65-13

DRAFT (rev 1)
BCT Agenda
23 Jan 2007 1330 - 1630 Hours
24 Jan2007 0830 - 1130 Hours

January 23

SEAD 11 Removal Action review
Ground Water results of Ash Landfill
LUC Remedial Design Addendum
Building Demolition effort at SEAD 16 and 17
SEAD 121 C and I PRAP Discussion regarding ORE pile house keeping.

January 24

See Attached

Addendum 1

Land Use Control Remedial Design
For
SEAD 27, 66, and 64A
Seneca Army Depot Activity
Romulus, New York
(January 2006)

Written by: Seneca Army Depot Activity
January 4, 2007

Addendum 1
Land Use Control Remedial Design
For
SEAD 27, 66, and 64A
Seneca Army Depot Activity
Romulus, New York
(January 2006)

1. Purpose: The Land Use Control Remedial Design (RD) For SEAD 27, 66, and 64A (SEAD LUC RD) implements land use controls for the SEAD Planned Industrial/Office Area and Warehouse area. The SEAD LUC RD exempted numerous parcels identified as United States Army retained parcels. Two of those parcels were identified as SEAD 25, Fire Demonstration Area and SEAD 26 Fire Training Area. Subsequently, the Army has completed the remediation of those two parcels and must implement LUCs. This addendum supplements the SEAD LUC RD to include these sites in accordance with the SEAD LUC RD Supplementation provision. .

2. LUC Objectives and Restrictions:

The Record of Decision ("ROD") titled "The Fire Training and Demonstration Pad (SEAD 25) and the Fire Training Pit and Area (SEAD 26) signed on September 29, 2004 requires the establishment of institutional controls ("ICs") at SEAD 25 and 26. The ROD LUC Objectives for SEAD 25 and 26 are as follows:

- Prevent access or use of the groundwater until cleanup levels are met; and
- Maintain the integrity of any current or future remedial or monitoring system.

Figure 1 has been modified to indicate that SEAD 25 and SEAD 26 are no longer identified as Army retained property and that these parcels will be managed under this RD.

Further more, since SEAD 25 and 26 parcels are within the boundary of the PID and Warehouse area, these areas will also be subject to the following overarching objective:

- Prevent residential housing, elementary and secondary schools, childcare facilities and playground activities.

Specifically, the residual contamination at the Controlled Property will not pose an unacceptable threat to human health and the environment provided the following Land Use Restrictions are employed:

(1) Commercial/Industrial Use Restriction.

The Controlled Property shall be used solely for commercial and industrial purposes and not for residential purposes, such real property having been remediated only for commercial and industrial uses. Commercial and industrial uses include, but are not limited to, administrative/office space, manufacturing, warehousing, restaurants, hotels/motels, and retail activities. Residential use includes, but is not limited to, housing; day childcare facilities; schools (excluding education and training programs for persons over 18 years of age); assisted living facilities; and outdoor recreational activities (excluding recreational activities by employees and their families incidental to authorized commercial and industrial uses on the Controlled Property).

(2) Groundwater Restriction.

Other than for the installation of and obtaining samples from groundwater monitoring wells, there shall be no access to or use of the groundwater on the Controlled Property for any purpose without the prior written approval of the U.S. Department of the Army (the "Army"), the U.S. Environmental Protection Agency Region II ("USEPA Region II"), and the New York State Department of Environmental Conservation ("NYSDEC").

A map showing the location of the PID/Warehouse Area and the boundaries of the land use restrictions is attached hereto as the Land Use Restriction Map (Figure1).

Note - The PID/Warehouse Area ROD also proposed establishment of an area-wide set of land use restrictions for the PID/Warehouse Area. The area-wide land use restrictions will simplify IC implementation by having a single set of land use restrictions for the PID/Warehouse Area, which are consistent with its anticipated industrial land use. The PID/Warehouse Area also includes No Action/No Further Action ("NA/NFA") sites. These sites may be suitable for uses other than industrial. Upon request by a future property owner, the Army, USEPA Region II, and NYSDEC will evaluate any requested variances to the land use restrictions regarding a NA/NFA site on a site-by-site basis.

3. IMPLEMENTATION ACTIONS.

The SEAD LUC RD Implementation Actions are implemented on SEAD 25 and SEAD 26 to prevent future violation of the above LUC Objectives and Land Use Restrictions.

4. ENFORCEMENT

The SEAD LUC RD Enforcement provisions will apply to SEAD 25 and SEAD 26.

5. MODIFICATION

The SEAD LUC RD Modification provisions will apply to SEAD 25 and SEAD 26.

6. TERMINATION

The SEAD Termination provision will apply to SEAD 25 and SEAD 26.

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BCT Agenda

March 20, 2007 1330 - 1630 Hours
March 21, 2007 0830 -1100 Hours

March 20

Review of Reuse of Seneca Army Depot - Ethanol Plant info

Status of OB Grounds monitoring plan – NYSDEC status

SEAD 16/17 Pre-remediation Sampling Efforts

Ash Landfill Completion report concerns/comments

SEAD 25/26 LTM report concerns/comments

Mar 21

SEAD 121 PRAP comments
- Reducing the size of document
- Ore Piles requirements
- Pre-release condition assessment

RODs planned for FY 07

SEAD 59/71
SEAD 4/38
SEAD 121
17 Sites ROD
SEAD 1, 2, 5, 24,48
SEAD 11

REMEDIATION PLAN AND TRANSFER SCHEDULE
March 7, 2007

PID / WHSE Area

SEAD 59 & SEAD 71- PAINT DISPOSAL AREAS

Acreage: 9 acres
Site History: Site consists of fill areas that debris was placed in.
Risk: Potential Ground water contamination from petroleum contamination found in the soil. No risk remains from soils in fill areas.
Status of Remediation: Removal action of the contaminated soil is complete. Evaluation of GW is underway. RI has been prepared and demonstrates there is no risk from site for and industrial setting. PRAP recommending Institutional Controls has been prepared and is under review and comment and ROD is pending.

Funds: On Hand
RIP/RC: September 2007
FOST: June 2007
Deed: September 2007

SEAD 001-R (SEAD 16) - ABANDONED DEACTIVATION FURNACE

Acreage: 3 acres.
Site History: This unit was used to destroy small arms ammunition.
Risk: SEAD 16 Abandoned Deactivation Furnace: Facility has residual powder in piping and OE scrap that has potential for explosive residuals. There is heavy metals contamination in the soil.
Status of Remediation: ROD has been signed. The work plan to complete the action is being prepared under a performance based contract.

Funds: November 07
RIP/RC Completion Date: June 2008
FOST: July 2008
Deed: September 2008

SEAD 001-R (SEAD 17) - DEACTIVATION FURNACE

Acreage: 8 acres
Site History: This unit was used to destroy small arms ammunition.
Risk. SEAD 17 Deactivation Furnace: Facility has OE scrap that has potential for explosive residuals. There is heavy metals contamination in the soil.

Status of Remediation ROD has been signed. The work plan to complete the action is being prepared under a performance based contract.

Funds: November 07
RIP/RC Completion Date: June 2008
FOST: July 2008
Deed: September 2008

SEAD 25 - FIRE DEMONSTRATION AREA

Acreage: 3.5 acres.
Site History: This site was used to demonstrate the installation fire fighting capability.
Risk: Volatiles in the soil contributing to GW contamination. Semi-volatiles in ditch line poses limited long term risk to child.
Status of Remediation: Remedial Action is complete and the long term management of the ground water is underway

Funds: Dec 2004
RIP/RC Completion Date: Dec 2005
FOST June 2006
Deed: September 2007

SEAD 26 - FIRE TRAINING AREA

Acreage: 6.7 acres.
Site History: This site was used to practice fire-fighting capability.
Risk: Semi-volatiles in surface soil and ditch line along railroad pose limited long term risk to child.
Status of Remediation: Remedial Action is complete and the long term management of the ground water is underway.

Funds: Dec 2004
RIP/RC Completion Date: Dec 2005
FOST: June 2006
Deed: September 2007

SEAD 121 - EBS SITE – INDUSTRIAL

Acreage: 23 Acres
Site History: DRMO yard and cosmoline steam cleaning site.

These sites have had a site investigation performed. PAHs (Semi-volatiles) have been found. Solvents have been found in the ground water around the DRMO yard.
Risk: Soil contamination may pose threat under the residential scenario but not the industrial scenario.
Status of Remediation: Proposed Remedial Action Plan has been submitted, commented on and is under revision. The Public meeting is expected in April. Proposing LUC

Funds: November 2005
RIP/RC Completion Date: December 2006
FOST: June 2007
Deed: September 2007

SEAD 50 - TANK FARM STORAGE
SEAD 54 - ASBESTOS STORAGE

SITE COMPLETE

Acreage: 26 acres
Sites History: These sites are where the Army stored material in above ground steel tanks. Movement of the material resulted in contamination of the soil.
Status of Remediation: These two sites have a removal action underway. The action consists of excavation and disposal by land-filling the soil, which are contaminated with heavy metals.
Status: Action Complete

Funds: Available
RIP/RC date: March 2005
FOST: Dec 2003
Deed: April 2004

SEAD 38 - BUILDING 2078 BOILER BLOW DOWN PIT
SEAD 39 - BUILDING 121 BOILER BLOW DOWN PIT
SEAD 40 - BUILDING 319 BOILER BLOW DOWN PIT

Acreage: 1 acre combined
Site History: These sites consist of contamination resulting in the blow down of the central boilers, which was discharged to the ground. SEAD 38 is also included in the SEAD 4 Area of concern.
Risk: Petroleum products may pose risk.
Status of Remediation: A PRAP for SEAD 39 and 40 with institutional controls has been prepared limiting use to industrial operations.

Funds: Available
RIP/RC date: April 2006
FOST: June 2007
Deed: September 2007

SEAD 5 - SLUDGE PILES

Acreage: 2 acres
Site History: This site is a result of the storage of domestic sewage sludge from the sewer treatment plant drying beds. The investigation revealed that the sludge has elevated level of heavy metals in it.
Risk: Heavy metals may pose a risk under the residential scenario.
Status of Remediation: Removal Action is complete. A PRAP recommending institutional controls is being prepared

Funds: Available
RIP/RC date: March 2006
FOST: June 2006
Deed: September 2007

SEAD 67 - DUMPSITE EAST OF STP4

Acreage: 2 acres
Site History: This site is identified as a location where unknown material was dumped. The site investigation revealed that the soil is contaminated with metals and the contaminants were localized.
Risk: Soil contamination has been removed from the site
Status of Remediation: Removal action complete. The ROD establishing institutional controls is being staffed for signature

Funds: Available
RIP/RC date: March 2006
FOST: May 2006
Deed: September 2007

SEAD 1 and 2 – RCRA STORAGE FACILITIES

Acreage: 0.5 acres
Site History: These facilities, building 301 and 307 were used to storage hazardous waste pending shipment to a permitted facility. These sites were listed in the Federal Facilities Agreement even though they were regulated under RCRA.
Risk: SVOCs in soil remain around the building.
Status of Remediation: RCRA permit has been closed. An institutional control PRAP and ROD is being prepared to close out these sites.

Funds: Available
RIP/RC date: September 2005
FOST: May 2006
Deed: September 2006

DECOMMISIONING SURVEYS (PID / Whse Area)

Size: 2 buildings (306 and 5)
Site History: Seneca has a NRC license that requires termination prior to allowing unrestricted access to the inside of the buildings. Field survey work completed. Final evaluation of risk is pending final approval of objectives. Final report and approval is required before transfer.
Risk: Residual depleted uranium material could impact interior surface of structure. (None was found during field investigation)
Status of Remediation: Fieldwork Complete. Final Report has prepared commented on, and has been resubmitted. NRC approval is pending
Funds: Available
Site Work Completion Date: N/A
License Termination Date: May 2007

CONSERVATION AREA SITES

SEAD 003-R-01 (SEAD 46 &57) - AMMUNTION DESTRUCTION AREAS

Acreage: 113 acres
Site History: These sites are where the Army performed destruction of ammunition by detonation or discharge. The site investigation of these sites revealed contamination of MEC and heavy metals.
Risk: Sites have MEC scrap that has potential for explosive residuals. There is heavy metals contamination in the soil.

Status of Remediation: Field investigation for MEC has been completed. The completion report is expected to be finalized in April 2007. A NFA PRAP and ROD are expected to close out this site.

Funds: November 2009
RIP/RC date: December 2011
FOST: May 2012
Deed: September 2012

SEAD 48 - PITCHBLENDE ORE STORAGE

Acreage: 55 acres
Site History: This site consists of 11 igloos that were used to store pitchblende ore. The igloos were decommissioned in the mid 1980s. Unrestricted access approval is on file from NRC, NYS and EPA. An extensive removal occurred during the decommissioning process however there is a concern for residuals under current standards. Further investigation will determine whether additional work is required.
Risk: Residual left from previous removal may have long term impact for residence.
Status of Remediation: Final Field Survey is complete. A NFA PRAP and ROD are being prepared

Funds: November 2005
RIP/RC date: December 2006
FOST: March 2007
Deed: September 2007

DECOMMISSIONING SURVEYS (Conservation Area)

Size: 105 igloos and 4 buildings
Site History: Seneca has a NRC license that requires termination prior to allowing unrestricted access to the inside of the buildings. Field survey work completed. Final evaluation of risk is pending the final approval of the cleanup objectives. Evaluation of results will be completed and approved before final transfer.
Risk: Residual depleted uranium material could impact interior surface of structure (none was found during the fieldwork).
Status of Remediation: Fieldwork Complete. Final Report has prepared commented on, and has been resubmitted. NRC approval is pending
Funds: Available
Site Work Completion Date: N/A
License Termination Date: May 2007

SEAD 63 - MISCELLANEOUS COMPONENTS BURIAL SITE

Acreage: 4 acres
History of Site: This site was use by the Army to bury classified military unique components.
Risk: Military unique items to be removed which have the potential to contain low-level radiological contamination. Some heavy metal contamination may be present.
Status of Remediation: Removal action completed. The ROD is signed. No Further Action is required. Completed

Funds: Available
RIP/RC date: May 2006
FOST: June 2006
Deed: September 2007

SEAD 6 - ASH LANDFILL (including SEADs 3, 8, 14, 15)

Acreage: 42 Acres
Site History: Site is former municipal waste disposal area. Heavy metals remain in the soil. TCE (solvent) is found in the ground water.
Risk: Ecological risk potentially exists. Ground water wells will not be permitted.
Status of Remediation: ROD is signed. Remedial Action is complete. The Long Term Management of this site is underway.

Funds: Available
RIP/RC date: Jan 2007
FOST: July 2007
Deed: September 2007

SEAD 11 - OLD LANDFILL

Acreage: 6 acres
History of Site: Construction debris and other unknown items were disposed of at this site.
A site investigation conducted revealed contamination and unknown anomalies.
Risk: Heavy metals and solvent in the soil, unknown items in the fill area.
Status of Remediation: An Interim removal action is complete. A NFA determination with a PRAP and ROD is expected

Funds: January 2005
RIP/RC date: February 2007
FOST: June 2007
Deed: September 2007

SEAD 13 - INHIBITED RED FUMING NITRIC ACID (IRFNA)

Acreage: 11.5 acres
History of Site: This site was used by the Army to neutralize IRFNA, a liquid propellant constituent. The acid was poured into a trench filled with limestone and water and was neutralized. Process resulted in nitrogen compounds being introduced into the ground water. This site is expected to require land use controls only.
Risk: Has excess nitrates above drinking water standards
Status of Remediation: The ROD establishing institutional controls is being staffed for signature.

Funds: Available
RIP/RC date: September 2007
FOST: July 2007
Deed: September 2007

SEAD 4 - MUNITIONS WASHOUT FACILITY

Size: 4 acres
Site History: This site was used by the Army to wash out shell casing to remove explosives. Heavy metal contamination has been found in the soil.
Risk: None for industrial future use. Contaminants pose ecological concerns
Status of Remediation: The DRAFT PRAP has been prepared and is under review. A performance based contract has been procured to take this site through response complete.

Funds: November 2005
RIP/RC date: April 2008
FOST: May 2008
Deed: September 2008

SEAD 12 - RADIATION SITE

Size: 10.5 acres
History of Site: This site consists of the former Special Weapons Storage Area. Three areas where military unique items were buried and a localized groundwater plume contaminated with TCE was found during the remedial investigation. SEAD 72- Mixed Waste Storage Bldg. regulated under the Interim Status Hazardous Waste Permit will be closed out and incorporated into the ROD of the SEAD 12.
Risk: Groundwater has localized TCE (solvent) plume
Status of Remediation: The site is in the RI/FS process. FS is being prepared.

Funding: November 2008
RIP/RC date: December 2009
FOST: March 2010
Deed: September 2010

SEAD 23 - OPEN BURNING GROUNDS

Acreage: 30 acres
Site History: The Army used this site for burning propellant, explosives and pyrotechnics to destroy unstable items. This site is with in the boundary described by SEAD 115
Risk: See SEAD 115
Status of Remediation: The Record of Decision has been signed. The remedial action is complete. Long term monitoring is underway.

Funds: Available
RIP/RC date: September 2004
FOST: April 2017
Deed: September 2017

SEAD 002-R-01 (SEAD118) – EAST EOD RANGES

Acreage: 18 acres
Site History: This site represents 2 areas where MEC was found as a result of record search and site investigations. It is proposed to perform removal actions at the three locations and restrict the land use to surface activity.
Mission: site is 2 locations. Site 2 and 3 are adjacent each other and were used by EOD units for training. These sites have MEC scrap that may have residual explosive contamination.
Risk: Sites that have MEC scrap have potential for explosive residuals.
Status of Remediation: Field investigation for MEC has been completed. The completion report is expected to be finalized in April 2007. A NFA PRAP and ROD are expected to close out this site.

Funds: November 2005
RIP/RC date: Apr 2007
FOST: August 2007
Deed: September 2007

SEAD 007-R-01 (SEAD118) RIFLE GRENADE RANGE
Acreage: 30 acres
Site History: This site represents an area where MEC was found as a result of record search and site investigations. It is proposed to perform removal actions at the three locations and restrict the land use to surface activity.

Mission: site is actually 3 locations. The site was a training range where 40 mm training grenades and 37 mm LAW sub-caliber training rounds were fired. Training rounds have small explosive charge that create the "puff of smoke" to indicate the location of round. This site has MEC scrap that has residual explosive contamination.
Risk: Sites that have MEC scrap have potential for explosive residuals.
Status of Remediation: Field investigation for MEC has been completed. The completion report is expected to be finalized in April 2007. A NFA PRAP and ROD are expected to close out this site.

Funds: November 2005
RIP/RC date: November 2007
FOST: August 2012
Deed: September 2012

SEAD 24 - POWDER BURNING AREA

Acreage: 3.25 acres
Site History: This site was used in the late 40s early 50s to burn black powder and propellants. Investigation shows heavy metal contamination in the soil.
Risk: Soil contamination may pose a risk in the residential scenario.
Status of Remediation: A removal action at this site is complete. A NFA PRAP and ROD are being prepared

Funds: Available
RIP/RC date: April 2006
FOST: May 2006
Deed: September 2007

SEAD 006-R-01 (SEAD115) - OPEN BURNING / OPEN DETONATION

Acreage: 400 acres
Site History: This site is where the Army performed destruction of ammunition by detonation or discharge. The site investigation of this site revealed contamination of ordnance residual and heavy metals. This is a RCRA permitted site
Risk: Site has MEC scrap that has potential for explosive residuals. There is heavy metals contamination in the soil.
Status of Remediation: No work underway at this time.

Funds: November 2009 12
RIP/RC date: December 2016

FOST: April 2017
Deed: September 2017

SEAD 64B- GARBAGE DISPOSAL AREA

Acreage: 0.25 acres
Site History: This site is where the Army disposed of approximately 1 truckload of municipal garbage in the early 70's. The material is located under 10 feet of soil cover and requires closure as an inactive solid waste site.
Status of Remediation: ROD is being staffed for signature which establishes an IC on this site.

Funds: Available
RIP/RC date: May 2006
FOST: June 2006
DEED: September 2007

SEAD 64D- GARBAGE DISPOSAL AREA

Acreage: 0.25 acres
Site History: This site is where the Army disposed of approximately 1 truckload of municipal garbage in the early 70's. The material is located under 10 feet of soil cover and requires closure as an inactive solid waste site.
Status of Remediation: ROD is being staffed for signature which establishes an IC on this site.

Funds: Available
RIP/RC date: May 2006
FOST: June 2006
DEED: September 2007

SEAD 70- CONSTRUCTION DEBRIS AREA

Acreage: 0.25 acres
Site History: This site is where the Army disposed of construction debris such as fencing posts, concrete etc.

Risk: Site has a single sample that should elevated arsenic in the soil. No other contaminates were at levels of concern.
Status of Remediation: A performance based contract has been procured to take this site through response complete.

Funds: Available
RIP/RC date: December 2007
FOST: August 2008
DEED: September 2008

SEAD 27, 64A, 66 - IC ROD SITES

COMPLETED

PID sites with no risk for industrial operations.

ROD - Signed September 29, 2004 LTM with LUCs
RD - 15 Feb 2005
RA- N/A
Deed 30 Sep 2007

SEAD 122B AIRFIELD SMALL ARMS RANGE and SEAD 122E DEICING LOCATIONS

Acreage- 3
Site History: Small arms range for weapons qualifications. State Police intend to use range for like use. The parking apron adjacent the tower structure has elevated semi-volatile organic compounds.
Risk: Contamination from lead in soil. No ground water contamination found. The SVOCs may pose a risk under a residential scenario
Status of Remediation: The ROD establishing institutional controls is being staffed for signature

Funds: Available
RIP/RC date: September 2005
FOST amendment: May 2005
Deed: September 2007

SEAD 44A, 43, 52, and 69 PRISION PARCEL SITES

Acreage- 25
Site History: SEAD 44B was a function test range. SEAD 43, 52, 69 were sites with no risk for future use as a prison, and these sites were transferred in Aug 2002.
Risk: UXO contamination for practice grenades

Remediation Status: UXO has been removed. The ROD establishing institutional controls is being staffed for signature
Funds: Available
RIP/RC date: Sept 2004
FOST: Aug 2005
Deed: September 2007

Reviewed - BCT minutes File

BCT Meeting
Seneca Army Depot Activity
Thursday, October 18, 2007
Meeting Minutes

Attending:

Steve Absolom, SEDA
Randy Battaglia, NY District
Tom Battaglia, NY District
Janet Fallo, NY District
Chris Boes, USAEC
Dave Minvielle, US Army Counsel
Julio Vazquez, EPA Region 2
Doug Garbarini, EPA
John Malleck, EPA
Kuldeep Gupta, NYSDEC
John Swartwout, NYSDEC
Lisa Porter, NYSDEC Region 8
Mark Sergott, NYSDOH
Mark VanValkenburg, NYSDOH
Todd Heino, Parsons
Jackie Travers, Parsons

Meeting convened at approximately 1:00 PM.

PRAP SEAD 121
A site visit was conducted by attendees earlier in the day and elevated PAH levels at the site were discussed.

The draft final version of this PRAP should be updated to include an explanation of physical features in relation to sample locations with elevated PAH levels. The sample in the NE corner of the site should be identified as being located between RR tracks and areas with visible asphalt should be noted.

The ore pile discussion that is currently in the draft ROD should be added to the DF PRAP.

A redline strikeout version should be submitted to the agencies before finalizing the document.

The NYSDOH review cycle was discussed. The Army expressed concerns that the review cycle on documents is excessive, sometimes exceeding 90 days. NYSDOH requested that the Army regularly provide communication regarding priorities. The Army agreed to provide at least monthly communication regarding priorities. Staffing at NYSDOH was also discussed and the need for more dedicated staff within NYSDOH to the Seneca project was considered. John Swartwout from NYSDEC will assist NYSDOH in accessing the DSMOA database with the intent of securing additional staff assigned to this multi-site project.

PRAP SEAD 4/38

A site visit was conducted by attendees earlier in the day.

Currently this project is on hold awaiting a decision from the NYSDOH technical staff to agree or disagree with the Army's position that a restricted residential use restriction at this site is warranted. If NYSDOH disagrees with the unrestricted land use, it was suggested that a conference call be held with the technical staff to clarify their concerns. NYSDEC technical staff thought the Army made a strong argument against the land use restriction. However, NYSDEC upper management will not reconsider their position on the land use control unless both NYSDOH and NYSDEC technical staff agree with the Army position.

The Army noted that if NYSDEC forces a restriction, the Army would consider a commercial restriction in which case, the Army's clean up effort would be minimal since most commercial standards under Part 375 are already met. Since the future use of the site is training, this would qualify as a commercial use with respect to site clean up goals. The State noted that this may be the case as long as there were no intrusive activities (e.g. fox holes dug for training).

The State noted that if the Army pursued this route, the Army would need to make an argument as to why clean up goals protective of ecological resources don't apply. These are clean up goals the State could argue need to be met.

NYSDOH will contact their technical staff 10/19 to check on the status of their review.

PRAP SEAD 59/71

A site visit was conducted by attendees earlier in the day.

The EPA had concerns about the frequency of samples representing the excavated soil from the sites and about the PAH levels within the samples. Samples were collected at a frequency of about one per 150 CY. EPA initially found this inadequate. However, the Army noted that when conducting an RI, this frequency is typical. EPA's request to collect a sample for every 20 CY (representing one truck load) is excessive, according to the Army. Landfills only require one sample per 2000 cy.

At the end of the meeting, the PAH data from the soil remaining from the excavation compared to the NYSDEC clean up goals and the EPA region IX values was reviewed with USEPA and NYSDEC. The following points were made during this discussion.

- Ninety to ninety-five percent of individual results exceed at least one of the commercial NYSDEC values. During the site visit, ground up asphalt in the soil was visible. PAH concentrations from samples collected from the soil were fairly consistent (i.e. no significant spikes).

- Soil levels were less than NYSDEC's value of 22 ppm for protection of groundwater.

- The site visit indicated that there was no ash or petroleum stained soils in the piles. The piles are vegetated.

- EPA asked for some clarification regarding the volumes that were excavated versus the volume planned for removal. Discrepancies stem from volume (CY) to weight (ton) conversions, estimates of the required volume of soil to be removed in order to access contaminated soil, and initial overestimates of soil to be removed based on conservative RI observations.

EPA will re-evaluate their position based on the observations they made at the site and the data presentation during the meeting.

PRAP SEAD 1, 2, 5, 24, and 48

This PRAP consists of SEADs 1, 2, and 5 which have a land use control (LUC) since they are within the PID area (not due to site conditions) and SEAD-24 and SEAD-48 which have no LUCs.

NYSDEC is currently getting ready to brief upper management on this project.

NYSDOH suggested that further explanation be added to the PRAP regarding elevated PAHs and the source of the PAHs (e.g. presence of asphalt or railroad tracks). There is currently discussion in the document with respect to SEAD 1 and 2 regarding the presence of asphalt and zinc on the building.

Completion Report SEAD 11

A site visit was conducted by attendees earlier in the day.

During the non-time critical removal action for this site, the clean up goals were not based on NYSDEC's Part 375 clean up goals. They were not in effect at the time. PAHs were set at the BaP equivalent of 10 ppm. The Part 375 values for individual PAHs are lower and the confirmatory sampling indicates that residual levels at SEAD-11 exceed the Part 375 criteria. Since Part 375 is in effect during the PRAP development, these criteria must be addressed.

The Army expressed concern over the Part 375 values for individual PAHs and questioned why values for industrial use did not differ greatly than values for residential use. NYSDEC explained that values for certain contaminants don't vary significantly and may be based on background.

The State expressed concern over the Army's use of the BaP equivalent as a clean up goal rather than a screening tool at this site. The Army argued that it had been used at other sites, the DOH had presented it before for use, and the Army was aware that if the BaP equivalent of 10 ppm was met, that an EPA risk assessment would be acceptable. However, it is not clear when/if risk assessment can assist in establishing alternative clean up goals within Part 375.

The Army made the following arguments to show that PAHs were adequately addressed at this site:

- When evaluating the 95th UCL of the individual PAH data at SEAD-11, PAHs fall below or slightly above the unrestricted use values under Part 375.
- Only one PAH exceeds the Part 375 values. This PAH is 1/10th as toxic as the other PAHs which do pass and has the same CUG as the other PAHs.
- The Army had performed additional excavation in the area of this sample to eliminate risk from PAHs.
- Asphalt roofing was found in the landfill (roofing tar and roofing materials).
- The entire site was excavated to clay.
- Groundwater is not an issue at the site.

NYSDOH suggested that in the PRAP, a discussion of the contents of the landfill (i.e. asphalt) should be added in relation to the levels of PAHs left at the site.

NYSDOH has the completion report and will review in light of the discussion above. There is also a human health risk assessment that needs to be considered.

Feasibility Study at SEAD 12

The Army will address comments on the DF FS and move onto the PRAP.

The Army noted that whatever action is to be taken at the site is not a CERCLA action. It will be taken to remove military unique items. If something else found during the excavation, the Army will address it then.

Completion Report at Munitions Response Sites

A site visit was conducted by attendees earlier in the day.

EPA comments were received on this document. The Army explained that the State will want to review this document since it is more than just a munitions site. The Army needs to close this site out under the FFA and needs State input. This document will be followed up with a draft PRAP.

The EPA requested documentation of the Army record search, preliminary ordnance work, and cost estimate that was sent out to DDESB for internal safety review. They need more than a statement from the Army that DDESB considers the site clear. They need the back up documentation (e.g. ESS, archive search report, OE EE/CA and previous investigations). They would like to know how the clearance boundaries were determined and what other actions may have occurred at the site.

No LUC is needed at this site because nothing was found. However, a notice is filed due to the nature of the former activities at this site.

BCT Agenda
12 December 2007
1330-1630 Hours

Review document status list.

Review of SEAD 11 Comments
- EPA comments on Risk Memo
- NYSDEC Comments on Completion report
  - Address previously approved clean up levels

Discuss the Potential for RODS for Seneca- SEAD 59/71, SEAD 4/38, SEAD 121, SEAD 12& 72, SEAD 11, SEAD 1,2,5, 24, and 48 and Munitions Response Sites.

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A, 11th Floor
625 Broadway, Albany, New York 12233-7015
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Erin M. Crotty
Commissioner

January 26, 2004

Mr. Stephen Absolom
Chief, Engineering and Environmental Division
Seneca Army Depot Activity (SEDA)
5786 State Route 96
Romulus, NY 14541-5001

Re: NYS Inactive Hazardous Waste Disposal Site No. 8-50-006
Removal Action at SWMU SEAD-11

Dear Mr. Absolom:

The NYSDEC and the NYS Department of Health have reviewed the Action Memorandum for Removal Action at SEAD 11 referenced above and **approve the removal action** based on the agreement reached during our phone conversation of 1/26/2004. The important factors of this agreement are as follows:

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

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

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

If you have questions, please call me at (518)- 402-9622.

Sincerely,

A. Joseph White

A. Joseph White, P.E.
Environmental Engineer II

C:\A-Remedial Bureau A\a Site Specific\Region 8\Seneca Army Depot 8-50-006\OU 7-SEAD 11,64D, 64A\letter.hw850006.2004-01-26.DECapprovalIRM.wpd

ecc: Mr. Steve Absolom, Seneca Army Depot
C. Bethoney, NYSDOH
P. Jones, SCIDA
J. Vasquez, USEPA
R. Battaglia, Seneca Army Depot

Division of Environmental Remediation

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Carcinogenic PAHs

This list of 7 carcinogenic PAHs are those that the DEC and DOH have agreed should comprise total cPAHs, when total cPAHs are used for cleanup limits. These are compounds for which there is sufficient evidence for carcinogenicity in animals as categorized by the U.S. Environmental Protection Agency (US EPA, 1993) and/or the International Agency for Research on Cancer (IARC, 1987).

NOTE: *Check with Jim Harrington before setting cPAH cleanup requirements. Also, see July 21, 1997 memo from Jim on soil cleanup requirments for cPAHs.*

Compound:	CAS Number	Synonyms:
Indeno(1,2,3-cd) pyrene	193-39-5	-
Benzo(a)anthracene	56-55-3	1,2 benzanthracene
Benzo(a)pyrene	50-32-8	BaP : 3,4 benzopyrene : many others
Benzo(b)fluoranthene	205-99-2	3,4 benzofluoranthene : benz(e) acephenanthrylene
Benzo(k)fluoranthene	207-08-9	11,12 benzofluoranthene
Chrysene	218-01-9	1,2 benzphenanthracene
Dibenzo(a,h) anthracene	53-70-3	1,2,5,6 dibenzanthracene

Benzo(a)pyrene Toxicity Equivalence

A new screening tool is now being applied to PAH concentrations at sites under the review of the NYSDEC and NYSDOH. The benzo(a)pyrene toxicity equivalent will be used for screening surface soil results, establishing site specific background levels for surface soils, and to define the degree of restrictions (e.g. commercial vs. residential use, engineering controls) that may be necessary due to remaining subsurface contamination.

The benzo(a)pyrene toxicity equivalent is calculated by multiplying the concentration of the individual carcinogenic PAHs by the following factors

PAH	Multiplier
Benzo(a)pyrene	1.00
Dibenzo(a,h)anthracene	1.00
Benzo(a)anthracene	0.10
Benzo(b)fluoranthene	0.10
Indeno(1,2,3-cd)pyrene	0.10
Benzo(k)fluoranthene	0.01
Chrysene	0.01

References:

U.S. EPA. 1993. Integrated Risk Information System (IRIS) Data base. Washington, DC: Office of Health and Environmental Assessment.

IARC. 1987. IARC Monographs on the Evaluation of Carcinogenic Risk to Humans.
Overall Evaluations of Carcinogenicity: An updating of IARC Monographs Volumes 1 to 42. Supplement 7. Lyon: International Agency for Research on Cancer.

Also see these IARC Monographs on PAHs:

Vol 32: Part 1, Chemical, Environmental and Experimental Data
Vol 33: Part 2, Carbon Blacks, Mineral Oils (Lubricant Base Oils and Derived Products) and Some Nitroarenes
Vol 34: Part 3, Industrial Exposures in Aluminium Production, Coal Gasification, Coke Production, and Iron and Steel Founding
Vol 35: Part 4, Bitumens, Coal-tars and Derived Products, Shale-oils and Soots

New York State Department of Environmental Conservation
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Alexander B. Grannis
Commissioner

December 6, 2007

Mr. Stephen Absolom
Chief, Engineering and Environmental Division
Seneca Army Depot Activity (SEDA)
5786 State Route 96
Romulus, NY 14541-5001

Re: Seneca Army Depot Activity
Site ID# 850006
Draft Construction Completion Report for the
Old construction debris Landfill (SEAD-11).

Dear Mr. Absolom:

The New York State Department of Environmental Conservation (DEC) and Department of Health (DOH) have reviewed the Draft Construction Completion report (SEAD-11) and the comments are following:

General Comments:

The Draft Construction Completion report was prepared after completing an Interim Removal Action (IRM) and was prepared on the basis of collecting confirmatory samples which met cleanup goals presented in the Final Interim Removal Action Work Plan.

Following the interim removal action (IRA) construction activities for SEAD-11, there are soils contiguous to the extent of the excavation with cPAHs (e.g., benzo(a)pyrene) above Part 375 Restricted Commercial Use Soil Cleanup Objectives (SCO). It is our position that if the restricted commercial use SCOs are exceeded, especially in multiple areas on the existing ground surface (where backfilling the landfill did not occur since the excavation returned the site to its natural grade), further actions to protect public health and the environment are warranted. Based on the cPAH exceedances identified in the end-point soil confirmatory samples, residual contaminants continue to pose a threat to public health and the environment. We do not support the Army's conclusion that the threat posed by the landfill material has been removed. Therefore, we believe the Army's plan to prepare and submit a No Further Action Proposed Plan and Record of

Decision is premature. It is requested that additional measures to remove or contain the residual contamination be conducted prior to future property transfer.

Throughout the Report, the Army discusses and compares analytical data to the State's guidance value of 10 ppm benzo(a)pyrene toxicity equivalence (BTE). As was discussed during the November 29, 2007 teleconference meeting, as well as in recent correspondence, there is currently no NYSDEC recommended screening level for BTE. The Army should reference the 10ppm BTE as a project -specific guidance value rather than as a general State guidance value to the guidance value from the text and tables of the report. From now on analytical data south of SEAD should be compared to the Restricted Commercial Use SCOs, which are consistent with the future intended use of the area as training.

Specific Comments:

Section 2.6, Last line

To address Control of Run-On and Run-off Water the Army stated ."".....the silt fencing will be removed once vegetation is established." Revise the document and address the resources who will do it.

Final Results, page 3-5 –

The text states the 95th upper confidence level (UCL) of the mean for each metal is below NYSDEC's Unrestricted Use Soil Cleanup Objectives. For a comparison of the data to the site's future intended use, it is recommended that the data (individual analyte concentrations) be compared to the State's Restricted Commercial Use SCOs.

Section 6.0

Conclusion -Revise the Report to allow for cotinued collection of quarterly sampling data for Groundwater until a final remedial decision is made for this area.

The completion Report states that the Clean up Goals were met -See Table 3-3 Page 5/20 for cPAH which shows that goals were exceeded. Please explain.

If you have any questions, please call me at (518)402-9620 or e-mail me at kxgupta@gw.dec.state.ny.us.

Sincerely

Kuldeep K. Gupta, P.E.
Environmental Engineer
Remedial Section C

ecc: J. Swartwout, NYSDEC
M. Sergott, NYSDOH
Todd Heino, Parsons
J. Vasquez, USEPA
B. Putzig, Region 8

becc: K.K. Gupta
Daybook

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Alexander B. Grannis
Commissioner

December 7, 2007

Mr. Stephen Absolom
Chief, Engineering and Environmental Division
Seneca Army Depot Activity (SEDA)
5786 State Route 96
Romulus, NY 14541-5001

Re: Seneca Army Depot Activity
Site #850006
Draft Final PRAP for SEAD-4 and SEAD-38

Dear Mr. Absolom:

Although New York State has concurred with the Draft Final Proposed Plan SEADs 4 & 38 - dated June , 2007, we request that the following comments be addressed in the Record of Decision to the extent feasible.

NYSDOH Comments:

See Mark Sergott's August 21, 2007 letter to me which was faxed to you on August 24, 2007.

NYS DEC Comments:

Page 5, Table 1- Maximum Concentration Column needs Cleanup Goal Column also .

Page 15, Paragraph 1st[d] - " .....6 inches topsoil... 6 inches common fill.....".Please define "common fill?" This AOC is in the Training area -purpose of using Commercial (which is subject to the Land Use Restrictions) is as long as the top one foot of soil meets the criteria for Commercial use as per Table 10.

Page 18, Left Column 1st Paragraph - "....The future industrial/training ...." . Please replace with "...The future commercial/Training ...".

Page 19, Right Column, 3rd Paragraph- "... terrestrial ecological receptors." And " .... ecological risk as well as ....", are we meeting ecological cleanup goals also?. Please explain in this paragraph.

Page 20, 2nd Paragraph,1st Bullet - 'Removing the debries....floors", please add " including meeting the NYS standards for PCB cleanup at Building 2073 .

Page 20, 2nd Paragraph, 6th Bullet -add the statement " ...in accordance with New York State regulations.

Additional Comments will be sent under a separate cover at a later date.

If you have any questions, please call me at (518)402-9620 or e-mail me at kxgupta@ gw.dec.state.ny.us

Sincerely

Kuldeep K. Gupta, P.E.
Environmental Engineer
Remedial Section C

ecc: J. Swartwout, NYSDEC
J. Vasquez, USEPA
Mark Sergott, NYSDOH
Todd Heino, Parsons
B. Putzig, Region 8

becc: K.K. Gupta
Daybook

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Flanigan Square, 547 River Street, Troy, New York 12180-2216

Richard F. Daines, M.D.
Commissioner

August 21, 2007

Mr. Kuldeep Gupta
Division of Environmental Remediation
NYS Department of Environmental Conservation
625 Broadway - 11th Floor
Albany, NY 12233-7015

Re: Draft Final Proposed Plan for the Munitions Washout Facility (SEAD-4) and the Building 2079 Boiler Blowdown Pit (SEAD-38)
Seneca Army Depot
Site #850006
Romulus (V), Seneca County

Dear Mr. Gupta:

I have reviewed the June 2007 Draft Final Proposed Plan for the Munitions Washout Facility (SEAD-4) and the Building 2079 Boiler Blowdown Pit (SEAD-38) at the Seneca Army Depot site located in Romulus, Seneca County and have the following comments:

1) While the proposed cleanup objectives for chromium (60 mg/Kg) and lead (167 mg/Kg) for the two areas of concern (AOC) will meet NYSDEC's Part 375 Commercial Use Soil Cleanup Objectives (SCOs), the remedy does not remove ditch soil samples that were previously found to exceed Part 375 SCOs for carcinogenic PAHs. Following the receipt of the Army's Response to NYSDOH comments (dated June 20, 2007), I do not support the Army's conclusion that there is no need for excavation based on SVOC concentrations in ditch soil (Response 8). Based on the ditch soil samples identified in the February 2007 Draft Proposed Plan (Section 5.3, page 6) that contained elevated concentrations of cPAHs above Part 375 SCOs, I again request that these soils be added to the proposed areas of excavation.

2) Since the future land use designated for the two AOCs is training, what is the rationale for comparing analytical summary data in the proposed plan to Industrial SCOs, per NYSDEC Part 375, and EPA's Region IX Preliminary Remediation Goals for industrial soils? I request these references be removed from the proposed plan and that data comparisons be made only to the Commercial Use SCOs that are applicable to the future intended use of the AOCs.

3) In viewing Tables 2, 3, and 5 of the proposed plan, the data provided do not match the maximum analyte concentrations depicted in associated summary tables in the February 2007 Draft Proposed Plan. Assuming each of the referenced data tables represent the 95% upper confidence limit of the arithmetic mean of surface soil (Table 2), subsurface soil (Table 3), and ditch soil samples (Table 5), please revise the tables accordingly so that a comparison of the maximum concentration of each individual analyte is made to Part 375 Commercial Use SCOs.

4) Drainage Ditch Soil Investigation – The Army indicates on page 7 that "The benzo(a)pyrene toxicity equivalent (BTE) concentrations of carcinogenic PAHs were all below the guidance value for residential use scenario of 10 mg/Kg." There is no NYSDEC recommended screening level for BTE. This is an inappropriate reference to this number as a guidance value and it should not be used to determine whether remedial actions are completed, nor should it override established SCOs that are protective of public health. Please remove this statement from the proposed plan.

If you should have any questions, please contact me at (518) 402-7860.

Sincerely,

Mark S. Sergott
Public Health Specialist II
Bureau of Environmental Exposure Investigation

cc: G. Litwin / M. VanValkenburg / file
R. Van Houten – RFO
V. Swinehart – SCHD
J. Swartwout – NYSDEC, Central
B. Putzig – NYSDEC, Region 8
G. Ulirsch – ATSDR
A. Block – ATSDR

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December 6, 2007

Mr. Julio F. Vazquez
Project Manager
U.S. Environmental Protection Agency, Region II
Emergency and Remedial Response Division
Special Projects Branch/ Federal Facilities Section
290 Broadway, 18th Floor
New York, NY 10007-1866

Subject: USEPA Comments dated November 6, 2007 regarding Draft Technical Memorandum for SEAD-1 and SEAD-2, Seneca Army Depot, Romulus, NY

Dear Mr. Vazquez

The Army has received EPA comments dated November 6, 2007 on the Draft Technical Memorandum presenting a risk analysis for SEAD-1 (the Hazardous Waste Container Storage Facility) and SEAD-2 (the PCB Transformer Storage Facility). This memorandum was requested by EPA to determine if levels of chemicals that have been identified in soil samples collected from the exterior of the buildings could pose a potential risk to human health. This letter provides responses to your comments.

Based on our understanding of the EPA's original request, the Army was asked to prepare a cohesive document that presents and summarizes the potential risks that may be present at the sites due to the chemicals identified in the exterior soil. In preparing our response to this request, we did not prepare a baseline risk assessment that included the enumeration of residential risks for the following reasons:

- A residential scenario is not applicable since Town of Romulus zoning currently places theses areas of concern (AOC) in an industrial/commercial zone;
- An existing finalized ROD for the Planned Industrial Development area places these facilities in an area where residential activities are prohibited through land use controls; and
- The future land use has been identified by the Seneca County Industrial Development Area is planned industrial /office development.

As requested, we have prepared and presented risk assessments for these sites that reflects its planned continuing industrial use. This philosophy is the same as we have applied for other SEADs throughout the Depot over the past 15 years, with the EPA's concurrence and acceptance. We believe that it is inappropriate to not include the risk management discussion as was requested. The risk management discussion completes the overall risk analysis discussion by identifying and clarifying real conditions that affect the conservative risk assessment process. This information needs to be included in this memo so it can be properly reviewed.

In summary, the Army does not intend to produce for administrative purposes a baseline risk assessment document, especially one that includes consideration of potential receptors that will be prohibited from using the property. The Army did not believe that it was necessary to fully document and perform all steps of the entire baseline risk assessment process, since we believed the level of effort was more along the lines of a mini-risk assessment process where we are

summarizing the reasons why we believe that no level of undo risk or potential hazard results from CERCLA release is present at either of these SWMUs.

Based on our understanding of the applicable process, we offer specific responses to EPA comments in the attached document.

We look forward to your review and approval of this material. If you have any continuing questions or comments, please feel free to contact Steve Absolom or me at your convenience.

Very Truly Yours,

Todd Heino, P.E.
Program Manager

c: S. Absolom (SEDA)
T. Battaglia (CENAN)
C. Boes (AEC)
K. Healy (CENHC)
K. Gupta (NYSDEC)
R. Battaglia
J. Fallo (CENAN)
K. Hoddinott (CHPPM)
J. Nohrstedt (CENHC)
M. Sergott (NYSDOH)

Army's Response to Comments from the United States Environmental Protection Agency

Subject: Draft Technical Memorandum for SEAD-1 and SEAD-2
Seneca Army Depot
Romulus, New York

Comments Dated: November 6, 2007

Date of Comment Response: December 6, 2007

Army's Response to Comments

GENERAL COMMENTS

Comment 1. Future Land Use: Section 2.3, on page 4 indicates that SEAD-1 and SEAD-2 are located in portions of the Depot where the defined land use is Commercial/Industrial (C/I). Therefore, the Army has limited their future use assessment to exposure pathways associated with receptor populations reflective of C/I conditions (i.e., workers, trespassers). The current assessment does not constitute a baseline assessment of conditions. Typically, future land use assessments advanced under U.S. EPAs CERCLA program are based on an assessment of baseline conditions where future land use is assumed to be uncontrolled under one set of conditions (i.e., residential adult and child exposures). Risk management decisions are not always based on these conditions, but the baseline assessment forms the demonstrated need/basis for implementation of institutional or land use controls.

The risk characterization section contains information that should be included elsewhere in the document. Discussions which pertain to a change in the estimated risks or hazards if alternative parameters were used belong in an uncertainty section, which was not included in this memorandum. For example, discussions related to bioavailability or other confounding sources of contaminants should not be discussed in the risk characterization section. In addition, discussions related to the Army's position do not belong in the risk assessment as these are risk management items that belong in letters or decision documents. The risk assessment is strictly designed to evaluate the potential risks and hazards and to present them in a detailed and clear manner so that the results can be used by risk managers, in conjunction with other site information to make an informed decision regarding the need for remedial action.

Response 1: Based on the SEDA future land use plan developed by the Seneca County Industrial Development Authority in June 2005, SEAD-1 and SEAD-2 are located in the planned industrial/office development (PID) area. Further, the Army intends to place institutional controls in the form of land use restrictions on the PID parcel. As described in the Signed Final Record of Decision for Sites Requiring Institutional Controls in the Planned Industrial/Office Development or Warehousing Areas (signed on September 28, 2004 by USEPA), the Army intends to impose the following restrictions:

- *Prohibit the development and use of property for residential housing, elementary and secondary*

schools, childcare facilities and playgrounds.

- *Prevent access to or use of groundwater until the Class GA Groundwater Standards are met.*

EPA in its Risk Assessment Guidance for Superfund indicates that *"Because residential land use is most often associated with the greatest exposures, it is generally the most conservative choice to make when deciding what type of alternate land use may occur in the future. However, an assumption of future residential land use may not be justifiable if the probability that the site will support residential use in the future is exceedingly small."*

As residential activities are prohibited in the area including SEAD-1 and SEAD-2, it is the Army's position that residential use in the future is unlikely under the LUC and therefore risk assessment is not needed for residential receptors.

It should be noted that discussions that pertain to a change in the estimated risks or hazards if alternative parameters were used were included in the uncertainty section - Section 8 of this memorandum. The risk characterization just provides a brief reference to the discussions. Further, the Army chose to include risk management discussion in the memorandum to facilitate and streamline the on-going PRAP and ROD activities. The risk management discussion will be included in a separate section (Section 9) and the title of the memorandum will be revised to "SEAD-1 and SEAD-2 Post Remediation Risk Assessment and Risk Management".

Comment 2. PAH-associated Cancer Risk: Please note the discussion presented within Section 7.2: Risk Characterization Results for SEAD-2 (pages 8-9). Within this discussion, the Army notes that the projected carcinogenic risk to an industrial worker is 5E-04, significantly exceeding the upper brightline of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Relative Risk Range (RRR). This risk is driven predominately by the presence of carcinogenic polynuclear aromatic hydrocarbons (cPAHs). The Army further notes that the areas generally associated with the highest analytical detections of cPAHs are believed to be impacted by roofing tar or asphalt gravel traction aids, and thus, are not associated with any CERCLA release at SEAD-2. Further: the Army adds that if bioavailability and alternative dermal absorption values were taken into consideration that the associated risk would fall to a level roughly equivalent to the NCP upper-brightline of 1E-04. For these reasons, the Army does not believe that an unacceptable level of carcinogenic risk exists at SEAD-2. These decisions are, fundamentally, risk management in nature. Future populations will be subject to anthropogenic cPAH contamination, regardless of source, and in the absence of fingerprinting it is very difficult to distinguish between the on-site sources. The consideration of bioavailability will greatly reduce the level of inherent conservatism necessary in an assessment of this nature (especially with respect to future land use and exposure).

Response 2: Acknowledged. The Army believes that discussion of bioavailability is part of the uncertainty discussion and therefore is appropriate to be included in this risk assessment memorandum.

The Army does not believe that the consideration of bioavailability will greatly reduce the level of inherent conservatism necessary in an assessment of this nature and the rationale is presented below.

EPA guidance recognizes the need to make adjustments for the reduced bioavailability of compounds in soil. Specifically, in Appendix A of EPA's Risk Assessment Guidance for Superfund (EPA, 1989, pg. A-3), EPA notes:

> *"If the medium of exposure in the site exposure assessment differs from the medium of exposure assumed by the toxicity value (e.g., RfD values usually are based on or have been adjusted to reflect exposure via drinking water, while the site medium of concern may be soil), an absorption adjustment may, on occasion, be appropriate. For example, a substance might be more completely absorbed following exposure to contaminated drinking water than following exposure to contaminated food or soil (e.g., if the substance does not desorb from soil in the gastrointestinal tract)."*

The EPA guidance goes on to recommend the use of relative absorption adjustments; for example, "to adjust a food or soil ingestion exposure estimate to match an RfD or slope factor based on the assumption of drinking water ingestion " (EPA, 1989, pg. A-3). As an example, an oral bioavailability of 0.6 is used by EPA for lead models.

Based on the above discussion, the use of relative bioavailability is consistent with the EPA guidance. In addition, using the appropriate bioavailability will result in more realistic risk assessment results. For this risk assessment, the Army used an extremely/overly conservative method by assuming a default bioavailability of 1. It is reasonable to include discussion of bioavailability in the uncertainty section and the consideration of bioavailability does not greatly reduce the level of inherent conservatism.

The Army acknowledged that discussions on cPAHs concentrations impacted by roofing tar or asphalt gravel traction aids could be included in the risk management section as versus Section 7.2. Nonetheless, the Army will restate that the cPAH concentrations are believed to be impacted by roofing tar or asphalt gravel traction aids, and thus, are not associated with any CERCLA release at SEAD-2.

Comment 3. Noncarcinogenic Hazard Totals: For instances where the projected total hazard index (HI) is reported as greater than the U.S. EPA brightline of 1.0, please consider segregation of the individual hazard estimates based on target organ system. The current arguments attempting to differentiate between site-associated and background hazard inputs can be retained; however, the target organ system segregation approach may help to clarify a pragmatic assessment of noncarcinogenic hazard.

Response 3: Acknowledged. As the target organ for several non-cancer risk contributors (e.g., aluminum, iron, and vanadium) are not clear, segregation of the individual hazard estimates based on target organ system is not expected to significantly change the risk results.

SPECIFIC COMMENTS

Comment 1. Section 4. Hazard Identification, page 5: This section fails to describe the Amy's consideration of reporting limits for analyses reported as non-detect. The associated contaminant of potential concern (COPC) selection tables do not report non-detect analyses. The Army should clarify how non-detect analytical results were scrutinized. Specifically, the Army should clarify whether any contaminants were not carried through as site COPCs where the reporting limits exceeded the most relevant health-based screening criteria.

Response 1: Acknowledged. Section 4 (Hazard Identification) will be revised to include a discussion of whether any contaminants that were not carried through as site COPCs had reporting limits above the screening criteria identified for the hazard identification step.

Comment 2. Section 5.4, Evaluation of Lead Exposure, page 6: It may be beneficial to reword the text on page 6 to reflect that the soil ingestion rates that were used were based upon the lead guidance and delete any reference to central tendency exposure so that there is no confusion between the lead assessment values and the remainder of the risk assessment.

Response 2: Acknowledged. However, it should be noted that the lead guidance does not provide a default value for the soil ingestion rate of a construction worker. Therefore, the reference to central tendency exposure is still needed for lead risk characterization. The following sentence will be added to the end of Section 5.4 to state that "The soil ingestion rate selected for industrial worker (i.e., 0.05 g/day) is consistent with the EPA (2003) recommendation."

Comment 3. Section 7.2, Risk Characterization Results for SEAD-2, page 9: Within this discussion, the noncarcinogenic hazard associated with a construction worker is reported as 1, implying that the value does not exceed the U.S. EPA brightline for excess hazard. It is Region 2 policy to round risk and hazard estimates to one significant figure, which was done in the risk assessment memo. However, for the construction worker assessment, the rounding was not done properly. The hazard index for the three exposure pathways were 0.5, 0.8, and 0.03, which add to 1.48 [*sic*], which would subsequently be rounded to one significant figure of 2. So the value presented in Table 10B for the construction worker should be listed as 2 instead of 1. In addition the text on page 9 should be revised to report an HQ of 2. In the absence of segregated hazard estimates predicated on target organ systems, U.S. EPA will decide whether the total hazard estimates are significant or actionable.

Response 3: Disagreed. According to EPA's guidance, the hazard index of 1.48 will be rounded to one significant figure of 1. Below is the quote of the EPA guidance provided in one of the EPA's Air Pollution Training Institute self-instructional courses (On-line EPA resources available at http://yosemite.epa.gov/oaqps/EOGtrain.nsf/fabbfcfe2fc93dac85256afe00483cc4/4939717614a0227e85256f400062252e/$FILE/Lesson2.pdf).

*"**Rule for Rounding Approximate Numbers***

If the value of the first digit to be discarded is less than 5, retain the last kept digit with no change. If the value of the first digit to be discarded is 5 or greater, increase the last kept digit's value by one.

***Example:** 25.0847*

Assume only the first two decimal places are to be kept (the 4 and 7 are to be dropped). Round to 25.08. Since the first digit to be discarded (4) is less than 5, the 8 is not rounded up. "

Comment 4. Section 9, Conclusions, page 10: In any revision of the current document, the Army is encouraged to add in a discussion surrounding the influence the use of the maximum detected concentrations (as exposure point concentrations [EPCs]) is assumed to have on the ultimate quantitative expressions of risk and hazard.

Response 4. Acknowledged. The uncertainty associated with using the maximum detected concentrations as EPCs is discussed in Section 8 (Uncertainties). The discussion will be reiterated in Section 9 (Conclusions).

Comment 5. Table 2A: For sake of clarity, the word "medium" could be removed from the table heading.

Response 5. Agreed. The word "medium" will be removed from the table heading.

Comment 6. Table 2B: The EPC for lead is presented as 1,570 mg/kg. This is the MDC for lead in soil at SEAD-2. However, this is not the EPC used within the lead exposure assessment. The EPC for lead in soil at SEAD-2 is presented in Table 13A as 190.57 ug/g (mg/kg), and is presumably the mean concentration for the dataset. Please verify this value and its basis. The use of the mean concentration as EPC is appropriate for lead only, and this fact should be stated within the body of the text and reiterated within the associated tables. It is suggested that tables such as 2B be revised to present the mean concentration with an associated footnote to identify this value as a dataset mean, in contrast to the other EPCs based upon the MDC.

Response 6. Agreed. The arithmetic mean concentration for lead was used for lead risk characterization. Table 2B and Section 5.4 will be revised to reflect that the arithmetic mean for lead was used for lead risk characterization.

MINOR COMMENTS

Comment 1. Terminology: To the greatest practicable, please use standard terminology within the text and tables when discussing carcinogenic risk noncarcinogenic hazard (as opposed to "noncarcinogenic

risk"). In some instances, the text simply discusses "risk" with no additional clarification of whether the discussion centers on carcinogenic risk or noncarcinogenic hazard. Consistent use of the proper terminology will ensure that when the Army discusses "risk" it implies *carcinogenic* risk. This simple approach will lessen the potential for confusion for readers of this public record document.

Response 1. Agreed. The document will be revised as commented.

Comment 2. Table 5: Please correct the reference for the Exposure Duration parameter value presented for the Adolescent Trespasser to Best Professional Judgment, or otherwise clarify the basis for this value.

Response 2. Agreed. **Table 5** will be revised as commented.

PARSONS

150 Federal Street • Boston, Massachusetts 02110 • (617) 946-9400 • Fax: (617) 946-9777 • www.parsons.com

December 6, 2007

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

Subject: Submittal of Army Response to EPA Comments on the Draft Technical Memo for SEAD-11 Risk Assessment; Contract FA8903-04-D-8675, Task Order 0031, Seneca Army Depot Activity; NYS ID#8-50-006; CERCLIS ID# NY0213820830;

Dear Mr. Vazquez:

Parsons Infrastructure & Technology Group Inc. (Parsons) is pleased to submit the attached responses to EPA comments (dated November 9, 2007) on the Draft Technical Memo for SEAD-11 Risk Assessment. Please let us know if these responses are acceptable, and if they are we will revise and reissue the Technical Memo for the SEAD-11 Risk Assessment.

Should you have any questions, please do not hesitate to call Steve Absolom at Seneca Army Depot or me at (617) 449-1405 to discuss them.

Sincerely,

Todd Heino, P.E.
Program Manager

Enclosures
cc: (by email only)
Mr. S. Absolom, SEDA
Mr. T. Battaglia, CENAN
Ms. J. Fallo, CENAN
Mr. J. Hill (AFCEE)
Mr. M Sergott (NYSDOH)
Mr. P. O'Connor, Portage Environmental
Mr. R. Battaglia, CENAN
Mr. C. Boes, USAEC
Mr. K. Hoddinott, USACHPPM (PROV)
Mr. K. Gupta (NYSDEC)
Contract Data Library

Army's Response to Comments from the United States Environmental Protection Agency

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

Comments Dated: November 9, 2007

Date of Comment Response: December 6, 2007

GENERAL COMMENTS

Comment 1. Please consider segregation of the individual hazard estimates based on target organ system for instances where the projected total hazard index (HI) is reported as greater than the U.S. EPA brightline of 1.0. As a result of such an evaluation, total estimates of non-cancer hazard may be pared down and the contribution of a particular health effect on the total estimates of non-cancer hazard may be adequately reflected.

Response 1. Acknowledged. Based on the risk assessment, hazard indices for residents and construction workers were above the USEPA target limit of 1. For construction workers, the elevated HI of 4 is mainly caused by inhalation of manganese in the dust, which resulted in an HQ of 3. For residents, the target organ for several non-cancer risk contributors (e.g., 4,6-dinitro-2-methylphenol, aluminum, and iron) are not clear and segregation of the individual hazard estimates based on target organ is not expected to significantly change the risk results. Overall, segregation of the individual hazard estimates based on target organ system is not expected to significantly change the risk results.

SPECIFIC COMMENTS

Comment 1. Section 3, *Data Used for Risk Assessment*, Page 3 and Table A1, *Risk Assessment Soil Dataset*: For the soil data, the text and Table A1 (footnote 1) indicate that sample duplicate pairs were averaged to generate the maximum concentration. Typically, the maximum concentration of a sample duplicate pair is used as the default maximum detected concentration (MDC) and not the average of the two. Furthermore, in using the MDC of a duplicate pair, an extra level of conservatism is conferred in the screening level assessment. In any revisions to the human health risk assessment (HHRA), please expand the uncertainty section to include a discussion on the impact of using the average of a sample duplicate pair instead of the MDC of a duplicate pair in the comparison of screening criteria (i.e., USEPA Region 9 residential soil Preliminary Remediation Goals [PRGs]) to soil concentrations.

Response 1. Acknowledged. There is no clear guidance on how to treat the field duplicates in calculating the EPCs provided by the USEPA (1989) Risk Assessment Guidance for Superfund, the guidance on Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites (USEPA, 2002), or the ProUCL Version 4.0 User Guide (USEPA, 2007). The use of the average to represent the field duplicate results is not uncommon, and has been adopted as the standard presentation

method used by the Army at Seneca. The Army's selection is consistent with an example found in a USEPA (2006) document titled "Holland America Veendam Sampling Episode Report" (on-line resources available at http://www.epa.gov/owow/oceans/cruise_ships/Veendam/VeendamSER.pdf):

"3.4 Quality Assurance/Quality Control

Duplicate samples were collected for quality assurance and quality control. Results for duplicate samples were averaged"

Comment 2. Section 4, *Hazard Identification*, Page 3: According to Section 4, Hazard Identification, chemicals have been eliminated from further consideration as chemicals of potential concern (COPC) based on one of the following two factors:

- If a chemical's concentration in a particular environmental medium was less than its associated health-protective screening criterion; or:
- If an associated health-protective screening criterion was not located for a particular chemical.

The latter decision criterion, above, is problematic in that the lack of a promulgated screening level for a particular chemical should not be considered the basis for elimination from the site COPC list. In addition, the HHRA fails to identify precisely which chemicals have been eliminated as site COPCs based on the absence of associated screening criteria. Efforts should be advanced lo identify appropriate surrogate screening criteria for those chemicals which lack chemical-specific screening criteria. Surrogate compound identification should be based on a structure-activity relationship, where the surrogate compound may be assumed to elicit the same type of health effects via the same pathways and/or mechanisms. In any revision to this document, please provide a list of the chemicals which have been eliminated from further evaluation based on their lack of available toxicity criteria or health-based screening concentrations. Please expand the uncertainty section to provide a discussion regarding the potential impact these exclusions are assumed to have on the final quantitative point estimates of cancer risk and non-cancer hazard.

Response 2, Acknowledged. Section 4 provides general rules for COPC screening. As specifically for SEAD-11, there were no chemicals eliminated due to the lack of any screening criterion in the risk assessment. Section 4 will be revised to reflect that no chemicals were eliminated from the SEAD-11 risk assessment due to the lack of associated health-protective screening criteria. As such, no expansion to the discussion presented in the uncertainty section is warranted at this time.

Comment 3. Subsection 5.1, *Exposure Point Concentrations (EPCs)*, Page 3: ProUCL Version 3.0 has been updated and the update to 3.0 (i.e., Version 4.0) may be accessed at http://www.epa.gov/nerlesd/tsc/software.htm. Please use the new version of ProUCL for future risk assessments. Note that although the new version of ProUCL allow for calculated distributions to be applied for non-detect data, USEPA has not altered its policy to use 1/2 of the detection limit for non-

detect data. If there are any questions, please contact the USEPA risk assessor, Chuck Nacc (212.657.4164).

Response 3. Acknowledged. The most up-to-date version of ProUCL will be used during preparation of EPCs for future risk assessments.

Comment 4. Subsection 7.2, *Risk Characterization Results for Residential Receptors*, Page 6 and Table 11, *Calculation of Total Noncarcinogenic and Carcinogenic Risks - SEAD-11, Reasonable Maximum Exposure (RME):* To streamline the presentation of cancer risk for a residential land use scenario and to provide a better understanding of how cancer risk applicable to the aforementioned scenario has been generated, please consider presenting cancer risk as an age-adjusted risk as opposed to a combined risk. This age-adjusted approach is predicated on 6 years of exposure as a child and 24 years exposure as an adult, for a total exposure duration (ED) of 30 years - accounting for differences in body weight and soil intake rates.

Response 4. Acknowledged. The risk results presented for Resident (Total) are the age-adjusted risks. That is, the risks were predicated on 6 years of exposure as a child and 24 years exposure as an adult, for a total exposure duration (ED) of 30 years - accounting for differences in body weight and soil intake rates. Detailed calculations are presented in **Table 5** through **Table 10**.

MINOR COMMENTS:

Comment 1. To the greatest extent practicable, please appropriately differentiate between cancer risk and non-cancer hazard. Comprehension of the discussion particularly in regard to the risk characterization section, and associated Tables will be benefited by consistent use of the proper terminology surrounding risk and hazard.

Response 1. Agreed. The document will be revised and the term non-cancer risk will be changed to non-cancer hazard as commented.

Comment 2. Table 3C, *Exposure Factor Assumptions for SEAD-11 - Adolescent Trespasser:* The citation for the default exposure duration (ED) parameter value (i.e., 5 years) presented in Table 3C for an adolescent trespasser is U.S. EPA 2002. However, this does not appear to be the appropriate reference. Please clarify the basis of this ED value.

Response 2. Agreed. The exposure duration (i.e., 5 years) for the adolescent trespasser was selected based on professional judgment and is consistent with the age span for the identified adolescent trespasser (i.e., 11-16 yrs old). **Table 3C** will be revised as commented.

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

Subject: Draft Final Proposed Plan for Two Areas of Concern Requiring Land Use Restrictions SWMUs SEAD-121C and SEAD-121I
Seneca Army Depot
Romulus, New York

Comments Dated: August 16, 2007

Date of Comment Response: December 5, 2007

Army's Response to Comments

GENERAL COMMENTS

Comment 1: I understand the proposed remedy for both AOCs include provisions to formally impose and implement LUCs that prohibit the use of the designated land for residential activities and prohibit access to and use of groundwater. These same LUCs were previously imposed across the larger Planned Industrial / Office Development and Warehousing (PID) Area within the Depot. Additionally, the Army will retain a portion of SEAD-121I and maintain engineering controls (e.g. security fences) that surround strategic stockpiles of ferro-manganese ore. The federal government will retain this portion of the AOC until the Depot's strategic mission is terminated. Following this action, subsequent environmental sampling and analysis and characterization of this portion of the AOC will occur as necessary.

It is also my understanding that as part of the remedy at SEAD-121C, the Army will perform a limited soil excavation in one area of the AOC containing elevated levels of lead. However, based on the results of the prior Remedial Investigation, surface soils in two additional areas of the AOC were found to contain elevated concentrations of benzo(a)pyrene above NYSDEC's Part 375 Industrial Use Soil Cleanup Objective (SCOs). Under Alternative 3 of the Proposed Plan (page 18), the total excavation volume for these areas is approximately 13,315 cubic yards of soil. I request that these areas of contamination are included in the proposed excavation.

Response 1:

As we discussed during the Base Cleanup Team meeting that was held on October 18, 2007 at the SEDA, the Army does not intend to remove the soil at three locations that have been shown to contain polycyclic aromatic hydrocarbons (PAHs) in and near SEAD-121C. In one of the cases, the affected soil is exterior to, and upgradient of, SEAD-121C and sandwiched between 1st Street and a man-made drainage culvert that conveys storm event runoff water away from the greater PID area. It is the Army's determination that this soil contamination does not result from operations performed at SEAD-121C and is likely impacted by materials that have been carried by runoff flows along the roadway towards the drainage culvert.

The second area where PAHs were observed at elevated concentrations is located within the confines of SEAD-121C, but in a location north of Building 360 that is between two historic railroad spur lines and in an area where there is considerable visual evidence of broken asphalt. As such, the elevated concentrations reported most probably result due to the sample containing fragments of asphalt.

The third location is located along the northwestern perimeter fence of the DRMO Yard, and is isolated. We collectively viewed this location on the 18th and it was decided that there was no need to excavate this soil.

A Revised Draft Proposed Plan for SEAD-121C and SEAD-121I was issued on November 7, 2007 and presents the most up-to-date version of the Army's proposed remedial action at these two areas of concern (AOCs). This plan was issued subsequent to the October 18th BCT meeting and incorporates all of the information that was discussed on that day. Most importantly the Revised Draft Final Plan documents that completion of the removal action at SEAD-121C for lead, and the completion of the post-mission cleanup that was done within SEAD-121I after the strategic stockpiles of ore were removed. Now that the ore stockpiles have been removed from SEAD-121I, the Army has dismantled and removed security fences that surrounded the ore piles, and does not intend to retain any portion of the AOC.

Comment 2: Through subsequent communication with Army and other State personnel, it has come to my attention that the Army feels that other carcinogenic polycyclic aromatic hydrocarbons identified at SEAD-121C do not pose a risk to human health and are well below 10 mg/Kg benzo(a)pyrene toxicity equivalence (BTE). It should be noted that the BTE screening value was originally utilized in the Record of Decision for SEAD-25 and SEAD-26 and was intended for commercial use at SEAD-26, only, when the State approved its usage. While the Agency acknowledges that this screening method can be utilized as a useful tool of measuring residual contamination, it should not be used as the sole basis for subsequent remedial actions, nor should it override established SCOs that are protective of public health. Please remove the statement "Three samples exhibited BTEQ concentrations in excess of NYSDEC's guidance value 10 mg/Kg" on page 10 of the proposed plan, as well as the BTE references in Table 8 (page 18) and Table 9 (page 19).

Response 2:

The Army will continue to use the Benzo(a)pyrene Toxicity Equivalent (BTE) concept for screening and comparative purposes. As is indicated by the State's own comment, BTEs are a useful tool for screening data. In the past, the Army and the State have agreed to use a level of 10 mg/Kg of BTEs as the basis of assessing the acceptability of remedial actions at sites at the Depot. BTE limits have also been written into a Record of Decision for SEAD-25 and 26 and into the accepted workplan for the interim removal action at SEAD-11. As such, the Army believes that this guidance value now qualifies as an approved alternative to other soil cleanup objectives issued by the State.

The Army also refutes the State's comment that the BTE screening has been used as the sole basis for its recommendation of remedial actions. As is allowed under New York's Part 375 regulations, the Army conducted a human health risk assessment in accordance with CERCLA guidance and presented its

findings in the Proposed Plan as an alternative to the Part 375 soil cleanup objectives. The results of the risk assessment are documented in full within the *Remedial Investigation Report, Two EBS Sites in the Planned Industrial Development Area (SEAD-121C and SEAD-121I)* (Parsons, May 2006), and are summarized in the Proposed Plan that is under review. This risk assessment indicates that there is no undo risk for the likely future users of SEAD-121C due to the presence of chemicals, including the carcinogenic polycyclic aromatic hydrocarbons, documented to exist at the site.

Comment 3: Since the proposed plan fails to remove the areas of contamination identified at SEAD-121C that exceed Part 375 Industrial Use SCOs, the proposed remedy is not protective of public health.

Response 3:

The Army also refutes the State's allegation that the proposed remedy is not protective of public health, as the risk assessment indicates that the risks potentially present at the site are acceptable (i.e., within or below EPA's recommended range of 10^{-4} to 10^{-6}) to the selected populations that are expected to use this land in the future. The Army submits that the comparatively low site-wide BTE value computed for SEAD-121C (as the 95^{th} upper confidence limit of the mean 2.66 ppm) further substantiates its contention that no action is needed for polycyclic aromatic hydrocarbons at the site.

BCT Agenda
29 January 2008
1330-1630 Hours

Review document status list.

Military Munitions Prioritization Protocol
- Purpose
- DRAFT Evaluation of SEAD 006-R-01

Land Use Control Remedial Design
- Addendum 2 Response to Comments.
  - Table of Site Descriptions,
  - Figure 1, 1a-d
  - STATE Comment regarding SEAD 64C

The National Defense Authorization Act of Fiscal Year 2002

- Purpose of the Protocol
  - The Secretary shall develop, in consultation with representatives of the States and Indian Tribes, a proposed protocol for assigning to each defense site a relative priority for response activities related to unexploded ordnance, discarded military munitions, and munitions constituents based on the overall conditions at the defense site [10 USC §2710(b)(1)]

- Requires DOD to:
  - Create an inventory of MMR sites in the US and Territories [10 USC §2710(a)]
  - Create a protocol with which to prioritize sites within each facility/state/region and across the United States [10 USC §2710(b)]

Jennifer Barry, DAIM-ODB, 703-602-6410,jennifer.barry@hqda.army.mil

Munitions Response Site Prioritization Protocol

- Proposed Rule released 2003
- Final Rule Promulgated in Federal Register on October 5, 2005
  - Preamble (70 FR 58016)
  - MRSPP Final Rule (70 FR 58028)
- Codified 32 CFR §179
- As of FY 2005 DoD has identified 3,309 MMRP sites
  - 1,333 on active installations
  - 318 on Base Closure and Realignment (BRAC) installations
  - 1,658 on Formerly Used Defense Site (FUDS) properties
- The MMRP inventory is updated annually and published in the Defense Environmental Program Annual Report to Congress
- It is also publicly available at http://deparc.egovservices.net/deparc/do/mmrp

Site Eligibility

- The Protocol is applied to sites that are included in DoD's inventory of defense sites

- Defense Site-
  - Is a location that is or was owned by, leased to or otherwise possessed or used by DoD
  - Does not include any operational range, operating storage or manufacturing facility, or facility that is used for or was permitted for the treatment or disposal of military munitions

– [10 USC § 2710(e)(1)]

Site In-Eligibility

- The Protocol **does not** apply to:

- Locations that are not, or were not, owned by, leased to, or otherwise possessed or used by DoD
- Locations neither known to contain, or suspected of containing UXO, DMM, or MC
- Locations outside the United States
- Locations where the presence of military munitions results from combat operations
- Currently operating military munitions storage and manufacturing facilities
- Locations that are used for, or were permitted for, the treatment or disposal of military munitions

– [32 CFR Part 179]

Munitions and Explosives of Concern (MEC)

- Military munitions include all ammunition products and components produced for or used by the Components for national defense and security
- Three Categories:
  - UXO
  - DMM
  - MC
- Chemical Warfare Materiel

Unexploded Ordnance

- UXO are military munitions that –
  - Have been primed, fused, armed, or otherwise prepared for action;
  - Have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and
  - Remain unexploded, whether by malfunction, design, or any other cause
    - [10 USC § 101(e)(5)]

UXO

Discarded Military Munitions

- DMM are military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal

– [10 USC § 2710(e)(2)]

Buried military munitions

- DMM may have resulted from –
  - Unauthorized disposal
  - Past practice of waste burial
  - Incomplete or improper disposal

Munitions Constituents

- MC are any materials originating from UXO; DMM; or other military munitions, including explosive and nonexplosive materials; and emission, degradation, or breakdown elements of such ordnance or munitions

  – [10 USC § 2710(e)(3)]

- Examples of MC include –
  - Metals: lead, copper, mercury
  - Explosives: RDX, TNT, HMX
  - Chemical agents (CA) in environmental media (e.g., soil): mustard, lewisite
  - Breakdown products of explosives: 4-amino-2,6-DNT and 2-amino-4,6-DNT
  - Pyrotechnics: white phosphorus
  - Propellants: nitroglycerine, nitrocellulose, 2,4-DNT, ammonium perchlorate

Munitions and Explosives of Concern

- Refers to specific categories of military munitions that may pose unique explosives safety risks –
  - Unexploded ordnance, as defined in 10 USC § 101(e)(5)
  - Discarded military munitions, as defined in 10 USC § 2710(e)(2)
  - Munitions constituents (e.g., TNT, RDX), as defined in 10 USC § 2710(e)(3), present in high enough concentrations to pose an explosive hazard
- Does not create a new category of materials covered under the Protocol and is adopted for consistency with DoD explosive safety terminology

Chemical Warfare Materiel

- Chemical agent means a chemical compound (to include experimental compounds) that, through its chemical properties produces lethal or other damaging effects on human beings, is intended for use in military operations to kill, seriously injure, or incapacitate persons through its physiological effects
- CWM is generally configured as a munition containing a chemical compound that is intended to kill, seriously injure, or incapacitate a person through its physiological effects
- Because of DoD's past training and testing, CWM may remain on sites as munitions with CA fill, bulk containers of CA, or CA released into the environment as MC
- For the purposes of the Protocol, chemical agent identification sets (CAIS) are considered CWM

Munitions Response Site Prioritization Protocol

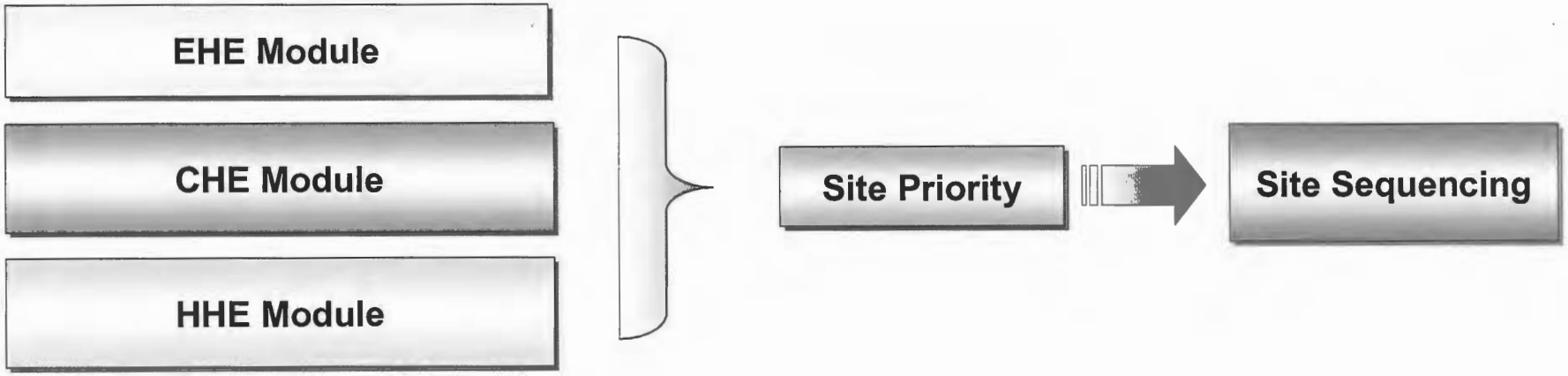
The Protocol

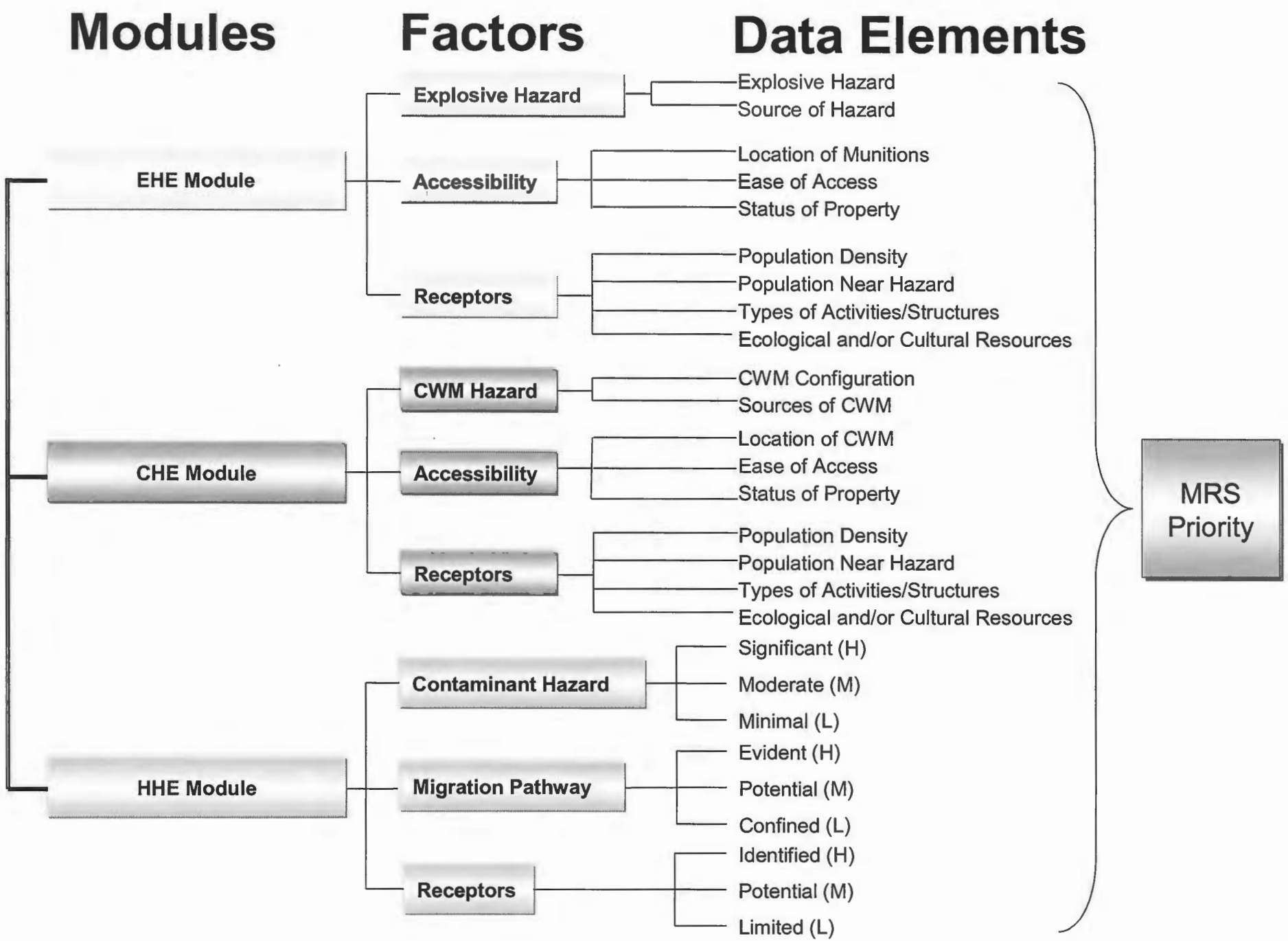
Protocol as a Rule

- The Protocol was published as a rule on October 5, 2005 (70 *FR* 58016), codified at 32 CFR Part 179
- The Protocol assigns a relative priority to each location in DoD's inventory of defense sites known or suspected of containing UXO, DMM, or MC
- The risk posed by potential hazards present at a defense site are captured through the Protocol's central feature, three hazard evaluation modules:
  - Explosive Hazard Evaluation (EHE) Module
  - CWM Hazard Evaluation (CHE) Module
  - Health Hazard Evaluation (HHE) Module
- The Protocol prescribes procedures for prioritizing the defense sites and general Component responsibilities

Protocol Structure – Modules

- The EHE Module addresses explosive hazards posed by MEC (UXO, DMM, and MC in high enough concentrations to pose an explosive hazard)
- The CHE Module addresses chemical hazards associated with the effects of CWM
- The HHE Module addresses health and environmental hazards posed by MC, to include CA, and incidental nonmunitions-related contaminants, if MC is present




Modules
Factors
Data Elements
EHE Module
CHE Module
HHE Module
Explosive Hazard
Accessibility
Receptors
CWM Hazard
Accessibility
Receptors
Contaminant Hazard
Migration Pathway
Receptors
Explosive Hazard
Source of Hazard
Location of Munitions
Ease of Access
Status of Property
Population Density
Population Near Hazard
Types of Activities/Structures
Ecological and/or Cultural Resources
CWM Configuration
Sources of CWM
Location of CWM
Ease of Access
Status of Property
Population Density
Population Near Hazard
Types of Activities/Structures
Ecological and/or Cultural Resources
Significant (H)
Moderate (M)
Minimal (L)
Evident (H)
Potential (M)
Confined (L)
Identified (H)
Potential (M)
Limited (L)
MRS Priority

Determining the MRS Priority

- Installations use available MRS-specific data for each data element to score each of the three modules
- At least one module must be completed to assign an MRS a relative priority
- The evaluations from all three modules are used to determine the MRS Priority
- The three module ratings are independent (i.e., they are not added together)
- MRSs are assigned one of eight numerical priorities (1-8) or to one of the three alternative priorities below –
  - Evaluation Pending
  - No Longer Required
  - No Known or Suspected Hazard
- The MRS Priority is based on the module with the greatest potential hazard

30 Tables

- EHE: 10
- CHE: 10
- HHE: 8 (max)
- Priority Ranking
- Table 'A'

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types found at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	◆ All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. ◆ All hand grenades containing energetic filler. ◆ Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	30
High explosive (used or damaged)	◆ All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." ◆ All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	25
Pyrotechnic (used or damaged)	◆ All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). ◆ All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	◆ All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	◆ All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ◆ All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	◆ All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. ◆ Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	◆ All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	◆ All UXO that are practice munitions that are not associated with a sensitive fuze. ◆ All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	5
Riot control	◆ All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	◆ All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	2
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	

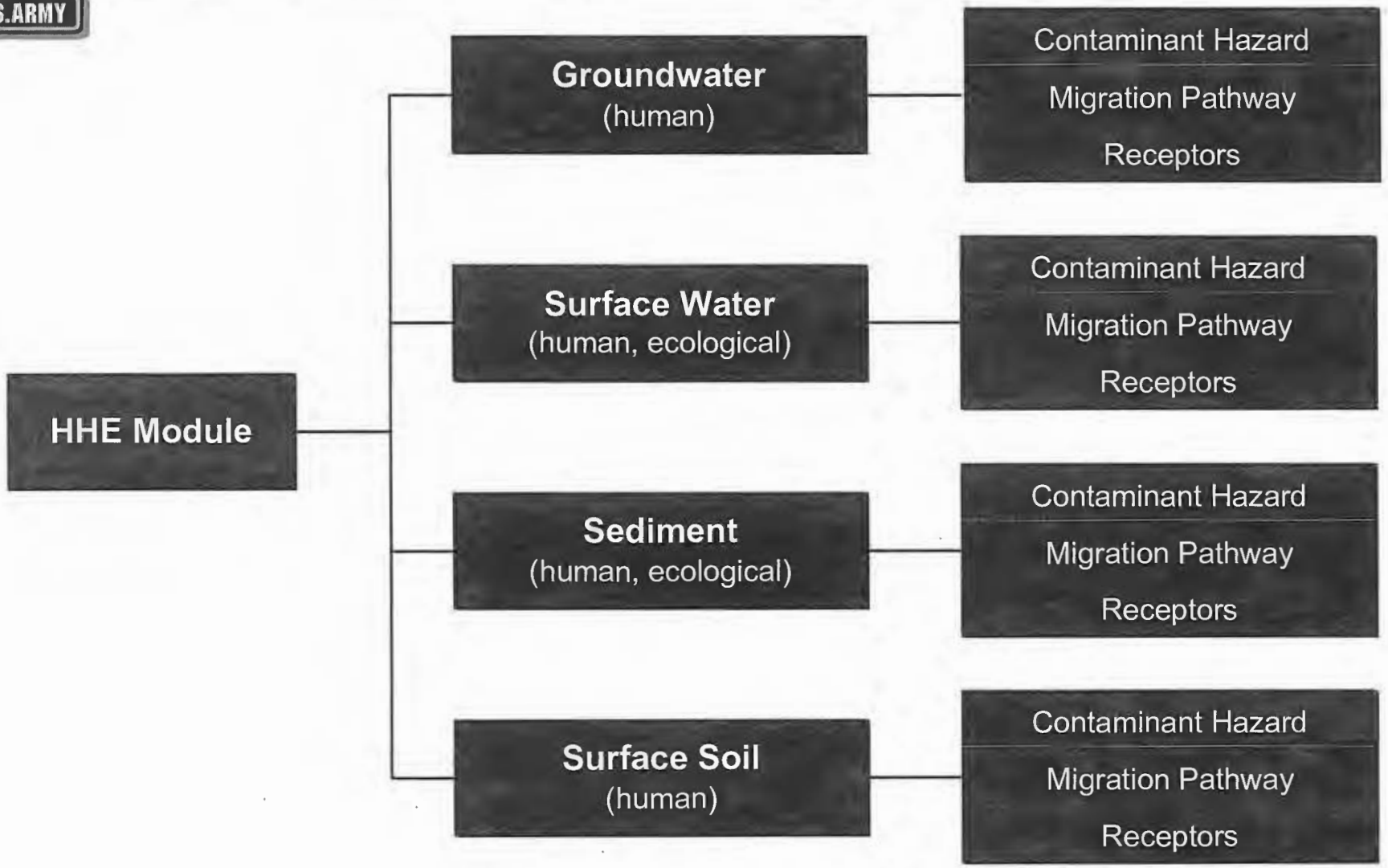
DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

_____ –

_____ –

_____ –

Health Hazard Evaluation (HHE)



Jennifer Barry, DAIM-ODB, 703-602-6410,jennifer.barry@hqda.army.mil

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the scores that correspond with **all** the munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms ammunition, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	◆ UXO that are considered most likely to function upon any interaction with exposed persons (e.g., submunitions, 40mm high-explosive [HE] grenades, white phosphorus [WP] munitions, high-explosive antitank [HEAT] munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions). ◆ Hand grenades containing energetic filler. ◆ Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	(30)
High explosive (used or damaged)	◆ UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." ◆ DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	(25)
Pyrotechnic (used or damaged)	◆ UXO containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades). ◆ DMM containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	(20)
High explosive (unused)	◆ DMM containing a high-explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	◆ UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ◆ DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	(15)
Bulk secondary high explosives, pyrotechnics, or propellant	◆ DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ◆ DMM that are bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	◆ DMM containing a pyrotechnic filler (i.e., red phosphorus), other than white phosphorus filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	◆ UXO that are practice munitions that are not associated with a sensitive fuze. ◆ DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	(5)
Riot control	◆ UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	◆ Used munitions or DMM that are categorized as small arms ammunition. (Physical evidence or historical evidence that no other types of munitions [e.g., grenades, subcaliber training rockets, demolition charges] were used or are present on the MRS is required for selection of this category.)	(2)
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	30

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

REF: OE EE/CA DTD FEB 2004 pg C-8 to C-22. Pg C-14 item #45K5-4 75mm WP; item pg C-12 45G2-5 120mm HEAT

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the scores that correspond with **all** the sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms range, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	◆ The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include impact or target areas and associated buffer and safety zones.	10
Former munitions treatment (i.e., OB/OD) unit	◆ The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	(8)
Former practice munitions range	◆ The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	◆ The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	◆ The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	◆ The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	◆ The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	◆ The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	◆ The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	◆ The MRS is a former military range where only small arms ammunition was used. (There must be evidence that no other types of munitions [e.g., grenades] were used or are present to place an MRS into this category.)	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	8

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

UXO EE/CA DTD FEB 2004 pg 2-4 CONFIRMS AREA AS OB/OD GROUNDS.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the scores that correspond with **all** the locations where munitions are known or suspected to be present at the MRS.

Note: The terms *confirmed, surface, subsurface, small arms ammunition, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS. ◆ Historical evidence (i.e., a confirmed report such as an explosive ordnance disposal [EOD], police, or fire department report that an incident or accident that involved UXO or DMM occurred) indicates there are UXO or DMM on the surface of the MRS.	(25)
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	(20)
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris such as fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	(10)
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	(5)
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability. (There must be evidence that no other types of munitions [e.g., grenades] were used or are present at the MRS to place an MRS into this category.)	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	25

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

UXO EE/CA DTD FEB 2004 pg 2-3 para 2.2.2.2.1 CONFIRMS FROST HEAVE CAN OCCUR AT MRS.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to the MRS. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	◆ There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	◆ There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	◆ There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	(5)
Barrier to MRS access is complete and monitored	◆ There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	5

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

FENCE INSTALLED IN 2005 UPON TRANSFER of SURROUNDING LAND. NO SECURITY/GUARD EXIST ON INSTALLATION

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies. • The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied.	(3)
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	3

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

TRANSFER Agreement SIGNED by the Army AND LRA ~~in~~ STATES ALL PARCELS ARE TO BE TRANSFERRED By Sep 2012. NO PARCELS Remain with the Army. The Agreement WAS SIGNED Sept. 2003

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications for population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Circle the most appropriate score.

Note: Use the U.S. Census Bureau tract data available to capture the **highest** population density within a two-mile radius of the perimeter of the MRS.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	(5)
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	1
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Hillside Children Center has 150 Clients 350 staff. There over 100 residential Housing units within 2 miles of the MRS

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the potential population near the MRS. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the number of inhabited structures.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	(5)
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	5

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

HILLSIDE CHILDRENS CAMPUS HAS 31 OCCUPIED BLDGS. THERE ARE OVER 100 INHABITED HOUSING UNITS WITHIN 2 miles of this MRS.

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the scores that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	◆ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	(5)
Parks and recreational areas	◆ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	◆ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	◆ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	2
No known or recurring activities	◆ There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	5

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

Hillside Childrens Campus is a residence and education center for Trouble Youths immediately adjacent the MRS boundary. There are over 100 Homes within 2 miles of the MRS boundary.

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	(3)
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

STATE DESIGNATED WETLANDS, PARCEL #GS-5, IS CONTAINED WITHIN MRS.

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	38
Source of Hazard	Table 2	8	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	25	33
Ease of Access	Table 4	5	
Status of Property	Table 5	3	
Receptor Factor Data Elements			
Population Density	Table 6	5	18
Population Near Hazard	Table 7	5	
Types of Activities/Structures	Table 8	5	
Ecological and/or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			89

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	B

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the scores that correspond with **all** the CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, that are either UXO, or explosively configured damaged DMM	The CWM known or suspected of being present at the MRS are: • CWM that are UXO (i.e., CWM/UXO) • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are undamaged CWM/DMM or CWM not configured as a munition that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM/DMM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS are: • Nonexplosively configured CWM/DMM either damaged or undamaged • Bulk CWM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS are CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	(0)
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	0

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

Archive Search Report Dated December 1998 on pg 2-1 that the only known CWM activities were the storage of incendiary ammunition and the Gas Chamber.

Table 12

CHE Module: Sources of CWM Data Element Table

DIRECTIONS: Below are 11 sources of CWM hazards and their descriptions. Review these classifications and circle the scores that correspond with **all** the sources of CWM hazards known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, CAIS/DMM, surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Live-fire involving CWM	◆ The MRS is a former military range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. ◆ The MRS is a former military range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface commingled with conventional munitions that are UXO.	10
Damaged CWM/DMM surface or subsurface	◆ There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM surface	◆ There are undamaged CWM/DMM on the surface at the MRS.	10
CAIS/DMM surface	◆ There are CAIS/DMM on the surface.	10
Undamaged CWM/DMM, subsurface	◆ There are undamaged CWM/DMM in the subsurface at the MRS.	5
CAIS/DMM subsurface	◆ There are CAIS/DMM in the subsurface at the MRS.	5
Former CA or CWM Production Facilities	◆ The MRS is a facility that formerly engaged in production of CA or CWM, and CWM/DMM is suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM	◆ The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	◆ The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWM, decontamination training) and CWM/DMM or CAIS/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	◆ The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	◆ Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	(0)
SOURCES OF CWM	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	( )

DIRECTIONS: Document any MRS-specific data used in selecting the ***Sources of CWM*** classifications in the space provided.

SEE TABLE 11

Table 13

CHE Module: Location of CWM Data Element Table

DIRECTIONS: Below are seven classifications of CWM locations and their descriptions. Review these locations and circle the scores that correspond with **all** the locations where CWM are known or suspected of being found at the MRS.

Note: The terms *confirmed, surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are CWM on the surface of the MRS. ◆ Historical evidence (i.e., a confirmed report such as an explosive ordnance disposal [EOD], police, or fire department report, that an incident or accident that involved CWM, regardless of configuration, occurred) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	◆ Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM. ◆ Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM.	20
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed. ◆ Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence, other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	◆ There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2
Evidence of no CWM	◆ Following investigation of the MRS, there is physical evidence that there is no CWM present or there is historical evidence indicating that no CWM are present.	(0)
LOCATION OF CWM	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	0

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of CWM*** classifications in the space provided.

SEE TABLE 11

Table 14

CHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to the MRS. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

No CWM N/A

Table 15

CHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	◆ The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal or local governments; and land or water bodies managed by other federal agencies. ◆ The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day.	5
Scheduled for transfer from DoD control	◆ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied.	3
DoD control	◆ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD controls access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

NO CWM N/A

Table 16

CHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications for population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Circle the most appropriate score.

Note: Use the U.S. Census Bureau tract data available to capture the **highest** population density within a two-mile radius of the perimeter of the MRS.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	1
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

No CWM N/A

Table 17

CHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the potential population near the MRS. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the number of inhabited structures.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	◆ There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25 inhabited structures	◆ There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	◆ There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	◆ There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	◆ There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	◆ There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

NO CWM

N/A

Table 18

CHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the scores that correspond with **all** the activities/structures classifications at the MRS.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	◆ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	◆ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	◆ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	◆ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	2
No known or recurring activities	◆ There are no known of recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

NO C WM N/A

Table 19

CHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	◆ There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	◆ There are ecological resources present on the MRS.	3
Cultural resources present	◆ There are cultural resources present on the MRS.	3
No ecological or cultural resources present	◆ There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

NO CWM

N/A

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11		
Sources of CWM	Table 12		
Accessibility Factor Data Elements			
Location of CWM	Table 13		
Ease of Access	Table 14		
Status of Property	Table 15		
Receptor Factor Data Elements			
Population Density	Table 16		
Population Near Hazard	Table 17		
Types of Activities/Structures	Table 18		
Ecological and/or Cultural Resources	Table 19		
CHE MODULE TOTAL			

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional groundwater contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Antimony	52.1	15	3.47
Iron	113,000	11,000	10.27
Lead	75.6	15	5.04
Manganese	4640	1700	2.73
CHF Scale	**CHF Value**	**Sum The Ratios**	21.51
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	M

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	(M)
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	(M)
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	M

No Known or Suspected Groundwater MC Hazard ☐

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Aluminum	37,500	36,000	1.04
Iron	60,400	11,000	5.49
Lead	68.7	15	4.58
CHF Scale	**CHF Value**	**Sum The Ratios**	11.11
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		M

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	(H)
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	H

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	(M)
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	M

No Known or Suspected Surface Water (Human Endpoint) MC Hazard ☐

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Iron	50,500	23,000	2.20
CHF Scale	**CHF Value**	**Sum The Ratios**	2,20
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		M

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	(H)
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	H

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	(M)
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	M

No Known or Suspected Sediment (Human Endpoint) MC Hazard ☐

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with ecological endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Al	37,500	87	431.3
Cd	11.2	0.25	48.8
Cu	612	9	68
Fe	60,400	1000	60.4
Pb	68.7	2.5	27.48
CHF Scale	**CHF Value**	**Sum the Ratios**	656.41
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		H

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	(H)
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	H

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	(M)
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	M

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard ☐

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Cd	25.6	0.99	25.86
Cu	814	31.6	25.76
Fe	50,500	20,000	2.53
Hg	5.3	0.18	29.44
CHF Scale	**CHF Value**	**Sum the Ratios**	83.59
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		M

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	(H)
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	H

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	(M)
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	M

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard ☐

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface soil contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
FE	75,700	23,000	3.29
CHF Scale	**CHF Value**	**Sum the Ratios**	3.29
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	M

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	(L)
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	L

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	(L)
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	L

No Known or Suspected Surface Soil MC Hazard ☐

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants in any given medium present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B of the Primer) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Do not add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio
Eco Surface H_2O	Hg	3	0.77	3.90
	ZN	883	120	7.36
	CYANIDE	47.7	5.2	9.17

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard**, **Migration Pathway**, and **Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the **HHE Ratings** provided below, determine each media's rating (A–G) and record the letter in the corresponding **Media Rating** box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)	M	M	M	MMM	D
Surface Water/Human Endpoint (Table 22)	M	H	M	HMM	C
Sediment/Human Endpoint (Table 23)	M	H	M	HMM	C
Surface Water/Ecological Endpoint (Table 24)	H	H	M	HHM	B
Sediment/Ecological Endpoint (Table 25)	M	H	M	HMM	C
Surface Soil (Table 26)	M	L	L	MLL	F

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	B

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS Priority is the single highest priority; record this relative priority in the **MRS Priority or Alternative MRS Rating** at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
(B)	(3)	C	3	(B)	(3)
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		(No Known or Suspected CWM Hazard)		No Known or Suspected MC Hazard	
MRS PRIORITY or ALTERNATIVE MRS RATING				3	

Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from Service and DoD databases. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the **MRS Summary**, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental nonmunitions-related contaminants (e.g., benzene, trichloroethylene) found at the MRS, and any potentially exposed human and ecological receptors. If possible, include a map of the MRS.

Munitions Response Site Name: OB/OD Grounds

Component: US Army

Installation/Property Name: Seneca Army Depot

Location (City, County, State): Romulus, Seneca, New York

Site Name/Project Name (Project No.): SEAD-006-R-01

Date Information Entered/Updated: 16 Jan 2008

Point of Contact (Name/Phone): Stephen M Absolom (607) 869-1309

Project Phase (check only one):

☐ PA	☒ SI	☐ RI	☐ FS	☐ RD
☐ RA-C	☐ RIP	☐ RA-O	☐ RC	☐ LTM

Media Evaluated (check all that apply):

☒ Groundwater	☒ Sediment (human receptor)
☒ Surface soil	☒ Surface Water (ecological receptor)
☒ Sediment (ecological receptor)	☒ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM, or MC known or suspected to be present. When possible, identify munitions, CWM, and MC by type: Storage, maintenance and Demil of Conventional Ammunition from 1941 – 2000. UXO EE/CA found variety of MEC include WP rounds, HEAT round 37mm, 155mm, 105mm, etc

Description of Pathways for Human and Ecological Receptors: Ingestion, Dermal Contact, Inhalation for both Human Receptor & Ecological Receptor; dust, surface water, sediment - from runoff; wetlands including Reeder Creek which feeds directly to Seneca Lake

Description of Receptors (Human and Ecological): Workers; Child visitors, adult visitors aquatic biota in creek; migratory birds, Neotropical birds, lower order terrestrial biota Child trespassers (from Hillside Campus) and terrestrial biota, deer, Hawks Eagles; Potentially Bog Turtle (endangered).

Addendum 2 - SEAD 13, 39, 40, 41, 43/56/69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and122E

Land Use Control Remedial Design
For
SEAD 27, 66, and 64A
Seneca Army Depot Activity
Romulus, New York

DRAFT
01/24/2008

by: Seneca Army Depot Activity
Addendum date: January 2008

Addendum 2

Land Use Control Remedial Design
For
SEAD 27, 66, and 64A
Seneca Army Depot Activity
Romulus, New York

1. Purpose: The Land Use Control Remedial Design For SEAD 27, 66, and 64A ("SEAD LUC RD") dated December 2006 implements land use controls for the SEAD Planned Industrial/Office Development and Warehousing Area ("PID/Warehouse Area"). This Addendum expands the LUC RD from the PID area to include sites that are in the area formerly known as the Conservation Area and the Airfield parcels. See SEAD LUC RD Figure 1. The Army completed a Record of Decision on July 3, 2007 for seventeen sites that include LUCs as part of the remedy. This addendum supplements the SEAD LUC RD to include these sites in accordance with the SEAD LUC RD Supplementation provision. Site descriptions are listed in table 1.

2. LUC Objectives and Restrictions:

The Record of Decision ("ROD") titled "Seventeen SWMU Requiring Land Use Controls (SEADs 13, 39, 40, 41, 43/56/69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and122E) " signed on July 3, 2007 requires the establishment of institutional controls ("ICs") at the following sites:

For SEADs 13 and 64 D

- Prevent access or use of the groundwater until cleanup levels are met; and
- Maintain the integrity of any current or future remedial or monitoring system.

For SEADs 39, 40, and 67

- Prevent residential housing, elementary and secondary schools, childcare facilities and playground activities.
- Prevent access to or use of the groundwater until cleanup levels are met.

These sites are located in the PID/Warehouse Area. An Environmental Easement will be prepared to ensure compliance with the PID area wide restrictions prohibiting residential housing and use of the groundwater.

For SEADs 43/56/69, 44A, 44B, 52, 62, and 64C

- Comply with the use limitations documented and imposed in the Deed used to transfer property for construction and use as a correctional facility.

These sites are located on property that was transferred to the State of New York for use as a correction facility. The existing deed provisions that requires the State of New York to use the property for the purpose of adult incarceration and if the State chooses to stop that activity, the property reverts back to the United States of America. Should the property revert to the Federal Government, the LUC will terminate and a remedy substitution will be agreed to.

The existing deed provisions ensure the property is used in a manner consistent with the above LUC Objectives.

For SEAD 64B and 64D

- No unauthorized excavation
- Maintenance of the existing soil cover

These sites are located in the Conservation Area Parcel. An Environmental Easement will be prepared to ensure compliance with the above LUC Objectives.

For SEAD 122B and 122E

- Prevent residential housing, elementary and secondary schools, childcare facilities and playground activities

These sites are located on the Airfield Parcel. An Environmental Easement will be prepared to ensure compliance with the above LUC Objectives.

For SEAD 41

- Notifies future land owners of contaminated groundwater and requirement to meet all applicable laws and regulations should the own decide to access and use the ground water.

This site is located in the Institutional Parcel and is subject to the existing Deed Groundwater notice.

A map showing the location of the above sites is attached hereto as the Land Use Restriction Map (Figure1 and Figure 1a-d).

3. IMPLEMENTATION ACTIONS.

The SEAD LUC RD Implementation Actions shall be implemented on SEAD 13, 39, 40, 41, 43/56/69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and122E to prevent violations of the above LUC Objectives and Land Use Restrictions.

4. ENFORCEMENT

The SEAD LUC RD Enforcement provisions shall apply to SEADs 13, 39, 40, 41, 43/56/69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and122E

5. MODIFICATION

The SEAD LUC RD Modification provisions shall apply to SEAD 13, 39, 40, 41, 43/56/69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and122E

6. TERMINATION

The SEAD Termination provisions shall apply to SEAD 13, 39, 40, 41, 43/56/69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and122E.

Table 1
Land Use Control Remedial Design
Site Descriptions

SEAD 27- Steam Jenny Pit
Site consists of location where degreasing of equipment occurred over a concrete pit at building 360.

SEAD 64A- Garbage Disposal Area
Site consists of area south of the warehouse area where construction debris was placed and covered over.

SEAD 66- Pesticide Storage Area
Site consist of Building # 5 where there were pesticides stored.

SEAD 25- Fire Demonstration Pad
Location where the Army demonstrated fire depart response capability to visiting dignitaries.

SEAD 26- Fire Training Area
Site is at the south end of the warehouse area where the Army's Fire Department trained use live fire activity to maintain its proficiency.

SEAD 59 & SEAD 71- PAINT DISPOSAL AREAS
Site consists of fill areas that had Public works type debris was placed in it.

SEAD 39 - BUILDING 121 BOILER BLOW DOWN PIT
This site is a result of the blow down water from central boilers being discharged on to the ground

SEAD 40 - BUILDING 319 BOILER BLOW DOWN PI This site is a result of the blow down water from central boilers being discharged on to the ground

SEAD 41- BUILDING 718 BOILER BLOW DOWN PIT
This site is a result of the blow down water from central boilers being discharged on to the ground

SEAD 67 - DUMPSITE EAST OF STP4
This site is identified as a location where unknown material was dumped.

SEAD 13 - INHIBITED RED FUMING NITRIC ACID (IRFNA)

This site was used by the Army to neutralize IRFNA, a liquid propellant constituent. The acid was poured into a trench filled with limestone and water and was neutralized. Process resulted in nitrogen compounds being introduced into the ground water.

SEAD 24 - POWDER BURNING AREA
This site was used in the late 40s early 50s to burn black powder and propellants.

SEAD 64B- GARBAGE DISPOSAL AREA
This site is where the Army disposed of municipal garbage in the early 70's.

SEAD 64D- GARBAGE DISPOSAL AREA
This site is where the Army disposed of municipal garbage in the early 70's.

SEAD 122B- AIRFIELD SMALL ARMS RANGE
Small arms range for weapons qualifications.

SEAD 122E- DEICING LOCATIONS
The parking apron adjacent the tower structure has elevated semi-volatile organic compounds.

SEAD 44A, SEAD 44B- Quality Assurance Range
SEAD 44A and 44BB were a function test ranges which the Army used to test various ammunition components.

SEAD 43- Old Missile Propellant Test Lab
SEAD 56- Herbicide and Pesticide Storage
SEAD 69- Building 606 Disposal Area
SEAD 43,56,69 are one complex which was used by the Army to store and test Inhibited Red Fuming Nitric Acid, a constituent of liquid missile propellant and then in later years to store and mix pesticides and herbicides.

Response to Comments LUC Remedial Design Addendum 2

EPA Comments dated November 20, 2007

General Comments:

1. The LUC RD Plan should include a site description for each one of the areas of concern. Please include a site description with the subject document.

RESPONSE: Table 1 with site descriptions has been added to the document

2. SEADs-43/56/69, 44A, 44b, 52, 62, and 64C does not appear on the title of the document. Event though these areas had been previously transferred, and the LUCs are already been implemented, we recommend they be included within this LUC to memorialize the mechanisms of the enforcement, maintenance, inspection and reporting required by the ROD.

RESPONSE: The Sites have been added to the title and are included in the document.

SPECIFIC COMMENTS

1. Page 2m SEAD 41: It seems the worked "own" was meant to say town.

REPSONSE: the wording has been clarified.

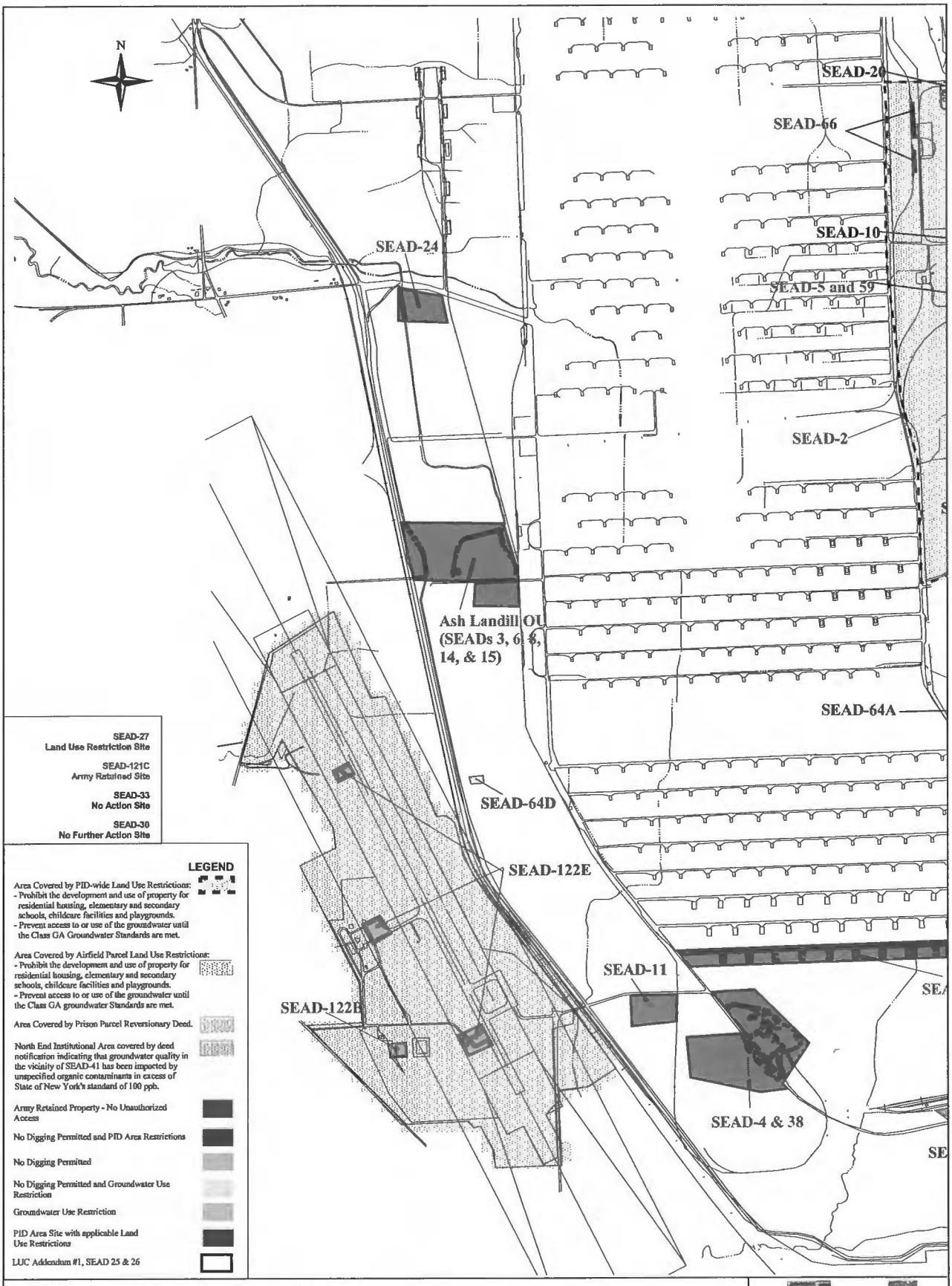
2. Figure 1: For clarity purposes, we recommend the Army add separate maps showing the different general areas that encompass the subject areas of this LUC RD (i.e. Prison Area, PID, Conservation, Airfield, North End, etc).

REPSONSE: The Army has added Fig 1a-d to provide a more detailed location.

NYSDEC Comment received verbally on December 10, 2007 from Kuldeep Gupta

SEAD 64C should be included with a no digging restriction.

RESPONSE: The Final ROD does not require a digging restriction at this site. The ROD references the existing Deed restriction limiting use as a correctional facility with a reversionary clause as the only LUC for this site. Table 1-1 of the ROD is in error regarding SEAD 64C. The Text of the ROD is more specific and clarifies the Army's intent.



Land Use Control, Remedial Design, Version

1000 0 1000 2000 3000 Feet

PID Area LUC Sites, SEADs 27, 64A, and 66
LUC Addendum #1, SEADs 25 and 26
LUC Addendum #2, SEADs 13, 39, 40, 41, 43/56/69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and 122E

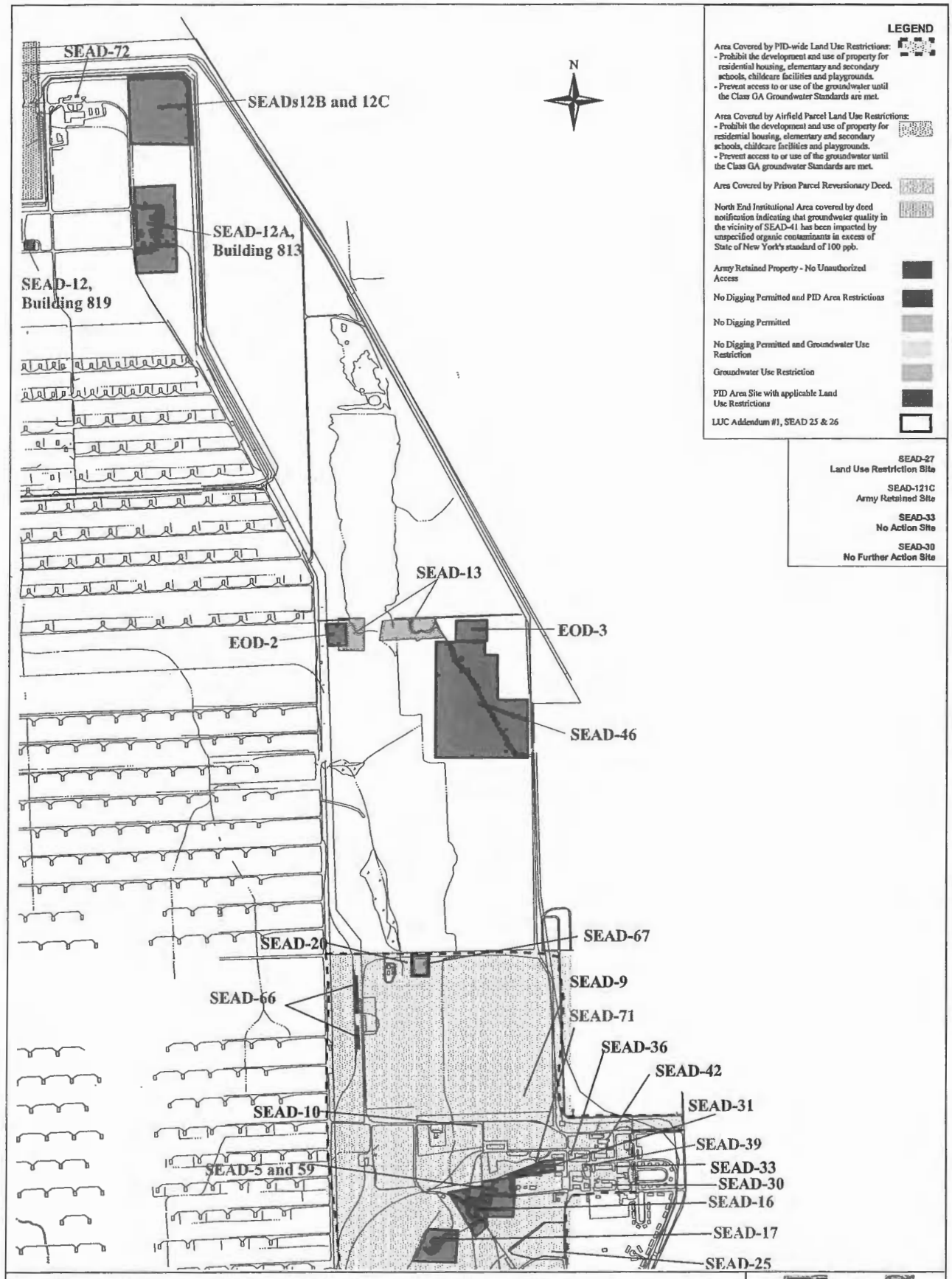
PARSONS

SENECA ARMY DEPOT ACTIVITY
Remedial Design
IC Implementation Plan - Addendum 2

FIGURE 1C
SEDA SOUTHWEST QUADRANT - EXTENT OF LAND USE RESTRICTION

January 2008

o:\seneca\pid luc\seneca lur sept 07.apr\Fig 1C SEDA Quad SW



Land Use Control, Remedial Design, Version

1000 0 1000 2000 3000 Feet

PID Area LUC Sites, SEADs 27, 64A, and 66
LUC Addendum #1, SEADs 25 and 26
LUC Addendum #2, SEADs 13, 39, 40, 41, 43/56/69, 44A, 44B, 52, 62, 64B, 64C, 64D, 67, 122B, and 122E

c:\seneca\pid luc\seneca lur sept 07.apr\Fig 1B SEDA Quad NE

PARSONS

SENECA ARMY DEPOT ACTIVITY
Remedial Design
IC Implementation Plan - Addendum 2

FIGURE 1B
SEDA NORTHEAST QUADRANT - EXTENT OF LAND USE RESTRICTION

January 2008

1.0 DECLARATION OF THE RECORD OF DECISION

Name and Location of Areas of Concern (AOCs)

The Munitions Washout Facility (SEAD-4) and the Building 2079 Boiler Blowdown Pit (SEAD-38)
Seneca Army Depot Activity
5786 State Route 96
Romulus, New York 14541

EPA Site ID: NY0213820830; NY Site ID: 8-50-006

Statement of Basis and Purpose

This Record of Decision (ROD) documents the U.S. Army's (Army's) and the U.S. Environmental Protection Agency's (EPA's) selection of a remedy for the Munitions Washout Facility (SEAD-4) and the Building 2079 Boiler Blowdown Pit (SEAD-38) located in the Seneca Army Depot Activity (SEDA), Romulus, New York. The remedy selected for the two Areas of Concern was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Section 9601, *et seq.* and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. The Base Realignment and Closure (BRAC) Environmental Coordinator, the Chief, Alpha Branch, Army BRAC Division, and the Director, Emergency and Remedial Response Division, EPA Region II, have been delegated the authority to approve this ROD.

This decision document presents and explains the factual and legal basis for selecting the remedy for the AOCs. This ROD is based on the Administrative Record that has been developed by the Army in accordance with Section 113(k) of CERCLA. The Administrative Record is available for public review at the Seneca Army Depot Activity, 5786 State Route 96, Building 123, Romulus, NY 14541. The attached index (see Appendix A) identifies the items that comprise the Administrative Record upon which the selection of the remedy is based.

The New York State Department of Environmental Conservation (NYSDEC) was consulted on the planned remedy in accordance with CERCLA Section 121(f), 42 U.S.C. Section 9621(f). NYSDEC forwarded a letter of concurrence to the EPA regarding the selection of a remedial action in the future. This letter of concurrence has been placed in Appendix B.

AOC Assessment

Actual or threatened releases of hazardous substances from the AOCs, if not addressed by implementing the response action selected in this ROD, may present a substantial endangerment to public health, welfare, and the environment.

Description of the Selected Remedy

The selected remedy for SEAD-4/38 includes the following components:

NON-CERCLA actions

- Removing debris from vacant buildings 2073, 2076, 2078, 2084, and 2085, and sweeping and vacuuming building floors;
- Demolishing Building 2079;
- Excavating ditch soil until the cleanup goal for total chromium (hereafter referred to as chromium; 60 mg/kg) is reached;
- Excavating the hot spot SD4-28 with vanadium concentrations greater than 150 mg/kg;
- Excavating surface and subsurface soils until the cleanup goals for lead and chromium (167 mg/kg and 60 mg/kg, respectively) are achieved;
- Dewatering the man-made lagoon and allowing water to percolate into the ground at a location outside of the excavation areas;
- Once the lagoon is empty, excavating soil from the man-made lagoon until the chromium cleanup goal of 60 mg/kg is achieved;
- Removing the temporary berm at the end of the lagoon and allowing the man-made lagoon to return to its natural condition;
- Stabilizing soils, ditch soil, lagoon soil, and building debris and building material exceeding the waste characterization criteria;
- Disposing the excavated soil and recovered debris in an off-site landfill;
- Backfilling excavation areas that cannot be graded to promote positive drainage and excavation areas deeper than 4 feet near the road or buildings with clean backfill as necessary; and
- Submitting a Completion Report once the remedial action is completed.

State Concurrence

NYSDEC forwarded a letter of concurrence to the EPA regarding the selection of a remedial action in the future. This letter of concurrence has been placed in Appendix B.

Prohibition

Declaration

CERCLA and the NCP require each selected remedy to be protective of human health, public welfare, and the environment; be cost-effective; comply with other statutory laws; and use permanent solutions, alternative treatment technologies, and resource recovery options to the maximum extent practicable. CERCLA and the NCP also state a preference for treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

The selected remedy described above is consistent with CERCLA and the NCP and is protective of human health and the environment, comply with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, and are cost-effective. Those remedies have been evaluated against toxicity, mobility, or volume of hazardous substances and pollutants or contaminants.

The remedy identified will result in hazardous substances and pollutants or contaminants remaining on-site consistent with levels that allow for unlimited use and unrestricted exposure.

The estimated capital cost for the selected soil remedy is $533,000 and no O&M cost is expected after the remedial action.

2.0 AOC NAME, LOCATION, AND DESCRIPTION

The Munitions Washout Facility (SEAD-4) and the Building 2079 Boiler Blowdown Pit (SEAD-38) are located in the southwestern portion of the former Seneca Army Depot Activity in the Towns of Varick and Romulus in Seneca County, New York.

SEAD-4 and SEAD-38 consist of developed and undeveloped areas surrounded by open grassland and thick brush. Several man-made drainage ditches are present at SEAD-4 and SEAD-38 and most of them are approximately three feet deep. Seneca Road bisects the area running southeast-northwest direction. Railroad tracks lead into the area and terminate in the vicinity of Building 2085. Eleven buildings previously existed at SEAD-4 and SEAD-38 but four of the buildings have been demolished. A man-made 150-foot diameter lagoon was created for the purpose of containing wastewater. SEAD-38 is the blowdown area that is located to the north-northwest of Building 2079, a vacant boiler plant. Figure 1 presents a map of SEAD-4 and SEAD-38 and the predominant features.

5.0 SCOPE AND ROLE OF THE OPERABLE UNIT

The NCP, 40 CFR Section 300.5, defines an operable unit as a discrete action that comprises an incremental step toward comprehensively addressing Site problems. A discrete portion of a remedial response eliminates or mitigates a release, threat of a release, or pathway of exposure. The cleanup of a Site can be divided into a number of operable units, depending on the complexity of the problems associated with the Site.

This response action applies a comprehensive approach to SEAD-4 and SEAD-38 problems; therefore, one operable unit is required to remediate SEAD-4/38. The primary objective of this action is to minimize any potential future health and environmental impacts.

release occurred and has affected the AOC. The subsurface soil sample SB38-1, which was collected 2-4 feet bgs. contained 85 mg/kg of TPH, indicating that the TPH impacts diminish with depth. A summary of the SEAD-38 TPH results is presented in Table 2.

Soil - ESI (1993-1994) and RI (1998-1999) Results

The Army compared soil data to several types of federal and state cleanup criteria during its assessment and evaluation of contaminants within soil at SEAD-4/38. The criteria used are considered To Be Considered (TBC) advisories or guidance values, as the Army's ultimate remedial action will be driven by risk-based determinations and the intended future use of the land. The criteria values used for soil include: Soil Cleanup Objectives for Restricted Commercial and Industrial Uses presented under the New York Code of Rules and Regulations (6NYCRR) Subpart 375-6.8(b) and EPA Region IX Preliminary Remediation Goals (PRGs) for industrial soils.

Surface soil samples were collected from a depth range of 0-2 or 0-6 inches bgs. from 80 locations and were analyzed for VOCs, SVOCs, pesticides, PCBs, explosives, and metals. Seven surface soil samples were also analyzed for herbicides. Subsurface soil samples were collected from depths beyond 6 inches bgs. from 72 locations during the ESI and RI investigations. Each of the soil samples were analyzed for VOCs, SVOCs, pesticides, PCBs, explosives, and metals. Thirty-nine subsurface soil samples were also analyzed for herbicides.

A comparison of the soil concentrations found at SEAD-4/38 and the identified criteria is summarized in Tables 3 and 4 for surface soil and total soil, respectively. Unless otherwise specified, the tables presented in this document list compounds with individual sample concentrations exceeding one or more of the listed criteria and the compounds that contribute to elevated risks to human health. The 95% upper confidence limit of the arithmetic mean (hereafter referred to as 95% UCL) is presented in the tables for each contaminant to represent the SEAD-4/38 conditions. For small data sets, the maximum concentrations are presented in the tables in place of the 95% UCLs.

Benzo(a)pyrene and several metals were detected in individual surface and subsurface soil at concentrations above their respective cleanup criteria. The 95% UCLs computed for all compounds in SEAD-4/38 surface soil and total soil were below the NYSDEC industrial soil cleanup objectives. In general, the detected concentrations of metals (e.g., antimony, chromium, copper, and thallium) were found to be highest in samples collected from an area located south of the lagoon, and from locations around former Building T30.

2004 Test Pitting Results

A total of 11 samples were collected during the 2004 test pitting activity to verify the presence/absence of a PCB source area around MW4-10. All samples were analyzed for PCBs and one sample (TP4-4-04) was also analyzed for VOCs, SVOCs, pesticides, and metals.

PCBs were not detected in any of the samples collected. All VOC, SVOC, pesticide, and metal concentrations were below the NYSDEC industrial soil cleanup objectives.

→ what about soil?

Drainage Ditch Soil Investigation

A total of 55 ditch soil samples were collected at the depth intervals of 0-2 or 0-6 inches bgs. from the drainage ditches at SEAD-4 and SEAD-38. Each of the ditch soil samples was analyzed for VOCs, SVOCs, pesticides, PCBs, explosives, and metals. Six ditch soil samples were also analyzed for herbicides. The 95% UCL calculated for all compounds were below the NYSDEC industrial soil cleanup objectives. The ditch soil results are summarized in Table 5.

The highest ditch soil concentrations of PAHs and metals such as iron and vanadium were detected in the samples collected from locations within the drainage ditch at the northern edge of the AOCs. The maximum chromium concentration (4,800 mg/kg) was detected in the drainage ditch located to the southwest of Building T30.

Groundwater

Groundwater samples were collected from thirteen monitoring wells during the ESI, RI, and 2004 sampling events. The maximum concentrations were compared to federal and state criteria including New York State Class GA Groundwater Standards, federal Maximum Contaminant Levels (MCLs) and federal Secondary Drinking Water Standards (SEC). The federal MCLs and SECs are considered TBC criteria because they pertain specifically to drinking water, and the groundwater at SEAD-4/38 is not used as a source of drinking water. The groundwater results from the ESI and RI investigations at SEAD-4/38 are presented in Tables 6A and 6B, respectively.

ESI and RI Results

Six metals (i.e., antimony, beryllium, cadmium, iron, manganese, and sodium) were detected in at least one groundwater sample at concentrations that exceeded their respective NYSDEC Class GA Ambient Water Quality Standards (AWQSs) or federal MCL values. In addition, aluminum and magnesium were detected in groundwater above the standard specified in the National Secondary Drinking Water Regulation and the NYSDEC GA guidance value, respectively. Among the metals with groundwater criteria exceedances, only beryllium and cadmium were detected at levels that were higher than their respective maximum concentrations observed in Seneca background groundwater samples. Beryllium concentrations detected in all groundwater samples were below the maximum Seneca background value of 2.2 µg/L except the beryllium concentration detected in monitoring well MW4-3 during the ESI. Cadmium was not detected in any groundwater samples except the sample collected from MW4-3 during the ESI. Beryllium and cadmium were not detected in any of the other wells during the ESI and were not detected in the same well (i.e., MW4-3) during the two rounds conducted in 1999.

Concentrations of benzene, ethylbenzene, 4-nitrotoluene, and nitrobenzene exceeded their respective NYSDEC GA Standards during the RI sampling event. However, these compounds were only detected in one monitoring well (i.e., MW4-10) during one round of sampling (March 1999). None of these SVOCs were detected in MW4-10 or any other groundwater monitoring wells during the second round of groundwater sampling in July 1999 or during the ESI sampling event. Further, the concentrations of these compounds in SEAD-4/38 groundwater do not pose significant risk to potential receptors.

Appendix C: Glossary

Accessibility Factor. Characterizes the potential for the receptor to encounter the hazard. The EHE Module Accessibility Factor has the data elements Location of Munitions, Ease of Access, and Status of Property and constitutes 40 percent of the EHE Module score. The CHE Module Accessibility Factor consists of three data elements, Location of CWM, Ease of Access, and Status of Property, and constitutes 40 percent of the CHE Module score. (Definition based on 32 CFR 179.6)

Active Condition. Naturally occurring phenomena (e.g., drought, flooding, frost heave) or intrusive activities (e.g., plowing, construction, dredging) are likely to expose subsurface UXO or DMM. (Definition based on 32 CFR Part 179, Appendix A, Tables 3 and 13)

Administrative Record. A lead agency shall establish an Administrative Record, located at an office of the lead agency or other central location, that contains the documents that form the basis for the selection of a response action. The record shall include documents containing factual information, data and analysis of the factual information, and data that may form a basis for the selection of a response action. Such documents may include verified sampling data, quality control and quality assurance documents, chain of custody forms, site inspection reports, preliminary assessment and site evaluation reports, ATSDR health assessments, documents supporting the lead agency's determination of imminent and substantial endangerment, public health evaluations, and technical and engineering evaluations. The record file shall also be made available for public review. (Definition based on 40 CFR 300.800, et. seq.)

Agriculture. The science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products. (Merriam-Webster Online Dictionary)

American Indian and Alaska Native Tribes. Federally recognized American Indian and Alaska Native tribal entity as defined by the most current Department of Interior/Bureau of Indian Affairs list of tribal entities published in the *Federal Register* pursuant to Section 104 of the *Federally Recognized Tribe Act*.

Armed. A munition is considered armed when it is ready to function (e.g., safety devices have been removed or otherwise disabled, thus allowing all arming mechanisms to become fully functional). (Definition based on "arming" in the *DoD Dictionary of Military and Associated Terms*)

Arming Sequence. As applied to explosives, weapons, and ammunition; the process for changing from a safe condition to a state of readiness for initiation. (Definition based on "arming" in the *DoD Dictionary of Military and Associated Terms*)

Barrier. A natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), and combinations of natural and man-made obstacles. (32 CFR 179.3)

Base Realignment and Closure (BRAC). The process that DoD uses to reorganize its installation infrastructure to more efficiently and effectively support its forces, increase operational readiness, and facilitate new ways of doing business. A variety of actions culminated in binding recommendations issued in 1988, 1991, 1993, 1995, and 2005 to close or realign military installations in the United States. These actions include the processes of selecting bases for closure or realignment and carrying out the associated closure or realignment activities such as relocating military units and disposing of excess property. The *National Defense Authorization Act for FY 1989*, Public Law 100-526, governed the 1988 BRAC process. The *Defense Base Closure and Realignment Act of 1990*, Public Law 101-510, as amended, governed the 1991, 1993, 1995, and 2005 BRAC processes.

Burial Pit or Other Disposal Area. A location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment. (Definition based on 32 CFR Part 179, Appendix A, Table 2)

Burster. An auxiliary explosive component used in certain munitions to rupture the munition and disperse the munitions contents. (Definition based on "burster charge" in TM 9-1300-200)

CA or CWM Production Facilities. A facility that engaged in production of CA or CWM and where CWM/DMM would be suspected of being present on the surface or in the subsurface. (Definition based on 32 CFR Part 179, Appendix A, Table 12)

Note: All terms in this Glossary are only defined for use with the Munitions Response Site Prioritization Protocol.

CAIS/DMM. CAIS other than CAIS K941 and CAIS K942. (Definition based on 32 CFR Part 179, Appendix A, Tables 11 and 12)

CAIS K941 and CAIS K942. CAIS K941, toxic gas set M-1; and CAIS K942, toxic gas set M-2/E11 are considered forms of CWM, bulk container, due to the relatively large quantities of agent contained in those types of sets. (32 CFR 179.3)

Cancer Risk. The incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen. (*Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997])

Carcinogen Reference Value (CRV). For carcinogens, the comparison value for human health is the concentration that presents a 1-in-10,000 risk of increased cancer incidence, which is the remedial action threshold for carcinogens defined in the Preamble to the *National Oil and Hazardous Substance Pollution Contingency Plan* (55 *Federal Register* 8716, March 8, 1990) and by Directive 9355.0-30 of the Office of Solid Waste and Emergency Response, US EPA (April 22, 1991). This value assigns a relative priority for action and does not assign a value for cleanup. (*Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997])

Chemical Agent (CA). A chemical compound (to include experimental compounds) that, through its chemical properties produces lethal or other damaging effects on human beings, is intended for use in military operations to kill, seriously injure, or incapacitate persons through its physiological effects. Excluded are research, development, testing, and evaluation (RDT&E) solutions; riot control agents; chemical defoliants and herbicides; smoke and other obscuration materials; flame and incendiary materials; and industrial chemicals. (32 CFR 179.3)

Chemical Agent Hazard. A condition where danger exists because CA is present in a concentration high enough to present potential unacceptable effects (e.g., death, injury, damage) to people, operational capability, or the environment. (32 CFR 179.3)

Chemical Agent Identification Sets (CAIS). Military training aids containing small quantities of various CA and other chemicals. All forms of CAIS are scored the same for the Protocol except CAIS K941, toxic gas set M–1; and CAIS K942, toxic gas set M–2/E11, which are considered forms of CWM, bulk container, due to the relatively large quantities of agent contained in those types of sets. (32 CFR 179.3)

Chemical Warfare Materiel (CWM). Items generally configured as a munition containing a chemical compound that is intended to kill, seriously injure, or incapacitate a person through its physiological effects. CWM includes V- and G-series nerve agents or H-series (mustard) and L-series (lewisite) blister agents in other than munition configurations; and certain industrial chemicals (e.g., hydrogen cyanide [AC], cyanogen chloride [CK], or carbonyl dichloride [called phosgene or CG]) configured as a military munition. Due to their hazards, prevalence, and military-unique application, CAIS are also considered CWM. CWM does not include riot control devices; chemical defoliants and herbicides; industrial chemicals (e.g., AC, CK, or CG) not configured as a munition; smoke and other obscuration-producing items; flame and incendiary-producing items; or soil, water, debris, or other media contaminated with low concentrations of chemical agents where no CA hazards exist. For the purposes of this Protocol, CWM encompasses four subcategories of specific materials: (1) CWM, explosively configured; (2) CWM, nonexplosively configured; (3) CWM, bulk container; and (4) CAIS. (32 CFR 179.3)

Commercial. Of, relating to, or being goods, often unrefined, produced and distributed in large quantities for use by industry. (Merriam-Webster Online Dictionary)

Community Relations Plan. The plan for community relations activities that an installation will use to meet its mission objectives. (ODUSD(I&E)/Environmental Management Office Glossary of Terms)

Complete Barrier. There is a barrier preventing access to all parts of the MRS and there is active, continual surveillance (e.g., by a guard, video monitoring) of the MRS. (Definition based on 32 CFR Part 179, Appendix A, Tables 4 and 14)

Components. The Office of the Secretary of Defense, the Military Departments, the Defense Agencies, the Department Field Activities, and any other Department organizational entity or instrumentality established to perform a government function. (32 CFR 179.3)

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Confined. Classification within the Migration Pathway Factor assigned when there is a low possibility for contamination to be present at or migrate to a point of exposure. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR Part 179, Appendix A, Tables 21-26)

Confirmed. The presence of a munition hazard can be established based on physical or historical evidence. (Definition based on 32 CFR Part 179)

Contaminant Hazard Factor (CHF). Assesses the hazards to receptors from MC and any nonmunitions-related incidental contaminants present in the four environmental media. The CHF contributes a value of High (H), Medium (M), or Low (L) based on Significant, Moderate, or Minimal contaminants present, respectively. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR 179.6)

Critical Habitat. A specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. (US Fish and Wildlife Service)

Cultural Resources. Recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in the *National Historical Preservation Act, Native American Graves Protection* and *Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and the *American Indian Religious Freedom Act*. (Definition based on 32 CFR Part 179, Appendix A, Tables 9 and 19)

CWM, Bulk Container. All nonmunitions-configured containers of CA (e.g., a ton container) and CAIS K941, toxic gas set M–1 and CAIS K942, toxic gas set M–2/E11. (32 CFR 179.3)

CWM Configuration. Data element that assesses the potential CWM hazards at an MRS based on the chemical warfare-related activities that occurred at the MRS. (Definition based on 32 CFR Part 179, Appendix A, Table 11)

CWM/DMM. CWM that are DMM, to include CAIS K941, toxic gas set M-1; and CAIS K942, toxic gas set M-2/E11. (Definition based on 32 CFR Part 179, Appendix A, Table 11 and 12)

CWM, Explosively Configured. All munitions that contain a CA fill and any explosive component. Examples are M55 rockets with CA, the M23 VX mine, and the M360 105-mm GB artillery cartridge. (32 CFR 179.3)

CWM Hazard Evaluation (CHE) Module. Provides an evaluation of the chemical hazards associated with the physiological effects of CWM. The CHE Module is used only when CWM are known or suspected of being present at an MRS. Like the EHE Module, the CHE Module has three factors, each of which has two to four data elements that are intended to assess the conditions at an MRS. (32 CFR 179.6)

CWM Hazard Factor. Evaluates the unique characteristics of CWM. The CWM Hazard Factor consists of the data elements CWM Configuration and Sources of CWM and constitutes 40 percent of the CHE Module score. (Definition based on 32 CFR 179.6)

CWM Mixed with UXO. The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO. (Definition based on 32 CFR Part 179, Appendix A, Table 11)

CWM, Nonexplosively Configured. All munitions that contain a CA fill, but that do not contain any explosive components. Examples are any chemical munition that does not contain explosive components and VX or mustard agent spray canisters. (32 CFR 179.3)

CWM/UXO. CWM that are UXO. (Definition based on 32 CFR Part 179, Appendix A, Table 11 and 12)

Damaged. A munition is considered damaged when the integrity of the munition is compromised by cracks, leaks, or other damage.

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Data Element. A part of a factor within the EHE and CHE Modules. Each data element has a range of classifications with associated scores to describe MRS-specific conditions. (Definition based on 32 CFR 179.6)

Defense Environmental Restoration Program (DERP). Program that addresses hazardous substances, pollutants, contaminants, and, in some cases, military munitions remaining from past operations at military installations and formerly used defense sites. DERP was established by Section 211 of the *Superfund Amendments and Reauthorization Act (SARA)* of 1986. (10 USC 2702-2706 and 10 USC 2810-2811)

Defense Site. Locations that are or were owned by, leased to, or otherwise possessed or used by the Department. The term does not include any operational range, operating storage or manufacturing facility, or facility that is used for or was permitted for the treatment or disposal of military munitions. (10 USC 2710(e)(1))

Discarded Military Munitions (DMM). Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include UXO, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental law and regulations. (10 USC 2710(e)(2))

DoD Control. The MRS is on land or a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year. (Definition based on 32 CFR Part 179, Appendix A, Tables 5 and 15)

Dummy Munitions. Reproductions of munitions that are produced from a variety of wholly inert materials (e.g., wood, metal, plastic) for many purposes (e.g., display, instruction, special tests).

Ease of Access. Data element that focuses on the extent to which barriers prevent access or entry to the MRS. (Definition based on 32 CFR Part 179, Appendix A, Tables 4 and 14)

Ecological and/or Cultural Resources. Data element that considers threatened/endangered species, critical habitats, historical sites, cultural items, American Indian and Alaska Native sacred sites, and other similar resources on the MRS. Focuses only on resources found on the MRS, not those outside the boundary. (Definition based on 32 CFR Part 179, Appendix A, Tables 9 and 19)

Ecological Receptors. Receptors limited to critical habitats and other environments that could reasonably be impacted by an MRS. (Definition based on 32 CFR Part 179, Appendix A)

Ecological Resources. Threatened or endangered species (designated under the *Endangered Species Act* [*ESA*]) present on the MRS; or the MRS is designated under the *ESA* as critical habitat for a threatened or endangered species; or there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS. (Definition based on 32 CFR Part 179, Appendix A, Tables 9 and 19)

Educational. Of or relating to the knowledge or skill obtained or developed by a learning process. (Merriam-Webster Online Dictionary)

Evaluation Pending. (1) An alternative module rating used when there are known or suspected hazards present, but sufficient information is not available to determine the module rating, or (2) an alternative MRS rating used to indicate that an MRS requires further evaluation. (Definition based on 32 CFR 179.6)

Evidence of No CWM. Following an investigation of the MRS, there is physical and/or historical evidence that CWM are not present. (Definition based on 32 CFR Part 179, Appendix A, Tables 11-13)

Evidence of No Munitions. Following an investigation of the MRS, there is physical and/or historical evidence that UXO or DMM are not present. (Definition based on 32 CFR Part 179, Appendix A, Tables 1-3)

Evident. Classification within the Migration Pathway Factor assigned when analytical data or observable evidence indicates that contamination is present at, is moving toward, or has moved to a point of exposure. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR Part 179, Appendix A, Tables 21-26)

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Explosive Hazard. A condition where danger exists because explosives are present that may react (e.g., detonate, deflagrate) in a mishap with potential unacceptable effects (e.g., death, injury, damage) to people, property, operational capability, or the environment. (32 CFR 179.3)

Explosive Hazard Evaluation (EHE) Module. Provides a single, consistent, Department-wide approach for the evaluation of explosive hazards. This module is used when there is a known or suspected presence of an explosive hazard. The EHE Module is composed of three factors, each of which has two to four data elements that are intended to assess the specific conditions at an MRS. (Definition based on 32 CFR 179.6)

Explosive Hazard Factor. Characterizes the nature of the explosive hazard. The Explosive Hazard Factor consists of the data elements Munitions Type and Source of Hazard and constitutes 40 percent of the EHE Module score. (Definition based on 32 CFR 179.6)

Explosives. Includes any chemical compound or mechanical mixture which, when subjected to heat, impact, friction, detonation, or other suitable initiation, undergoes a very rapid chemical change with the evolution of large volumes of highly heated gases which exert pressures in the surrounding medium. The term applies to high explosives, propellants, and pyrotechnics that either detonate, deflagrate, burn vigorously, generate heat, light, smoke, or sound. (*Ammunition and Explosives Ashore: Safety Regulations for Handling, Storing, Production, Renovation, and Shipping* [NAVSEA OP-5, 7th Revision, Change 4, June 2005])

Exposure Point. A location of potential contact between a receptor and a chemical or physical agent. (*Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997])

Factor. Categories of information within each module used to assess the hazards posed by UXO, DMM, or MC. Factors are assigned values. The EHE Module factors are Explosive Hazard, Accessibility, and Receptor; the CHE Module factors are CWM Hazard, Accessibility, and Receptor; and the HHE Module factors are Contamination Hazard, Migration Pathway, and Receptor. (Definition based on 32 CFR 179.6)

Feasibility Study (FS). A study undertaken by the lead agency to develop and evaluate options for remedial action. The FS emphasizes data analysis and is generally performed concurrently and in an interactive fashion with the RI, using data gathered during the RI. The RI data are used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to a report that describes the results of the study. (40 CFR 300.5)

Firing Point. The point or location at which a weapon system is placed for firing. (Definition based on "firing position" in Range Safety, DA PAM 385-63)

Forestry. The science and art of cultivating, maintaining, and developing forests. (Merriam-Webster Online Dictionary)

Former Range. Ranges for which a formal decision has been made to close the range or that have been put to a use that is incompatible with continued use as a military range.

Formerly Used Defense Sites (FUDS). A facility or site (property) that was under the jurisdiction of the Secretary of Defense and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances. By the DERP policy, the FUDS program is limited to those real properties that were transferred from DoD control prior to October 17, 1986. FUDS properties can be located within the 50 States, District of Columbia, Territories, Commonwealths, and possessions of the United States. (US Army Engineer Regulation 200-3-1 FUDS Program Policy)

Fuze. A device used to cause the primary munition, or portion/segment thereof, to function. (Definition based on "fuze" in General Ammunition, TM 9-1300-200)

Fuzed. A primary munition that has a fuze already attached or incorporated into the munition. (Definition based on "fuze" in General Ammunition, TM 9-1300-200)

Groundwater. Precipitation or water from surface water bodies (e.g., oceans, lakes, streams) that soaks into the soil/bedrock and is stored underground. (Merriam-Webster Online Dictionary)

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Health Hazard Evaluation (HHE) Module. A consistent DoD-wide approach for evaluating the relative risk to human health and the environment posed by MC. The HHE builds on the Relative Risk Site Evaluation framework that is used in the IRP and has been modified to address the unique requirements of MRSs. The HHE Module shall be used for evaluating the potential hazards posed by MC and other chemical contaminants. The HHE Module is intended to evaluate MC at sites. (32 CFR 179.6)

High Explosive. An explosive substance designed to function by detonation (e.g., main charge, booster or primary explosives). (DoD Ammunition and Explosives Safety Standards, DoD 6055.9-STD)

High Explosive Fill. An explosive substance (e.g., RDX) carried in an ammunition container such as a projectile, mine, bomb, or grenade. (Definition based on "filler" in the *DoD Dictionary of Military and Associated Terms*)

Historical Evidence. The investigation (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information. (Definition based on 32 CFR Part 179, Appendix A, Tables 1-3 and 11-13)

Identified. Classification within the HHE Receptor Factor assigned when identified receptors have access to media in which contamination has moved or can move. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR Part 179, Appendix A, Tables 21-26)

Incendiary. A CA used primarily for igniting combustible substances with which it is in contact by generating sufficient heat to cause ignition. (*Ammunition and Explosives Ashore: Safety Regulations for Handling, Storing, Production, Renovation, and Shipping* [NAVSEA OP-5, 7th Revision, Change 4, June 2005])

Incomplete Barrier. There is not a barrier preventing access to an MRS or there is a barrier preventing access to parts of the MRS, but not the entire MRS. (Definition based on 32 CFR Part 179, Appendix A, Tables 4 and 14)

Industrial. Of, relating to, or resulting from the sector of the economy made up of manufacturing enterprises. (Merriam-Webster Online Dictionary)

Industrial Operating Facilities. Facilities including materials, special tooling, and other industrial facilities used to produce essential material to support the national military objectives. Industrial operating facilities include munitions maintenance, manufacturing, and demilitarization facilities. (Merriam-Webster Online Dictionary)

Information Repository. A collection of copies of all the information related to a response action (i.e., a remedial or removal action) that has been made available to the public established at or near the location of the response action. (Definition based on 40 CFR 300.430)

Inhabited Structures. Permanent or temporary structures, other than Department-related structures, that are routinely occupied by one or more persons for any portion of a day. (Definition based on 32 CFR Part 179, Appendix A, Tables 7 and 17)

Installation Restoration Program (IRP). Program designed to focus on releases of hazardous substances, pollutants, or contaminants that pose environmental health and safety risks at military installations and formerly used defense sites. This program is within DERP. (10 USC 2701)

Limited. Classification within the HHE Receptor Factor assigned when there is little or no potential for receptors that have access to a media in which contamination has moved or can move. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR Part 179, Appendix A, Tables 21-26)

Location of CWM. Data element that evaluates whether the presence of CWM is confirmed or suspected, the proximity of CWM to the surface, and whether there is potential for CWM to be brought to the surface. (Definition based on 32 CFR Part 179, Appendix A, Table 13)

Location of Munitions. Data element that evaluates whether the presence of munitions (UXO or DMM) is confirmed or suspected, the proximity of munitions to the surface, and whether there is potential for munitions to be brought to the surface. (Definition based on 32 CFR Part 179, Appendix A, Table 3)

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Long-Term Management (LTM). Term used for environmental monitoring, review of site conditions, and/or maintenance of a remedial action to ensure continued protection as designed once a site achieves Response Complete. Examples of LTM include landfill cap maintenance, leachate disposal, fence monitoring and repair, five-year review execution, and land use control enforcement actions. This term should be used until no further environmental restoration response actions are appropriate or anticipated. LTM is reserved for monitoring once a site achieves Response Complete, and should not be used to refer to monitoring after Remedy in Place, (this includes sites for which the selected remedy is natural attenuation). (*Management Guidance for the DERP*, September 2001)

Low Explosive. An explosive with a low rate of combustion. Examples of low explosives are smokeless and black powders. (Definition based on "low explosive" in Explosives and Demolitions, FM5-250)

Management Action Plan (MAP). A key document for managing the environmental restoration program at an installation or FUDS. The MAP describes an integrated, coordinated approach for conducting all environmental restoration activities required at an installation or FUDS. (Definition based on *Management Guidance for the DERP*, September 2001)

Maneuver Area. The area needed for movement to place troops, ships, or aircraft in a position of advantage over the enemy or for tactical exercises carried out at sea, in the air, on the ground, or on a map in imitation of war. (Definition based on "maneuver" in the *DoD Dictionary of Military and Associated Terms*)

Migration Pathway Factor (MPF). Indicates environmental migration pathways, and contributes a level of High (H), Medium (M), or Low (L) based on Evident, Potential or Confined pathways, respectively. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR 179.6)

Military Munitions. All ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the DoD, the Coast Guard, the DOE, and the National Guard. The term includes confined gaseous, liquid, and solid propellants; explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives and chemical warfare agents; chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, and demolition charges; and devices and components of any item thereof. The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, other than nonnuclear components of nuclear devices that are managed under the nuclear weapons program of the DOE after all required sanitization operations under the *Atomic Energy Act of 1954* (42 USC 2011 et seq.) have been completed. (10 USC 101(e)(4))

Military Munitions Response Program (MMRP). Formerly known as the OE Cleanup Program, which is part of the DERP, the MMRP is the program under which DoD carries out environmental restoration activities. The MMRP is a category under the DERP that requires Components to identify munitions response sites requiring action. (10 USC 2710)

Military Range. Designated land and water areas set aside, managed, and used to research, develop, test, and evaluate military munitions, other ordnance, or weapon systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, and buffer zones with restricted access and exclusionary areas. (40 CFR 266.201)

Minimal. Classification within the Contaminant Hazard Factor assigned when the sum of the contaminant ratios is less than two. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR Part 179, Appendix A, Tables 21-26)

Missile or Air Defense Artillery Emplacements. A missile defense or ADA placed in a prepared position, such as a mounting or silo, for one or more weapons or pieces of equipment, for protection against hostile fire or bombardment, and from which they can execute their tasks. (Definition based on "emplacement" in the *DoD Dictionary of Military and Associated Terms*)

Moderate. Classification within the Contaminant Hazard Factor assigned when the sum of the contaminant ratios is between 2 and 100. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR Part 179, Appendix A, Tables 21-26)

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Monitoring. The act of listening, carrying out surveillance on, and/or recording the emissions of one's own or allied forces for the purposes of maintaining and improving procedural standards and security, or for reference, as applicable. (*DoD Dictionary of Military and Associated Terms*)

MRS Project Team. A team assembled by the Component responsible for conducting a munitions response at an MRS. The MRS Project Team may be composed of representatives from DoD, the regulatory community, federal land managers, the local community, and other affected stakeholders. DoD personnel should include technical personnel (e.g., UXO qualified personnel, explosives or chemical safety personnel) knowledgeable of any known or suspected hazards at the MRS. The MRS Project Team is responsible for the application of the Protocol.

Munitions and Explosives of Concern (MEC). Specific categories of military munitions that may pose unique explosives safety risks, such as UXO, as defined in 10 USC 101(e)(5); discarded military munitions, as defined in 10 USC 2710(e)(2); or munitions constituents (e.g., TNT, RDX), as defined in 10 USC 2710 (e)(3), present in high enough concentrations to pose an explosive hazard. (32 CFR 179.3)

Munitions Constituents (MC). Any materials originating from UXO, DMM, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. (10 USC 2710(e)(3))

Munitions Response. Response actions, including investigation, removal actions, and remedial actions, to address the explosive safety, human health, or environmental risks presented by UXO, DMM, or MC, or to support a determination that no removal or remedial action is required. (32 CFR 179.3)

Munitions Response Area (MRA). Any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Example MRAs include former ranges and munitions burial areas. An MRA is comprised of one or more munitions response sites. (32 CFR 179.3)

Munitions Response Site (MRS). A discrete location within an MRA that is known to require a munitions response. (32 CFR 179.3)

Munitions Response Site Prioritization Protocol (MRSPP). A tool adopted by DoD to assign a relative priority for munitions responses to each location in the Department's inventory of defense sites known or suspected of containing UXO, DMM, or MC. (32 CFR 179)

Munitions Treatment Open Burn/Open Detonation (OB/OD) Unit. A location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal. (Definition based on 32 CFR Part 179, Appendix A, Table 2)

Munitions Type. Data element that assesses the potential explosive hazard posed by MEC, given the types of munitions potentially present at an MRS. (Definition based on 32 CFR Part 179, Appendix A, Table 1)

No Known or Suspected Hazard. (1) An alternative module rating reserved for MRSs that do not require evaluation under one or more of the modules, or (2) an alternative MRS rating used to indicate that an MRS has no known or suspected hazards. (Definition based on 32 CFR 179.6)

No Longer Required. (1) An alternative module rating used when the MRS no longer requires an assigned priority because DoD has conducted a response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and recurring reviews, is required, or (2) an alternative MRS rating used to indicate that an MRS no longer requires prioritization. (Definition based on 32 CFR 179.6)

Non-DoD Control. The MRS is a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies. (Definition based on 32 CFR Part 179, Appendix A, Table 5 and 15)

Nonexplosively Configured. All munitions that do not contain any explosive components. An example is VX or mustard agent spray canisters.

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Open Burn (OB). An open-air combustion process by which excess, unserviceable, or obsolete munitions are destroyed to eliminate their inherent explosive hazards. (*DoD Ammunition and Explosives Safety Standards*, DoD 6055.9-STD)

Open Detonation (OD). An open-air process used for the treatment of excess, unserviceable, or obsolete munitions whereby an explosive donor charge initiates the munitions being treated. (*DoD Ammunition and Explosives Safety Standards*, DoD 6055.9-STD)

Operational Range. A range that is under the jurisdiction, custody, or control of the Secretary of a military department and that is used for range activities; or although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities. (10 USC 101(e)(3))

Parks and Recreational Areas. An area of land set aside for public use as (1) a piece of land with few or no buildings within or adjoining a town, maintained for recreational and ornamental purposes; (2) a landscaped city square; or (3) a large tract of rural land kept in its natural state and usually reserved for the enjoyment and recreation of visitors. (Merriam-Webster Online Dictionary)

Physical Constraint. A restriction (e.g., pavement, water depth greater than 120 feet) that prevents direct access to objects beneath. (Definition based on 32 CFR Part 179, Appendix A, Table 3 and 13)

Physical Evidence. (1) Recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations. (Definition based on 32 CFR Part 179, Appendix A, Tables 1-3 and 11-13)

Population Density. Data Element based on the number of people per square mile in the county where an MRS is located per US Census data. (Definition based on 32 CFR Part 179, Appendix A, Tables 6 and 16).

Population Near Hazard. Data Element based on the number of inhabited structures on the MRS and within two miles of the MRS boundary. (Definition based on 32 CFR Part 179, Appendix A, Tables 7 and 17)

Potential. (1) Classification within the Migration Pathway Factor assigned when contamination has moved only slightly beyond the source, could move but is not moving sufficiently to select Evident or Confined; or (2) classification within the Receptor Factor assigned when receptors have access to the source to which contamination has moved or can move. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR Part 179, Appendix A, Tables 21-26).

Practice Munitions. Munitions that contain inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze. (32 CFR Part 179, Appendix A, Table 1)

Practice Munitions Range. A former military range on which only practice munitions without sensitive fuzes were used. (Definition based on 32 CFR Part 179, Appendix A, Table 2)

Preliminary Assessment (PA). A review of existing information and an off-site reconnaissance, if appropriate, to determine if a release may require additional investigation or action. A PA may include an on-site reconnaissance, if appropriate. (Definition based on 40 CFR 300.5)

Preliminary Remediation Goals (PRGs). Concentration levels set for individual chemicals that, for carcinogens, correspond to a specific cancer risk level of one in one million and, for noncarcinogens, correspond to a Hazard Quotient of one. They are generally selected when Applicable or Relevant and Appropriate Requirements are not available. (*Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997])

Primary Explosives. Highly sensitive compounds that are typically used in detonators and primers. A reaction is easily triggered by heat, spark, impact, or friction. Examples of primary explosives are lead azide and mercury fulminate. (*DoD Ammunition and Explosives Safety Standards*, DoD 6055.9-STD)

Primed. A charge ready in all aspects for ignition. (Definition based on "primed charge" in the *DoD Dictionary of Military and Associated Terms*)

Note: All terms in this Glossary are only defined for use with the Munitions Response Site Prioritization Protocol.

Propellants. Substances or mixtures of substances used for propelling projectiles and missiles, or to generate gases for powering auxiliary devices. When ignited, propellants burn at a controlled rate to produce quantities of gas capable of performing work but they must be capable of functioning in their application without undergoing a deflagration-to-detonation transition. (*Ammunition and Explosives Ashore: Safety Regulations for Handling, Storing, Production, Renovation, and Shipping* [7th Revision, Change 4, June 2005])

Pyrotechnics. A mixture of chemicals which, when ignited, is capable of reacting exothermically to produce light, heat, smoke, sound, or gas. (*DoD Dictionary of Military and Associated Terms*)

Range. A designated land or water area that is set aside, managed, and used for range activities of the DoD. Such term includes the following: firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas and airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration. (10 USC 101(e)(1))

Range Activities. Research, development, testing, and evaluation of military munitions, other ordnance, and weapons systems; and the training of members of the armed forces in the use and handling of military munitions, other ordnance, and weapons systems. (10 USC 101(e)(2))

Ratings. Assigned to hazard evaluation modules based on the factor values. The highest module rating (A is highest; G is lowest) becomes the MRS Priority. (Definition based on 32 CFR 179.6)

Receptor. A human individual or individuals, ecological population, or sensitive environment subject to, or potentially subject to, the hazard of contaminant exposure. (*Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997])

Receptor Factor. Focuses on human and ecological populations that may be impacted by the presence of MEC for the EHE Module, CWM for the CHE Module, or MC and any incidental nonmunitions-related contaminants for the HHE Module. The Receptor Factor for the EHE and CHE Modules consists of the data elements Population Density, Population Near Hazard, Types of Activities/Structures, and Ecological and/or Cultural Resources, and constitutes 20 percent of the EHE and CHE Module scores. For the HHE Module, the Receptor Factor contributes a level of High (H), Medium (M), or Low (L) based on Identified, Potential, or Limited receptors, respectively. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR 179.6)

Reference Dose (RfD). An estimated daily exposure level of a contaminant to a human population below which no adverse noncancer health effects are anticipated. (*Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997])

Relative Risk Site Evaluation (RRSE). The RRSE framework serves as the basis for the HHE Module. Methodology used by DoD to evaluate the relative risk posed at an IRP site in relation to other IRP sites. It is based on the nature and extent of contamination at an IRP site, the potential for contaminants to migrate, and the populations and ecosystems that could be impacted.

Remedial Investigation (RI). A process undertaken by the lead agency to determine the nature and extent of the problem presented by the release. The RI emphasizes data collection and site characterization, and is generally performed concurrently and in an interactive fashion with the feasibility study. The RI includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives. (40 CFR 300.5)

Remedy in Place (RIP). Designation that a final remedial action has been constructed and implemented and is operating as planned in the remedial design. Because operation of the remedy is ongoing, the site cannot be considered Response Complete. (Definition based on *Management Guidance for the DERP*, September 2001)

Research, Development, Testing, and Evaluation (RDT&E) Facility. The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface. (Definition based on 32 CFR Part 179, Appendix A, Table 12)

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Residential. Of, relating to, or having a place where one actually lives as distinguished from a domicile or place of temporary sojourn. (Merriam-Webster Online Dictionary)

Response Complete (RC). Milestone reached when the selected remedy has achieved cleanup goals specified in the ROD or decision document. (*Department of the Navy Environmental Restoration Program Manual*, August 2006)

Restoration Advisory Board (RAB). An advisory group for the environmental restoration process that includes members of the public, the installation, and regulatory agencies. The purpose of a RAB is to gain effective input from stakeholders on cleanup activities and to increase installation responsiveness to community environmental restoration concerns. (ODUSD(I&E)/Environmental Management Office Glossary of Terms)

Scores. Numeric classifications, ranging from zero to a maximum score, assigned to each data element within the EHE and CHE Modules. (Definition based on 32 CFR 179.6)

Secondary Explosives. Generally less sensitive to initiation than primary explosives and are typically used in booster and main charge applications. A severe shock is usually required to trigger a reaction. Examples are TNT, RDX or cyclonite, cyclotetramethylene-tetranitramine (HMX) (also known as octogen), and tetryl. (*DoD Ammunition and Explosives Safety Standards*, DoD 6055.9-STD)

Sediment. Sediments are formed from the deposition of solid material that include the clay and silts on the bottom of a water body (e.g., ocean, lake, stream). (Merriam-Webster Online Dictionary)

Sensitive. All UXO that are considered likely to function upon any interaction with exposed persons (e.g., submunitions, 40mm HE grenades, white phosphorus [WP] munitions, high explosive antitank [HEAT] munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions); all hand grenades containing energetic filler; and bulk primary explosives, or mixtures of these with environmental media such that the mixture poses an explosive hazard. (Definition based on 32 CFR Part 179, Appendix A, Table 1)

Significant. Classification within the Contaminant Hazard Factor assigned when the sum of the contaminant ratios is greater than 100. (Definition based on the *Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997] and 32 CFR Part 179, Appendix A, Tables 21-26)

Site Inspection (SI). An on-site investigation to determine whether there is a release or potential release and the nature of the associated threats. The purpose is to augment the data collected in the preliminary assessment and to generate, if necessary, sampling and other field data to determine if further action or investigation is appropriate. (40 CFR 300.5)

Slope Factor (SF). A plausible upper-bound estimate of the probability of a response per unit intake of a chemical over a lifetime. The slope factor is used to estimate an upper-bound probability of an individual developing cancer as a result of a lifetime of exposure to a particular level of a carcinogen. (*Relative Risk Site Evaluation Primer* [Revised Edition, Summer 1997])

Small Arms Ammunition. Ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or below, or for shotguns. (*DoD Ammunition and Explosives Safety Standards*, DoD 6055.9-STD)

Small Arms Range. A range where only small arms ammunition was used. (Definition based on 32 CFR Part 179, Appendix A, Table 2)

Source of Hazard. Data element that assesses the potential explosive risk at an MRS based on the MRS's previous uses. (Definition based on 32 CFR Part 179, Appendix A, Table 2)

Sources of CWM. Data element that addresses the type of CWM activities conducted, the extent CWM may be present, and its potential condition. (Definition based on 32 CFR Part 179, Appendix A, Table 12)

Stable Condition. Naturally occurring phenomena or intrusive activities are not likely to expose subsurface UXO or DMM. (Definition based on 32 CFR Part 179, Appendix A, Tables 3 and 13)

Stakeholders. Includes federal, state, and local officials, community organizations, property owners, and others having a personal interest or involvement, or having a monetary or commercial involvement in the real property which is to undergo a munitions response action. (Definition based on *Engineering and Design - Ordnance and Explosives Response,* EM 1110-1-4009)

Status of Property. Data element that differentiates between an MRS that is currently under DoD's control and an MRS that has been transferred out of DoD control. (Definition based on 32 CFR Part 179, Appendix A, Tables 5 and 15).

Storage or Transfer Points. The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system). (Definition based on 32 CFR Part 179, Appendix A, Table 2)

Subsistence. The act or state of to maintain or support with provisions. (Merriam-Webster Online Dictionary)

Subsurface. The munition is entirely beneath the ground surface or submerged in a water body. (Definition based on 32 CFR Part 179, Appendix A, Tables 3 and 13)

Surface. The munition is entirely or partially exposed above the ground surface, or entirely or partially exposed above the surface of a water body. (Definition based on 32 CFR Part 179, Appendix A, Tables 3 and 13)

Surface Soil. The layer of soil on the surface (with a depth of 0 to 6 inches). (Merriam-Webster Online Dictionary)

Surface Water. Precipitation that collects in surface water bodies (e.g., oceans, lakes, streams) or groundwater that discharges to the surface from springs. (Merriam-Webster Online Dictionary)

Suspected. The presence of a munition hazard is suggested from physical or historical evidence. (Definition based on 32 CFR Part 179, Appendix A, Tables 3 and 13)

Technical Review Committee (TRC). A group of technical experts that is responsible for reviewing technical reports and data for a site. A TRC is established at installations for the purpose of reviewing and commenting on actions and proposed actions concerning releases or threatened releases at the installation. The TRC consists of at least one representative from the installation, a representative of EPA, appropriate state and local authorities, and a public representative of the community involved. (ODUSD(I&E)/Environmental Management Office Glossary of Terms)

Threatened and Endangered Species. Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man. (*Endangered Species Act*)

Training Facility Using CWM or CAIS. A location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWM, decontamination training), and CWM/DMM or CAIS/DMM are suspected of being present on the surface or in the subsurface. (Definition based on 32 CFR Part 179, Appendix A, Table 12)

Types of Activities/Structures. Data element that assesses the nature of the population near the hazard. Provides an indication of the extent, type, and intrusiveness of activities at an MRS, likelihood of people being on or within a two-mile radius of an MRS, and accounts for permanent and transient populations. (Definition based on 32 CFR Part 179, Appendix A, Tables 8 and 18)

Undamaged Munitions. A munition is considered undamaged when the integrity of the munition is not compromised by cracks, leaks, or other damage. (*DoD Dictionary of Military and Associated Terms*)

Unexploded Ordnance (UXO). Military munitions that (1) have been primed, fused, armed, or otherwise prepared for action; (2) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (3) remain unexploded, whether by malfunction, design, or any other cause. (10 USC 101(e)(5))

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United States. In a geographic sense, the States, territories, and possessions and associated navigable waters, contiguous zones, and ocean waters of which the natural resources are under the exclusive management authority of the United States. (10 USC 2710(e)(10))

Unused Munitions. Those munitions that have not been fired, dropped, launched, placed, or otherwise used. Such munitions include, but may not be limited to, military munitions in DoD's stockpile that are available for issue; munitions issued to using units that have not been used; and munitions that were not used that were disposed of without authorization, lost or stolen. (Definition based on the *Munitions Rule Implementation Policy*)

Used or Fired Military Munitions: Those military munitions that have been primed, fuzed, armed, or otherwise prepared for action, and that have been fired, dropped, launched, projected, placed, or otherwise used. Such munitions include, but may not be limited to, malfunctions, misfires (e.g., fail to properly fire), and UXO. Small arms ammunition that may have been used, but that misfired are not considered UXO. (Definition based on the *Munitions Rule Implementation Policy*)

Values. Designations assigned to each factor. Factor values are used to determine the module rating. (Definition based on 32 CFR 179.6)

Warehousing. To place or store in a place in which goods or merchandise are stored; a storehouse, especially in a bonded or government warehouse. (Merriam-Webster Online Dictionary)

Wholly Inert. Those munitions (e.g., dummy) or munitions components (e.g., ogive, rotating band, adapter and lifting plugs) that have never contained reactive materials (i.e., explosives, chemical agents, chemicals such as pyrophoric chemicals). (Note: Once an inert item is employed as a component of a military munition, it may no longer be considered wholly inert.)

BCT Agenda
17 June 2008
1330-1630 Hours

Review Document Status List Furnished by Parsons

Review of Comments and Responses on SEAD 1, 2 ,5, 24, and 48 PRAP
To Include the recent comment regarding SEAD 59 "clarification".

Progress- The Army plan for:
- SEAD 12
- Munitions Response Sites
- SEAD 11

Up-Date on Reuse of Seneca Army Depot
- Ethanol Plant
- Special Weapons Storage Area
- PID Area
- Military Training

BCT Agenda
16 August 2008
1330-1630 Hours

Review Document Status List Furnished by Parsons

Particular interest- OPS For Ash Landfill
State Comments on Completion Report for SEAD 16/17

SEAD 59/71 Discuss the Path forward.
Review proposed Army responses to letter of 9/3/08

Schedule for SEAD 4/38 Remedial Action

Components of Selected Remedy at SEAD-59/71 (Alternative 3)

- Install demarcation fabric over existing soil piles.
- Place 12 inches of soil cover over piles.
- Revegetate to prevent erosion.
- Implement LUCs to prohibit groundwater and residential use (e.g., housing, schools, child care facilities, and playgrounds) and prohibit unauthorized excavation of piles.

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

Subject: Draft Final ROD for SEAD-59 and SEAD-71
Seneca Army Depot
Romulus, New York

Comments Dated: September 3, 2008

Date of Comment Response: September __, 2008

Army's Response to Comments

GENERAL COMMENTS

Comment 1: Whenever describing the land use controls, in addition to specifying the prohibited uses (such as housing), please specify the allowable use category (in this case, commercial).

Response 1:

The Army will include a statement at appropriate locations in the text of ROD that specifies what allowable uses will be permitted at sites. However, before this may be done, the Army guidance from EPA and the State as to the definition of all future use categories is required. For example, the State indicates that the ongoing use of the land at SEAD 59 and 71 is commercial, which in 6 NYCRR Part 375-1.8 is defined as "considered for the primary purpose of buying, selling, selling or trading of merchandise or services. Commercial use includes passive recreational uses, which are public uses with limited potentials for soil contact." It is conceivable that one could consider a playground as a commercial land use, yet this is explicitly prohibited at these sites. Further, "Training" is described as commercial, yet this has nothing to do with buying, selling or trading of merchandise or services, nor is it a passive recreational use.

Comment 2: New York State does not find it useful to compare site data to USEPA Region IX PRGs and would prefer that these comparisons be eliminated. They may be retained if so requested by USEPA Region 2 so long as comparisons with New York State SCOs are also included in the text and tables.

we Do this now !

Response 2:

It is the Army's understanding that the EPA requires the comparison of site data to PRGs, other guidance values, and other potential ARARs, as appropriate. Therefore, unless directed otherwise by the EPA, we will continue to provide comparisons to PRGs, MCLs, etc. in future Completion Reports, Proposed Plans, and Records of Decision.

The Army has been providing appropriate presentations of the State SCOs and other criteria in documents submitted to the oversight agencies, since these values were required.

Comment 3: Whenever statements are made in the text comparing AOC-wide 95th UCL values with SCOs, information must also be included on exceedances at individual sampling points (number of and magnitude of the exceedances) since New York State does not make remedial decisions based on statistical analysis alone.

Also see Mr. John Swartwout's letters dated June 27, 2008 and September 2, 2008.

Response 3: Interim remedy - NOT SATISFACTORY -> DAMAGE ROD VS RI Report Summary TABLE ARMY!

The Army believes that it is already complying with this request. We have had many discussion with the State representatives about the manner in which this presentation should be made, and believe we are meeting this goal. Tthe Army requests that the State provide specific examples that are not currently found to be acceptable. Examples of preferred discussions are also requested so all parties fully understand the goal that is desired.

Further, the EPA has routinely expressed a desire for brevity in the size of Proposed Plan and Record of Decision presentations, which contradicts the State's desire to fully document every instance and nuance of potential exceedance. The Army will continue to try and address all specific concerns as they are identified.

Risk Assessment to NY. for approval;

Further in regards to Mr. John Swartwouts letters, the Army points to Section 11 "Removal Actions" paragraph.3 of the Federal Facility Agreement (FFA) which states "Any dispute among the Parties as to whether a proposed non-emergency response is a proper Removal Action under CERCLA, or as to the consistency of such a Removal Action with the final remedial action, shall be resolved pursuant to PART 19(Resolution of Disputes)." Since the Army has demonstrated through an EPA accepted risk assessment that there is no unacceptable risk from SEAD 59 and SEAD 71 for the future use of the property, that the backfill met the requirements of the clean up goals at the time of the action, and that the back fill was approved by the State Remedial Project Manager, the Army is unclear as to the State position of this site as it relates to CERCLA and the FFA. The Army believes that if the State now non-concurs with the Army's proposed decision,, the State as the party in disagreement is obligated to identify their concerns consistent with Dispute section.

Stephen Absolom

SPECIFIC COMMENTS:

Comment 1: Section 10.2, Page 10-2, 1st paragraph. It is the position of New York State that the Soil Cleanup Objectives in the Part 375 regulation are ARARs.

Response 1:

The NYSDEC's position is noted. The Army will modify the document to be consistent with the wording used in the recently signed ROD for SEAD 121 C and I.

Comment 2: Figure 3-1. Figure 3-1 is incomplete. Please provide all sampling locations as referred in the Tables. The location of stock pile samples like WS-07, WS-08, WS-59-01-006-11 are not listed. The Army can provide two figures, one showing sample locations after excavation with residual soil cleanup

numbers and the other figure showing before excavation/remediation the soil contamination numbers present at the area of concern. Please provide also in detail the graphical limits of remediation in the figure.

Response 2:

The Army will update Figure 3-1 to show the extent of the completed removal action at SEAD-59 and SEAD-71. Maps showing the location of all samples were previously provided to the NYSDEC in the Construction Completion Report for the Removal Action, the Final Action Memorandum and in the Supplemental RI Report for SEAD 59 and SEAD 71. These maps could be added to the ROD, if all parties believe it necessary and appropriate. However, the Army does not believe that these additional maps provide any essential information to the ROD.,. The Removal Action Report, The Final Action Memorandum and the Supplemental RI Repot are all final, and identified in the Administrative Record for the sites.

The purpose of the ROD is to specify the remedial action that is selected for the site. The remedial action proposed by the Army and previously approved by the State and the EPA was the imposition of land use controls that prohibit residential housing, elementary and secondary schools, childcare facilities, and playgrounds, and that prohibit access to and use of the groundwater at both sites. These land use controls were to be imposed over the entire extent of each of the AOCs, and not over select sampling locations; hence the detailed maps are seemingly unwarranted. Further the purpose of having a map with stockpile samples on it for this ROD seems unnecessary since the State has concurred with the plan to intern these stock piled soils at SEAD 5 and is address the stockpiles in another ROD.

§375-2.8 Remedial program

(a) The goal of the remedial program for a specific site is to restore that site to pre-disposal conditions, to the extent feasible. At a minimum, the remedy selected shall eliminate or mitigate all significant threats to the public health and to the environment presented by contaminants disposed at the site through the proper application of scientific and engineering principles and in a manner not inconsistent with the national oil and hazardous substances pollution contingency plan as set forth in section 105 of CERCLA, as amended as by SARA.

(b) Application of the soil cleanup objectives.

(1) The remedial party must utilize soil cleanup objectives that eliminate or mitigate the significant threat and are protective of public health and the environment. The remedial party, subject to Department approval, may:

(i) utilize the soil cleanup objectives, as set forth in section 375-6.8;

(ii) develop or modify site specific soil cleanup objectives, as set forth at section 375-6.9; or

(iii) propose site-specific soil cleanup objectives which are protective of public health and the environment based upon other information.

(2) The soil component of the remedial program will consider the soil cleanup objectives for unrestricted use, as set forth in Table 375-6.8(a), as representative of pre-disposal conditions for remedial programs proceeding as set forth in subparagraphs (1)(i) or (1)(ii) above, unless an impact to ecological resources has been identified.

(3) Cleanup objectives for other media. The threat to public health and the environment resulting from contamination in all other environmental media shall be evaluated in the development of remedial alternatives in the feasibility study to ensure that the remedial program meets the requirements of this subdivision and section 375-1.8.

(c) Feasibility Study.

(d) Interim remedial measures. In the case of a site at which an interim remedial measure has been implemented, the Department may determine, based on site-specific circumstances including post-implementation investigation and/or monitoring, that the interim remedial measure satisfies the goal of the remedial program for the site, where only continued implementation of the site management plan associated with the interim remedial measure or other engineering or institutional controls is required. In which event the Department will propose the no further action alternative. Provided no other operable units remain for the site requiring action, the Department may reclassify or delist the site according to subdivisions 375-2.7(d) or (e). (e) Remedy selection. The process of selecting a remedy shall be documented in a record of decision, which includes the information identified below.

(1) The location and a description of the site.

(2) A history of the operation of the site.

(3) The current environmental and public health status of the site.

(4) An enforcement history and current status of the site.

(5) The specific goals and objectives of the remedy selected for the site.

(6) A description and evaluation of the remedial alternatives considered, except in the case of no further action remedies.

(7) A summary of the basis for the Department's decision.

(8) A list of the documents the Department used in its decision making.

(9) A responsiveness summary.

§360-1.15 BENEFICIAL USE.

(a) Applicability.

(1) This section applies to materials that, before being beneficially used (as determined by the department), were solid waste. This section does not apply to solid wastes subject to regulation under Subpart 360-4 of this Part, except in the manner identified in subdivision 360-1.15(b) of this Part.

(2) Beneficial use determinations granted by the department before the effective date of this section shall remain in effect, subject to all conditions contained therein, unless specifically addressed by subsequent department action.

(b) Solid waste cessation.

The following items are not considered solid waste for the purposes of this Part when used as described in this subdivision:

(1) materials identified in subparagraphs 371.1(e)(1)(vi)-(viii) of this Title that cease to be solid waste under the conditions identified in those subparagraphs;

(2) compost and other waste derived soil conditioning products from facilities that are exempt or registered under this Part, and products that satisfy the applicable requirements under Subpart 360-5 of this Part;

(3) unadulterated wood, wood chips, or bark from land clearing, logging operations, utility line clearing and maintenance operations, pulp and paper production, and wood products manufacturing, when these materials are placed in commerce for service as mulch, landscaping, animal bedding, erosion control, wood fuel production, and bulking agent at a compost facility operated in compliance with Subpart 360-5 of this Part;

(4) uncontaminated newspaper or newsprint when used as animal bedding;

(5) uncontaminated glass when used as a substitute for conventional aggregate in asphalt or subgrade applications;

(6) tire chips when used as an aggregate for road base materials or asphalt pavements in accordance with New York State Department of Transportation standard specifications, or whole tires or tire chips when used for energy recovery;

(7) uncontaminated soil which has been excavated as part of a construction project, and which is being used as a fill material, in place of soil native to the site of disposition;

(8) nonhazardous, contaminated soil which has been excavated as part of a construction project, other than a department-approved or undertaken inactive hazardous waste disposal site remediation program, and which is used as backfill for the same excavation or excavations containing similar contaminants at the same site. Excess materials on these projects are subject to the requirements of this Part. (Note: use of in-place and stockpiled soil from a site being converted to a realty subdivision, as defined by the Public Health Law (10 NYCRR 72), must be approved by the local health department.);

(9) nonhazardous petroleum contaminated soil which has been decontaminated to the satisfaction of the department and is being used in a manner acceptable to the department;

(10) solid wastes which are approved in advance, in writing, by the department for use as daily cover material or other landfill liner or final cover system components pursuant to the provisions of subdivision 360-2.13(w) of this Part when these materials are received at the landfill;

(11) recognizable, uncontaminated concrete and concrete products, asphalt pavement, brick, glass, soil and rock placed in commerce for service as a substitute for conventional aggregate;

(12) nonhazardous petroleum contaminated soil when incorporated into asphalt pavement products by a producer authorized by the department;

(13) unadulterated wood combustion bottom ash, fly ash, or combined ash when used as a soil amendment or fertilizer, provided the application rate of the wood ash is limited to the nutrient need of the crop grown on the land on which the wood ash will be applied and does not exceed 16 dry tons per acre per year;

(14) coal combustion bottom ash placed in commerce to serve as a component in the manufacture of roofing shingles or asphalt products; or as a traction agent on roadways, parking lots and other driving surfaces;

(15) coal combustion fly ash or gas scrubbing by-products placed in commerce to serve as an ingredient to produce light weight block, light weight aggregate, low strength backfill material, manufactured gypsum or manufactured calcium chloride; and

(16) coal combustion fly ash or coal combustion bottom ash placed in commerce to serve as a cement or aggregate substitute in concrete or concrete products; as raw feed in the manufacture of cement; or placed in commerce to serve as structural fill within building foundations when placed above the seasonal high groundwater table.