NA	1200000
Thallium	6.3	8	2.4
Vanadium	233	14	36
Zinc	6910	159.25	11000

Key: μg/L = micrograms per liter; NA = Not Available; ND = Not Detected.

Surface water samples were collected from 10 locations during the SEAD-121C RI; nine of these samples were collected exterior to SEAD-121C, while the last was collected from a puddle that accumulated after a storm event within the AOC.

Neither VOCs nor pesticides/PCBs were detected in any of the surface water samples collected near SEAD-121C. The SVOC bis(2-ethylhexyl)phthalate was detected in one sample collected from a location that is upgradient of, exterior to, and southwest of the AOC. The reported concentration of 4.2 μg/L exceeds New York's Class C AWQS, but is less than Region IX's PRG for tap water.

Twenty-two metals were detected in surface water samples collected from the vicinity of the DRMO Yard. Of the 22 metals detected, 10 were detected in every sample

analyzed, while two others (i.e., arsenic and selenium) were only observed in one sample each. Antimony was not detected in any surface water sample. Eleven of the detected metals exceeded their respective Class C AWQS for surface water. Eight metals exceeded their respective Region IX PRGs for tap water.

SEAD-121I, Rumored Cosmoline Oil Disposal Area

Samples of surface soil, ditch soil and surface water were collected and analyzed as part of the EBS and RI at SEAD-121I, the Rumored Cosmoline Oil Disposal Area. The sampling and analyses were performed in 2002 and 2003; the results of this effort were reported in the "*Remedial Investigation Report for Two EBS Sites in the Planned Industrial Development Area (SEAD-121C and SEAD-121I).*" The combined analytical results of the EBS and the RI are summarized and discussed below.

Soil Investigations

Fifty-one (51) soil samples, including 12 ditch soil samples, 34 surface soil samples (i.e., 0 – 2 inches bgs) and five soil samples collected from soil borings, but from depths of less than 2 ft. bgs, were collected and analyzed as part of the investigation of soil at SEAD-121I. A summary of the soil data for SEAD-121I compared to pertinent criteria is provided in **Table 4**.

Table 4
Comparison of Measured Soil Concentrations at SEAD-121I to Soil Cleanup Objective Criteria

Hazardous Substance	95th UCL of the Mean (mg/Kg)*	NYSDEC Restricted Commercial Use (mg/Kg)*	NYSDEC Restricted Industrial Use (mg/Kg)*	Region IX Industrial Soil PRGs (mg/Kg)*
Acetone	0.061	500	1000	54000
Benzo(a)anthracene	9.25	5.6	11	2.1
Benzo(a)pyrene	8.42	1	1.1	0.21
Benzo(b)fluoranthene	10.43	5.6	11	2.1
Benzo(k)fluoranthene	9.40	56	110	21
Chrysene	12.00	56	110	210
Dibenz(ah)anthracene	1.26	0.56	1.1	0.21
Indeno(123-cd)pyrene	4.47	5.6	11	2.1
B(a)P Toxicity Equiv.	13	NA	NA	NA
4,4`-DDE	0.014	62	120	7
4,4`-DDT	0.013	47	94	7
Aldrin	0.0059	0.68	1.4	0.1
Dieldrin	0.011	1.4	2.8	0.11
Endrin	0.0048	89	410	1800
Heptachlor epoxide		NA	NA	0.19
Antimony	3.3	NA	NA	410
Arsenic	26	16	16	1.6
Cadmium	2.5	9.3	60	450
Chromium	73	1500	6800	10000
Copper	65	270	10000	41000
Iron	21111	NA	NA	100000
Lead	54	1000	3900	800
Magnesium	11000	NA	NA	NA
Manganese	89533	10000	10000	19000
Mercury	0.039	2.8	5.7	NA
Nickel	96	310	10000	20000
Selenium	41	1500	6800	5100
Silver	2.4	1500	6800	5100
Thallium	45	NA	NA	67
Zinc	163	10000	10000	100000

Key: * mg/Kg = milligrams per Kilogram; NA = Not Available

Eight VOCs, including acetone, benzene, ethyl benzene, met/para xylene, methyl ethyl ketone, methylene chloride, ortho xylene, and toluene, were detected in the 45 surface soil samples collected and analyzed from SEAD-121I. Acetone was the only VOC found at concentrations that was found at concentrations that are above normal laboratory contaminant levels.

Twenty-eight SVOCs, including mainly PAHs, cPAHs, and mixed phthalates were detected in the soil samples collected from SEAD-121C. Generally, the seven cPAH compounds were found most frequently. The seven cPAH

compounds were also the only substances observed to exceed state or federal comparative values. Three samples exhibited BTEQ concentrations in excess of NYSDEC's guidance value 10 mg/Kg.

Seven pesticides and two PCBs were detected in the soils at SEAD-121I. Five pesticides (i.e., 4,4`-DDE, 4,4`-DDT, aldrin, dieldrin and endrin) were found at concentrations that exceeded one of their respective comparative cleanup objectives.

Twenty-three metals were detected in the 45 soil samples collected at or around SEAD-121I. Thirteen metals (arsenic, antimony, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc) were found at concentrations that exceeded one of their respective comparative cleanup criteria.

The metals exhibiting concentrations above comparative cleanup objective levels were generally located in close proximity to the ore piles. As such, the stockpiles are presumed to be the source of the elevated levels of these metals in the AOC soils.

Groundwater Investigation

Groundwater was not encountered in any of the soil borings advanced at SEAD-121I. Each of these borings was terminated once the underlying bedrock surface was encountered. Therefore, groundwater was not evaluated as a media of concern at SEAD-121I.

Surface Water Investigation

Seven (7) surface water samples were collected and analyzed as part of the investigation of SEAD-121I.

Table 5
Comparison of Measured Surface Water Concentrations at SEAD-121I and Cleanup Objectives

Hazardous Substance	Maximum Surface Water Concentration (µg/L)*	NYSDEC Class C Surface Water Standard (µg/L)*	EPA Region IX PRG for Tap Water (µg/L)*
Aluminum	2050	100	36000
Iron	3410	300	11000
Lead	26.3	1.46	15
Zinc	190	159.25	11000

Key: µg/l = micrograms per liter; NA = Not Available; ND = Not Detected.

No VOCs or pesticide/PCB compounds were detected in the surface water samples collected for SEAD-121I. Two SVOCs (butylbenzylphthalate and fluoranthene) were detected in one surface water sample each, at SEAD-121I. Neither of these values exceeded their respective cleanup objective levels (i.e., NYS Class C AWQS or Region IX tap water PRGs).

Eighteen metals were detected in the surface water at SEAD-121I, of these 18, seven (i.e., aluminum, calcium, magnesium, manganese, potassium, sodium, and zinc) were found in every sample. Four of the identified metals [aluminum (3 times), iron (2 times), lead (4 times), and zinc (1 time)] exceeded their respective AWQS Class C standards; however, only lead was found at a concentration that exceeded its Region IX tap water cleanup objective.

Based on the data, the Army has concluded that hazardous substances do exist at both of the AOCs at concentrations above defined cleanup objectives and occasionally standards. There is no strong and direct correlation between the hazardous substances found in AOC-specific soils and groundwater as no definitive plumes have been identified at SEAD 121C, and no groundwater was encountered at SEAD-121I. There is some evidence that identified hazardous substances have been mobilized by overland flow of storm-event water.

Risk Assessment Methodology

Risk assessments are performed at sites where hazardous substances have been detected to identify if the concentrations of the species found will pose potential adverse threats to current or future human or ecological receptors if they are allowed to remain at the site. Risk assessments are inherently conservative, purposely biased to prompt an action if potential risk is identified.

Human health risk assessments follow a four-step process, which includes hazard identification, exposure assessment, toxicity assessment and risk characterization. These four steps are used to assess potential site-related human health risk for reasonable maximum exposure scenarios that do or could exist at the site no action were taken to eliminate or mitigate them

Hazard Identification: Chemicals of Concern (COCs) in the various media at the site are identified and selected based on factors such as their toxicity, concentrations detected relative to regulatory standards and guidelines, frequency of occurrence, fate and transport in the environment, mobility, persistence and bioaccumulation.

Exposure Assessment: Different exposure pathways through which existing or future receptors might be exposed to the COCs are evaluated. Possible exposure pathways include ingestion, dermal contact, or inhalation. Factors relating to the exposure assessment include concentrations that receptors may encounter, and the duration and frequency of the potential exposure. The reasonable maximum exposure scenario is calculated to estimate the highest level that could be expected to occur at the site.

Toxicity Assessment: The types of adverse effects associated with exposure to COCs, and the relationship between the magnitude of the exposure and the severity of potential effects are determined. Potential effects are COC-specific and may include risks of developing cancer or other changes in normal functions of organs (non-carcinogenic effects).

Risk Characterization: The level of potential risk present is assessed by combining the outputs of the exposure and toxicity assessment components. Carcinogenic and non-carcinogenic risk are estimated. Current guidelines for acceptable individual lifetime excess cancer risk are established as 1 in 10,000 to 1 in 100,000 or less (10^{-4} to 10^{-6}, or less). The non-cancer risk, expressed as a "hazard index" (HI), represents the sum of individual exposure levels to corresponding reference doses. A non-cancer HI threshold level of less than 1 is set as the reference point.

Screening-Level Ecological Risk Assessments (SLERAs) are conservative assessments that provide a high level of confidence in determining a low probability of adverse risk, and they incorporate uncertainty in a precautionary manner. The purpose of the SLERA is to assess the need, and if necessary the level of effort necessary, to conduct a detailed, baseline ecological risk assessment for a site. Principal components of the SLERA are the Screening-Level Problem Formulation and Ecological Effects Evaluation, Screening-Level Exposure Estimate and Risk Calculation and the Scientific Management Decision Point (SMDP) with four possible decisions:

- There is adequate information to conclude that ecological risks are negligible and therefore there is no need for remediation on the basis of ecological risks;
- The information is not adequate to make a decision at this point and the ERA process should continue to a baseline ERA;
- The information indicates a potential for adverse ecological effects, and a more thorough assessment is warranted; or
- In cases where contamination has sharply defined borders or where the extent of contamination is limited, it may be preferable to cleanup the area to the screening values rather than spending time and resources determining a less conservative cleanup number.

The results of the SLERA indicate which contaminants found at the AOC can be eliminated from further consideration and which should be evaluated further. The refinement of COCs helps streamline the overall ERA process by considering additional components early in the baseline ERA.

Site Risks

Human health (HHRA) and ecological risk assessments were performed for both SEAD-121C and SEAD-121I to assess potential effects that could result due to the human or ecological species exposure to hazardous substances identified at the AOCs. The baseline HHRAs were conducted in accordance with the USEPA's "*Risk Assessment Guidance for Superfund* (RAGS)" and the supplemental guidance and updates to the RAGS. Technical judgment, consultation with EPA staff, and recent publications were used in the development of the risk assessment. The overall objective of the HHRAs were to assess potential risks to current and reasonably anticipated future human receptors resulting from the release of, and exposure to, hazardous substances at SEAD-121C and SEAD-121I. The reasonable maximum exposure (RME) was evaluated during the HHRAs.

Screening-level ecological risk assessments (SLERAs) were also performed for SEAD-121C and SEAD-121I to evaluate whether hazardous substances found at either of the AOCs have the potential to cause adverse effects to ecological resources. The SLERAs were conducted in accordance with several USEPA and NYSDEC guidance documents.

Human Health Risk Assessment

The land at SEAD-121C previously was used as the Defense Reutilization and Marketing Office Yard where scrap, hazardous materials and substances, excess and retired equipment, and other materials were staged pending sale or recycle. SEAD-121I was used as an equipment and material receiving and shipping area, where transported materials were brought into or dispatched from the Depot. The future use of both of these sites has been defined as planned industrial / office development.

The HHRA began by identifying contaminants of concern (COCs) for the various media found in the AOCs. The COCs identified for SEAD-121C included:

- Benzene (soil)
- PAHs (soil)
- Pesticides/PCBs (soil)
- Metals (soil and surface water)

The COCs identified for SEAD-121I included:

- PAHs (soil)
- Pesticides/PCBs (soil)
- Metals (soil and surface water)

Both AOCs are in an area that is serviced by municipal water; therefore it is unlikely that groundwater underlying the AOCs will be used for potable purposes in the future. However, New York views all groundwater as a drinking water source, so potential exposure to groundwater was evaluated for SEAD-121C, where groundwater was found and samples were characterized. COCs identified for SEAD-121C groundwater included 1,2-dichlrobenzene, pesticides and metals which were found at concentrations above NYS AWQSs. Groundwater was not considered at SEAD-121I where it was not identified or sampled.

Receptors considered in the HHRA included industrial workers, construction workers and adolescent trespassers. Exposure pathways considered included inhalation of dusts, dermal contact with and ingestion of soil, and dermal contact with surface water.

SEAD-121C Risk Results

A review of the carcinogenic risks for reasonable maximum exposures (RMEs) to the soils and surface water at SEAD-121C showed that all levels were within EPA's acceptable range (i.e., 10^{-4} to 10^{-6} or less). The industrial work exhibited the highest potential risk at 3 $x10^{-5}$, with all other potential risk levels found at 2 x 10^{-6} or less.

Non-cancer risk levels (HIs) for all exposure scenarios evaluated were less than EPA's threshold of one. The largest HI found was 0.8 for the construction worker.

Lead was identified as a COC in soil and surface water at SEAD-121C. The lead risk for industrial workers and adolescent trespassers for heterogeneous and homogeneous populations were all below EPA's target PbB level of 10 μg/dL.

SEAD-121I Risk Results

A review of the carcinogenic risks for RMEs to the soils and surface water at SEAD-121I showed that all levels were within EPA's acceptable range (i.e., 10^{-4} to 10^{-6} or less). The industrial work exhibited the highest potential risk at 7 $x10^{-5}$, with all other potential risk levels found at levels of 2 x 10^{-5} or less.

RME HIs calculated for the construction worker and industrial worker at SEAD-121I are all above 1. The significant contributing COC for both receptors and exposure pathways is manganese. Arsenic and iron also contribute to the elevated HI noted for the construction worker. Locations identified at SEAD-121I with the most significant concentrations of each of these dominant COCs were in the immediate vicinity of the strategic stockpiles of ferro-manganese ore, where visual evidence exists to indicate that fines and dusts from the ore are present.

The HI identified for the adolescent trespasser was less than 1.

Lead was identified as a COC in surface water at SEAD-121I; however, there is no reliable model for quantifying risk from lead due to dermal contact to surface water.

Ecological Risk Assessment

AOC-specific ecological evaluations were not conducted at SEADs 121C and 121I. Both AOCs are generally void of characteristics and attributes that would make them attractive habitats for ecological receptors. As is indicated, the DRMO Yard is a gravel-covered lot where historic short- to long-term storage of materials occurred. It is surrounded by a chain-linked fence with a single access gate to control vehicular and human traffic. Isolated growths of weed plants are present at numerous locations immediately along the fence line and randomly at other locations within the Yard. Similarly, SEAD-121I is a relatively flat, open area that is located between parallel strips of bordering warehouses, roads, and railroad lines. There are intermixed areas of dirt and grass/weed vegetative growths within each block of the AOC, and evidence of wear due to vehicular traffic.

Animals that have been identified within the greater Depot during various other ecological surveys include the beaver, eastern coyote, deer, red and gray fox, eastern cottontail rabbit, muskrat, raccoon, gray squirrel, striped skunk, and the woodchuck. Other smaller mammals (mice, shrews, voles, etc) are also likely. Bird species identified include the blue jay, black-capped chickadee, American crow, mourning dove, northern flicker, ruffed grouse, ring-billed gull, red-tailed hawk, northern junco, American kestrel, white breasted nuthatch, ring-necked pheasant, American robin, eastern starling, turkey vulture, and pileated woodpecker.

There are no permanent lakes, ponds, streams or wetlands in SEAD-121C or SEAD-121I. Surface water only exists intermittently in man-made drainage ditches that abut or underlie the AOCs; thus, it does not directly support aquatic life.

No known occurrences of federal- or state-designated threatened or endangered plant or animal species within a 2-mile radius of the AOCs are identified in NYSDEC's Natural Heritage Program Biological and Conservation Data System. No species of special concern are documented within the Depot property.

The results of the SLERA indicated that there are potential ecological risks associated with the hazardous substances that are present at SEAD-121C and SEAD-121I. Potential ecological risks were found for a variety of avian and mammalian receptors that could be periodically found in and around the AOCs.

Subsequently, during the refinement of ecological COC analysis, no final COCs were identified in any medium found at the AOCs. Some of the COCs identified as contributing to the ecological risk are present at levels consistent with background concentrations found throughout the Depot. Additionally, some of the risk is associated with the on-going mission of storage of strategic stockpiles at SEAD-121I. Finally, both AOCs are in an area where the planned future land use is industrial/warehousing/office development, and therefore is not expected to be an attractive wildlife habitat.

Given these additional considerations and information, it is unlikely that the conditions identified at the AOCs will significantly impact ecological receptors and no further action is warranted for either SEAD-121C or SEAD-121I based on the ecological risk assessment.

Summary of Human Health and Ecological Risks

The results of the HHRA completed for SEAD-121C indicate that there are no unacceptable human health non-cancer or carcinogenic risks present at the AOC. Data is available to indicate that potential risk may exist due to hazardous substances contained in the groundwater, but this risk is mitigated because there is an alternative source of potable water present. The ERA indicates that potential risks are possible to wildlife; however, this AOC is an area previously and currently designated for industrial/warehousing/office development usage, and thus this AOC is not likely to be an attractive habitat.

Comparably, the results of the HHRA completed for SEAD-121I indicate that there are unacceptable non-cancer risks to potential industrial and construction workers at the AOC. These risks arise due to concentrations of manganese, iron and arsenic likely to be found in soil and dusts at the AOC. These hazardous substances are found in locations associated with the ongoing strategic stockpile mission at the Depot. Non-cancer risks are not found for the adolescent trespasser. Additionally, no carcinogenic risk is identified for any human receptor at the AOC. The ERA indicates that potential risks are possible to wildlife; however, this AOC is an area previously and currently designated for industrial/warehousing/office development usage, and thus this AOC is not likely to be an attractive habitat.

Based on the results of the site investigations and risk assessments completed, the Army and EPA had determined that actual or threatened releases of hazardous substances from the AOCs, if not addressed by the preferred remedy of some other remedial alternative, may present a threat to human health or the environment.

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, including consideration of applicable or relevant and appropriate requirements (ARARS), TBC guidance and site-specific risk-based levels.

The following remedial action objectives were established for SEAD-121C and SEAD-121I:

- Reduce or eliminate future user direct contact, ingestion and the inhalation threats to soils containing hazardous substances; and,

- Protect human health by prohibiting exposures of future users to groundwater that may contain hazardous substances.

Tables 1 – 3 identify soil groundwater and surface water cleanup objectives, standards, and standards, respectively.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA § 121(b)(1), 42 U.S.C. §9621(b)(1) mandates that remedial actions must be protective of human health and the environment, cost effective, comply with ARARs and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable.

Alternatives

Alternative 1: No Action

The Superfund program requires that the “no-action” alternative be considered and serve as the baseline by which other alternatives evaluated are compared. The no-action remedial alternative for soil does not include the design or implementation of any physical remedial measures to address types of contamination identified at the AOCs. The “no-action” alternative (Alternative 1) is identical for work that might be considered for either SEAD-121C or SEAD-121I.

Application of this alternative would result in hazardous substances at concentrations above levels that allow for unrestricted use and unlimited exposures remaining in the soils at both AOCs. As such, CERCLA requires that the AOCs be reviewed at least once every five years to assess changes in conditions found at the AOCs. If justified by the periodic reviews, subsequent remedial actions may be implemented to remove, treat or contain the contaminated soils.

A municipal, potable water distribution system, which derives its raw water from a non-groundwater source, is present within the PID Area. The presence of this alternative supply of water system eliminates any reason to consider use of groundwater for domestic purposes. Groundwater was not encountered in the vicinity of SEAD-121I. A poor yielding supply of groundwater does exist beneath SEAD-121C, and it is known to contain chemical contaminants at concentrations in excess of New York GA standards for groundwater quality. However, these concentrations are consistent with the background water

quality found to exist at the Depot. Given these facts, the Army has opted to impose a groundwater access and use restriction on all groundwater that is located in the PID Area. The no action alternative for groundwater will apply to all remedial action alternatives considered within this propose plan.

SEAD-121C and SEAD-121I, Alternative 1 Costs

Capital Cost:	$0
Annual Operation, Maintenance, and Monitoring (OM&M) Costs (soil):	$3,000
OM&M Costs (groundwater)	$3,000
Present-Worth Costs:	$74,460
Construction Time:	0 months

Alternative 2: Excavation of Contaminated Soil to Achieve Unrestricted Use Cleanup Objectives, Off Site Treatment/Disposal and Soil Backfill.

SEAD-121C, the DRMO Yard

This alternative involves the excavation of soil containing substances at levels in excess of the NYSDEC's Unrestricted Use Soil Clean-up Objective levels (see Title 6 New York Code of Rules and Regulations, Part 375-8). A summary listing of hazardous substances identified in current surface, subsurface and ditch soils at SEAD-121C at concentrations in excess of NYSDEC's Unrestricted Use Soil Cleanup Objectives is provided in **Table 6**.

TABLE 6
Comparison of Hazardous Substance Concentrations found in SEAD-121C Soil Versus NYSDEC's Unrestricted Use Soil Cleanup Objectives

Hazardous Substance	Units	95th UCL of the Mean Concentrations	NYSDEC 's Unrestricted Use Value	Number of Concentrations Above Criteria	Is the 95th UCL Above Criteria (Y/N)?
Benzene	µg/Kg	181	60	1	Y
Ethylbenzene	µg/Kg	2444	1000	2	Y
Benzo(a)anthracene	µg/Kg	1908	1000	6	Y
Benzo(a)pyrene	µg/Kg	1986	1000	7	Y
Benzo(b)fluoranthene	µg/Kg	2640	1000	9	Y
Benzo(k)fluoranthene	µg/Kg	1379	800	7	Y
Chrysene	µg/Kg	1834	1000	6	Y
Dibenz(ah)anthracene	µg/Kg	312	330	3	N
Indeno(1,2,3-cd)pyrene	µg/Kg	319	500	5	N
B(a)P Equivalents	µg/Kg	2659	10000	2	N
4,4`-DDD	µg/Kg	6.4	3.3	5	Y
4,4`-DDE	µg/Kg	14.8	3.3	19	Y
4,4`-DDT	µg/Kg	15.7	3.3	15	Y
Aldrin	µg/Kg	3.6	5	4	N
Aroclor-1254	µg/Kg	134	100	5	Y
Aroclor-1260	µg/Kg	32.5	100	1	N
Dieldrin	µg/Kg	6.9	5	2	Y
Endrin	µg/Kg	4.1	14	3	N
Barium	mg/Kg	400	350	7	Y
Cadmium	mg/Kg	9.9	2.5	16	Y
Chromium	mg/Kg	27	30	15	N
Copper	mg/Kg	1575	50	21	Y
Lead	mg/Kg	2278	63	27	Y
Mercury	mg/Kg	0.11	0.18	4	N
Nickel	mg/Kg	44	30	51	Y
Silver	mg/Kg	3.6	2	9	Y
Zinc	mg/Kg	800	109	39	Y

Analysis of the available analytical data indicates that hazardous substances are found at concentrations exceeding NYSDEC's unrestricted use cleanup objective in most surface soil samples collected from SEAD-121C. Further, hazardous substances at concentrations that exceed the Unrestricted Use Cleanup levels are present in many samples collected from the 2 to 6 foot depth range. Given this distribution of contaminants in the soil, the Army anticipates that six feet of excavation over the DRMO yard surface would be required to achieve unrestricted use standards. Based on these dimensions, the estimated volume of contaminated soil requiring excavation at the DRMO Yard is 173,600 cubic yards (CY).

As part of the construction work, the soil exterior to three permanent buildings (Buildings 316, 360 and 355) would need to be excavated, as would soil adjacent to, but not beneath, two railroad tracks that service this portion of the former Depot. Extra care and time would be required during the excavations around these structures to ensure that their structural integrity was not impacted by the work

or backfill operations. Local utility lines servicing this portion of the former Depot would need to be diverted or possibly eliminated during the planned excavation. The temporary storage pads and cells, their surrounding walls or barriers, and the security fence surrounding the yard would be dismantled or demolished, and materials would be decontaminated and disposed, or recycled, as necessary and appropriate. Further, episodic water flow through four drainage ditches surrounding the Yard would need to be diverted during the construction process to preclude inflow of storm-event run-off water into the excavation. Finally, air and fugitive dust monitoring would need to be performed during the active phases of excavation, waste soil and debris loading and transport, and excavation backfill.

All excavated soil and demolition debris would be characterized and transported for disposal at off site landfills. Water generated from the collection of storm event water if the open excavations would be captured and treated on site, as necessary. It would be discharged to the Seneca County Wastewater Treatment Facility in conformance with their requirements.

Once the excavation was completed and its extent confirmed by the collection and analysis of confirmatory samples, the area of the excavation would need to be backfilled, compacted, and graded.

Once this action was completed, the land excavated would be appropriate for unrestricted use and unlimited exposures, and no further land use restriction would be imposed on the soil found in this area.

SEAD-121C Alternative 2 Costs

Capital Cost	$17,600,000
Annual OM&M Cost (soil)	$0
Annual OM&M Cost (groundwater)	$3,000
Present-Worth Costs:	$17,637,230
Construction time	12 Months
Completion Time	24 Months

SEAD-121I, the Rumored Cosmoline Oil Disposal Area

Alternative 2 for soil at SEAD-121I is essentially identical to that which is discussed above for SEAD-121C. This alternative involves the excavation of soil containing hazardous substances at levels in excess of the NYSDEC's Unrestricted Use Soil Clean-up Objective levels. A summary listing of the hazardous substances found in surface and ditch soils at SEAD-121I where measured concentrations exceed NYSDEC's Unrestricted Use Soil Cleanup Objectives is provided in **Table 7**.

TABLE 7
Comparison of Hazardous Substance Concentrations found in SEAD-121I Soil Versus NYSDEC's Unrestricted Use Soil Clean Up Objectives

Hazardous Substance	Units	95th UCL of the Mean Concentrations	NYSDEC 's Unrestricted Use Value	Number of Concentrations Above Criteria	Is the 95th UCL Above Criteria (Y/N)?
Acetone	µg/Kg	61	50	3	Y
Benzo(a)anthracene	µg/Kg	9252	1000	14	Y
Benzo(a)pyrene	µg/Kg	8419	1000	16	Y
Benzo(b)fluoranthene	µg/Kg	10431	1000	16	Y
Benzo(k)fluoranthene	µg/Kg	9405	800	17	Y
Chrysene	µg/Kg	11998	1000	17	Y
Dibenz(ah)anthracene	µg/Kg	1263	330	10	Y
Indeno(1,2,3-cd)pyrene	µg/Kg	4468	500	14	Y
Phenol	µg/Kg	759	330	1	Y
B(a)P Equivalents	µg/Kg	13000	10000	2	Y
DDE	µg/Kg	14	3.3	5	Y
DDT	µg/Kg	13	3.3	2	Y
Aldrin	µg/Kg	5.9	5	3	Y
Dieldrin	µg/Kg	11	5	2	Y
Endrin	µg/Kg	4.8	14	1	N
Arsenic	mg/Kg	26	13	6	Y
Cadmium	mg/Kg	2.5	2.5	4	Y
Chromium	mg/Kg	73	30	7	Y
Copper	mg/Kg	65	50	5	Y
Lead	mg/Kg	54	63	8	N
Manganese	mg/Kg	89533	1600	13	Y
Nickel	mg/Kg	96	30	19	Y
Selenium	mg/Kg	41	3.9	7	Y
Silver	mg/Kg	2.4	2	3	Y
Zinc	mg/Kg	163	109	14	Y

Analysis of available analytical data indicates that one or more of the identified hazardous substances are found in most soil samples collected and characterized during the RI at levels that exceed the Unrestricted Use Cleanup Objective levels. The identified hazardous substances identified were found in shallow soils (0 to 2 feet) because only a thin layer of soil exists above the underlying bedrock in this portion of the Depot.

Based on this distribution of hazardous substances, most of the four blocks that define the Rumored Cosmoline Oil Disposal Area would require excavation to an average depth of 2 feet. The area across the bounding road surfaces to the front face of the parallel, north-south oriented rows of facing warehouses that constrict the

extent of this AOC would not be excavated. The Army believes that the roads are a physical barrier that bound the limit of the AOC and limit the extent of excavation. The area surrounding the Rumored Cosmoline Oil Disposal Area and not associated with a release of hazardous substances would remain with the existing land use control for industrial use only. Since most soil samples collected from the warehouse area contained one or more contaminants that exceeded an unrestricted use cleanup objective, the Army believes that the entire warehouse area that surrounds the exterior of the Rumored Cosmoline Oil Disposal Area would have the existing LUC remain.

Based on this excavation area, 45,425 CY of soil and roadway would need to be excavated, characterized, treated (as necessary), transported and disposed of off site at a non-hazardous waste landfill.

The area's underlying stormwater collection and conveyance system may be compromised, requiring subsequent repair or replacement. Further, buried utility lines that run through the area (telephone, electricity, gas and water) would possibly need to be addressed. Finally, the railroad line and sidings servicing the warehouse area could also have to be removed, limiting reuse potentials

Silt fencing would be erected around the excavation site to minimize storm water run-on and runoff and to limit the transport of soil via erosion. Episodic storm water run on flows into excavation areas would be captured, tested, treated as necessary, and then discharged to the Seneca County Wastewater Authority system. All excavated soil and associated demolition debris would be characterized and transported for disposal at off site landfills.

The area of the excavation would need to be backfilled with clean fill, the fill would be compacted, and the site would be regraded. As a result of this action, the land excavated would be appropriate for unrestricted use and unlimited exposures, and no further land use restriction for soil would be imposed on the area.

SEAD-121I, Alternative 2 Costs

Capital Cost	$4,542,500
Annual OM&M Cost (soil)	$0
Annual OM&M Cost (groundwater)	$3,000
Present-Worth Costs:	$4,579,730
Construction time	15 Months
Completion Time	27 Months

Alternative 3: Excavation of Contaminated Soil to Achieve Industrial Use Cleanup Objectives, Off Site Treatment/Disposal and Soil Backfill.

SEAD-121C, the DRMO Yard

This alternative involves the excavation of soil containing hazardous substances at levels that exceed the NYSDEC's Industrial Use Soil Clean-up Objective levels. A summary listing of hazardous substances found in surface, subsurface and ditch soils at SEAD-121C at concentrations exceeding NYSDEC's Industrial Use Soil Cleanup Objectives is provided in **Table 8**.

TABLE 8
Comparison of Hazardous Substance Concentrations found in SEAD-121C Soil Versus NYSDEC's Industrial Use Soil Clean Up Objectives

Hazardous Substance	Units	95th UCL of the Mean Concentrations	NYSDEC 's Restricted Industrial Use Value	Number of Concentrations Above Criteria	Is the 95th UCL Above Criteria (Y/N)?
Benzo(a)pyrene	µg/Kg	1986.1	11000	7	Y
Benzo(b)fluoranthene	µg/Kg	2640.2	1100	1	N
B(a)P Equivalents	µg/Kg	2658.9	11000	2	N
Lead	Mg/Kg	2278.1	3900	3	N

Three separate areas of the former DRMO Yard would be excavated to remove soil containing hazardous substances above industrial cleanup objective levels under this alternative. The first area centers around an isolated, surficial (approximately 1 foot) detection of benzo(a)pyrene exceeding the industrial use standard that is located partway along the northwest facing fence line that separates the yard from the abutting drainage ditch. Approximately 1,315 cubic yards of soil would be removed from this location.

The second excavation area defined by three elevated detections of lead that were found in the shallow soil in the northern portion of the DRMO Yard, where the former debris pile, storage pad and storage cells were located. Approximately 1,620 cubic yards of soil would be excavated. The last excavation area would be located to the east and almost entirely outside the former DRMO Yard where soil samples indicate that levels of benzo(a)pyrene exceeding industrial standards are present in soils to a depth of at least two feet. This area is approximated by results from three samples along the southern edge investigated area and one near the former storage cells that are located to the north of Building 316 inside the DRMO Yard. Approximately 12,000 CY of soil would be excavated from this area.

The total excavation volume for this alternative is approximately 14,900 CY.

As part of the construction work, the soil exterior to two permanent buildings will be excavated, as will soil in the vicinity of two railroad spur lines that service this portion of the former Depot. A portion of the storage cells and security fence surrounding the yard would be dismantled or demolished, and materials would be decontaminated as necessary. All excavated soil and demolition debris would be characterized and transported for disposal at an off-site non-hazardous landfill. If any of the soil was found to be hazardous, on site treatment would be used prior to transport to the off site landfill. Water generated from the collection of runoff would be captured and treated on site, as necessary. It would be discharged to the Seneca County Wastewater Treatment Facility in conformance with their requirements.

The area of the excavation would need to be backfilled, compacted, and graded. As a result of this action, the land comprising the former DRMO Yard would be appropriate for future industrial use. Institutional controls in the form of an environmental easement would be used to prohibit the use of the property for non-industrial activity purposes.

Because this alternative would result in hazardous substances remaining on site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years. If justified by the review, further remedial actions may be implemented to remove or treat the identified wastes.

SEAD-121C, Alternative 3 Costs

Capital Cost	$1,490,000
Annual OM&M Cost (soil)	$3,000
Annual OM&M Cost (groundwater)	$3,000
Present-Worth Costs:	$1,564,460
Construction time	9 Months
Completion Time	21 Months

SEAD-121I, the Rumored Cosmoline Oil Disposal Area

Soil containing hazardous substances at levels in excess of the Commercial Use Soil Objective levels would be excavated from SEAD-121I, characterized, treated on site, as necessary, and then transported off site for disposal at a licensed landfill. A summary listing of hazardous substances found in surface and ditch soils at SEAD-121I at concentrations in excess of NYSDEC's Commercial Use Soil Cleanup Objectives is provided in **Table 9**.

TABLE 9
Comparison of Hazardous Substance Concentrations found in SEAD-121I Soil Versus NYSDEC's Commercial Use Soil Clean Up Objectives

Hazardous Substance	Units	95th UCL of the Mean Concentrations	NYSDEC 's Restricted Commercial Use Value	Number of Concentrations Above Criteria	Is the 95th UCL Above Criteria (Y/N)?
Benzo(a)anthracene	µg/Kg	9252	5600	6	Y
Benzo(a)pyrene	µg/Kg	8419	1000	16	Y
Benzo(b)fluoranthene	µg/Kg	10431	5600	8	y
Dibenz(ah)anthracene	µg/Kg	1263	560	6	Y
Indeno(1,2,3-cd)pyrene	µg/Kg	4468	5600	3	N
B(a)P Equivalents	µg/Kg	13000	10000	3	Y
Arsenic	mg/Kg	26	16	5	Y
Manganese	mg/Kg	89533	10000	8	Y
Nickel	Mg/Kg	96	310	2	N

Based on a review of analytical data collected at SEAD-121I, the Army estimates that approximately 5,500 CY of soil would be excavated from southern most block of the AOC; another 2,850 CY would be excavated from next block; over 8,520 CY would need to be excavated from the third block of the AOC; and, roughly 4,760 CY would be

excavated from the northern most block of the AOC. Each excavation would be extended to an average depth of 2 feet below grade. The existing roadways would again serve as physical barriers that bound to outward extent of all of the proposed excavations.

Approximately 21,630 CY of soil would be excavated, characterized, treated (as necessary), transported and disposed of off site at a non-hazardous waste landfill.

During the construction work, uses of the warehouse facilities affected by the excavation would need to be interrupted or terminated. As part of the construction work, many of the adjacent roadways surfaces would be removed, and the integrity of the underlying storm water diversion system may be compromised, requiring subsequent repair or replacement. Further, the railroad line and sidings servicing the warehouse area would also be removed, requiring replacement.

Silt fencing would be erected around the area of excavation to minimize storm water run-on and runoff and to limit the amount of erosion that would occur. Episodic storm water run on flows into excavation areas would be captured, tested, treated as necessary, and then discharged to the Seneca County Wastewater Authority for final treatment and discharge. All excavated soil and associated demolition debris would be characterized and transported for disposal at off site landfills. Water generated from the collection of runoff would be captured and treated on site, as necessary.

The area of the excavation would need to be backfilled with clean fill and regraded. As a result of this action, the land excavated would be appropriate for commercial use.

Because this alternative would result in hazardous substances remaining on site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years. If justified by the review, further remedial actions may be implemented to remove or treat the identified wastes.

SEAD-121I, Alternative 3 Costs

Capital Cost	$2,163,000
Annual OM&M Cost (soil)	$3,000
Annual OM&M Cost (groundwater)	$3,000
Present-Worth Cost:	$2,237,460
Construction time	12 Months
Completion Time	24 Months

Alternative 4: Land Use Control Alternative

SEAD-121C, the DRMO Yard

The Army conducted human health and ecological risk assessments based on sampling results for soil and surface water at SEAD-121C, in accordance with Superfund guidance. The results of this risk assessment indicate that SEAD-121C is suitable for the continued use as an industrial area.

Under this alternative, institutional controls in the form of land use restrictions that prohibit the use of the site for any purpose other than industrial activities would be implemented.

It is estimated that this alternative would take approximately one month to implement. This alternative would allow hazardous substances to remain at the site above levels that would allow for unrestricted use and unlimited exposures. Therefore, CERCLA requires that the site be reviewed at least once every five years. If justified by the review, further remedial actions may be implemented to remove or treat the identified wastes.

SEAD-121C, Alternative 4 Costs

Capital Cost	$0
Annual OM&M Cost (soil)$3,000Annual OM&M Cost (groundwater)	$3,000
Present Worth Cost	$74,460
Construction time	1 Month
Completion Time	1 Month

SEAD-121I, the Rumored Cosmoline Oil Disposal Area.

The Army conducted human health and ecological risk assessments for SEAD-121I. The SLERA indicated that no final ecological COCs were identified and that the area

is not an attractive habitat for ecological receptors. The human-health risk assessment indicated that the likely carcinogenic risks associated with the exposure to hazardous substances currently found in the soils at, and in the vicinity of the AOC, are within the EPA's recommended risk range of 10^{-4} – 10^{-6}. The human-health risk assessment also indicated that residual levels hazardous substances found at the AOC did pose potential non carcinogenic risks to current and future receptors.

Non carcinogenic health risks were identified and are directly associated with residuals of the U.S. Government's strategic stockpiles of ferro-manganese ore that are located within the bounds of the Rumored Cosmoline Oil Disposal Area. The Government's stockpile mission continues at the SEDA, and will for the foreseeable future. Therefore, it is likely that non carcinogenic risks will persist, until such time as the residuals from the stockpiles are removed, and necessary mission termination actions are completed. As the strategic stockpile mission is ongoing, materials associated with them are not governed by CERCLA. The Army has notified parties responsible for the management and administration of the strategic stockpiles that risks exist due to the presence of hazardous substances in soils surrounding, and presumably underlying, the stockpiles. The administrators acknowledge that site cleanup will be required once the mission is terminated. In the interim it is the Army's intention to maintain the security fences that surround the stockpile locations to minimize potential inadvertent access into the affected areas. Further, appropriate warning signs will be posted on the security fences to notify potentially affected personnel of the hazards that are associated with the materials.

However, since hazardous substances remain at the AOC, the Army will also impose institutional controls in the form of land use restrictions that prohibit the use of the site for any purpose other than industrial activities at the AOC. It is estimated that this alternative would take approximately one month to implement.

Furthermore, since this alternative would allow hazardous substances to remain at the site above levels that would allow for unrestricted use and unlimited exposures, CERCLA requires that the site be reviewed at least once every five years. If justified by the review, further remedial actions may be implemented to remove or treat the identified wastes.

SEAD-121I, Alternative 4 Costs

Capital Cost	$0
Annual OM&M Cost (soil)	$3,000
Annual OM&M Cost (ore piles)	$1,000
Annual OM&M Cost (groundwater)	$3,000
Present Worth Cost	$86,870
Construction time	1 Month
Completion Time	1 Month

COMPARATIVE ANALYSIS OF ALTERNATIVES

The evaluation criteria are described below.

- Overall protection of human health and the environment assesses 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 protections 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 address 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 the estimated capital and OM&M costs and net present-worth costs.

- State acceptance indicates if, based on tits review of the RI/FS and Proposed Plan, 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 Proposed Plan and the RI/FS reports.

A comparative analysis of these alternatives based upon the evaluation criteria noted above is presented below. Since the remedial alternatives considered for both sites are identical, the following discussion applies to both AOCs, except where AOC specific variations are noted.

Overall Protectiveness of Human Health and the Environment

Alternative 1 would not be protective of human health or the environment since it would not address the soils that have been found to contain hazardous substances which pose risks to human and ecological receptors for unrestricted use. Alternative 2 is protective of human health and the environment as its objective is to removal all soil that contains hazardous substances in excess of levels that would allow for unrestricted use and unlimited exposures. Alternatives 3 and 4 are protective of future industrial scenario human health for the future site use as an industrial area. Alternative 3 is slightly more protective of human health than 4 since the highest contaminant concentrations are removed and replaced with material that is not yet affected by hazardous substance.

Compliance with ARARs

There are currently no promulgated federal standards for hazardous substance levels in soils, and risked based decisions are used to determine if cleanup is warranted or necessary. NYSDEC recently issued and enacted into state law cleanup objectives for five categories of future land use (i.e., unrestricted, residential, restricted-residential, commercial, and industrial) at waste sites located within its bounds and these are considered to be "relevant and appropriate" criteria to consider.

Alternative 1 does not comply with the NYSDEC's soil cleanup objectives. Alternatives 2 and 3 comply with NYSDEC's soil cleanup objectives for the future use of the site anticipated under each alternative. Although Alternative 4 does not comply with NYSDEC's industrial use cleanup objectives, a risk assessment performed using USEPA's risk assessment guidance demonstrated no human health risk for the future use of the site. LUCs will be implemented to maintain that future use.

EPA and the New York State Department of Health (NYSDOH) have promulgated health based protective criteria, which are enforceable standards for drinking water contaminants. Hazardous substances have been identified in the groundwater at SEAD-121C. The levels of metals identified are consistent with the Depot's background groundwater quality. Occasionally, organic contaminants have also been identified in the groundwater at SEAD-121C, but these appear to be associated result with releases from SEAD-27, which abuts the DRMO Yard. A separate ROD, approved by the Army, EPA, and NYSDEC, imposes a groundwater access and use restriction on all land within the PID area based on the data that is available from SEAD-27. Furthermore, the area of SEAD-121C is serviced by a municipal water supply source that is not directly derived from groundwater. Given these considerations, and the Army's and EPA's prior decision to impose a area wide access and use restriction on groundwater in the PID Area, the current proposed remedy does not consider any form of groundwater treatment.

However, since groundwater was identified at SEAD-121C and since all groundwater within the State of New York is considered a source of drinking water, the federal and state criteria health based criteria are applicable, and none of the proposed remedies proposed for SEAD-121C addresses this criteria.

Groundwater was not encountered in the unconsolidated soils above the shallow bedrock in SEAD-121I. The area of SEAD-121I is also served by a municipal source of potable water that is derived from a non-groundwater source location. Therefore, groundwater criteria are not applicable to the proposed remedy at SEAD-121I.

Reduction in Toxicity, Mobility, or Volume Through Treatment

Alternatives 1 and 4 would provide no reduction in the toxicity, mobility or volume of hazardous substances found in soil at either AOC. Under Alternative 2, soils containing hazardous substances in excess of the state's unrestricted use cleanup objectives would be excavated and transported off site for disposal. This would reduce the toxicity and mobility of hazardous substances left at the AOCs. Comparably, Alternative 3 would also reduce the toxicity and mobility of hazardous substances left at the AOCs, but not to the same extent as would be achieved under Alternative 2. In either case, if excavated soil needed to be stabilized prior to off site disposal, the volume of the material disposed at the off site facility would increase.

Short-Term Effectiveness

Alternatives 1 and 4 would not pose any additional short term hazards to workers at the AOCs or the community as physical construction is not included in either of these remedies. Alternatives 2 and 3 could both pose some additional short-term hazards to neighboring site workers and the community through dermal contact, ingestion or inhalation of hazardous constituents during the excavation, loading, transporting, and unloading operations that are needed to complete these construction efforts. Further, noise from the heavy equipment used for excavation, loading and hauling could also impact nearby employees of neighboring industries and companies, and local residents. Excavation noise levels at SEAD-121I are expected to be more significant because it is likely that the underlying bedrock will be encountered and repeatedly scraped during the work, and there are more industrial and residential units in close proximity to this AOC than SEAD-121C. In addition, interim and post remediation sampling activities would pose some risk to site 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 and debris will be transported off site under alternatives 2 and 3, there will 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. Since more material is being excavated and disposed under Alternative 2, there is a greater potential under this option than Alternative 3. Alternatives 2 and 3 also require varying amounts of soil disturbance that could affect the surface water hydrology in the areas being excavated.

At SEAD-121C, Alternative 2, which involves the excavation of a larger amount of soil overall, and involves the excavation of soil from areas within or very close to four existing drainage ditches that service the greater PID Area, has a greater likelihood of impacting the surface water hydrology than does Alternative 3. At SEAD-121I, Alternative 2 also involves the excavation of more soil, and this is expected to include more soil to the depth of bedrock, and the exposure of bedrock may significantly impact surface water flow. Alternative 2's disturbance of soil across larger surfaces at both AOCs 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 will need to be implemented and monitored during the excavation, loading, and hauling activities. Lesser levels of controls would also need to be implemented, maintained and monitored during the work associated with Alternative 3.

Implementability

Alternative 1, the no-action alternative, would be the easiest alternative to implement, since there are no actions to undertake.

Alternative 4 will be slightly more difficult to implement than Alternative 1 because it requires the implementation, maintenance, oversight and annual reporting of the continuing effectiveness of land use controls and the preparation, submittal and approval of a land use control implementation plan. Additionally, at SEAD-121I, engineering controls (security fences and warning signs) would need to be continued and maintained in the vicinity of the ferro-manganese ore piles until the U.S. Government's continuing strategic stockpile mission was terminated at AOC.

The excavation; stabilization, as necessary; characterization; transport; and disposal of soil and debris excavated under either Alternatives 2 or 3 are readily available and mature technologies and can be accomplished. The increased volume of soil/debris requiring excavation under Alternative 2 at both AOCs would increase the difficulty of completing this alternative above those anticipated for Alternative 3.

Cost

The present worth cost associated with Alternatives 2, 3, 4 and G-1 is calculated using a discount rate of seven percent (7%) and a 30-year time interval. The estimated capital, operation, maintenance, and monitoring, and the present-worth costs are presented in **Table 10** below.

TABLE 10

Alternative	Capital Cost	Annual OM&M Costs	Total Present-Worth Costs
SEAD-121C and SEAD-121I, Separately			
Soil	$0	$3,000	$37,230
Groundwater	$0	$3,000	$37,230
SEAD-121C, the DRMO Yard			
2	$17,600,000	$3,000	$17,637,230
3	$1,490,000	$6,000	$1,564,460
4	$0	$6,000	$74,460
SEAD-121I, the Rumored Cosmoline Oil Disposal Area			
2	$4,542,500	$3,000	4,579,.730
3	$2,163,000	$6,000	$2,237,460
4	$0	$7,000	$86,870

Alternative 1 is the least expensive remedial action alternative at an estimated cost of $74,460. Alternative 2 is the most expensive remedial action alternative with respective AOC costs of $17,637,230 for SEAD-121C and $4,579,730 for SEAD-121I.

State Acceptance

NYSDEC concurs with the preferred remedial soil and groundwater alternatives

Community Acceptance

Community acceptance of the preferred alternative for SEAD-121C and SEAD-121I will be assessed in the ROD following review of the public comments received on the Proposed Plan.

SELECTED REMEDY

The selected remedy for any site should, at a minimum, eliminate or mitigate all significant threats to the public health or the environment presented by the hazardous substances or waste present at the site. Based on the data presented and summarized earlier within this Proposed Plan, the Army has selected to impose LUCs on land that is designated as SEAD-121C, the DRMO Yard, and SEAD-121I, the Rumored Cosmoline Oil Disposal Area. The Army's recommended LUCs will:

- Prohibit use of the land for residential activities including residential housing, elementary or secondary schools, child care facilities, playgrounds, etc.; and,
- Prohibit access to, and use of groundwater at the AOC.

Further, for portions of SEAD-121I only, the Army will maintain and secure existing engineering controls (security fences) around the strategic stockpiles of ferro-manganese ore to restrict the access to these portions of the AOC. These engineering controls will be maintained until the stockpiles of the strategic ores are removed, necessary post-stockpile actions are completed, and the ongoing mission is terminated by the governing authority.

Results of the site investigations and risk assessment performed using data developed from SEAD-121C and SEAD-121I indicate that hazardous substances have been identified to exist at, or in the vicinity of, the AOCs. Levels found are higher than NYS guidance values for unrestricted use, and it is likely that the identified concentrations would pose a threat to residential populations. Thus, the levels measured do not allow for unlimited exposure and unrestricted use of the land.

At SEAD-121C (DRMO Yard) levels of residual hazardous substances found in the soil do not pose a potential risk to the human receptors that are considered most likely to use the land (i.e., industrial worker, construction worker, adolescent trespasser) for the foreseeable future. Further, while hazardous substances were identified in the groundwater at concentrations above NYS AWQSs, an alternative potable water distribution supply exists throughout the PID Area, which minimizes the potential risks represented by contact or ingestion with this media.

At SEAD-121I (Rumored Cosmoline Oil Disposal Area) levels of residual hazardous substances found in the soil in proximity to the strategic stockpiles do pose a non-cancer risk to the industrial and construction workers. Therefore, there is a need to limit and restrict incidental human contact with the soil at these locations until such time as the piles are removed, dusts and debris associated with them are addressed, and the storage mission is terminated.

Further, the quality of the groundwater at SEAD-121I, while not found during the investigations completed, is unknown and thus suspect. Groundwater found at other locations within the PID area suggests that there is a regional poor quality of groundwater and the potential to have hazardous substances at concentrations in excess of NYS AWQSs could be present. Therefore, the Army believes it prudent to limit or restrict potential contact with or ingestion of this media until such time as sufficient data is available to clarify if possible risk exists. The presence of a potable water supply in the PID area again minimizes the potential impact of this decision.

Security fences already exist around the location of the stockpiles, and these will be maintained until such time as the mission is terminated.

Finally, since the area surrounding these sites has a land use control all ready existing on it, the sites should stay consistent with the surrounding land uses.

The residential use and groundwater access/use LUCs proposed as part of this remedy already have been proposed and implemented by the Army and the EPA throughout the PID Area. These LUCs result from conditions found at other AOCs (SEADs 27, 64A, and 66) and were implemented in September 2004. SEAD-27 is immediately adjacent to SEAD-121C. These LUCs may be lifted on a location-by-location basis at some time in the future, with the consent and approval of the Army, the USEPA, and the NYSDEC, if a future owner/user/occupant provides additional data that indicates that the selected location is suitable for unlimited exposure and unrestricted use.

The Army's recommended remedial actions for SEAD-121C, the DRMO Yard and SEAD-121I, the Rumored Cosmoline Oil Disposal Area discussed in this Proposed Plan include LUCs. To implement the Army's recommended remedy at the AOCs, a LUC Remedial Design (RD) will be prepared. The LUC RD Plan will include: a Site Description; the 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;

and, Reporting/Notification requirements. In addition, the Army will prepare an environmental easement for the AOC, consistent with Section 27-1318(b) and Article 71, Title 36 of ECL, in favor of the State of New York and the Army, which will be recorded at the time of transfer of the AOCs from federal ownership. A schedule for completion of the draft LUC RD covering the AOC will be completed within 21 days of the ROD signature, consistent with Section 14.4 of the Federal Facilities Agreement (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, maintain, report, and enforce the LUCs 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.

[i] LORAN – long range navigation.