452-11

DEPARTMENT OF THE ARMY
U.S. Army Engineering and Support Center, Huntsville
CORPS OF ENGINEERS
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Huntsville, AL 35807-4301
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MEMORANDUM FOR RECORD

SUBJECT: Rough Order of Magnitude for Seneca Army Depot, Site SEAD-006-R-01.

1. This memorandum serves as formal documentation of the information used to develop the ROM estimate. Estimators experience is documented on the Estimator Experience Form (Attachment 2), included in the supporting documentation, per the Federal Accounting Standards Advisory Board Handbook Technical Release 2.

2. Background Information: Seneca Army Depot (SEDA) is a 10,587-acre facility in Seneca County near Romulus, New York (1.1, SI). The Army destroyed ammunition by detonation and open burning at this site, which was in operation from 1948 through 1998. The OB/OD Grounds are in the northwest portion of the installation in which the SEDA boundary is about 3,000ft away. Residences lie adjacent to the OD Grounds and obtain drinking water from private water wells (1.1.1.5, SI). The detonation activities at the OD Grounds were conducted in an area known as the "OD Hill" (Pg 8, Completion Report). The investigation of this site revealed contamination consisting of ordnance and explosives (OE) and heavy metals. SEAD-006-R-01 is a RCRA interim permitted site and consists of 421 acres, not including OB grounds where a CERCLA remediation was completed in 2003.

Previous Work of OD Grounds includes: 1995 Expanded Site Investigation (Section 1.2.6.1 of Final FS), 2000 OE EE/CA (Section 1.2.6.2 Final FS), 2003 Phase 1 Geophysical Investigation by Weston (Section 1.2.6.3 Final FS), 2006 Phase II OE Removal Activities by Weston (Section 1.2.6.4 Final FS), Additional Munitions Response Site Investigation in 2010 by Parsons and Feasibility Study in 2015 by Parsons (Section 1.2.6.4 Final FS).

3. Current Conditions: Parsons submitted an Engineering Change Request November 2017 in result of additional work requirements identified during the 30 August 2017 meeting with SEDA, EPA, and the New York State Department of Environmental Conservation (NYSDEC). During the meeting it was agreed that additional characterization and documentation of all work conducted at the OD Grounds are required. MMRP work has been conducted at the OD Grounds in different phases, under different contracts, and by different contractors; a comprehensive presentation and evaluation of the OD Grounds is required in order to move forward with the Feasibility Study (FS) and subsequent phases of work.

4. Cleanup/Exit Strategy:
Remedy 1 - Mechanical sifting of the 38,000CY of the OD Hill.
Remedy 2 – OD Hill to 1000 ft: mechanical scrape and sift 47 acres down to 2ft. Perform AGC on the 47 acres that have been scraped. Assuming 1200 anomalies/acre and 10% of anomalies will be left after sifting. Perform mag and dig on 24.9 acres which are assumed to be inaccessible. OB Grounds are not included.

Remedy 3 – 1000 to 1250 ft: mechanical scrape and sift 21.6 acres down to 2ft. Assuming 1200 anomalies/acre and 10% of anomalies will be left after sifting. Perform AGC on the 21.6 acres that have been scraped. OB Grounds are not included.

Remedy 4 – 1250 to 2500 ft: Surface Clearance first must be performed for safety and quality results of future DGM. Re-map 184.7 acres using EM61. Assuming 84 anomalies/acre. Perform mag and flag on 81.9 acres which are assumed to be inaccessible.

Remedy 5 – 2500ft to road boundaries: Surface Clearance first must be performed for safety and quality results of future DGM. Perform DGM with EM61. Assuming 50 anomalies/acre.

Assuming surveying will be performed for the non-covered acres, 114 acres.
Long Term Management (LTM) includes five-year reviews, site closeout, land use controls, groundwater monitoring and well abandonment.

5. Cost Breakdown:

RACER 11.4 was used to estimate mechanical sifting, groundwater monitoring, five-year reviews, site close-out, well abandonment, MEC institutional controls and Administrative land use controls.

Excel was utilized to perform estimates for field work, including: vegetation removal, surface clearance, geophysics (AGC, DGM, M&D), and surveying.

a. Attachment 1 - Estimate documentation from Excel
b. Attachment 2 – Remedy Background & Assumptions
c. Attachment 3 - Estimate documentation report (EDR) from RACER
d. Attachment 4 – Parson's Acreage Data
e. Attachment 5 - Estimator Experience forms (TBD)

6. Total Cost to Complete for Site SEAD-006-R-01 is $24,882,006.00.

MFR prepared by: Bethanie Thomas (256) 895-5518
SIGNATURE DATE:

MFR reviewed by:
SIGNATURE DATE:

US Army Engineering and Support Center, Huntsville			
SENECA OD GROUNDS			
ROM			
Task	*Description*	*Unit*	*Price*
	Remedy 1	1	
	Mechanical Sifting of OD Hill	1	$1,281,884.00
	Remedy 2	1	
	Vegetation Clearance	1	$95,831.08
	Mechanical Sifting inside 1000ft radius	1	$4,149,573.38
	Geophysics	1	$6,432,246.70
	Remedy 3	1	
	Vegetation Clearance	1	$31,817.56
	Mechanical Sifting 1000ft to 1250ft radius	1	$2,201,573.00
	Geophysics	1	$1,039,919.82
	Remedy 4	1	
	Vegetation Clearance	1	$368,079.79
	Geophysics	1	$4,925,388.49
	Remedy 5	1	
	Vegetation Clearance	1	$226,369.79
	Geophysics	1	$2,738,191.16
	Surveying	1	$113,158.24
	MEC Institutional Controls	1	$772,220.00
	Administrative Land Use Controls	1	$100,296.00
	Long Term Management (LTM)	1	$405,457.00
		Remedy 1	$1,281,884.00
		Remedy 2	$10,677,651.16
		Remedy 3	$3,273,310.38
		Remedy 4	$5,293,468.28
		Remedy 5	$2,964,560.95
		TOTAL	$24,882,006.00

NOTE: This includes the estimates from RACER 11.4.

Seneca OD Grounds Remedy Background & Assumptions

OD Ground estimate was divided into 5 remedies based on past field work and engineering assumptions.

Remedy 1 - Mechanical sifting of the 38,000CY of the OD Hill.

Remedy 2 – OD Hill to 1000 ft: mechanical scrape and sift 47 acres down to 2ft. Perform AGC on the 47 acres that have been scraped. Assuming 1200 anomalies/acre and 10% of anomalies will be left after sifting. Perform mag and dig on 24.9 acres which are assumed to be inaccessible. OB Grounds are not included.

Remedy 3 – 1000 to 1250 ft: mechanical scrape and sift 21.6 acres down to 2ft. Assuming 1200 anomalies/acre and 10% of anomalies will be left after sifting. Perform AGC on the 21.6 acres that have been scraped. OB Grounds are not included.

Remedy 4 – 1250 to 2500 ft: Surface Clearance first must be performed for safety and quality results of future DGM. Re-map 189 acres using EM61. Assuming 84 anomalies/acre. Perform mag and flag on 89 acres which are assumed to be inaccessible.

Remedy 5 – 2500ft to road boundaries: Surface Clearance first must be performed for safety and quality results of future DGM. Perform DGM with EM61. Assuming 50 anomalies/acre.

- Assuming surveying will be performed for the non-covered acres, 114 acres.
- Long Term Management (LTM) includes five-year reviews, site closeout, land use controls, groundwater monitoring and well abandonment.

Background & Assumptions:

Remedy 1 - includes mechanical sifting and disposal based on the information found in FY 17 MFR stating "EPA's disagreement with the planned IRA to include a cap.". The 38,000CY is based on Parson's Additional Munitions Response Site Investigations 2010, Section 3.1.

Remedy 2 – Assuming mechanical scrape and sift will reduce anomaly density down to 10% remaining based on most anomalies lying in the first 18 inches. Parson's divided the 1000ft radius into areas that have been covered and non-covered. CB&I performed DGM on 44 acres and the OD Hill is recorded as 3ac. Therefore, 47 acres are accessible and will be scraped and sifted. 24.9 acres is what is leftover and is inaccessible so mag & dig is the assumed remedy. Based on past field work, the anomaly density is higher the closer to OD Hill. Therefore, 1200 anomaly/acre is the assumed density.

Remedy 3 - Assuming mechanical scrape and sift will reduce anomaly density down to 10% remaining based on most anomalies lying in the first 18 inches. Total acreage of 40.6ac – 1/3 of OB Grounds (10ac.) – 15% of M&D (9ac.) = 21.6ac.

Remedy 4 – Based on the past DGM approach, re-mapping is proposed on 189acres. Total acreage of 338ac. – Parson's M&D (60.3ac.) – Parson's defined No Coverage (88.8ac) = 189 ac. Assuming the 'No Coverage' defined area is inaccessible and therefore will need M&D. Assuming anomaly density will decrease to 84/acre.

Remedy 5 – Due to anomalies being found at the 2500 ft. radius and past the 2500 ft. radius, DGM is proposed out to the roads surrounding OD Grounds. Acreage was determined using Google Earth Pro. Assuming anomaly density will decrease to 50/acre.

Estimate Documentation Report

System:

RACER Version: RACER® Version 11.4.63.0
Database Location: C:\Users\a0edcbnt\Documents\work\OE Design\Seneca CTC\RACER 11.4\OBOD database copy.mdb

Folder:

Folder Name: OBOD Grounds

Project:

ID: NY0213820830
Name: Seneca Army Depot
Category: None

Location
State / Country: NEW YORK
City: SYRACUSE

Location Modifier	Default	User	Reason for changes
	1.120	1.120	

Options
Database: System Costs
Cost Database Date: 2017
Report Option: Fiscal

Description

Seneca Army Depot is located in New York. The Army destroyed ammunition by detonation and open burning at this site, which was in operation from 1948 through 1998. The OB ground consists of elevated burning trays. The site is in the northwest portion of the installation and covers 364 acres. The investigation of this site revealed contamination consisting of ordnance and explosives (OE) and heavy metals. This is a RCRA interim permitted site. This site also encompasses SEAD-023 (not listed in HQAES), OB Grounds, where a CERCLA remediation was completed in 2003.

The distance to the Property is approximately 60 miles (one way) and will be applied to all applicable mileage fields for this MMRP estimate. The distance is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist. For this Property the city selected isSyracuse.

Estimate Documentation Report

Site:

ID: SEAD-006-R-01
Name: Seneca OD Grounds
Type: None

Media/Waste Type

Primary: Ordnance (not residual)
Secondary: Soil

Contaminant

Primary: Metals
Secondary: Ordnance (residual)

Phase Names

- **Pre-Study** ☐
- **Study** ☑
- **Design** ☐
- **Removal/Interim Action** ☐
- **Remedial Action** ☑
- **Operations & Maintenance** ☑
- **Long Term Monitoring** ☑
- **Site Closeout** ☑

Documentation

Description: The Army destroyed ammunition by detonation and open burning at this site, which was in operation from 1948 through 1998. The OB ground consists of elevated burning trays. The site is in the northwest portion of the installation and covers 364 acres. The investigation of this site revealed contamination consisting of ordnance and explosives (OE) and heavy metals. This is a RCRA interim permitted site. This site also encompasses SEAD-023 (not listed in HQAES), OB Grounds, where a CERCLA remediation was completed in 2003.

SEAD-006-R-01 consists of an OD Hill and a 2,500ft radius boundary surrounding the OD Hill. The OB Grounds lay within the boundary and have previously been cleared. SEAD-006-R-01 consists of 421 acres, not including OB grounds. Previous Work of OD Grounds: 1995 Expanded Site Investigation (Section 1.2.6.1 of Final FS), 2000 OE EE/CA (Section 1.2.6.2 Final FS), 2003 Phase 1 Geo Investigation (Section 1.2.6.3 Final FS), 2006 Phase II OE Removal Activities (Section 1.2.6.4 Final FS) and 2010 Supplemental Work (Section 1.2.6.4 Final FS).

Parsons submitted an Engineering Change Request November 2017 in result of additional work requirements identified during the 30 August 2017 meeting with SEDA, EPA, and the New York State Department of Environmental Conservation (NYSDEC). During the meeting it was agreed that additional characterization and documentation of all work conducted at the OD Grounds are required. MMRP work has been conducted at the OD Grounds in different phases, under different contracts, and by different contractors; a comprehensive presentation and evaluation of the OD Grounds is required in order to move forward with the Feasibility Study (FS) and subsequent phases of work.

Support Team: Bethanie Thomas

References:
- Engineering Change Request 2017
- Final Feasibility Study Report (FS), February 2015
- FY17 MFR SEAD-006-R-01

Estimate Documentation Report

Estimator Information

Estimator Name: Bethanie Thomas
Estimator Title: Environmental Engnieer
Agency/Org./Office: CEHNC-ED-EDC-E
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Telephone Number: 256-895-1859
Email Address: bethanie.n.thomas@usace.army.mil
Estimate Prepared Date: 01/24/2018

Estimator Signature: _____ **Date:** _____

Reviewer Information

Reviewer Name:
Reviewer Title:
Agency/Org./Office:
Business Address:
Telephone Number:
Email Address:
Date Reviewed: 01/30/2018

Reviewer Signature: _____ **Date:** _____

Estimate Costs:

Phase Names	Direct Cost	Marked-Up Cost
Remedial Action Operations	$4,525,594	$6,563,197
LTM	$201,482	$405,457
Total Cost:	$4,727,076	$6,968,654
Total Project Cost:	$4,727,076	$6,968,654

Phase Documentation:

Phase Type: Remedial Action
Phase Name: Remedial Action Operations
Description: Remedial Action Operations is to include MEC Sifting, LUCs, LTM plan, well monitoring and site closeout.
Approach: Ex Situ
Start Date: January, 2021
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Estimate Documentation Report

Phase Markup Template: System Defaults

Technology Markups	Markup	% Prime	% Sub.
MEC Institutional Controls	True	100	0
ADMINISTRATIVE LAND USE CONTROLS	True	100	0
MEC Sifting	True	100	0
MEC Sifting	True	100	0
MEC Sifting	True	100	0

Total Marked-up Cost: $6,563,196.93

Technologies:

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		False	n/a
Planning Documents: Start Date		2021	n/a
Implementation		True	n/a
Implementation: Start Date		2021	n/a
Monitoring & Enforcement		False	n/a
Monitoring & Enforcement: Start Date		2021	n/a
Modification/Termination		False	n/a
Modification/Termination: Start Date		2018	n/a
Type of Site		Active Government Installation	n/a
Implementation			
Required Parameters			
Modify Installation (or City) Master Plan		False	n/a
Deed Notification		False	n/a
Deed Notification: Number		0	EA
Negotiating Easements		False	n/a
Negotiating Easements: Number		0	EA
Restrictive Covenants		False	n/a
Restrictive Covenants: Number		0	EA
Equitable Servitudes		False	n/a
Equitable Servitudes: Number		0	EA

Estimate Documentation Report

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	Value	UOM
Implementation			
Required Parameters			
Access Control Signs		True	n/a
Access Control Signs: Number		100	EA
Access Control Signs: Task Complexity		Medium	n/a
Utility Notification Service		False	n/a
Access Control Signs: Number		0	EA
Geographic Information Systems (GIS)/Overlay Maps		False	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
Develop Finding of Suitability to Transfer (FOST)		False	n/a

Comments:

Assuming 100 control signs will be placed on boundary fence.

Site Mileage is 60 miles; the distance is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist.

Technology: ADMINISTRATIVE LAND USE CONTROLS

Element: Implementation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
18010412	Construction Signs	2,400.00	SF	28.00	0.00	0.00	0.00	$67,200.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	0.00	$0.00	True

Total Element Cost:	$67,200.00
Total 1st Year Tech Cost:	$67,200.00

Technology Name: **MEC Institutional Controls (#1)**

User Name: **MEC Institutional Controls**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Planning		True	n/a
Implementation		True	n/a
Engineering Controls		True	n/a
Training and Follow Up		False	n/a
Quality Support Visits		False	n/a
Site Distance		60	MI (One-way)
Site Complexity		Moderate	n/a

Estimate Documentation Report

Technology Name: **MEC Institutional Controls (#1)**

User Name: **MEC Institutional Controls**

Description	Default	Value	UOM
Planning			
Required Parameters			
Institutional Analysis		True	n/a
Plan Development		True	n/a
Implementation			
Required Parameters			
Process Agreement		True	n/a
Plan Execution		True	n/a
Deed Notice		True	n/a
Engineering Controls			
Required Parameters			
Type of Fence		Boundary	n/a
Length of Fence		20592	LF

Comments: Planning and Implementation defaults were used.
For the Engineering Controls, a boundary fence was chosen. Google Earth was used to determine fence length. Assuming a fence will be constructed up to the roads, a polygon was drawn inside of the roads that bound OD grounds.

Site Distance is 60 miles to Syracuse which is the distance determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist

Technology: MEC Institutional Controls

Element: Planning

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	240.00	MI	0.00	0.00	0.00	0.56	$134.40	True
33010202	Per Diem (per person)	4.00	DAY	0.00	0.00	0.00	159.00	$636.00	True
33040927	UXO Senior Scientist	64.00	HR	0.00	81.48	0.00	0.00	$5,214.72	False
33040929	UXO Word Processor	12.00	HR	0.00	23.82	0.00	0.00	$285.87	False
33240101	Other Direct Costs	1.00	LS	55.01	0.00	0.00	0.00	$55.01	True
					Total Element Cost:			$6,325.99	

Element: Implementation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	240.00	MI	0.00	0.00	0.00	0.56	$134.40	True
33010202	Per Diem (per person)	6.00	DAY	0.00	0.00	0.00	159.00	$954.00	True

Technology: MEC Institutional Controls

33040927	UXO Senior Scientist	196.00	HR	0.00	81.48	0.00	0.00	$15,970.08	False
33240101	Other Direct Costs	1.00	LS	159.70	0.00	0.00	0.00	$159.70	True
33990105	Letter/Brochure Printing and Distribution, per Page	100.00	EA	0.00	0.00	0.00	1.46	$145.60	False

Total Element Cost: $17,363.78

Element: Engineering Controls

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
18040105	Boundary Fence, 5' Galvanized	20,592.00	LF	11.20	9.63	2.31	0.00	$476,616.17	False
18040501	Hazardous Waste Signing	103.00	EA	137.76	29.25	5.16	0.00	$17,734.42	False

Total Element Cost: $494,350.59

Total 1st Year Tech Cost: $518,040.37

Technology Name: **MEC Sifting (#1)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Site Planning		True	n/a
Sifting Field Work		True	n/a
Site Management		True	n/a
Stakeholder Involvement		True	n/a
Sifting Area		10	AC
Vegetation		Heavy shrubs with trees	n/a
Soil Type		Sand-Silt Mixture/Sand-Clay Mixture	n/a
Include Per Diem		False	n/a
Safety Level		E	n/a
Site Planning			
Required Parameters			
Site Visit		True	n/a
Duration		1	Days
Airfare		500	$ / Ticket
Distance to Site		60	Miles
Work Plan ESS Level of Detail		Moderate	n/a
Work Plan		True	n/a
Explosive Safety Submission		True	n/a

Estimate Documentation Report

Technology Name: **MEC Sifting (#1)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Sifting Field Work			
Required Parameters			
Site Preparation		True	n/a
Excavation		True	n/a
Sifting		True	n/a
Backfill		True	n/a
Site Preparation			
Secondary Parameters			
Vegetation Removal: Heavy Removal	5	5	AC
Vegetation Removal: Moderate Removal	2.5	2.5	AC
Vegetation Removal: Light Removal	2.5	2.5	AC
Vegetation Removal: No Removal	0	0	AC
Vegetation Removal: Total Area		10	AC
Surface Clearance	10	10	AC
Excavation			
Secondary Parameters			
Excavation Area	10	10	Acres
Excavation Depth	1	5	FT
Total Quantity to Excavate	80,666.7	80666.7	CY
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Vehicle Modification	True	True	n/a
Sifting			
Secondary Parameters			
Front End Loader	105	105	Days
Front End Loader: Vehicle Modification Required	True	True	n/a
Dump Truck	105	105	Days
Dump Truck: Vehicle Modification Required	True	True	n/a
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Soil to be Sifted	104,866.7	104866.7	CY
Soil to be Hand Sorted	10,486.67	10486.67	CY
Backfill			
Secondary Parameters			
Sifted Material to be Used as Backfill	100.00	100.00	%
Source of Additional Backfill	None	Off-Site	n/a
Site Restoration: Regrading	10	10	Acres
Site Restoration: Reseeding	10	10	Acres
Site Restoration: General Cleanup	10	10	Acres
Site Management			
Secondary Parameters			
Senior UXO Supervisor	168	168	Days
Project Manager	168	168	Days
UXO Supervisor	0	0	Days
Quality Control Supervisor	168	168	Days

Estimate Documentation Report

Technology Name: **MEC Sifting (#1)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Site Management			
Secondary Parameters			
Safety Supervisor	168	168	Days
Stakeholder Involvement			
Secondary Parameters			
Level of Detail Required in Reporting	Moderate	Moderate	n/a
Level of Stakeholder Involvement	Moderate	Moderate	n/a
Number of Community Meetings	2	2	EA
Site Specific Final Report	True	True	n/a

Comments: This MEC Sifting Technology is for Remedy 2. 10 acres was used for MEC sifting because that is the max number that can be entered into RACER 11.4. We only want to sift down to 2ft but in order to reach the amount of actual CY of soil to be sifted, 5 ft removal depth was inserted. 80,666 CY of soil is reached using RACER maximum inputs. However, the actual amount of soil to be sifted is 151,653 CY of soil. Therefore, the final RACER estimate for MEC sifting will be multiplied by a conversion factor to reach the appropriate estimate for siftingl.

Vegetation selection is based on Final Feasibility Study report section 1.2.1.

An average air fare of $500 was assumed.

The distance to site, 60 miles, is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist.

Technology: MEC Sifting

Element: Site Visit

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.56	$33.60	True
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	53.50	$160.51	False
33040921	Senior UXO Supervisor (SUXOS)	8.00	HR	0.00	68.91	0.00	0.00	$551.31	False
33040923	UXO Project Manager	8.00	HR	0.00	109.21	0.00	0.00	$873.69	False
33040925	UXO Staff Engineer	8.00	HR	0.00	64.27	0.00	0.00	$514.12	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	500.00	$1,500.00	True
33041302	Munitions Response Workplan (Moderate Complexity)	1.00	EA	89.60	12,525.56	0.00	0.00	$12,615.16	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33240101	Other Direct Costs	1.00	LS	500.00	0.00	0.00	0.00	$500.00	True

Estimate Documentation Report

Total Element Cost: $39,622.84

Element: Site Preparation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	2.50	ACR	0.00	1,307.47	393.77	0.00	$4,253.10	False
17010402	Chipping brush, medium brush	2.50	ACR	0.00	1,680.95	506.25	0.00	$5,467.99	False
17010403	Chipping brush, heavy brush	5.00	ACR	0.00	3,269.26	984.60	0.00	$21,269.28	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	92.06	$552.38	False
33040933	UXO Technician I	60.00	HR	0.00	36.55	0.00	0.00	$2,192.74	False
33040934	UXO Technician II	79.00	HR	0.00	44.05	0.00	0.00	$3,479.92	False
33040935	UXO Technician III (UXO Supervisor)	59.00	HR	0.00	52.04	0.00	0.00	$3,070.08	False

Total Element Cost: $44,192.83

Element: Excavation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	80,666.67	CY	0.00	0.89	0.95	0.00	$148,412.48	False
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	26.00	SF	260.40	34.16	0.00	0.00	$7,658.53	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	45.36	0.00	0.00	0.00	$5,533.92	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	3.15	55.56	8.57	0.00	$4,709.47	False

Total Element Cost: $166,314.40

Element: Sifting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	1,050.00	HR	0.00	65.11	52.84	0.00	$123,847.27	False
17030427	Sand Bags	1,000.00	EA	1.00	0.00	0.00	0.00	$996.80	False
17030436	0.75 CY Wheel Loader	1,050.00	HR	0.00	103.63	38.80	0.00	$149,548.86	False
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	32.00	SF	260.40	34.16	0.00	0.00	$9,425.88	False

Estimate Documentation Report

Technology: MEC Sifting

33040651	4 X 4 Truck-Rental/Lease	14.00	DAY	0.00	0.00	91.45	0.00	$1,280.34	False
33040662	Trommel Screener	6.00	MO	0.00	0.00	9,002.31	0.00	$54,013.85	False
33040693	Manual Clean Suspended Electromagnet	6.00	MO	0.00	0.00	0.00	1,950.95	$11,705.68	False
33040933	UXO Technician I	440.00	HR	0.00	36.55	0.00	0.00	$16,080.06	False
33040934	UXO Technician II	220.00	HR	0.00	44.05	0.00	0.00	$9,690.91	False
33040935	UXO Technician III (UXO Supervisor)	110.00	HR	0.00	52.04	0.00	0.00	$5,723.87	False
33188605	Adjustable Height Radial Stacker Conveyor	105.00	DAY	0.00	0.00	200.67	0.00	$21,070.25	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	105.00	DAY	0.00	0.00	106.76	0.00	$11,210.29	False
33240101	Other Direct Costs	2.00	LS	20,729.70	0.00	0.00	0.00	$41,459.41	True

Total Element Cost: $456,053.48

Element: Backfill

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030415	On-Site Backfill for Large Excavations, Includes Compaction	80,666.66	ECY	0.00	0.94	1.25	0.00	$176,476.97	False
17040101	Cleaning Up, site debris clean up and removal	10.00	ACR	0.00	546.66	50.91	0.00	$5,975.66	False
18050101	Area Preparation, 67% Level & 33% Slope	10.00	ACR	0.00	20.73	25.56	0.00	$462.81	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	10.00	ACR	1,731.95	862.17	492.38	0.00	$30,864.98	False
18050408	Fertilizer, Hydro Spread	10.00	ACR	975.74	83.06	55.23	0.00	$11,140.31	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False

Total Element Cost: $228,828.09

Element: Site Management

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33040921	Senior UXO Supervisor (SUXOS)	1,680.00	HR	0.00	68.91	0.00	0.00	$115,774.85	False
33040923	UXO Project Manager	1,680.00	HR	0.00	109.21	0.00	0.00	$183,474.82	False
33040930	UXO QC Specialist	1,680.00	HR	0.00	61.33	0.00	0.00	$103,036.42	False
33040931	UXO Safety Officer	1,680.00	HR	0.00	61.68	0.00	0.00	$103,619.71	False

Estimate Documentation Report

Technology: MEC Sifting

	Total Element Cost:	$505,905.79

Element: Stakeholder Involvement

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	12.00	HR	0.00	109.21	0.00	0.00	$1,310.53	False
33040935	UXO Technician III (UXO Supervisor)	12.00	HR	0.00	52.04	0.00	0.00	$624.42	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	179.20	15,914.62	0.00	0.00	$16,093.82	False

	Total Element Cost:	$40,903.22
	Total 1st Year Tech Cost:	$1,481,820.65

Technology Name: **MEC Sifting (#2)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Site Planning		True	n/a
Sifting Field Work		True	n/a
Site Management		True	n/a
Stakeholder Involvement		True	n/a
Sifting Area		5	AC
Vegetation		Heavy shrubs with trees	n/a
Soil Type		Sand-Silt Mixture/Sand-Clay Mixture	n/a
Include Per Diem		True	n/a
Safety Level		E	n/a
Site Planning			
Required Parameters			
Site Visit		True	n/a
Duration		1	Days
Airfare		500	$ / Ticket
Distance to Site		60	Miles
Work Plan ESS Level of Detail		Moderate	n/a
Work Plan		True	n/a
Explosive Safety Submission		True	n/a

Estimate Documentation Report

Technology Name: **MEC Sifting (#2)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Sifting Field Work			
Required Parameters			
Site Preparation		True	n/a
Excavation		True	n/a
Sifting		True	n/a
Backfill		True	n/a
Site Preparation			
Secondary Parameters			
Vegetation Removal: Heavy Removal	2.5	2.5	AC
Vegetation Removal: Moderate Removal	1.25	1.25	AC
Vegetation Removal: Light Removal	1.25	1.25	AC
Vegetation Removal: No Removal	0	0	AC
Vegetation Removal: Total Area		5	AC
Surface Clearance	5	5	AC
Excavation			
Secondary Parameters			
Excavation Area	5	5	Acres
Excavation Depth	1	4.7	FT
Total Quantity to Excavate	37,913.3	37913.3	CY
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Vehicle Modification	True	True	n/a
Sifting			
Secondary Parameters			
Front End Loader	50	50	Days
Front End Loader: Vehicle Modification Required	True	True	n/a
Dump Truck	50	50	Days
Dump Truck: Vehicle Modification Required	True	True	n/a
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Soil to be Sifted	49,287.34	49287.34	CY
Soil to be Hand Sorted	4,928.734	4928.734	CY
Backfill			
Secondary Parameters			
Sifted Material to be Used as Backfill	100.00	100.00	%
Source of Additional Backfill	None	Off-Site	n/a
Site Restoration: Regrading	5	5	Acres
Site Restoration: Reseeding	5	5	Acres
Site Restoration: General Cleanup	5	5	Acres
Site Management			
Secondary Parameters			
Senior UXO Supervisor	80	80	Days
Project Manager	80	80	Days
UXO Supervisor	0	0	Days
Quality Control Supervisor	80	80	Days

Estimate Documentation Report

Technology Name: **MEC Sifting (#2)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Site Management			
Secondary Parameters			
Safety Supervisor	80	80	Days
Stakeholder Involvement			
Secondary Parameters			
Level of Detail Required in Reporting	Moderate	Moderate	n/a
Level of Stakeholder Involvement	Moderate	Moderate	n/a
Number of Community Meetings	2	2	EA
Site Specific Final Report	True	True	n/a

Comments: This MEC Sifting technology is for sifting the OD Hill, Remedy 1. The OD Hill was estimated to consist of 38,000CY of soil to be sifted (Parson's Additional Munitions Response Site Investigations 2010, Section 3.1).

Site Mileage is 60 miles; the distance is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist.

Technology: MEC Sifting

Element: Site Visit

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.56	$33.60	True
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	53.50	$160.51	False
33010202	Per Diem (per person)	3.00	DAY	0.00	0.00	0.00	159.00	$477.00	True
33040921	Senior UXO Supervisor (SUXOS)	8.00	HR	0.00	68.91	0.00	0.00	$551.31	False
33040923	UXO Project Manager	8.00	HR	0.00	109.21	0.00	0.00	$873.69	False
33040925	UXO Staff Engineer	8.00	HR	0.00	64.27	0.00	0.00	$514.12	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	500.00	$1,500.00	True
33041302	Munitions Response Workplan (Moderate Complexity)	1.00	EA	89.60	12,525.56	0.00	0.00	$12,615.16	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33240101	Other Direct Costs	1.00	LS	500.00	0.00	0.00	0.00	$500.00	True

Total Element Cost: $40,099.84

Element: Site Preparation

Estimate Documentation Report

Technology: MEC Sifting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	1.25	ACR	0.00	1,307.47	393.77	0.00	$2,126.55	False
17010402	Chipping brush, medium brush	1.25	ACR	0.00	1,680.95	506.25	0.00	$2,734.00	False
17010403	Chipping brush, heavy brush	2.50	ACR	0.00	3,269.26	984.60	0.00	$10,634.64	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False
33010202	Per Diem (per person)	10.00	DAY	0.00	0.00	0.00	159.00	$1,590.00	True
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	92.06	$552.38	False
33040933	UXO Technician I	30.00	HR	0.00	36.55	0.00	0.00	$1,096.37	False
33040934	UXO Technician II	40.00	HR	0.00	44.05	0.00	0.00	$1,761.98	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	52.04	0.00	0.00	$1,561.06	False

Total Element Cost: $25,964.33

Element: Excavation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	37,913.33	CY	0.00	0.89	0.95	0.00	$69,753.85	False
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	26.00	SF	260.40	34.16	0.00	0.00	$7,658.53	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	45.36	0.00	0.00	0.00	$5,533.92	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	3.15	55.56	8.57	0.00	$4,709.47	False

Total Element Cost: $87,655.78

Element: Sifting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	500.00	HR	0.00	65.11	52.84	0.00	$58,974.89	False
17030427	Sand Bags	1,000.00	EA	1.00	0.00	0.00	0.00	$996.80	False
17030436	0.75 CY Wheel Loader	500.00	HR	0.00	103.63	38.80	0.00	$71,213.74	False
33010202	Per Diem (per person)	350.00	DAY	0.00	0.00	0.00	159.00	$55,650.00	True
33040518	UXO Vehicle Modification - Acrylic	32.00	SF	260.40	34.16	0.00	0.00	$9,425.88	False

	Glass Sheets 3" Thick								
33040651	4 X 4 Truck-Rental/Lease	7.00	DAY	0.00	0.00	91.45	0.00	$640.17	False
33040662	Trommel Screener	3.00	MO	0.00	0.00	9,002.31	0.00	$27,006.93	False
33040693	Manual Clean Suspended Electromagnet	3.00	MO	0.00	0.00	0.00	1,950.95	$5,852.84	False
33040933	UXO Technician I	200.00	HR	0.00	36.55	0.00	0.00	$7,309.12	False
33040934	UXO Technician II	100.00	HR	0.00	44.05	0.00	0.00	$4,404.96	False
33040935	UXO Technician III (UXO Supervisor)	50.00	HR	0.00	52.04	0.00	0.00	$2,601.76	False
33188605	Adjustable Height Radial Stacker Conveyor	50.00	DAY	0.00	0.00	200.67	0.00	$10,033.45	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	50.00	DAY	0.00	0.00	106.76	0.00	$5,338.23	False
33240101	Other Direct Costs	2.00	LS	12,972.44	0.00	0.00	0.00	$25,944.88	True

Total Element Cost: $285,393.66

Element: Backfill

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030415	On-Site Backfill for Large Excavations, Includes Compaction	37,913.34	ECY	0.00	0.94	1.25	0.00	$82,944.20	False
17040101	Cleaning Up, site debris clean up and removal	5.00	ACR	0.00	546.66	50.91	0.00	$2,987.83	False
18050101	Area Preparation, 67% Level & 33% Slope	5.00	ACR	0.00	20.73	25.56	0.00	$231.41	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	5.00	ACR	1,731.95	862.17	492.38	0.00	$15,432.49	False
18050408	Fertilizer, Hydro Spread	5.00	ACR	975.74	83.06	55.23	0.00	$5,570.16	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False

Total Element Cost: $111,073.43

Element: Site Management

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	448.00	DAY	0.00	0.00	0.00	159.00	$71,232.00	True
33040921	Senior UXO Supervisor (SUXOS)	800.00	HR	0.00	68.91	0.00	0.00	$55,130.88	False
33040923	UXO Project Manager	800.00	HR	0.00	109.21	0.00	0.00	$87,368.96	False

Estimate Documentation Report

Technology: MEC Sifting

33040930	UXO QC Specialist	800.00	HR	0.00	61.33	0.00	0.00	$49,064.96	False
33040931	UXO Safety Officer	800.00	HR	0.00	61.68	0.00	0.00	$49,342.72	False

Total Element Cost: $312,139.52

Element: Stakeholder Involvement

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	12.00	HR	0.00	109.21	0.00	0.00	$1,310.53	False
33040935	UXO Technician III (UXO Supervisor)	12.00	HR	0.00	52.04	0.00	0.00	$624.42	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	179.20	15,914.62	0.00	0.00	$16,093.82	False

Total Element Cost: $40,903.22

Total 1st Year Tech Cost: $903,229.77

Technology Name: **MEC Sifting (#3)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Site Planning		True	n/a
Sifting Field Work		True	n/a
Site Management		True	n/a
Stakeholder Involvement		True	n/a
Sifting Area		10	AC
Vegetation		Heavy shrubs with trees	n/a
Soil Type		Sand-Silt Mixture/Sand-Clay Mixture	n/a
Include Per Diem		True	n/a
Safety Level		E	n/a
Site Planning			
Required Parameters			
Site Visit		True	n/a
Duration		1	Days
Airfare		500	$ / Ticket
Distance to Site		60	Miles
Work Plan ESS Level of Detail		Moderate	n/a

Estimate Documentation Report

Technology Name: **MEC Sifting (#3)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Site Planning			
Required Parameters			
Work Plan		True	n/a
Explosive Safety Submission		True	n/a
Sifting Field Work			
Required Parameters			
Site Preparation		True	n/a
Excavation		True	n/a
Sifting		True	n/a
Backfill		True	n/a
Site Preparation			
Secondary Parameters			
Vegetation Removal: Heavy Removal	5	5	AC
Vegetation Removal: Moderate Removal	2.5	2.5	AC
Vegetation Removal: Light Removal	2.5	2.5	AC
Vegetation Removal: No Removal	0	0	AC
Vegetation Removal: Total Area		10	AC
Surface Clearance	10	10	AC
Excavation			
Secondary Parameters			
Excavation Area	10	10	Acres
Excavation Depth	1	4.3	FT
Total Quantity to Excavate	69,696	69696	CY
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Vehicle Modification	True	True	n/a
Sifting			
Secondary Parameters			
Front End Loader	91	91	Days
Front End Loader: Vehicle Modification Required	True	True	n/a
Dump Truck	91	91	Days
Dump Truck: Vehicle Modification Required	True	True	n/a
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Soil to be Sifted	90,604.8	90604.8	CY
Soil to be Hand Sorted	9,060.479	9060.479	CY
Backfill			
Secondary Parameters			
Sifted Material to be Used as Backfill	100.00	100.00	%
Source of Additional Backfill	None	None	n/a
Site Restoration: Regrading	10	10	Acres
Site Restoration: Reseeding	10	10	Acres
Site Restoration: General Cleanup	10	10	Acres

Estimate Documentation Report

Technology Name: **MEC Sifting (#3)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Site Management			
Secondary Parameters			
Senior UXO Supervisor	147	147	Days
Project Manager	147	147	Days
UXO Supervisor	0	0	Days
Quality Control Supervisor	147	147	Days
Safety Supervisor	147	147	Days
Stakeholder Involvement			
Secondary Parameters			
Level of Detail Required in Reporting	Moderate	Moderate	n/a
Level of Stakeholder Involvement	Moderate	Moderate	n/a
Number of Community Meetings	2	2	EA
Site Specific Final Report	True	True	n/a

Comments: This MEC Sifting Technology is included to account for the mechanical sifting needed between 1000ft to 1250ft radius, Remedy 3. The area needing sifting is 21.6 acres; however, RACER has a maximum input of 10 ac. In order to reach the correct CY of soil to be sifted, the removal depth in RACER was increased.

Actual Work to be Performed:
21.6 ac, 2ft removal = 69,696 CY

RACER Estimate:
10ac, 3.32ft removal = 69,696 CY

Average air fare of $500 was assumed.

Site Mileage is 60 miles; the distance is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist.

Technology: MEC Sifting

Element: Site Visit

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.56	$33.60	True
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	53.50	$160.51	False
33010202	Per Diem (per person)	3.00	DAY	0.00	0.00	0.00	159.00	$477.00	True
33040921	Senior UXO Supervisor (SUXOS)	8.00	HR	0.00	68.91	0.00	0.00	$551.31	False
33040923	UXO Project Manager	8.00	HR	0.00	109.21	0.00	0.00	$873.69	False
33040925	UXO Staff Engineer	8.00	HR	0.00	64.27	0.00	0.00	$514.12	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	500.00	$1,500.00	True

Estimate Documentation Report

Technology: MEC Sifting

33041302	Munitions Response Workplan (Moderate Complexity)	1.00	EA	89.60	12,525.56	0.00	0.00	$12,615.16	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33240101	Other Direct Costs	1.00	LS	500.00	0.00	0.00	0.00	$500.00	True

Total Element Cost: $40,099.84

Element: Site Preparation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	2.50	ACR	0.00	1,307.47	393.77	0.00	$4,253.10	False
17010402	Chipping brush, medium brush	2.50	ACR	0.00	1,680.95	506.25	0.00	$5,467.99	False
17010403	Chipping brush, heavy brush	5.00	ACR	0.00	3,269.26	984.60	0.00	$21,269.28	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False
33010202	Per Diem (per person)	20.00	DAY	0.00	0.00	0.00	159.00	$3,180.00	True
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	92.06	$552.38	False
33040933	UXO Technician I	60.00	HR	0.00	36.55	0.00	0.00	$2,192.74	False
33040934	UXO Technician II	79.00	HR	0.00	44.05	0.00	0.00	$3,479.92	False
33040935	UXO Technician III (UXO Supervisor)	59.00	HR	0.00	52.04	0.00	0.00	$3,070.08	False

Total Element Cost: $47,372.83

Element: Excavation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	69,373.34	CY	0.00	0.89	0.95	0.00	$127,634.74	False
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	26.00	SF	260.40	34.16	0.00	0.00	$7,658.53	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	45.36	0.00	0.00	0.00	$5,533.92	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	3.15	55.56	8.57	0.00	$4,709.47	False

Total Element Cost: $145,536.66

Estimate Documentation Report

Technology: MEC Sifting

Element: Sifting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	910.00	HR	0.00	65.11	52.84	0.00	$107,334.30	False
17030427	Sand Bags	1,000.00	EA	1.00	0.00	0.00	0.00	$996.80	False
17030436	0.75 CY Wheel Loader	910.00	HR	0.00	103.63	38.80	0.00	$129,609.01	False
33010202	Per Diem (per person)	637.00	DAY	0.00	0.00	0.00	159.00	$101,283.00	True
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	32.00	SF	260.40	34.16	0.00	0.00	$9,425.88	False
33040651	4 X 4 Truck-Rental/Lease	12.00	DAY	0.00	0.00	91.45	0.00	$1,097.44	False
33040662	Trommel Screener	5.00	MO	0.00	0.00	9,002.31	0.00	$45,011.55	False
33040693	Manual Clean Suspended Electromagnet	5.00	MO	0.00	0.00	0.00	1,950.95	$9,754.73	False
33040933	UXO Technician I	400.00	HR	0.00	36.55	0.00	0.00	$14,618.24	False
33040934	UXO Technician II	200.00	HR	0.00	44.05	0.00	0.00	$8,809.92	False
33040935	UXO Technician III (UXO Supervisor)	100.00	HR	0.00	52.04	0.00	0.00	$5,203.52	False
33188605	Adjustable Height Radial Stacker Conveyor	91.00	DAY	0.00	0.00	200.67	0.00	$18,260.88	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	91.00	DAY	0.00	0.00	106.76	0.00	$9,715.59	False
33240101	Other Direct Costs	2.00	LS	23,056.04	0.00	0.00	0.00	$46,112.09	True

Total Element Cost: $507,232.94

Element: Backfill

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030415	On-Site Backfill for Large Excavations, Includes Compaction	69,373.34	ECY	0.00	0.94	1.25	0.00	$151,770.22	False
17040101	Cleaning Up, site debris clean up and removal	10.00	ACR	0.00	546.66	50.91	0.00	$5,975.66	False
18050101	Area Preparation, 67% Level & 33% Slope	10.00	ACR	0.00	20.73	25.56	0.00	$462.81	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	10.00	ACR	1,731.95	862.17	492.38	0.00	$30,864.98	False
18050408	Fertilizer, Hydro Spread	10.00	ACR	975.74	83.06	55.23	0.00	$11,140.31	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False

Estimate Documentation Report

Total Element Cost: $204,121.34

Element: Site Management

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	820.00	DAY	0.00	0.00	0.00	159.00	$130,380.00	True
33040921	Senior UXO Supervisor (SUXOS)	1,460.00	HR	0.00	68.91	0.00	0.00	$100,613.86	False
33040923	UXO Project Manager	1,460.00	HR	0.00	109.21	0.00	0.00	$159,448.35	False
33040930	UXO QC Specialist	1,460.00	HR	0.00	61.33	0.00	0.00	$89,543.55	False
33040931	UXO Safety Officer	1,460.00	HR	0.00	61.68	0.00	0.00	$90,050.46	False

Total Element Cost: $570,036.23

Element: Stakeholder Involvement

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	12.00	HR	0.00	109.21	0.00	0.00	$1,310.53	False
33040935	UXO Technician III (UXO Supervisor)	12.00	HR	0.00	52.04	0.00	0.00	$624.42	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	179.20	15,914.62	0.00	0.00	$16,093.82	False

Total Element Cost: $40,903.22

Total 1st Year Tech Cost: $1,555,303.05

Phase Documentation:

Phase Type: Long Term Monitoring
Phase Name: LTM
Description: Long Term Monitoring of SEAD-006-R-01 will consist of groundwater monitoring, five year reviews, site close-out and well abandonment.
Approach: Ex Situ
Start Date: October, 2021
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Estimate Documentation Report

Phase Markup Template: System Defaults

Technology Markups	Markup	% Prime	% Sub.
Groundwater Monitoring Well	True	100	0
Five-Year Review	True	100	0
Site Close-Out Documentation	True	100	0
Well Abandonment	True	100	0

Total Marked-up Cost: $405,456.93

Technologies:

Technology Name: **Five-Year Review (#1)**

User Name: **Five-Year Review**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Site Complexity		Moderate	n/a
Document Review		True	n/a
Interviews		True	n/a
Site Inspection		True	n/a
Report		True	n/a
Travel		False	n/a
Rebound Study		False	n/a
Start Month		10	n/a
No. Reviews		6	EA
Start Year		2021	n/a
Document Review			
Required Parameters			
5-Year Review Check List		True	n/a
System Definition			
Required Parameters			
Safety Level		D	n/a
Document Review			
Required Parameters			
Record of Decision		False	n/a
Remedial Action Design & Construction		False	n/a
Close-Out Report		False	n/a
Operations & Maintenance Manuals & Reports		False	n/a
Consent Decree or Settlement Records		False	n/a
Groundwater Monitoring & Reports		True	n/a
Remedial Action Required		True	n/a

Estimate Documentation Report

Technology Name: **Five-Year Review (#1)**

User Name: **Five-Year Review**

Description	Default	Value	UOM
Document Review			
Required Parameters			
Previous 5-Year Review Reports		False	n/a
Interviews			
Required Parameters			
Current and Previous Staff Management		True	n/a
Community Groups		True	n/a
State Contacts		False	n/a
Local Government Contacts		False	n/a
Operations & Maintenance Contractors		True	n/a
PRPs		False	n/a
Remedial Design Consultant		False	n/a
Site Inspection			
Required Parameters			
General Site Inspection		True	n/a
Containment System Inspection		False	n/a
Monitoring Systems Inspection		False	n/a
Treatment Systems Inspection		False	n/a
Regulatory Compliance		False	n/a
Site Visit Documentation (Photos, Diagrams, etc.)		True	n/a
Report			
Required Parameters			
Introduction		False	n/a
Remedial Objectives		True	n/a
ARARs Review		False	n/a
Summary of Site Visit		True	n/a
Areas of Non Compliance		True	n/a
Technology Recommendations		False	n/a
Statement of Protectiveness		False	n/a
Next Review		False	n/a
Implementation Requirements		False	n/a

Comments: The five year review start date of 2021 and the selection of reports, reviews, interviews and site inspections are based on FY 17 MFR.
The details of reports, reviews, interviews and site inspections are assumptions.

Technology: Five-Year Review

Element: Document Review

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	12.00	HR	0.00	114.05	0.00	0.00	$1,368.59	False
33220105	Project Engineer	5.00	HR	0.00	78.77	0.00	0.00	$393.84	False

Estimate Documentation Report

Technology: Five-Year Review

33220108	Project Scientist	3.00	HR	0.00	85.76	0.00	0.00	$257.29	False
33220109	Staff Scientist	7.00	HR	0.00	69.26	0.00	0.00	$484.84	False

Total Element Cost: $2,504.55

Element: Interviews

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	8.00	HR	0.00	114.05	0.00	0.00	$912.39	False

Total Element Cost: $912.39

Element: Site Inspection

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	4.00	HR	0.00	114.05	0.00	0.00	$456.20	False
33220105	Project Engineer	4.00	HR	0.00	78.77	0.00	0.00	$315.08	False
33220108	Project Scientist	4.00	HR	0.00	85.76	0.00	0.00	$343.05	False
33220109	Staff Scientist	4.00	HR	0.00	69.26	0.00	0.00	$277.05	False

Total Element Cost: $1,391.37

Element: Report

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	9.00	HR	0.00	114.05	0.00	0.00	$1,026.44	False
33220105	Project Engineer	22.00	HR	0.00	78.77	0.00	0.00	$1,732.91	False
33220108	Project Scientist	10.00	HR	0.00	85.76	0.00	0.00	$857.62	False
33220109	Staff Scientist	26.00	HR	0.00	69.26	0.00	0.00	$1,800.82	False

Total Element Cost: $5,417.80

Total 1st Year Tech Cost: $10,226.11

Technology Name: **Groundwater Monitoring Well (#1)**

User Name: **Groundwater Monitoring Well**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Number of Aquifers		One	n/a
Include Guard Posts		Yes	n/a

Estimate Documentation Report

Technology Name: **Groundwater Monitoring Well (#1)**

User Name: **Groundwater Monitoring Well**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Depth to Groundwater to Aquifer One		15	FT
Number of Wells to Aquifer One		10	EA
Safety Level		D	n/a
Aquifer One			
Required Parameters			
Aquifer One: Average Well Depth		20	LF
Aquifer One: Formation Type		Unconsolidated	n/a
Aquifer One: Drilling Method		Hollow Stem	n/a
Aquifer One: Well Diameter		2 Inch	n/a
Aquifer One: Well Construction Material		PVC Schedule 40	n/a
Aquifer One: Split Spoon Sample Collection		True	n/a
Aquifer One: Average Number of Soil Samples per Well		5	EA
Aquifer One: Soil Analytical Template		System Soil - Multi-Contaminant	n/a

Comments: Data is based on FY 17 MFR and a Revised Engineering Change Request by Parsons Jan 2018. Parson proposes 10 additional monitoring wells in section 2.3.2.2.

Page 3 of FY 17 MFR:
Well abandonment (LTM):
1. Number of wells: 12
2. Well depth: 15 feet
3. Well diameter: 2 inches
4. Formation type: Unconsolidated
5. Method: Overdrill/excavation

Technology: Groundwater Monitoring Well

Element: Aquifer 1

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33020303	Organic Vapor Analyzer Rental, per Day	3.00	DAY	0.00	0.00	0.00	45.60	$136.80	False
33021709	Testing, TAL metals (6010/7000s)	50.00	EA	0.00	0.00	0.00	192.92	$9,646.00	False
33021717	Pesticides/PCBs (SW 3550B/SW 8081/8082), Soil Analysis	50.00	EA	0.00	0.00	0.00	128.80	$6,440.00	False
33021719	Testing, soil & sediment analysis, chlorinated phenoxy acid herbicides EPA 8150	50.00	EA	0.00	0.00	0.00	181.44	$9,072.00	False

Estimate Documentation Report

Technology: Groundwater Monitoring Well

33021720	Testing, purgeable organics (624, 8260)	50.00	EA	0.00	0.00	0.00	179.20	$8,960.00	False
33021721	Testing, semi-volatile organics (625, 8270)	50.00	EA	0.00	0.00	0.00	334.88	$16,744.00	False
33021803	Testing, non-rad lab tests, tentative id of compounds GC/MS 30/5040/8240	50.00	EA	0.00	0.00	0.00	16.80	$840.00	False
33170808	Decontaminate Rig, Augers, Screen (Rental Equipment)	3.00	DAY	43.12	744.67	0.00	0.00	$2,363.37	False
33220112	Field Technician	48.00	HR	0.00	52.57	0.00	0.00	$2,523.44	False
33230101	2" PVC, Schedule 40, Well Casing	100.00	LF	3.25	6.26	5.35	0.00	$1,486.24	False
33230201	2" PVC, Schedule 40, Well Screen	100.00	LF	4.00	6.26	5.35	0.00	$1,561.28	False
33230301	2" PVC, Well Plug	10.00	EA	10.35	18.79	16.05	0.00	$451.92	False
33231101	Hollow Stem Auger, 8" Dia Borehole, Depth <= 100 ft	210.00	LF	0.00	20.95	25.11	0.00	$9,673.43	False
33231173	Split Spoon Sampling	50.00	LF	0.00	16.47	5.66	0.00	$1,106.62	False
33231401	2" Screen, Filter Pack	120.00	LF	5.88	4.84	4.13	0.00	$1,781.51	False
33231811	2" Well, Portland Cement Grout	70.00	LF	6.41	0.00	0.00	0.00	$448.74	False
33232101	2" Well, Bentonite Seal	10.00	EA	16.11	124.95	106.72	0.00	$2,477.77	False

Total Element Cost: $75,713.13

Element: General Aquifers

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010101	Mobilize/DeMobilize Drilling Rig & Crew	1.00	LS	0.00	1,879.24	806.50	0.00	$2,685.74	False
33231178	Move Rig/Equipment Around Site	9.00	EA	100.46	270.14	115.93	0.00	$4,378.85	False
33231182	DOT steel drums, 55 gal., open, 17C	10.00	EA	114.78	0.00	0.00	0.00	$1,147.78	False
33231504	Surface Pad, Concrete, 2' x 2' x 4"	10.00	EA	56.95	20.90	2.02	0.00	$798.76	False
33232301	5' Guard Posts, Cast Iron, Concrete Fill	40.00	EA	83.77	114.42	0.05	0.00	$7,929.36	False

Total Element Cost: $16,940.49

Total 1st Year Tech Cost: $92,653.62

Estimate Documentation Report

Technology Name: **Site Close-Out Documentation (#1)**

User Name: **Site Close-Out Documentation**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Meetings		True	n/a
Work Plans and Reports		True	n/a
Documents		True	n/a
Site Close-Out Complexity		Moderate	n/a
Meetings			
Required Parameters			
Kick Off/Scoping Meetings		True	n/a
Kick Off/Scoping Meetings: Number of Meetings	1	1	EA
Kick Off/Scoping Meetings: Travel		True	n/a
Kick Off/Scoping Meetings: Travelers		3	EA
Kick Off/Scoping Meetings: Days		2	Days
Kick Off/Scoping Meetings: Air Fare		1500.00	$
Review Meetings		True	n/a
Review Meetings: Number of Meetings	1	1	EA
Review Meetings: Travel		True	n/a
Review Meetings: Travelers		2	EA
Review Meetings: Days		1	Days
Review Meetings: Air Fare		1000.00	$
Regulatory Review Meetings		True	n/a
Regulatory Review Meetings: Number of Meetings	1	1	EA
Regulatory Review Meetings: Travel		True	n/a
Regulatory Review Meetings: Travelers		2	EA
Regulatory Review Meetings: Days		2	Days
Regulatory Review Meetings: Air Fare		1000.00	$
Work Plans & Reports			
Required Parameters			
Work Plans		True	n/a
Draft Work Plan		True	n/a
Final Work Plan		True	n/a
Reports		True	n/a
Draft Close-Out Report		True	n/a
Draft Final Close-Out Report		True	n/a
Final Close-Out Report		True	n/a
Progress Reports		True	n/a
Project Duration	10	10	months
Documents			
Required Parameters			
Draft Decision Document		True	n/a
Draft Final Decision Document		True	n/a
Final Decision Document		True	n/a
Long Term Document Storage		True	n/a

Estimate Documentation Report

Technology Name: **Site Close-Out Documentation (#1)**

User Name: **Site Close-Out Documentation**

Description	Default	Value	UOM
Documents			
Required Parameters			
Number of Boxes		1	EA
Duration of Storage		30	Yrs

Comments: Site Closeout is moderate complexity based on FY17 MFR Section 5.
Kickoff, review and regulatory meetings were chosen based on FY MFR section 5.
Work plans and reports were kept at default values like the FY MFR.
Document storage is based on FY 17 MFR.

Technology: Site Close-Out Documentation

Element: Meetings

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	5.00	DAY	0.00	0.00	0.00	53.50	$267.51	False
33010202	Per Diem (per person)	12.00	DAY	0.00	0.00	0.00	159.00	$1,908.00	True
33041101	Airfare	1.00	LS	0.00	0.00	0.00	8,500.00	$8,500.00	True
33220102	Project Manager	19.00	HR	0.00	114.05	0.00	0.00	$2,166.93	False
33220106	Staff Engineer	17.00	HR	0.00	103.71	0.00	0.00	$1,763.06	False
33220114	Word Processing/Clerical	6.00	HR	0.00	53.38	0.00	0.00	$320.27	False
33220115	Draftsman/CADD	2.00	HR	0.00	50.78	0.00	0.00	$101.56	False

Total Element Cost: $15,027.33

Element: Work Plans & Reports

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220101	Senior Project Manager	10.00	HR	0.00	124.02	0.00	0.00	$1,240.20	False
33220102	Project Manager	83.00	HR	0.00	114.05	0.00	0.00	$9,466.05	False
33220104	Senior Staff Engineer	5.00	HR	0.00	122.91	0.00	0.00	$614.57	False
33220109	Staff Scientist	3.00	HR	0.00	69.26	0.00	0.00	$207.79	False
33220114	Word Processing/Clerical	67.00	HR	0.00	53.38	0.00	0.00	$3,576.30	False
33220115	Draftsman/CADD	8.00	HR	0.00	50.78	0.00	0.00	$406.26	False

Total Element Cost: $15,511.15

Element: Documents

Estimate Documentation Report

Technology: Site Close-Out Documentation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220101	Senior Project Manager	4.00	HR	0.00	124.02	0.00	0.00	$496.08	False
33220102	Project Manager	13.00	HR	0.00	114.05	0.00	0.00	$1,482.63	False
33220104	Senior Staff Engineer	4.00	HR	0.00	122.91	0.00	0.00	$491.65	False
33220106	Staff Engineer	37.00	HR	0.00	103.71	0.00	0.00	$3,837.24	False
33220114	Word Processing/Clerical	14.00	HR	0.00	53.38	0.00	0.00	$747.29	False
33220115	Draftsman/CADD	10.00	HR	0.00	50.78	0.00	0.00	$507.82	False
33440102	Standard Record Storage Carton (Month)	360.00	MO	0.00	0.99	0.00	0.00	$355.35	False
33440105	Standard Storage Carton	1.00	EA	12.07	0.00	0.00	0.00	$12.07	False
33440113	Pickup Boxes (Per Box)	1.00	EA	0.00	35.64	0.00	0.00	$35.64	False

Total Element Cost: $7,965.77

Total 1st Year Tech Cost: $38,504.25

Technology Name: **Well Abandonment (#1)**

User Name: **Well Abandonment**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Safety Level		D	n/a
Abandon Wells			
Required Parameters			
Technology/Group Name		Groundwater Monitoring Well Aquifer - 1	n/a
Number of Wells	10	10	n/a
Well Depth		20	FT
Well Diameter		2	IN
Well Abandonment Method		Abandon In-Place	n/a
Formation Type		Unconsolidated	n/a
Karst Formation Type		False	n/a

Comments: Well abandonment was included based on FY 17 MFR engineering estimate.

Technology: Well Abandonment

Element:

Estimate Documentation Report

Technology: Well Abandonment

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010101	Mobilize/DeMobilize Drilling Rig & Crew	1.00	LS	0.00	1,879.24	806.50	0.00	$2,685.74	False
33220112	Field Technician	24.00	HR	0.00	52.57	0.00	0.00	$1,261.72	False
33231178	Move Rig/Equipment Around Site	10.00	EA	100.46	270.14	115.93	0.00	$4,865.39	False
33231820	Grout Continuous Borehole	4.00	CF	38.62	0.00	0.00	0.00	$154.47	False

Total Element Cost: $8,967.31

Total 1st Year Tech Cost: $8,967.31

Parson's Data		
Description	Area (s.f.)	Area (ac.)
OD Hill	131507.5	3.0
1000 ft Coverage	1873303.04	43.0
1000 ft No Coverage	1084213.4	24.9
OB Grounds	1314882.6	30.2
1000-2500 ft No Coverage	3870244.0	88.8
2012-2014 Mag & Dig	2626922.9	60.3

NTW footprint = 47.78

OE FOOTPRINT 30.17

675.76

- 2 Stockpile

- 30.17 OBG OE

643.59

- 3 OD Hill

640.59

596

OE

450a 2,500 FT Radius — Removals done

→ 74a = 1000 FT R

o/o ~~Wooded~~ Wooded area

o/o light grub

o/o heavy grub

From:	Battaglia, Randall W CIV USARMY CENAN (US)
To:	Johnson, Betina M CIV USARMY CEHNC (US)
Cc:	Frazier, Brett W CIV USARMY CEHNC (US); Pollard, Lawanda J CIV USARMY CEHNC (US); Pommerenck, Derek A CIV USARMY CEHNC (US); Hodges, Barry A CIV USARMY CEHNC (US); Schwartz, Andrew B CIV USARMY CEHNC (US); Bryant, Kenneth Wayne CIV USARMY CEHNC (US); Grabowski, Richard J CIV USARMY CEHNC (US); Lang, Miguel J CIV USARMY CEHNC (US); Roos, Allen D NAN02 (Allen.D.Roos@usace.army.mil)
Subject:	FOUO FW: update
Date:	Friday, February 23, 2018 3:24:00 PM

Betina,
Thank you for your time in the conference call.

On the compilation report, the main purpose was to compile the data in the previous completion reports so it was more easily reviewed by EPA. It seems the contractor is continually proposing studies or has been told to propose it. This has consumed any time for its review prior to a revised FS for a 30 Sep 2018 ROD.

It appears from the discussions in the conference call that the geophysics technical support team will not support the previous data and work efforts.

Given this, to execute this remediation project, it will be a more effective plan to grub the entire site, except wooded areas, and perform the geophysics on the entire site (conventional hand held in wooded areas and steep terrain). A distinction for radial areas is not necessary. Any area that needs to be defined for excavation and sifting can be defined as such for mechanical separation for the RA. All prior data will be available for the RFP.

EPA can then review any methodology and/or technology to be used, the work plans and the results.

The project schedule, based on ACSIM RA and transfer goals is as follows:

30 Sept 2018 ROD

1 Oct 2018-30 Sept 2019 RD
RD Scope is to perform MMR surveys and removal, determine and define areas for excavation/sifting
1 Oct 2019 RA Start
1 Oct 2019- 1 Jan 2020 RA Contracting
1 Jan 2020 RA Workplan Start
1 Feb 2020 RA Workplan submitted
1 May-30 Sep 2020 RA Field Work
Oct 2020 Completion Report submitted
Nov 2020 FOST and LUC Easement submission for OD Grounds parcel

I decided to sample for perchlorates to eliminate any question that may have come from the proposed "crosswalk" of munitions. I told the PDT to do this in January. No actions have been taken.

In the short term, I expect the following: A specific NTP from the contracting officer to provide a letter workplan for the regulators, to include perchlorate sampling of soils and the 10 existing wells. The

laboratory must now have expedited work. The results need to be included in the human health risk assessment in the FS and the FS submitted 1 April for Army review.

I discussed this in January with the PDT and no action has been taken.

This is the only sampling needed for the regulatory process. That is what needs to be executed. The $1M +/- in proposed new wells, full blown RI, compilation report, and geophysical MMR studies do not support progress in the regulatory process.

The compilation report was a good idea in six months ago, but there is no longer time and without technical support of the previous work, it has lost it's usefulness.

Thank you for your support.

Randy
Randy Battaglia
Seneca AD BRAC Environmental Coordinator/Caretaker

675.76
~~636~~ Acres — FTOF / Seed 57 ROAD

– 2 Acres Stockpile

– ~~47~~ 30.17 acres OB G

643.59 ~~586~~ Acres

PREVIOUSLY SURVEYED 2,500 FT RADIUS ⇒ 450 acres

= 456.4 – 0.3(00 Hill)

– 6 (Cedar creek)

⇒ 450 acres

586

– 450

136 acres > 2,500 kickout

From:	Badik, Beth
To:	Battaglia, Randall W CIV USARMY CENAN (US); Belanger, Todd
Cc:	Pommerenck, Derek A CIV USARMY CEHNC (US)
Subject:	[Non-DoD Source] RE: OD Grounds Acreage
Date:	Wednesday, April 11, 2018 12:58:00 PM
Attachments:	OD Grounds Boundary.pdf

Randy,

Based on your email description (see attached sketch) the OD Grounds acreage is 675.76 (inclusive of OB Grounds).

675.76
-645.59
30.17

675.76
-627.98
47.78

- The OB Grounds HTW acreage is 47.78.
- The OB Grounds OE acreage is 30.17.

OD Grounds minus OB (HTW) = 627.98

OD Grounds minus OB (OE) = 645.59

OB HTW = 47.78
OB OE = 30.17

Thanks,

Beth

-----Original Message-----
From: Battaglia, Randall W CIV USARMY CENAN (US) <Randy.W.Battaglia@usace.army.mil>
Sent: Wednesday, April 11, 2018 9:44 AM
To: Badik, Beth <Beth.Badik@parsons.com>; Belanger, Todd <Todd.Belanger@parsons.com>
Cc: Pommerenck, Derek A CIV USARMY CEHNC (US) <Derek.Pommerenck@usace.army.mil>
Subject: RE: OD Grounds Acreage

Just to verify, that is using the MMR boundary on the OBG or HTRW boundary(?)

Randy
Randy Battaglia
Project Manager
Seneca AD BRAC Environmental Coordinator/Caretaker New York District CENAN-PP-E

-----Original Message-----
From: Badik, Beth [mailto:Beth.Badik@parsons.com]
Sent: Wednesday, April 11, 2018 9:19 AM
To: Battaglia, Randall W CIV USARMY CENAN (US) <Randy.W.Battaglia@usace.army.mil>; Belanger, Todd <Todd.Belanger@parsons.com>
Cc: Pommerenck, Derek A CIV USARMY CEHNC (US) <Derek.Pommerenck@usace.army.mil>
Subject: [Non-DoD Source] RE: OD Grounds Acreage

Randy,

The OD Grounds (using this boundary) is 636 acres.

If you subtract out the OB (which is 47 acres), it's down to 588 acres.

Let us know if we can provide any other information.

Beth

-----Original Message-----
From: Battaglia, Randall W CIV USARMY CENAN (US) <Randy.W.Battaglia@usace.army.mil>
Sent: Wednesday, April 11, 2018 7:24 AM
To: Belanger, Todd <Todd.Belanger@parsons.com>; Badik, Beth <Beth.Badik@parsons.com>
Cc: Pommerenck, Derek A CIV USARMY CEHNC (US) <Derek.Pommerenck@usace.army.mil>
Subject: OD Grounds Acreage

Todd/Beth,
I need an accurate estimate of the acreage of the OD Grounds, including the area EPA questioned outside of the 2,500 foot radius. The boundaries should be 30 feet outside of the fence on the north and west, the road accessing the SEAD 57 site, and on the east the fence along the access road and the Q area.

It should be around 600 acres +/-.

Thanks

Randy
Randy Battaglia
Project Manager
Seneca AD BRAC Environmental Coordinator/Caretaker New York District CENAN-PP-E

DEPARTMENT OF THE ARMY
Office of the Assistant Chief of Staff for Installation Management
BRAC Division
Seneca Army Depot, Seneca, NY

MEMORANDUM FOR RECORD 29 June 2018

SUBJECT: Environmental Liabilities for site SEAD-006-R-01 (HQAES WBS# 36760.1100) RCRA Closure of the OB/OD Grounds (alias SEAD-115 [not listed in HQAES], SEAD 45 [Demolition Area HQAES WBS# 36760.1045]) at Seneca Army Depot

This memorandum serves as formal documentation of the information used to develop the Cost-To-Complete (CTC) estimate for site SEAD-006-R-01 during the 2017 data call. This site also encompasses SEAD-023 (Open Burning Grounds) (not listed in HQAES). SEAD 023 was inadvertently deleted from AEDBR at HQ level. The direction provided was to include SEAD 23 with SEAD 45 (Open Detonation Grounds) because it was the same operable unit. SEAD 45 was re-categorized as SEAD 115 and then to SEAD 006-R-01 due to MMR program nomenclature changes.

Estimators experience is documented on the Estimator Experience Form, enclosure 7, per the Federal Accounting Standards Advisory Board (FASAB) Handbook Technical Release 2.

RACER 11.4 was used for the cost for well abandonment and site closeout.

The SEAD-23 monitoring program, which was initiated in 2007 under this project, will be carried under the RI/FS phase until completion of the remediation. A zero dollar CTC has been prepared for SEAD-23. It is assumed six additional wells will be installed at SEAD 006-R-01 for additional GW monitoring at the site as part of a LTM plan. Contract W912DY-10-D-0014 Delivery Order 5, 23 November 2011, (Enclosure 5) provides the cost of the Long Term Monitoring Plan, well installation, first year monitoring cost, and out-year monitoring cost. The cost for the GW monitoring during the RI/FS phase for SEAD 23 is2 provided by contract W912DY-09-D-0062 Delivery Order 0023 task 0003a, 30 March 2016. (Enclosure 6) and the requirement for testing is established in the ROD for the OB Grounds (Enclosure 2). It is assumed that after the completion of the remediation, monitoring GW for SEAD-006-R-01 will require sampling at a quarterly interval for the first year and then semi-annually in subsequent years for cap inspection and effectiveness. It is further assumed that the monitoring efforts at SEAD 23 will continue as part of the overall project (Enclosure 6). After the remediation is completed the monitoring will be carried out under the LTM phase.
Due to EPA's disagreement with the planned IRA to include a cap, and due to the Army's agreement with Land Use Controls for munitions sites, the FS will be finalized and a ROD signed for the final remediation. It is assumed that the final remediation will be accomplished with funding provided in prior years. Contract W912DY-10-D-0014 Delivery Order 5, 23 November 2011, Enclosure 5, was terminated for convenience.

Funding remains for the final remediation. This included the contract cost for the cap alternative. It was assumed the first 5 year review will occur in 2021, this may need to be in 2026 given ROD signature and completion of remediation in 2019. The Owner Support for RDRA is S&A for the remedial action, which was postponed due to the ROD. This cost is shown in FY20.

A long standing concern of EPA was perchlorate contamination. The Army's position is that perchlorates were not in the munitions disposed at the site. To resolve this issue, the Army sampled for perchlorates in June 2018. It is expected the results of this are limited contamination, no risk is expected for perchlorate contamination. This will be addressed with no residential use, and no groundwater use in accordance with expected munitions LUCs. These results and risk assessment will be included in the revised FS in July 2018. It is assumed for this CTC that there will be no additional cost for perchlorate contamination.

The Mandatory Center of Expertise (MCX) provided a "rough order of magnitude" (ROM) in January 2018 to provide an estimate for the material change (enclosure 10). The MCX provided a detailed "worst case (sic)" CTC in MFR format (enclosure 11). Enclosure 11 is submitted as a separate supporting document due to its size (164 pages). Specific references are to Tasks sections in Enclosure 11. This documentation is titled "36760.1100 Supp Doc Part 2 of 2 CX CTC Packet". The enclosures indicate this with a title page. This estimate used different judgement, references, assumptions and methodology. However the primary differences in these estimates is the assumption for the volume of soil requiring T&D, and COE oversight cost. Tasks 5, 6, and 7 of Enclosure 11 did not document environmental sampling and T&D costs. T&D estimate calculations are shown below in this MFR.

Environmental sampling costs are based upon Enclosure 13, Contract W912DS-10-D-0014/0005, which show sampling costs for this site, for the cap alternative (reference enclosure 5). Although this contract is dated and no escalation factor is provided for FY11 to FY18, this contract was for this site and not a comparable site. It is assumed the FY12 to FY18 escalation factor is adequate. It is assumed the volume estimate for the OD Hill to be spread one foot in depth for sampling.

It is assumed the Disposal fees are for daily cover, and no pretreatment/stabilization is required.

Sampling Costs are estimated as follows:

$57,740.48 sampling costs per acre (enclosure 13)

28,500 cubic yards (enclosure 12) x 27 feet/ cft x 1/1foot depth x acre/43,200 square feet= 17.81 acres

17.81 acres x $57,740.48 per acre = $1,028,357.95
$1,028,357.95 x 1.313 (FY18 escalation factor)= $1,350,233.99

T&D Costs are estimated as follows:

Reference Enclosure 13, Contract # W912DS-13-D-0005:

Excavate contaminated soil	$7.97 per CY
Load Excavated Soil	$4.83 per CY
Transportation (15 miles)	$0.57 per CY
Disposal Fee Hazardous Material Treated	$175.08 per ton

Excavation of Contaminated Soil 28,500 CY (Encl 12) x 7.97 $/CY =	$227,145.00
Load Soil 28,500 CY x $4.83 /CY =	$137,655.00
Transportation 15 miles x 28,500 CY x $0.57 per CY =	$243,675.00
Disposal Fees Hazardous Material to Non-Hazardous Landfill 28,500CY x 1.5 Ton/CY = 42,750 Tons 42,750 Tons x $175.08 per ton=	$7,484,670
Subtotal T&D Costs (Encl 13)	**$8,093,845.00**

The Jan ROM (enclosure 10) assumed 0% soil T&D, and the CTC assumed 100% (enclosure 11).

The 2018 FS revision will include an estimate for mechanical separation/sifting and T&D of soils in the hill. The contractor prepared this, and calculated 75% of soils require T&D, based upon soil concentrations (enclosure 12).

The 10% oversight COE cost is not required, and is assumed to be and is reduced to 5.6%, the typical S&A for RDRA efforts. Due to the nature of the project and CTC, this oversight cost is adequate for technical support and S&A.

Both enclosures 10 and 11 included LTM costs; the basis for the LTM costs for both of these estimates differ. It is assumed that the RA emerging requirement will be needed for the RDRA, and LTM will be an additional costs based upon the escalated contract amount.

1. Site History: The Army destroyed ammunition by detonation and open burning at this site, which was in operation from 1948 through 1998. The OB ground consists of elevated burning trays. The site is in the northwest portion of the installation and covers 364 acres. The investigation of this site revealed contamination consisting of ordnance and explosives (OE) and heavy metals. This is a RCRA interim permitted site. This site

also encompasses SEAD-023 (not listed in HQAES), OB Grounds, where a CERCLA remediation was completed in 2003.

2. Current Site Status:

a. The previous cleanup strategy includes the ongoing removal actions for munitions potentially posing an explosive hazard from the outer perimeter of the site at approximately 2500 feet, inwardly to the proposed 8 acre landfill cap. The work from 2500 feet to 1000 feet is underway through a Removal Action. The preferred FS Alternative has been to consolidate all soil that contains hazardous toxic or radiological waste (HTRW) contamination will be placed under the cap. The cap will comply with State Regulatory standards. Soil under the cap will not have ordnance removed prior to the capping.

b. Groundwater will require annual testing until results demonstrate cleanup criteria.

c. EPA raised numerous concerns on materials potentially presenting an explosive hazard (MPPEH) and disagrees with the cap alternative. A large amount of the <1000 feet radius was geophysically mapped and MPPEH removed. EPA has disagreed with the cap only alternative and has taken the position of removal of one foot and geophysics to three feet below this point on the entire site similar to the Umatilla site ($47M).

d. EPA raised numerous concerns regarding the previous investigations and removals, adequacy of effectiveness (locating and removing all MPPEH) and data gaps between the phased investigations and removals. Prior to FY17, EPA accepted DDESB's acceptance of a Completion Report for MMR removals for CERCLA site completion.

e. The Army position is surface clearance is adequate for this site for the known future use of restricted access conservation. A meeting was held on site 30 August 2017 with Region 2 Division Chiefs, USACE branch chiefs, and telephonetically higher EPA personnel to resolve EPA concerns. It was decided in 2018 to be more effective to resurvey as QA for prior geophysic surveys than attempting to prove prior data. EPA additionally wanted more acreage to be surveyed in the boundary areas.

f. To address EPA's concerns, final remediation alternatives are to be evaluated using MMR LUCs, the Open Burning Grounds ROD as a precedent for HTRW soils (only), a cap with slurry wall, mechanical separation, and soil stabilization.

g. The FS is being revised for clarified alternatives, EPA comments, and a more detailed cost estimate for the mechanical separation/sifting alternative.

h. The EPA involvement, review of investigative actions, and preference for mechanical separation of MPPEH, MD and soils created the emerging requirement for the RDRA phase.

3. Exit Strategy:

Resurvey all geophysical prior work, additional areas of concern to EPA, mechanical separation for the OD hill, and EPA review and concurrence of the work efforts.

Revision of the FS for EPA's preferred alternative, and MMR LUCs for a Conservation Area with limited public access.

LTM includes Cap Maintenance, GW monitoring, LUCs, Five-Year reviews, and site closeout effort. MMR LUCs will be critical to final agreement on remediation.

For cost estimating purposes, the LTM duration as indicated in the phase schedule extends only to the end of the second five-year review; however, LTM is anticipated to continue in perpetuity due to Munitions LUCs.

4. Enclosures:

1. Draft Final Feasibility Study Report for Open Detonation Grounds Munitions Response Action, Parsons, April 2013
2. Final Record of Decision Former Open Burning Grounds Site, January 1999
3. Final Long Term Monitoring Plan for Open Burning Grounds, January 2007
4. Performance Work Statement for Contract W912DY-10-D-0014, DO 0005, 23 November 2011
5. Contract W912DY-10-D-0014, Delivery Order 0005, DTD 23 November 2011
6. Final 2011 Long Term Monitoring Annual Report for the Open Burning Grounds, May 2013; Contract W912DS-09-D-0062 TO 0023, 30 March 2016; Escalation Rates.
7. Estimator's Experience Sheet, Environmental Liabilities training
8. Estimate Summary Table
9. USACE Oversight Estimate
10. January 2018 Rough Order of Magnitude (ROM) Estimate
11. 36760.1000 Supplemental Documentation, CX CTC Packet, Part 2 of 2
12. FS revision, 2018, Treatment Volume Estimate
13. Sampling Costs Contract W912DS-10-D-0014/0005; T&D Estimate Source, W912DS-13-D-0005

5. Engineering Estimate Assumptions:

Site Closeout Documentation (LTM):

1. Site Closeout is moderate complexity
2. Kick-off, review and regulatory meetings
3. Work Plans and reports - all default values
4. Documents will be stored for 30 years

The cost estimate for site closeout documentation is out of date, the cost to complete is to be determined.

Well abandonment (LTM):

1. Number of wells: 12

2. Well depth: 15 feet
3. Well diameter: 2 inches
4. Formation type: Unconsolidated
5. Method: Overdrill/excavation

The cost estimate for well abandonment is out of date, the cost to complete is to be determined.

Five year MPPEH & CERCLA review

1. Review cycles (SEAD 006-R-01 and SEAD 23 combined)
2. Five year review cycle starts 2016 for SEAD 23
3. Five year review cycle starts 2021 for SEAD 006-R-01 and SEAD 23 combined
4. Site is moderate complexity
5. Reports, reviews, interviews and site inspections include all default parameters
6. MPPEH review included

7. Cost Summary SEAD-006-R-01 (SEAD-115/45)

Remedial Action (RA)

Remedial Design	(Encl 12, Task 1)	$ 50,000.00
Mobilization/Demob	(Encl 12, Task 2)	$ 60,791.73
Surveying	(Encl 12, Task 3)	$ 105,710.78
Geophysical QUAPP	(Encl 12, Task 4)	$ 109,239.75
Mechanical Sifting OD Hill	(Encl 12,Task 5)	$1,479,853.38
Environmental Sampling	(Encl 13)	$1,350,233.99

Munitions Removal Action within 1,000 ft (Encl 12, Task 6)

Vegetation Clearance	$ 80,563.35
Mechanical Sifting & Disposal	$5,999,633.78
Geophysics	$3,026,497.48

Munitions Removal Action outside 1,000 ft (Encl 12, Task 8)

Surface Clearance	$ 844,601.41
Vegetation Clearance	$ 586,159.13
Geophysics	$4,794,881.91

Recycling Munitions Debris (MDAS, Encl 12, Task 9)	$ 66,716.00
Subtotal RA	$18,554,882.69
Subtotal T&D Costs(Encl 13)	$ 8,093,845.00

Subtotal RA **$26,648,727.69**

Government Oversight (5.6%)= $ 1,492,328.75

Remedial Action (RA) **$28,141,056.44**

Remedial Action (Operations) (RA(O)):

Long Term Monitoring Plan preparation (enclosure 5);
FY17 $25426.10 escalated to FY18 x 1.0313= **$33,384.47**

Install 6 and Monitor 12 GW wells quarterly 1st year,
(Source 5); FY17 $174,906.71 escalated to
FY18 x 1.0313 = **$229,652.51**

For years 2017-2045,
Monitor 12 GW wells, semiannually x 29 years (source 5);
FY17 $49,663.35 x 29
escalated to FY18 x1.0313 = **$1,891,031.38**

Owner Support for RA (Source 4)
USACE Estimate (encl 11) = **$3,735.00**

Subtotal RA(O) = **$2,154,068.36**

Long Term Monitoring SEAD 23 (LTM):

Six five-year reviews for SEAD-23 and SEAD-006-R-01
(Encl 6,W912DY-09-D-0023, 30 March 2016, 6 events)
FY17 $170,505.11x 1.0313= **$223,873.21**

Owner Support for GW Monitoring (Source 4)
USACE Estimate (Enclosure 9) **$3,735.00**

Well abandonment and site closeout
(Enclosure 10, RACER 11.4)

Well Abandonment
(Encl 10, RACER Est Doc Report, page 31 of 31) $8,967.31

Site Closeout Documentation
(Encl 10, RACER Est Doc Report, page 30 of 31) $38,504.25

Subtotal Well Abandonment and Site Closeout	**$47, 471.56**
Subtotal LTM	**$275,079.77**
Total Cost	**$30,570,204.57**

Material Change: The material change is expected due to the emerging requirement. The material change will be calculated by HQAES.

Prepared by: Randall Battaglia
Cost Estimator

_____
Signature Date

Reviewed by: William W. Millar
Cost Estimate Reviewer

_____
Signature Date

ENCLOSURE 1

DRAFT FINAL

FEASIBILITY STUDY REPORT

Site

for

OPEN DETONATION GROUNDS MUNITIONS RESPONSE ACTION

SENECA ARMY DEPOT ACTIVITY
ROMULUS, SENECA COUNTY, NEW YORK

Prepared for:

U.S. Army Engineering and Support Center, Huntsville

and
SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Prepared by:

PARSONS
100 High Street
Boston, MA 02110

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

APRIL 2013

ENCL 1

3.0 DEVELOPMENT AND SCREENING OF ALTERNATIVES

3.1 INTRODUCTION

This section summarizes the remedial action alternatives that were developed from the technologies screened in **Section 2.0**. Prior to the development of alternatives, an evaluation of general response actions and a technology screening was performed for inclusion into proposed remedial action alternatives for the OD Grounds. Technologies were combined into alternatives considering potential waste-limiting and site-limiting factors unique to the OD Grounds and the level of technical development for each technology. This information was used to differentiate alternatives with respect to effectiveness and implementability. This FS focuses on identifying and evaluating alternatives for the OD Grounds.

3.2 DESCRIPTION OF ALTERNATIVES

The following remedial action alternatives were developed for the OD Grounds:

- Alternative 1: NFA
- Alternative 2: Geophysical mapping, intrusive investigation, capping, LUCs; and
- Alternative 3: Geophysical mapping, intrusive investigation, excavation, off-site disposal, and LUCs.

Remedy

Technologies and processes associated with these actions were assembled into remedial action alternatives.

3.2.1 Alternative 1, No-Further Action

Alternative 1 is the no further action alternative. CERCLA and NYSDEC guidance for conducting feasibility studies recommends that the no-action alternative be considered against all other alternatives.

The no further action alternative would leave the OD Grounds undisturbed with the continuation of existing site security measures, such as locked gates, to prevent civilian access and direct contact with contaminated soil and possible exposure to potential MPPEH.

3.2.2 Alternative 2, Geophysical Mapping/Intrusive Investigation/Capping/LUCs

This alternative would complete the MPPEH clearance in areas that were not previously cleared by previous investigations. In the open and accessible areas, previously identified anomalies will be reacquired and removed. In areas that are wooded or inaccessible and were not previously cleared, mag and dig operations will be completed using a handheld magnetometer, such as a Schonstedt. In accessible areas that were not previously mapped (0 – 1,000 foot radius), DGM surveys will be conducted using EM61s over approximately 60 acres in the area surrounding the OD Hill. The newly mapped areas will be designated in two different categories:

1. metals saturated areas where the high density prohibits individual anomalies from being identified and manually removed (0 – 500 foot radius)
2. lower metals density areas where individual anomalies can be identified and manually removed (500 – 1,000 foot radius)

It is anticipated that metallic saturation (or a high density of potential MPPEH) will be encountered in areas located closer to the OD Hill (0 – 500 foot radius). At locations where the DGM survey indicates that there is metallic saturation, the top 6 inches of soil will be excavated. The soil will be screened to remove potential MPPEH, and the overburden will be staged on-site for potential reuse and/or incorporation into the site cap. The excavated area will then be resurveyed and the results of the DGM survey will be used to generate a dig list of target anomalies to be investigated. In the event that the results of the DGM survey indicate that areas are still saturated with metal an additional 6 inches of soil may be excavated, screened, and staged, as previously described, followed by a subsequent DGM survey of that area.

For the lower density metals areas, the anomalies on the generated dig list from the DGM surveys will be reacquired and intrusively investigated by a geophysicist and UXO dig team, in the same manner as the intrusive investigation in the Kickout area. A two-person UXO technician/ demolition team will perform any required MPPEH demolition procedures. The demolition team will dispose of any MPPEH suspected of containing explosives/spotting charges or inaccessible voids by detonation. All MD will be certified and disposed of as MDAS in accordance with current regulations.

The excavated soil that passed through the screen will be placed on the OD Hill and the resulting surface will be compacted and graded. An engineered cap, covering approximately 10 acres in aerial extent and approximately 75,000 cy (+/- 35%) of material, will be installed over the OD Hill and the surrounding area. The cap will comply with NYS Part 360 requirements. A geomembrane layer will be selected, and the total thickness of the cap will be at least 18 inches. Any identified soil with contaminant levels exceeding the selected soil cleanup goals would be incorporated under the cap. A design work plan will be prepared and the exact limits of the cap will be determined during the design phase of the project.

LTM would include maintenance of the cap and LUC inspections. Potential LTM of site groundwater conditions may be appropriate subsequent to the remedial alternative selected in this FS.

LUCs will be placed on the site to prohibit the use of groundwater, prohibit digging, and prevent the use of the site for use as a daycare or a residential facility.

Implementation of this alternative would be highly effective in achieving the RAOs, long-term effectiveness, preventing exposure, and implementability. The costs for this alternative are moderate.

3.2.3 Alternative 3, Geophysical Mapping/Intrusive Investigation/Excavation/Off-Site Disposal/LUCs

Alternative 3 is similar to Alternative 2, but this alternative would involve the excavation and off-site disposal of all soil containing MPPEH or contaminant concentrations that exceed cleanup goals in lieu of capping these soils. Similar to Alternative 2, reacquisition would be completed in the Kickout area. In areas outside of the OD Hill that are wooded or inaccessible and were not previously surveyed, mag and dig operations will be completed using a handheld magnetometer, such as a Schonstedt. In accessible areas that were not previously mapped (0 – 1,000 foot radius), DGM surveys will be conducted using EM61s over approximately 60 acres in the area surrounding the OD Hill. At locations where the DGM survey indicates that there is metallic saturation, the top 6 inches of soil will be excavated (estimate

Alternative 1 must be ruled out because it is ineffective in long-term permanence and does not achieve the RAOs. Overall, Alternatives 2 and 3 have similar levels of protectiveness, permanence, long-term effectiveness, and short-term effectiveness. They will both limit exposure to potential MPPEH or contaminated soil. Alternative 3 ranks slightly higher for reduction of toxicity, mobility, or volume due to the volume reduction of off-site disposal. Alternative 2 rates more favorably for implementability. Alternative 2 ranks better in terms of cost.

4.5 RECOMMENDED ALTERNATIVE

Based on a comparison of the criteria, the most effective remedy for the OD Grounds is Alternative 2, DGM Mapping, intrusive investigation, cap, and LUCs. Alternative 2 limits human exposure to potential MPPEH or soil contamination, is implementable using known techniques, and is cost effective. The capital cost for the alternative is $8.0M. The TPV is $8.9M. The total costs include $31,500 per year for LUC inspections and cap maintenance, plus $40,300 per five-year review over the 30 year period.

RECOMMENDED

ENCLOSURE 2

FINAL RECORD OF DECISION (ROD)
FORMER OPEN BURNING (OB) GROUNDS SITE
SENECA ARMY DEPOT ACTIVITY (SEDA)
ROMULUS, NY

Prepared For:
United States Army Corps of Engineers

Prepared By:
Parsons Engineering Science, Inc.
30 Dan Road
Canton, MA 02021-2809
January 1999
CONTRACT NO. DACA87-92-D-0022

Delivery Order 001

FNCL 2

The selected remedy outlined in this ROD addresses potential exposure to elevated le metals, such as lead, in the on-site soils and sediment in Reeder Creek. The following de the significant aspects of the remedy:

- The OB Grounds was used for surface burning of explosive trash and propellants. concern for OE below the surface, at depth, at this site is small. Although OE is not exp to be found at depth at this site, through a combination geophysics, excavation, si removal and soil cover, the Army will nevertheless remediate OE to meet the Departm Defense Explosive Safety Board (DDESB) requirements for unrestricted use or put place land use restrictions as may be required by the DDESB.
- Excavation of soils with lead concentrations above 500 mg/kg and sediments from Re Creek with concentrations of copper and lead above the NYSDEC criteria of the 16 m and 31 mg/kg, respectively.
- Treatment of soils exceeding the Toxicity Characteristic Leaching Procedure (TC estimated to be approximately 3,800 CY of the excavated soil, via solidification /stabiliza will be performed to remove the RCRA characteristic of toxicity. This will allow the so. be landfilled, in accordance with the requirements of the Land Disposal Restrictions (LI of RCRA.
- Disposal of the excavated and solidified soil in an off-site Subtitle D landfill. The t quantity of soil to be disposed of is estimated to be 17,900 CY, including the 3,800 CY solidified soil.
- Construction of a soil cover of at least 9 inches of compacted soils in the areas of the (Grounds with soils remaining on the site with lead concentrations above 60 ppm. The area be covered is estimated to be approximately 27.5 acres, which encompasses most of the ar of the OB Grounds. The PRAP incorrectly identified the area to be covered as 43.8 acre The cap will be vegetated with indigenous grasses to prevent erosion and to prevent dire contact and incidental soil ingestion by terrestrial wildlife. The monitoring program w ensure that the 9-inch soil/vegetative cover is maintained after the remedy is complete.
- Control of surface water runoff, as necessary, to prevent erosion of the vegetative cover ar solids loading to the creek. This will be accomplished with vegetation, regrading of sit topography and drainage swales.
- Conducting a monitoring program for site groundwater and sediment in Reeder Creek. This program will monitor metals. For groundwater, the level of detection will be to below 15 ug/L, the federal action level for lead in groundwater. For sediment, the detection limit for lead will be to 10 mg/kg. Should a significant exceedance be noted, the exceedance will be

will be implemented to eliminate the threat posed by the exceedance. For groundwate action may include metals removal via filtering. A similar process will apply for a sed exceedance observed in Reeder Creek. First, the source of the exceedance will be ider and confirmed. If the exceedance is determined to originate from the OB Grounds site, maintenance of or improvements to the existing erosion control systems will be institut reduce the threat due to erosion of on-site soils to the Creek. This may include revegeta or the construction of drainage control swales or structures.

STATE CONCURRENCE

NYSDEC has concurred with the selected remedy. Appendix B of this Record of Dec contains a copy of the Declaration of Concurrence.

DECLARATION

The selected remedy is consistent with CERCLA and to the extent practicable the NCI protective of human health and the environment, complies with federal and state requirem that are legally applicable or relevant and appropriate to the remedial action, and is effective. The remedy uses a permanent solution for soil contamination. This remedy will result in hazardous substances, above cleanup goals, remaining at SEDA. Because th alternatives would result in hazardous substances, pollutants or contaminants remaining on- above levels that allow for unlimited use and unrestricted exposure, CERCLA requires that lead agency review the remedial action no less than every five years after its initiation, justified by the review, remedial actions may be implemented to remove or treat the wastes.

FINAL

LONG-TERM MONITORING PLAN FOR OPEN BURNING (OB) GROUNDS SENECA ARMY DEPOT ACTIVITY ROMULUS, NEW YORK

Site SEAD 036

Prepared for

U.S. Army, Engineering & Support Center, Huntsville

4820 University Square

Huntsville, AL 35816

and

Seneca Army Depot Activity

5786 State Route 96

PO Box 9

Romulus, New York 14541

Prepared by

PARSONS
150 Federal Street, 4th Floor
Boston, MA 02110-1713

Contract DACA87-02-D-0005, Delivery Order 29
USEPA Site ID: NY0213820830; NY Site ID: 8-50-006

January 2007

ENCL 3

Groundwater data collected during the RI also indicated that, with the possible exception of two monitoring well locations, groundwater had not been impacted by metal contamination that was then present in the soil. Groundwater data from all but the two well locations indicated lead concentrations ranging from non-detectable to less than the 15 µg/L limit stipulated in the ROD. The two exceptions showed lead concentrations higher than 15 µg/L; however, these samples were highly turbid and results from filtered samples collected at these locations showed lead concentrations below 15 µg/L. Based on these findings, the Army indicated that the turbid nature of the samples resulted in the elevated concentrations of lead identified.

Based on the flow direction of groundwater, the existence of a groundwater divide, the lack of widespread metals contamination in groundwater at the OB Grounds, and the ROD requirement to prevent future degradation of Reeder Creek, the monitoring well network will consist of six wells, all of which will need to be constructed at the site. New wells are required due to abandonment of 32 historic wells during the OB Grounds remedial action (Weston Solutions, June 2005) and due to the lack of maintenance applied to the three remaining well installations at the OB Grounds. The locations of the six new proposed wells are shown on **Figure 5-1**, and they will be positioned as follows:

6 new wells

- Three wells will be installed on the east side of the OB Grounds, between the former grounds, the location of the buried lead contaminated soil, and Reeder Creek. These wells will be used to monitor the groundwater for possible future impacts to Reeder Creek.
- Two wells will be installed on the west side of the OB Grounds, west of the groundwater divide. These wells will be used to monitor groundwater flowing off the OB Grounds to the west southwest.
- One well will be installed south of the OB Grounds, outside the area that formerly contained contaminated soil. This well will serve as a background well for comparison to the five other wells installed at the site.

These wells will adequately monitor the OB Grounds to assess future degradation of groundwater in the area of the former OB Grounds and potential migration of affected groundwater towards Reeder Creek. Collection of groundwater levels and generation of potentiometric maps will be used to check the direction of groundwater flow and be used to evaluate the need for additional wells should the groundwater flow directions alter from that currently anticipated.

The exact details of the final monitoring well installations will be determined and documented once they are installed, and will be contingent on conditions found at the OB Grounds. However, based on details of the historic monitoring well network previously located at the OB Grounds, it is expected that all new wells placed at the former AOC will be installed in the till with the screen top set at a depth of 4 to 5 feet below grade surface (bgs), with the screen length extending down

into the underlying weathered shale horizon. Setting the top of the screen 4 to 5 feet bgs will allow for the construction of a permanent well installation consisting of a 2 foot thick concrete collar, overlying a 1 - 2 foot thick bentonite seal and a minimum of 1 foot of sand pack above the top of the screen. The screen length at each monitoring well location will be set to maximize coverage across the till and weathered shale horizons, and as such screen lengths may vary from 2 feet to 10 feet in length. All wells in the historic monitoring network at the OB Grounds had screen lengths of 5 feet.

5.3 MONITORING ANALYTE LIST

The ROD stipulated that groundwater at the OB Grounds is required to contain less than 15 µg/L lead, and the sediment in Reeder Creek found to contain more that 16 mg/Kg copper and 31 mg/Kg lead was to be excavated. The ROD also required that these media be analyzed for metals. In accordance with these requirements, the samples of groundwater from the OB Grounds will be analyzed initially for total lead and total copper. If preliminary results suggest that turbidity is potentially affecting the sample results, groundwater analyses will also include the determination of total and dissolved lead and copper in the samples. The State of New York Contract Required Quantitation Limits for lead and copper are shown in **Table 5-1** below.

5.4 MONITORING FREQUENCY

As is indicated above, all wells proposed for monitoring groundwater at the OB Grounds will be new; therefore, the initial sampling frequency will be once per quarter for at least one year until it can be established that the wells meet or exceed the required concentrations limits, within the acceptable error tolerances specified in **Section 4.2** After collection of this initial data set and the decision regarding whether the wells meet the ROD-specified concentration limits, the Army anticipates that the sampling frequency will be reduced to once per year. After a total of five years of sampling, a decision will be made whether the sampling should be terminated or continued into the next five-year period.

1st year freq

year 2-30 freq

The vegetated, compacted soil cap overlying the lead contaminated soil that has been left at the former OB Grounds site will initially be inspected and documented once per quarter, concurrent to the quarterly groundwater monitoring events. Inspection of the surface will include observations pertinent to the integrity of the soil and indigenous vegetative covering, and the condition of surface water run-off channels, infiltration galleries, and swales. Any identified breach of the vegetated, soil cap or erosion in the run-off and infiltration galleries will be repaired within one month of being noted. After collection of this initial data set and the decision regarding whether the cap is effective in isolating the lead-contaminated soil, the cap inspections will be reduced to an annual basis. After a total of five years of inspections, a decision will be made whether the inspections should be terminated or continued into the next five-year period.

Performance Work Statement
Remedial Action
Seneca Army Depot Activity (SEDA)
Open Detonation Ground
Romulus, New York
22 Nov 2011

Project Site

1.0 OBJECTIVE: The objective of this task order is to design and complete the installation of a NYS Part 360 landfill cap to inter hazardous soils at the Seneca Army Depot Activity (SEDA) in Romulus, New York. Additionally, the Contractor shall perform other activities in support of the landfill construction to include additional investigation and Long Term Monitoring at the site. All activities shall be performed in compliance with CERCLA and Department of Defense, Army, and USACE Regulations and Guidance to include Interim Guidance and Data Item Descriptions (DID's). The subject site is considered a Munitions Response (MRS) and Hazardous, Toxic and Radiological Waste (HTRW) site.

This task order shall be conducted pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and National Oil and Hazardous Substances Contingency Plan (NCP) requirements, with regulatory coordination, as appropriate, of the New York Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (USEPA) Region II.

2.0 BACKGROUND

2.1 Work under this Performance Work Statement (PWS) falls within the Military Munitions Response Program (MMRP) for the Open Burn/Open Detonation Ground Area of Concern (AOC) at Seneca Army Depot located in Seneca County, NY. The AOC consists of 365 acres and was used to perform open detonation and open burning of munitions.

Of particular concern for this effort is an area of approximately 18 acres with potential ancillary needs over a wider area than the actual landfill cap construction. The contractor will complete all actions necessary to meet CERCLA requirements and achieve acceptance of the required designs and construction so the parcel can be closed out.

This requirement involves a legacy BRAC-funded, Military Munitions Response Program (MMRP) site (Munitions Response Site or MRS). The Department of Defense (DoD) established the MMRP under the Defense Environmental Restoration Program (DERP) to address unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC) located on current and former military installations. The Contractor shall perform all work in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP), 40 CFR Part 300. Any activities involving work in areas potentially containing explosive hazards shall be conducted in full compliance with United States Army Corps of Engineers (USACE), Department of the Army (DA), and Department of Defense (DOD) regulations.

3.0 GENERAL REQUIREMENTS:

3.0.1 **Contractor Methods:** This is a performance based task order. The performance objectives and standards included herein are the basis of the task order requirements. The technical approach and level of effort expended to achieve task order objectives and standards are solely up to the contractor to select and adjust as necessary through the life of the task order. Government recognizes the contractor's right to change the technical approach and level of effort from that proposed with the understanding that the contractor shall still meet all project objectives and gain government Quality Assurance acceptance in order to receive payment. Given the short time available during the pre-award phase to evaluate the site it is possible that after award and refinement of the conceptual site model and data needs that the contractor will wish to adjust the investigation strategy. If before the field work begins, an adjustment in the quantities or types of field investigations are required to achieve the performance standard or the Government determines that the performance standard must be adjusted the Government at its discretion may choose to modify the contract with the price adjustment based upon the prorated unit prices proposed in the accepted proposal. Once these adjustments are complete the contractor shall be obligated to deliver the required

ENCL 4

Task specific **Incentives/Disincentives**: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

Specific Task **Requirements**:

- All UXO, DMM and MC encountered during this effort shall be processed in accordance with the approved work and safety plans.
- **Hazardous, Toxic and Radiological Waste (HTRW) Disposal:** The Contractor shall collect, secure, store,

and arrange for disposal of any HTRW generated as a result of field activities. The HW containers shall be staged, secured, labeled, sampled and analyzed (if required) IAW the approved work plan. The Contractor shall recommend appropriate disposal actions for all waste items. The Contractor shall perform the HW disposal in a timely manner.

SOW PLAN

3.6 Task 6, **Preparation of A Long Term Monitoring Plan**. This is a Firm Fixed Price task.
Objective: The Contractor shall prepare, submit and gain acceptance of a Long Term Monitoring (LTM) Plan for the monitoring of groundwater and the management of the installed cap. Groundwater monitoring shall be based upon the six existing wells and the installation of another six wells. The Contractor shall assume an average depth of 15 feet per well.

Performance Standard: Prepare the plan in accordance with DID WERS-001 and EM 1110-1-4009, EM 385-1-1 and EM 385-1-97. Prepare the sampling and analysis plan, field sampling, and UFP-QAPP in accordance with EM 1110-1-4009, DID WERS-009.01, and UFP-QAPP, as appropriate. UFP-QAPP content shall also meet the requirements of DoD Quality Systems Manual for Environmental Laboratories (current version). Draft QASP includes requirements in regulations, guidance, DIDs and the Quality Control Plan in the WP.

AC: Acceptance of LTM Plan and UFP-QAPP with two revisions. Draft QASP reflects requirements and QCP with one revision required.

Measurement / Monitoring: Review of LTM Plan, UFP-QAPP and QASP per guidance to verify that the minimum acceptable content has been provided and acceptance by the project team and regulatory agencies.

Task specific **Incentives/Disincentives**: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

Specific **Task Requirements**: The sampling and analysis plan (SAP) shall include the Contractor's phased approach and address contaminants of interest and sample media (soil/groundwater/sediment/surface water). The Contractor shall provide a discussion on data evaluation.

3.7 Task 7, **Performance of Long Term Monitoring**. This is a Firm Fixed Price task.
Objective: Following regulatory approval of the Long Term Monitoring Plan prepared under Task 6, the Contractor shall implement the LTM plan and perform monitoring of the ground water and management of the installed cap. The Contractor shall provide all the labor, material and equipment required to install ground water monitoring wells required in the approved plan. As part of this task, the contractor shall perform one year of Long Term Monitoring on a quarterly basis. The effort will also include submission and approval of Long Term Monitoring reports presenting a description of the effort performed, the results achieved and recommendations for the next period of monitoring.

SOW GW Monito 1st yea

Performance Standard: Field work, data quantity and quality, and analysis of said data provides the results required to meet approved plans and be acceptable to the regulators.

- Demonstrate that the work was performed in accordance with the applicable laws, regulations, and guidance

documents;

- Perform the field sampling activities in accordance with the accepted Work Plans (prepared previously)/ LTM

Plan.

- Proper processing and disposition of any UXO, DMM and MC encountered in accordance with approved Work Plan(s).
- Any Material Potentially Presenting an Explosive Hazard (MPPEH) and munitions debris processed in accordance with Chapter 14, EM 1110-1-4009 and Errata Sheet No. 2.
- Meet the project DQOs.

AQL: Conduct the field activities in accordance with the accepted/approved LTM Plan. QC data submitted meets LTM Plan requirements. No more than 3 CARs for non-critical violations and/or 1 CAR for critical violations. No unresolved Corrective Action Requests. All final data and QC tests/documentation submitted. Government QA acceptance QC tests/documentation gained. No Class "A" Safety, contractor at fault, violations during execution of work. "1 non-explosive related Class D, accidents, or <2 non-explosive Class C accidents IAW AR 385-40. Major safety violations, 1 non-explosive related safety violation. Minor safety violations, 2 safety violations. Zero letters of reprimand, grievances, or formal complaints.

Measurement / Monitoring: Period inspection/review of field work. Verify compliance with accepted LTM Plan and other Plans as required. Quality control tests/documentation submitted per the QASP for government review. Boundary precision will be determined by evaluation of the sampling footprint as it relates to the reported contaminated/ uncontaminated areas in question.

Task specific Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

Specific Task Requirements:
- Any UXO, DMM and MC encountered during this effort shall be processed in accordance with the approved work and safety plans.
- **Hazardous, Toxic and Radiological Waste (HTRW) Disposal:** The Contractor shall collect, secure, store, and arrange for disposal of any HTRW generated as a result of field activities. The HW containers shall be staged, secured, labeled, sampled and analyzed (if required) IAW the approved work plan. The Contractor shall recommend appropriate disposal actions for all waste items. The Contractor shall perform the HW disposal in a timely manner.

3.8 Task 8, **Performance of Additional Long Term Monitoring (Optional)**. These are Firm Fixed Price tasks. Objective: If awarded, the Contractor shall provide additional LTM for the site and perform monitoring of the ground water and management of the installed cap. As part of this task, the contractor shall perform Long Term Monitoring on the basis requested as part of the individual options. The effort will also include submission and approval of Long Term Monitoring reports presenting a description of the effort performed, the results achieved and recommendations for the next period of monitoring.

see GW monit Optional year 2 +

Performance Standard: Field work, data quantity and quality, and analysis of said data provides the results required to meet approved plans and be acceptable to the regulators.
- Demonstrate that the work was performed in accordance with the applicable laws, regulations, and guidance documents;
- Perform the field sampling activities in accordance with the accepted Work Plans (prepared previously)/ LTM Plan
- Proper processing and disposition of any UXO, DMM and MC encountered in accordance with approved Work Plan(s).
- Any Material Potentially Presenting an Explosive Hazard (MPPEH) and munitions debris processed in accordance with Chapter 14, EM 1110-1-4009 and Errata Sheet No. 2.
- Meet the project DQOs.

AQC: Conduct the field activities in accordance with the accepted/approved LTM Plan. QC data submitted meets LTM Plan requirements. No more than 3 CARs for non-critical violations and/or 1 CAR for critical violations. No unresolved Corrective Action Requests. All final data and QC tests/documentation submitted. Government QA acceptance QC tests/documentation gained. No Class "A" Safety, contractor at fault, violations during execution of work, <1 non-explosive related Class D, accidents, or <2 non-explosive Class C accidents IAW AR 385-40. Major safety violations, 1 non-explosive related safety violation. Minor safety violations, 2 safety violations. Zero letters of reprimand, grievances, or formal complaints.

Measurement / Monitoring: Period inspection/review of field work. Verify compliance with accepted LTM Plan and other Plans as required. Quality control tests/documentation submitted per the QASP for government review. Boundary precision will be determined by evaluation of the sampling footprint as it relates to the reported contaminated/ uncontaminated areas in question.

Task specific Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

Specific Task Requirements:

- Any UXO, DMM and MC encountered during this effort shall be processed in accordance with the approved work and safety plans.
- Hazardous, Toxic and Radiological Waste (HTRW) Disposal: The Contractor shall collect, secure, store,

and arrange for disposal of any HTRW generated as a result of field activities. The HW containers shall be staged, secured, labeled, sampled and analyzed (if required) IAW the approved work plan. The Contractor shall recommend appropriate disposal actions for all waste items. The Contractor shall perform the HW disposal in a timely manner.

3.8.1 Task 8.1, Performance of An Additional Year of Long Term Monitoring (Optional). If awarded, the Contractor shall provide LTM for an additional (2nd overall) year on a quarterly basis.

3.8.2 Task 8.2, Performance of An Additional Year of Long Term Monitoring (Optional). If awarded, the Contractor shall provide LTM for an additional (3rd overall) year on a quarterly basis.

3.8.3 Task 8.3, Performance of An Additional Year of Long Term Monitoring (Optional). If awarded, the Contractor shall provide LTM for an additional (4th overall) year on a semi-annual basis.

Monitoring on a semi annual Basis

3.9 Task 9, Performance of the Five Year Review (Optional). This is a Firm Fixed Price task.

Objective:

- If awarded, the Contractor shall provide an additional (5th overall) year of LTM for the site and perform

monitoring of the ground water and management of the installed cap on a semi-annual basis.

- If awarded, the Contractor shall perform the regulatory-required Five Year Review. This review shall include presentation and analysis of the five years of annual monitoring and maintenance activities and will include meetings, presentations, report preparation/ revision/ response to comments and recommendations for the future of the site.
- The Contractor shall prepare, submit and gain acceptance of the Five Year Review report which shall certify

that all items identified in the Work Plans and the LTM Plan have been completed.

Performance Standard:

- Field work, data quantity and quality, and analysis of said data provides the results required to meet approved plans and be acceptable to the regulators.
- Demonstrate that the work was performed in accordance with the applicable laws, regulations, and guidance

documents.

- Perform the field sampling activities in accordance with the accepted Work Plans (prepared previously)/

LTM Plan.

- Proper processing and disposition of any UXO, DMM and MC encountered in accordance with approved

Work Plan(s).

- Any Material Potentially Presenting an Explosive Hazard (MPPEH) and munitions debris processed in accordance with Chapter 14, EM 1110-1-4009 and Errata Sheet No. 2.
- Meet the project DQOs.
- Prepare report documents in accordance with the DIDS, the WP/LTM Plan and all applicable Federal, State and local regulations.

AC:

- Conduct the field activities in accordance with the accepted/approved LTM Plan. QC data submitted meets

LTM Plan requirements. No more than 3 CARs for non-critical violations and/or 1 CAR for critical violations. No unresolved Corrective Action Requests. All final data and QC tests/documentation submitted. Government QA acceptance QC tests/documentation gained. No Class "A" Safety, contractor at fault, violations during execution of work. 1 non-explosive related Class D, accidents, or <2 non-explosive Class C accidents IAW AR 385-40. Major safety violations, 1 non-explosive related safety violation. Minor safety violations, 2 safety violations. Zero letters of reprimand, grievances, or formal complaints.

- Acceptance of all report documents (with two revisions) by the Project Team and regulators.

Measurement / Monitoring:

- Period inspection/review of field work. Verify compliance with accepted LTM Plan and other Plans as required. Quality control tests/documentation submitted per the QASP for government review. Boundary precision will be determined by evaluation of the sampling footprint as it relates to the reported contaminated/ uncontaminated areas in question.
- Review of reports per guidance to verify that the minimum acceptable content has been provided.

Task specific **Incentives/Disincentives:** Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

Specific Task Requirements:

- Any UXO, DMM and MC encountered during this effort shall be processed in accordance with the approved work and safety plans.
- **Hazardous, Toxic and Radiological Waste (HTRW) Disposal:** The Contractor shall collect, secure, store,

and arrange for disposal of any HTRW generated as a result of field activities. The HW containers shall be staged, secured, labeled, sampled and analyzed (if required) IAW the approved work plan. The Contractor shall recommend appropriate disposal actions for all waste items. The Contractor shall perform the HW disposal in a timely manner.

3.10 (Task 10) Project Management. The Contractor shall manage the task order in accordance with the basic contract statement of work. All project management associated with the task order, with the exception of the direct technical oversight of the work described in the preceding tasks, shall be accounted for in this task.

4.0 SUBMITTALS.

Even though draft and draft final submittals are requested, the term "draft" shall not reflect upon the quality of the submittal being provided by the Contractor. Submittals shall include all supporting materials including supporting data whether electronic or hardcopy. Submittals not meeting the requirements of referenced guidance or Data Item Descriptions or missing supporting data may be rejected and revised by the contractor at the contractor's own expense.

4.1 The Contractor shall deliver the specified number of copies shown in Table 4.2 of each report listed in Table 4-1 to the following addressees (addresses to be verified by Contractor):

ENCLOSURE 5

(CONTRACT
Deliveryorder

ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF 40

1. CONTRACT/PURCH ORDER/ AGREEMENT NO	2. DELIVERY ORDER/CALL NO.	3. DATE OF ORDER/CALL (YYYYMMMDD)	4. REQ./PURCH. REQUEST NO.	5 PRIORITY
W912DY-10-D-0014	0005	2011 Nov 23	W9IRY013254857	

6. ISSUED BY	CODE W912DY	7. ADMINISTERED BY (if other than 6)	CODE	8. DELIVERY FOB
US ARMY ENGINEERING & SUPPORT CENTER CEHNC-CT 4820 UNIVERSITY SQUARE HUNTSVILLE AL 35816-1822		SEE ITEM 6		[X] DESTINATION [ ] OTHER (See Schedule if other)

9. CONTRACTOR	CODE 8X202	FACILITY 8X202	10. DELIVER TO FOB POINT BY (Date) (YYYYMMMDD)	11. MARK IF BUSINESS IS
NAME AND ADDRESS SHAW ENVIRONMENTAL & INFRASTRUCTURE, INC WILLIAM WINKLER 312 DIRECTORS DR KNOXVILLE TN 37923-4705			SEE SCHEDULE 12. DISCOUNT TERMS Net 30 Days	[ ] SMALL [ ] SMALL DISADVANTAGED [ ] WOMEN-OWNED
			13. MAIL INVOICES TO THE ADDRESS IN BLOCK See Item 15	

14. SHIP TO	CODE W912DY	15. PAYMENT WILL BE MADE BY	CODE 664145	
US ARMY ENGINEERING & SUPPORT CENTER NO CONTACT SPECIFIED CEHNC-CT 4820 UNIVERSITY SQUARE HUNTSVILLE AL 35816-1822		US ARMY ENG & SUP CENTER - FINANCE OFFIC US ARMY CORPS OF ENGRS FINANCE CTR 5722 INTEGRITY DRIVE MILLINGTON TN 38054-5005		MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.

16. TYPE OF ORDER			
	DELIVERY/ CALL	X	This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.
	PURCHASE		Reference your quote dated Furnish the following on terms specified herein. REF:

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

Shaw E & I Inc	Stephen D. Moran	Stephen G Moran PG PMP Program Manager	2011 Nov 24
NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED (YYYYMMMDD)

[ ] If this box is marked, supplier must sign Acceptance and return the following number of copies:

17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE:

See Schedule

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/ SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE SCHEDULE				

* If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.

24. UNITED STATES OF AMERICA
TEL:
EMAIL:
BY: [signature] CONTRACTING/ ORDERING OFFICER

25. TOTAL 15,400,010.51
26. DIFFERENCE

27a. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	c. DATE (YYYYMMMDD)	d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE		28. SHIP NO.	29. DO VOUCHER NO.	30. INITIALS
		[ ] PARTIAL [ ] FINAL	32. PAID BY	33. AMOUNT VERIFIED CORRECT FOR
f. TELEPHONE NUMBER	g. E-MAIL ADDRESS	31. PAYMENT		34. CHECK NUMBER
36. I certify this account is correct and proper for payment.		[ ] COMPLETE [ ] PARTIAL [ ] FINAL		
a. DATE (YYYYMMMDD)	b. SIGNATURE AND TITLE OF CERTIFYING OFFICER			35. BILL OF LADING NO.

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED (YYYYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NO	42. S/R VOUCHER NO.

DD Form 1155, DEC 2001 PREVIOUS EDITION IS OBSOLETE.

ENCL 5

ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF 40

1. CONTRACT/PURCH ORDER/ AGREEMENT NO	2. DELIVERY ORDER/ CALL NO.	3. DATE OF ORDER/CALL (YYYYMMMDD)	4. REQ./ PURCH. REQUEST NO.	5. PRIORITY
W912DY-10-D-0014	0005	2011 Nov 23	W31RYO13254857	

6. ISSUED BY	CODE W912DY	7. ADMINISTERED BY (If other than 6)	CODE	8. DELIVERY FOB
US ARMY ENGINEERING & SUPPORT CENTER CEHNC-CT 4820 UNIVERSITY SQUARE HUNTSVILLE AL 35816-1822		SEE ITEM 6		[X] DESTINATION [ ] OTHER (See Schedule if other)

9. CONTRACTOR	CODE 8X202	FACILITY 8X202	10. DELIVER TO FOB POINT BY (Date) (YYYYMMMDD)	11. MARK IF BUSINESS IS
NAME AND ADDRESS SHAW ENVIRONMENTAL & INFRASTRUCTURE, INC WILLIAM WINKLER 312 DIRECTORS DR KNOXVILLE TN 37923-4705			SEE SCHEDULE 12. DISCOUNT TERMS Net 30 Days	[ ] SMALL [ ] SMALL DISADVANTAGED [ ] WOMEN-OWNED
				13. MAIL INVOICES TO THE ADDRESS IN BLOCK See Item 15

14. SHIP TO	CODE W912DY	15. PAYMENT WILL BE MADE BY	CODE 964145	MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.
US ARMY ENGINEERING & SUPPORT CENTER NO CONTACT SPECIFIED CEHNC-CT 4820 UNIVERSITY SQUARE HUNTSVILLE AL 35816-1822		US ARMY ENG & SUP CENTER - FINANCE OFFIC US ARMY CORPS OF ENGRS FINANCE CTR 5722 INTEGRITY DRIVE MILLINGTON TN 38054-5005		

16. TYPE OF ORDER			
	DELIVERY/ CALL	X	This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.
	PURCHASE		Reference your quote dated Furnish the following on terms specified herein. REF:

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED (YYYYMMMDD)

[ ] If this box is marked, supplier must sign Acceptance and return the following number of copies:

17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE

See Schedule

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/ SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE SCHEDULE				

* If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.	24. UNITED STATES OF AMERICA TEL: EMAIL: BY: CONTRACTING / ORDERING OFFICER	25. TOTAL	$5,460,010.54
		26. DIFFERENCES	

27a. QUANTITY IN COLUMN 20 HAS BEEN

[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	c. DATE (YYYYMMMDD)	d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE	28. SHIP NO.	29. DO VOUCHER NO.	30. INITIALS
	[ ] PARTIAL [ ] FINAL	32. PAID BY	33. AMOUNT VERIFIED CORRECT FOR
f. TELEPHONE NUMBER. g. E-MAIL ADDRESS			
36. I certify this account is correct and proper for payment.	31. PAYMENT		34. CHECK NUMBER
a. DATE (YYYYMMMDD) b. SIGNATURE AND TITLE OF CERTIFYING OFFICER	[ ] COMPLETE [ ] PARTIAL [ ] FINAL		35. BILL OF LADING NO.

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED (YYYYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NO.	42. S/R VOUCHER NO.

Section A - Solicitation/Contract Form

AWARD NARRATIVE

Task Order 0005, which contains Firm Fixed Price (FFP) and Fixed Unit Price (FUP) tasks, is being issued to Shaw Environmental & Infrastructure, Inc. for the Remedial Action at Seneca Army Depot Activity (SEDA) Open Detonation Ground in Romulus, New York in accordance with the Performance Work Statement entitled Remedial Action Seneca Army Depot Activity (SEDA) Open Detonation Ground in Romulus, New York, dated 11 August 2011.

The Period of Performance for this Task Order is 24 months from the NTP or Date of Award.

The terms and conditions of the basic contract, W912DY-10-D-0014, takes precedence in the case of any ambiguity or conflict.

US Department of Labor Wage Determination Number 2005-2381, Revision 11 dated June 17, 2011 shall be used with project task order.

The following Task Listing reflects funding allocation:

Seneca ADA OB/OD Grounds Remedial Action				
Task, Title, Type	Qty	Unit	Price	Funded
BASIC TASKS				
Task 1. Preparation of Work Plans and Designs (FFP)	1.0	LS	$360,199.55	$360,199.55
Task 2. Field Sampling Activities (FFP/FUP).				
Task 2a.1 (Formerly Task 2a.1 and 2a.3). The Contractor shall geophysically map the 500-1000 foot radius area (40.6 acres). The Contractor shall delineate all areas which exhibit metallic saturation, whereby individual anomalies >50mV are not distinguishable. The Contractor's work shall include construction support while this work is on-going.	58.6	Acres	$3,568.98	$209,142.44
Task 2a.2 (Formerly Task 2a.4). The Contractor shall excavate those areas exhibiting metallic saturation to a depth of 6 inches, pushing or transporting the excavated soils to within the 0-500 foot radius area and regrading these with the existing OD hill material. The regraded material shall be maintained within the 0-500 foot radius area as necessary. The Contractor's work shall include construction support while earth work is on-going. For the purposes of estimation, the Contractor shall assume that 20 acres of this overall area will exhibit saturation.	20	Acres	$24,336.56	$486,731.20
Task 2a.3 (Formerly Task 2b.1 and 2b.2). The Contractor shall perform a surface sweep of the existing OD hill material for potential MPPEH. The Contractor shall remove all MPPEH in the regraded OD hill material. For the purposes of estimation, the Contractor shall assume that this will amount to 50 anomalies per acre or 900 anomalies.	900	Anomalies	$76.60	$68,938.31
Task 2a.4 (Formerly Task 2a.5). The Contractor shall geophysically re-map the portions of the 500-1000 foot radius area which were considered saturated and which were excavated to a depth of 6 inches. For the purposes of estimation, the Contractor shall assume that 20 acres of this overall area will require re-mapping. The Contractor's work shall include construction support while this work is on-going.	20	Acres	$911.82	$18,236.46
Task 2a.5 (Formerly Task 2a.2). The Contractor shall reacquire and prosecute all identified, mapped targets in the area of the 500-1000 foot radius which exceed the 50mV threshold (15,240).	15,240	Anomalies	$43.07	$656,460.82

Seneca ADA OB/OD Grounds Remedial Action				
Task, Title, Type	Qty	Unit	Price	Funded
Task 2c. Area of 0-1000 foot radius for the existing OD Hill. The Contractor shall mag, flag and prosecute identified targets in wooded or severely overgrown or sloped terrain in this area. For purposes of estimation, the cost for this task shall be based upon 700 anomalies per acre and an FUP cost per additional anomaly given as well	9,800	Anomalies	$28.42	$278,564.32
Task 2g. Open Burning Tray. The Contractor shall close the Open Burning Tray IAW the approved work plan	1.0	LS	$82,556.23	$82,556.23
Task 3. Environmental Sampling & Analysis (Optional): (FFP/FUP)	2	EA/SDG	$57,740.48	$115,480.96
Task 4. Remedial Action Report (FFP)	1.0	LS	$54,324.63	$54,324.63
Task 5. Installation of an Engineered Cap (FFP)	1.0	LS	$2,655,220.43	$2,655,220.43
Task 6. Preparation of a Long Term Monitoring Plan	1.0	LS	$23,333.12	$23,333.12
Task 7. Performance of Long Term Monitoring	1.0	LS	$160,509.05	$160,509.05
Task 10. Project Management	1.0	LS	$290,313.02	$290,313.02
OPTIONAL TASKS				
Task 8. Performance of Additional Long Term Monitoring (Optional)				
Task 8.1. Performance of An Additional Year of Long Term Monitoring (Optional). If awarded, the Contractor shall provide LTM for an additional (2nd overall) year on a quarterly basis.	1.0	LS	$99,875.46	
Task 8.2. Performance of An Additional Year of Long Term Monitoring (Optional). If awarded, the Contractor shall provide LTM for an additional (3rd overall) year on a quarterly basis.	1.0	LS	$98,282.29	
Task 8.3. Performance of An Additional Year of Long Term Monitoring (Optional). If awarded, the Contractor shall provide LTM for an additional (4th overall) year on a semi-annual basis.	1.0	LS	$49,663.35	
Task 9. Performance of Five Year Review (Optional).	1.0	LS	$76,255.29	
			Total Funded	$5,460,010.54

The following Payment Milestone Schedule is acceptable for use on this project task order:

Payment Milestone Schedule	
Final Submittals	Upon government acceptance
Field Work	For defined units and activities completed and QA review and acceptance
Meetings	After completion of meetings with government acceptance of meeting minutes

Section B - Supplies or Services and Prices

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0001		1	Lump Sum	$5,460,010.54	$5,460,010.54

Seneca RA at OD Grounds
FFP
The objective of this task order is to design and complete the installation of a NYS Part 360 landfill cap to inter hazardous soils at the Seneca Army Depot Activity (SEDA) in Romulus, New York. Additionally, the Contractor shall perform other activities in support of the landfill construction to include additional investigation and Long Term Monitoring at the site. All activities shall be performed in compliance with CERCLA and Department of Defense, Army, and USACE Regulations and Guidance to include Interim Guidance and Data Item Descriptions (DID's). The subject site is considered a Munitions Response (MRS) and Hazardous, Toxic and Radiological Waste (HTRW) site.
FOB: Destination
MILSTRIP: W31RYO13254857
PURCHASE REQUEST NUMBER: W31RYO13254857

	MAX NET AMT	$5,460,010.54
ACRN AA CIN: W31RYO13254857O001		$5,460,010.54

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0002		2	Each	$0.00	$0.00 NC

Contractor Manpower Reporting
FFP
This CLIN is used for the pricing of the collection and reporting of Contractor Manpower Reporting data as described in Section C. Reporting period will be the period of performance not to exceed twelve months ending 30 September of each Government Fiscal Year and must be reported by 31 October of each calendar year.
FOB: Destination
MILSTRIP: W31RYO13254857
PURCHASE REQUEST NUMBER: W31RYO13254857

MAX NET AMT	$0.00

ENCLOSURE 6

FINAL

2011 LONG-TERM MONITORING ANNUAL REPORT

FOR THE OPEN BURNING GROUNDS
SENECA ARMY DEPOT ACTIVITY, ROMULUS, NEW YORK

Prepared for:

U.S. ARMY, CORPS OF ENGINEERS, ENGINEERING AND SUPPORT CENTER,
HUNTSVILLE, ALABAMA

and

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Prepared by:

PARSONS
100 High Street
Boston, MA 02110

Contract Number W912DY-08-D-0003
Task Order No. 0008
EPA Site ID# NY0213820830
NY Site ID# 8-50-006

May 2013

ENCL 6

6.0 LONG-TERM MONITORING CONCLUSIONS AND RECOMMENDATIONS

The following conclusions can be made based on the results of the sixth round of LTM at the OB Grounds:

- Residual lead and copper concentrations remaining in the soils have not impacted groundwater at, or in the immediate vicinity of, the Site above the applicable action levels.
- The integrity of the vegetated soil cover overlying interred contaminated soils at the Site was intact and there was no evidence that terrestrial wildlife are exposed or will be exposed to the lead-contaminated soils interred below the 9-inch soil cover.
- The washout area noted during in Grid Cell L7 in (identified as L8 in 2008 Report) during the February and May 2008 inspections and in the August 2010 inspection was observed again during the 2011 soil cover inspection. As discussed in Section 4.2 the washout area is outside of the areas where contaminated soils were interred beneath clean soil; this area therefore will not be repaired by the Army at this time. If subsequent inspections suggest that this area is becoming larger, the Army will evaluate the need for a permanent repair.
- An approximately 21-ft long area of minor erosion was observed in Grid Cell K6, outside of the area where lead-contaminated soil is interred beneath clean soil. Grid Cell K6 is located adjacent to Grid Cell J6, which is part of the soil cover, and therefore the condition of this location will be reassessed during the next inspection event to determine if corrective measures are needed.
- The Army will continue to monitor soil cover erosion, and will note any instance of cover erosion or exposed native or interred soil.
- Based on evaluation of the groundwater data and the results of the cover inspection, there is no evidence to suggest that the OB Grounds may be contributing to the degradation of sediment quality in Reeder Creek.
- The Army will continue to inspect Reeder Creek for evidence of sediment deposition and if it is observed, a sediment sampling and analysis program plan will be prepared, submitted for approval, and implemented for Reeder Creek at locations adjacent to the OB Grounds.

Continue to monitor

Based on the result of the LTM events conducted at the OB Grounds, the Army recommends continuing the monitoring frequency of once per year. As presented and summarized above, available monitoring data shows no evidence of lead or copper in the groundwater above the cleanup goals subsequent to the completion of the remedial action for the Site. These findings are consistent with the groundwater analytical results obtained during the remedial investigation stage (1990s) of work at the Site, indicating that there is no evidence of groundwater quality deterioration over approximately 15 years. Further, the annual inspections of the soil cover have shown minimal evidence of erosion or animal breaching of the

ORDER FOR SUPPLIES OR SERVICES

1. CONTRACT/PURCH. ORDER/ AGREEMENT NO.	2. DELIVERY ORDER/ CALL NO.	3. DATE OF ORDER/CALL (YYYYMMMDD)	4. REQ./ PURCH. REQUEST NO.	5. PRIORITY
W912DY-09-D-0062	0023	2016 Mar 30	W31RYO60838003	

6. ISSUED BY	CODE W912DY	7. ADMINISTERED BY (If other than 6)	CODE W912DY	8. DELIVERY FOB
US ARMY ENGINEERING & SUPPORT CENTER CEHNC-CT 4820 UNIVERSITY SQUARE HUNTSVILLE AL 35816-1822		DIRECTORATE OF CONTRACTING - HNC ATTN: MICHELLE BLACKMON 256-895-2531 HUNTSVILLE AL 35816		[X] DESTINATION [ ] OTHER (See Schedule if other)

9. CONTRACTOR	CODE 1BVK6	FACILITY	10. DELIVER TO FOB POINT BY (Date) (YYYYMMMDD)	11. MARK IF BUSINESS IS
NAME AND ADDRESS PARSONS GOVERNMENT SERVICES INC. MICHELLE SMITH 100 W WALNUT ST PASADENA CA 91124-0001			SEE SCHEDULE 12. DISCOUNT TERMS Net 30 Days	[ ] SMALL [ ] SMALL DISADVANTAGED [ ] WOMEN-OWNED
			13. MAIL INVOICES TO THE ADDRESS IN BLOCK See Item 15	

14. SHIP TO	CODE W912DY	15. PAYMENT WILL BE MADE BY	CODE 964145	MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.
SEE SCHEDULE SEE SCHEDULE SEE SCHEDULE SEE SCHEDULE AA		US ARMY ENG & SUP CENTER - FINANCE OFFIC US ARMY CORPS OF ENGRS FINANCE CTR 5722 INTEGRITY DRIVE MILLINGTON TN 38054-5005		

16. TYPE OF ORDER			
	DELIVERY/ CALL	X	This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract:
	PURCHASE		Reference your quote dated Furnish the following on terms specified herein. REF:

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

PARSONS GOV SERVICES		DON SILLERMAN, VP	3/30/16
NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED (YYYYMMMDD)

[X] If this box is marked, supplier must sign Acceptance and return the following number of copies: 3/30/16

17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE

See Schedule

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/ SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE SCHEDULE				

* If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.

24. UNITED STATES OF AMERICA
TEL:
EMAIL: MULLADY.RICHARD.J.1090040282
Digitally signed by MULLADY.RICHARD.J.1090040282
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=MULLADY.RICHARD.J.1090040282
Date: 2016.03.30 15:38:53 -05'00'
BY: CONTRACTING / ORDERING OFFICER

25. TOTAL	$637,951.83
26. DIFFERENCES	

27a. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	c. DATE (YYYYMMMDD)	d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE	28. SHIP NO.	29. DO VOUCHER NO.	30. INITIALS
	[ ] PARTIAL [ ] FINAL	32. PAID BY	33. AMOUNT VERIFIED CORRECT FOR
f. TELEPHONE NUMBER / g. E-MAIL ADDRESS	31. PAYMENT [ ] COMPLETE [ ] PARTIAL [ ] FINAL		34. CHECK NUMBER
36. I certify this account is correct and proper for payment. a. DATE (YYYYMMMDD) / b. SIGNATURE AND TITLE OF CERTIFYING OFFICER			35. BILL OF LADING NO.

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED (YYYYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NO	42. S/R VOUCHER NO.

Section A - Solicitation/Contract Form

AWARD NARRATIVE

Task Order 0023, which contains Firm Fixed-Price (FFP) tasks, is being issued to Parsons Government Services, Inc for Remedial Action at Seneca Army Depot Activity, Romulus, NY, EPA Site ID# NY0213820830, NY Site ID# 8-50-006 in accordance with Performance Work Statement Revision 2, dated March 24, 2016.

The period of performance is date of award through March 30, 2018.

US Department of Labor Wage Determination Number 15-2381, Revision 1, dated March 1, 2016 shall be used with project task order.

The Terms and Conditions of the basic contract, W912DY-09-D-0062 takes precedence in the case of any ambiguity or conflict.

This task order is awarded in the amount of $1,211,190.20 of which $637,951.83 is being funded at the time of award.

Task	Description	Type	Amount	Total
1	UFP-QAPP and QASP	FFP	7,063.20	7,063.20
2	GIS	FFP	3,908.96	3,908.96
2a	Optional, Additional GIS per FY	FFP	1,525.90	
3	Long Term Monitoring of The OB Grounds	FFP		
3a	(FY17) First Annual Groundwater Monitoring	FFP	21,453.84	21,453.84
3b	Optional, (FY18) Second Annual Groundwater Monitoring	FFP	21,457.76	
3c	Optional, (FY19) Third Annual Groundwater Monitoring	FFP	21,461.68	
3d	Optional, (FY20) Fourth Annual Groundwater Monitoring	FFP	21,465.59	
3e	Optional, (FY21) Fifth Annual Groundwater Monitoring	FFP	21,469.51	
4	Long Term Monitoring of the Fire Training and Demonstration Pad Area	FFP		
4a	(FY17) First Annual Groundwater Monitoring	FFP	26,049.47	26,049.47
4b	Optional, (FY18) Second Annual Groundwater Monitoring	FFP	26,080.17	
4c	Optional, (FY19) Third Annual Groundwater Monitoring	FFP	26,110.87	
4d	Optional, (FY20) Fourth Annual Groundwater Monitoring	FFP	26,141.57	
4e	Optional, (FY21) Fifth Annual Groundwater Monitoring	FFP	26,172.27	
5	Long Term Monitoring of the Ash Landfill Operable Unit	FFP		
5a	(FY17) First Annual Groundwater Monitoring	FFP	51,594.03	51,594.03
5b	Optional, (FY18) Second Annual Groundwater Monitoring	FFP	51,686.28	
5c	Optional, (FY19) Third Annual Groundwater Monitoring	FFP	51,778.54	
5d	Optional, (FY20) Fourth Annual Groundwater Monitoring	FFP	51,870.79	
5e	Optional, (FY21) Fifth Annual Groundwater Monitoring	FFP	51,963.04	
6	Ash Landfill Operable Unit Biowall Recharge	FFP	440,038.65	440,038.65
7	Long Term Monitoring of the Deactivation Furnaces Operable Unit	FFP		
7a	(FY17) First Annual Groundwater Monitoring	FFP	23,146.49	23,146.49
7b	Optional, (FY18) Second Annual Groundwater Monitoring	FFP	23,178.47	
7c	Optional, (FY19) Third Annual Groundwater Monitoring	FFP	23,210.46	
7d	Optional, (FY20) Fourth Annual Groundwater Monitoring	FFP	23,242.44	
7e	Optional, (FY21) Fifth Annual Groundwater Monitoring	FFP	23,274.43	
8	Monitoring of LUCs at Various Sites	FFP		
8a	(FY17) First Annual Monitoring Event	FFP	17,934.42	17,934.42

8b	Optional, (FY18) Second Annual Monitoring Event	FFP	17,934.42	
8c	Optional, (FY19) Third Annual Monitoring Event	FFP	17,934.42	
8d	Optional, (FY20) Fourth Annual Monitoring Event	FFP	17,934.42	
9	Monitoring of LUCs at Various Munition Sites	FFP		
9a	(FY17) First Annual Monitoring Event	FFP	5,895.00	5,895.00
9b	Optional, (FY18) Second Annual Monitoring Event	FFP	5,895.28	
9c	Optional, (FY19) Third Annual Monitoring Event	FFP	5,895.28	
9d	Optional, (FY20) Fourth Annual Monitoring Event	FFP	5,895.28	
10	Five-year Review	FFP	27,488.41	27,488.41
11	Community Relations Support	FFP	13,379.36	13,379.36
11a	Optional, Additional Meetings	FUP	8,646.02	
12	Optional, Administrative Record	FFP	1,013.48	
	Totals		$1,211,190.20	$637,951.83

ESCALATION RATES

Constant Year (FY17) Dollars

The CTC estimates shall be reported on a current cost basis (unadjusted for inflation). The following factors should be used to bring previous year costs to the current year.

Base Fiscal Year	Escalation Rate*
FY12	1.0897
FY13	1.0736
FY14	1.0578
FY15	1.0463
FY16	1.0338

* Rates based on FY18 Joint Inflation Calculator (weighted index) – 9 Mar 2017

Encl 6

ESTIMATOR EXPERIENCE

ESTIMATOR NAME: Randall Battaglia	**POSITION: Project Manager/BEC**
LOCATION: Seneca Army Depot	**YEARS OF EXPERIENCE: 32 years**
EMAIL: Randy.W.Battaglia@usace.army.mil	**PHONE NUMBER: 347-213-1565**

DESCRIPTION: (Insert description of experience here, such as educational background, training, etc.)
B.S. Chemical Engineering, 1982; Certified Project Manager, 2007

Work Experience: Project Manager; USACE, 1995-Present: Prepare and manage Life-Cycle Cost for HTRW projects; executes the COE project management business process & establishing a project management plan with a project development team consisting of interdisciplinary, regional or other agencies teams to execute & ensure all projects meet customer, budgetary, safety, scope and schedule requirements during the life cycle of the project, under changing management parameters. Represents the Army as an Alternate for the installation manager in all customer/sponsor, congressional, public contacts, including public meetings, organizations, property transfers with the state, EPA, county, & independent organizations interested in the projects. Served also as the BRAC Environmental Coordinator, 2016-Present.

Environmental Coordinator, Seneca Army Depot, 1985-1995; performed all program management, cost estimation, budget regulatory, permitting, and other management for the environmental program at the active Seneca Army Depot for hazardous waste, TSDF, air, wetlands, CERCLA, RCRA, engineering projects, etc.

Process Engineer, IEC Electronics, 1983-1985 Process engineering for production, product development, personnel, process & Quality

Relevant Continuing Education: Network Systems Analysis; Project Management for Military Projects & HTRW projects; Environmental Auditing; Economic Assessment; Various Project Management & environmental remediation courses; Cost Estimating

SITE TYPE REVIEWED: Insert site number(s) at which experience gained for each site type to the maximum extent possible.

	SITE TYPE	SITE NUMBER		SITE TYPE	SITE NUMBER
	Above Ground Storage Tank	SEAD 5,59,71		Open Burn	SEAD 23, 24, 006-R-01, 003-R-01, 007-R-01
	Burn Area	SEAD 24,45,25,26		Plating Shop	
	Chemical Disposal	SEAD 13,72,4		POL (Petroleum/Lubricant Lines	SEAD 9
	Contaminated Buildings	SEAD 12, 16,17, 3		Radioactive Waste Area	SEAD 012,48,72, 63, NRC License closeout
	Contaminated Fill	SEAD 3, 9,4		Sewage Treatment Plant	SEAD 20,21
	Contaminated Groundwater	SEAD 025,006, 001-R-01, 023, 064B&D, 041		Small Arms Range	SEAD 57, 46, 120B,122A,122B
	Contaminated Sediments	SEAD 4, 3,		Soil Contamination After Tank Removal	SEAD 59,
	Contaminated Soil Piles	SEAD 5		Spill Site Area	SEAD 122
	Dip Tank			Storage Area	SEAD 123
	Disposal Pit/Dry Well			Surface Disposal Area	
	Explosive Ordnance Disposal Area	SEAD 23, 24, 006-R-01, 003-R-01, 007-R-01		Training and Maneuver Area	
	Fire/Crash Training Area	SEAD 025,026		Underground Storage Tank	SEAD 27
	Firing Range			Underground Tank Farm	
	Incinerator	SEAD 006, 001-R-01,019, 018		Unexploded Munitions/Ordnance	SEAD 115
	Industrial Discharge			Wash rack	
	Landfill	SEAD 006, 064 A,B&D, 011,		Waste Lines	
	Maintenance Yard	SEAD 122		Waste Treatment Plant	
	Oil Water Separator	SEAD 27			

Enclosure 7

US Army Corps of Engineers®

Certificate of Completion

Randall Battaglia

has successfully completed

Environmental Liability (EL)/Cost to Complete (CTC) Training

Dec 05, 2017 - Web/Audio Teleconference

Sandra M. Zebrowski

Sandi Zebrowski, P.E.
Director, USACE Environmental and Munitions Center of Expertise,

FUDS Training Services
fudstraining@usace.army.mil

ENCL 1

ESTIMATOR EXPERIENCE

ESTIMATOR NAME: Bethanie Thomas	**POSITION: Environmental Engineer**
LOCATION: US Army Eng & Sup Center, Huntsville	**YEARS OF EXPERIENCE: 1.5**
EMAIL: Bethanie.n.thomas@usace.army.mil	**PHONE NUMBER: 256-895-5518**

DESCRIPTION: (Insert description of experience here (e.g. educational background, training, etc.).

2015 - Summa Cum Laude BS Civil Engineering, University of Alabama at Birmingham

Training:
2016 RACER 11.4
2018 EL Training

Experience:
2017
- FUDS CTC update of 170 projects - land & water - utilizing RACER 11.4 & engineering estimates
- Environmental Liability documentation for DLA Fuel Tanks
- ACSIM CTCs - Landfills
- Facility EL Costs

2018

- Cost member on Source Selection Evaluation Board - performed cost analysis & assited in writing cost report - performed price reasonableness - performed most probable cost
- Performed Cost Analysis for Waikoloa Task Order

SITE TYPE REVIEWED: Insert site number(s) at which experience gained for each site type, to the maximum extent possible.

	Site Type	Site Number(s)		Site Type	Site Number(s)
X	Above Ground Storage Tank	DLA Fuel Tanks	X	Open Burn	FUDS Projects: F10WA0281 (NWK); B07NE0089 (NWO); F10AK0298 (POA);
X	Burn Area	FUD Projects: A04MS0012 (SAS district); A04MS0185 (SAS); F10WA0281 (NWK); B07NE0089 (NWO); others		Plating Shop	
	Chemical Disposal (CWM/CA)			POL (Petroleum/Lubricant) Lines	
X	Contaminated Buildings	ACSIM CTC - Various		Radioactive Waste Area	
	Contaminated Fill			Sewage Treatment Plant	
	Contaminated Ground Water		X	Small Arms Range	FUDS Projects: A04MS0118 (SAS) ; B07NE0051 (NWO); others
	Contaminated Sediments			Soil Contamination After Tank Removal	
	Contaminated Soil Piles			Spill Site Area	
	Dip Tank			Storage Area	FUDS: H09HI0065 (POH)
	Disposal Pit/Dry Well			Surface Disposal Area	
	Drainage Ditch			Surface Impoundment/ Lagoon	

ENCL 7

X	Explosive Ordnance Disposal Area	FUDS: I04FL0227 (SAJ)		Training and Maneuver Area	FUDS: I02PR0068(SAJ)
	Fire/Crash Training Area			Underground Storage Tank	
X	Firing Range	FUDS: A04MS0274 (SAS); E05MI0034 (LRL)		Underground Tank Farm	
	Incinerator		X	Unexploded Munitions/ Ordnance	FUDS: H09HI0243 (POH)
	Industrial Discharge			Washrack	
	Landfill			Waste Lines	
	Maintenance Yard			Waste Treatment Plant	
	Oil Water Separator				

Estimate Summary Table
36760.1100 Site # SEAD-006-R-01

Site Number	Phase	CTC Subtotal ($0.00)	Estimate Type	Assumption / Estimate Source	Basis of Assumption	Document Name	Location of Document
SEAD 006-R-01	RA(O)	$2,154,068.36	Contract	Optional Task 6;7,8.1,8.3	Contract Costs	Contract #: W912DY-10-D-0014-0005	HNC 1600 University Square Huntsville Al
				30 years for remediation, Source 4 LTM plan $33,384.47 Install 12 wells $229,652.51 29 years monitoring, FY18 escalated $1,891,031.38	$49,663.35 x 29 events , escalated to FY18	The DoDM 4715.20, DERP Management, March 9, 2012 required CTC estimates for RA(O) or LTM phases that are expected to continue indefinitely should include a finite period of 30 years.	
	RA	$28,141,056.44	Contract	RD $50,000.00 Munitions removal, geophysics, $18,554,882.69 T&D Costs, $8,093,845.00 Oversight, 5.6% $1,492,328.75	USACE S&A policy for environmental remediation projects Engineering Estimate	2018 FS revision, CX CTC Packet	USACE, NY 5786 State Route 96 Romulus, NY 14541
	LTM	$275,079.77	RACER	Engineering Estimate	Engineering Estimate		USACE, NY 5786 State Route 96 Romulus, NY 14541
				Six FYR, $223,873.21 Owner support, $3,735.00 Well Abandonment and Closeout, $47,471.56 x 29 events escalated to FY18	$180,810 rounded to $181K	RACER 11.4 for Well Abandonment and Site Closeout	
	LTM			COE Oversight of Contract	Engineering Estimate	Well Closure and five year review costs	USACE NY 5786 State Route 96 Romulus, NY 14541
				30 years for remediation	$47,312 x 6 5YRs = $283,870	CTC Guidance, LTM phases that are expected to continue indefinitely should include a finite period of 30 years.	
Total cost to complete		$30,570,204.57					
Does the CTC estimate include work through site closure? (Yes/No)		yes					

Enclosure 8

Oversight Cost Estimate New York District SEAD 25

Fully Burdened Rates (FY18 Guidance Memo)

Description	Quantity	Unit of Measure (Hours)	Unit Cost(Marked up)	Total Cost
Project Manager	5	HR	$260.97	$1,304.85
Staff Scientist	6	HR	$158.49	$ 950.94
Contract Administrator	10	HR	$128.11	$1,281.10

Total oversight estimate = $3,536.89 rounded $3,537

ENCL 9

Professional Labor Categories and Fully Burdened Rates
(RACER Ver 11.4) – 6 MAR 2018

Assembly	Description	Quantity	Unit of Measure	Marked Up Total
33220101	Senior Project Manager	1.00	HR	$283.79
33220102	Project Manager	1.00	HR	$260.97
33220103	Office Manager	1.00	HR	$216.15
33220104	Senior Staff Engineer	1.00	HR	$281.26
33220105	Project Engineer	1.00	HR	$180.24
33220106	Staff Engineer	1.00	HR	$237.31
33220107	Senior Scientist	1.00	HR	$327.39
33220108	Project Scientist	1.00	HR	$196.24
33220109	Staff Scientist	1.00	HR	$158.49
33220110	*QN QC* Officer	1.00	HR	$186.09
33220111	Certified Industrial Hygienist	1.00	HR	$245.75
33220112	Field Technician	1.00	HR	$120.30
33220113	Secretarial/ Administrative	1.00	HR	$135.52
33220114	Word Processing/Clerical	1.00	HR	$122.14
33220115	Draftsman/GADD	1.00	HR	$116.20
33220119	Health and Safety Officer	1.00	HR	$196.78
33220120	Computer Data Entry	1.00	HR	$113.58
33220121	Purchasing Agent	1.00	HR	$167.96
33220122	Contract Administrator	1.00	HR	$128.11
33220138	Engineer, Quality Control	1.00	HR	$231.97
33220501	Attorney, Senior Partner, Real Estate	1.00	HR	$298.80
33220502	Attorney, Senior Partner, Contracts	1.00	HR	$298.80
33220503	Attorney, Partner, Real Estate	1.00	HR	$276.17
33220504	Attorney, Partner, Contracts	1.00	HR	$276.17
33220505	Attorney, Senior Associate, Real Estate	1 00	HR	$297.68
33220506	Attorney, Senior Associate, Contracts	1.00	HR	$297.68
33220507	Attorney, Associate, Real Estate	1.00	HR	$255.83
33220508	Attorney, Associate, Contracts	1.00	HR	$255.83
33220509	Paralegal, Real Estate	1.00	HR	$92.68
33220510	Paralegal, Contracts	1.00	HR	$92.68
33220511	Legal Assistant, Real Estate	1.00	HR	$92.68
33220512	Legal Assistant, Contracts	1.00	HR	$92.68
33221004	Equip Operators, Oilers	1.00	HR	$104.70
33222001	Radiation Control Officer	1.00	HR	$76.90
33222002	Site Safety & Health Officer	1.00	HR	$153.99
33222003	Demolition Crew Supervisor	1.00	HR	$113.24
33222004	Radiation Technician	1.00	HR	$76.90
33222005	Safety Monitor (Spotter)	1.00	HR	$92.11
33222006	Electrician	1.00	HR	$119.52
33222007	Carpenter	1.00	HR	$104.80
33222008	Security Escort	1.00	HR	$38.39
33222009	Pipefitter	1.00	HR	$140.07
33222010	Quality Control Engineer	1.00	WK	$4,868.11
33222011	Millwrights	1.00	HR	$107.08
33222012	Mechanic	1.00	HR	$136.71

Encl 6

ENCL 5

Professional Labor Categories and Fully Burdened Rates (RACER Ver 11.4) – 6 MAR 2018

Assembly	Description	Quantity	Unit of Measure	Marked Up Total Cost
33040103	UXO Site Setup	1.00	HR	$118.00
33040921	Senior UXO Supervisor (SUXOS)	1.00	HR	$100.89
33040922	UXO Program Manager	1.00	HR	$179.27
33040923	UXO Project Manager	1.00	HR	$159.89
33040924	UXO Senior Engineer	1.00	HR	$128.59
33040925	UXO Staff Engineer	1.00	HR	$94.09
33040926	UXO Junior Engineer	1.00	HR	$73.25
33040927	UXO Senior Scientist	1.00	HR	$119.29
33040928	UXO Staff Scientist	1.00	HR	$85.97
33040929	UXO Word Processor	1.00	HR	$34.88
33040930	UXO QC Specialist	1.00	HR	$89.79
33040931	UXO Safety Officer	1.00	HR	$90.30
33040932	UXO Certified Industrial Hygienist	1.00	HR	$128.93
33040933	UXO Technician I	1.00	HR	$53.51
33040934	UXO Technician II	1.00	HR	$64.49
33040935	UXO Technician III (UXO Supervisor)	1.00	HR	$76.18
33040936	Geophysicist (UXO)	1.00	HR	$129.18
33040937	Geophysical Instrument Operator (UXO)	1.00	HR	$106.85
33040938	Geologist (UXO)	1.00	HR	$109.42
33040939	UXO Drafter	1.00	HR	$54.62
33040940	GIS Manager (UXO)	1.00	HR	$108.78
33040941	Outside Diver	1.00	HR	$237.35
33040942	Diver Tender	1.00	HR	$106.57
33040943	Work Boat Operator	1.00	HR	$100.52
33040945	Work Boat Assistant Operator	1.00	HR	$101.66
33040946	Community Relations Specialist	1.00	HR	$94.09
33040909	Captain (Pay Grade 0 -3)	1.00	HR	$97.55
33040910	First Lieutenant (Pay Grade 0 -2)	1.00	HR	$73.46
33040911	Second Lieutenant (Pay Grade 0 -1)	1.00	HR	$57.98
33040912	Chief (Pay Grade E-9)	1.00	HR	$78.48
33040913	Senior Master Sergeant (Pay Grade E-	1.00	HR	$67.30
33040914	Master Sergeant (Pay Grade E-7)	1.00	HR	$62.08
33040915	Tech. Sergeant (Pay Grade E-6)	1.00	HR	$56.00
33040916	Staff Sergeant (Pay Grade E-5)	1.00	HR	$49.08
33040917	Senior Airman (Pay Grade E-4)	1.00	HR	$38.49
33040918	Airman First Class (Pay Grade E-3)	1.00	HR	$32.29
33040919	Airman (Pay Grade E-2)	1.00	HR	$27.22
33040920	Airman Basic (Pay Grade E-1)	1.00	HR	$24.30

* Labor rates generated from RACER 11.4

DEPARTMENT OF THE ARMY
U.S. Army Engineering and Support Center, Huntsville
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MEMORANDUM FOR RECORD

SUBJECT: Rough Order of Magnitude for Seneca Army Depot, Site SEAD-006-R-01.

1. This memorandum serves as formal documentation of the information used to develop the ROM estimate. Estimators experience is documented on the Estimator Experience Form (Attachment 2), included in the supporting documentation, per the Federal Accounting Standards Advisory Board Handbook Technical Release 2.

2. Background Information: Seneca Army Depot (SEDA) is a 10,587-acre facility in Seneca County near Romulus, New York (1.1, SI). The Army destroyed ammunition by detonation and open burning at this site, which was in operation from 1948 through 1998. The OB/OD Grounds are in the northwest portion of the installation in which the SEDA boundary is about 3,000ft away. Residences lie adjacent to the OD Grounds and obtain drinking water from private water wells (1.1.1.5, SI). The detonation activities at the OD Grounds were conducted in an area known as the "OD Hill" (Pg 8, Completion Report). The investigation of this site revealed contamination consisting of ordnance and explosives (OE) and heavy metals. SEAD-006-R-01 is a RCRA interim permitted site and consists of 421 acres, not including OB grounds where a CERCLA remediation was completed in 2003.

Previous Work of OD Grounds includes: 1995 Expanded Site Investigation (Section 1.2.6.1 of Final FS), 2000 OE EE/CA (Section 1.2.6.2 Final FS), 2003 Phase 1 Geophysical Investigation by Weston (Section 1.2.6.3 Final FS), 2006 Phase II OE Removal Activities by Weston (Section 1.2.6.4 Final FS), Additional Munitions Response Site Investigation in 2010 by Parsons and Feasibility Study in 2015 by Parsons (Section 1.2.6.4 Final FS).

3. Current Conditions: Parsons submitted an Engineering Change Request November 2017 in result of additional work requirements identified during the 30 August 2017 meeting with SEDA, EPA, and the New York State Department of Environmental Conservation (NYSDEC). During the meeting it was agreed that additional characterization and documentation of all work conducted at the OD Grounds are required. MMRP work has been conducted at the OD Grounds in different phases, under different contracts, and by different contractors; a comprehensive presentation and evaluation of the OD Grounds is required in order to move forward with the Feasibility Study (FS) and subsequent phases of work.

4. Cleanup/Exit Strategy:
Remedy 1 - Mechanical sifting of the 38,000CY of the OD Hill.
Remedy 2 – OD Hill to 1000 ft: mechanical scrape and sift 47 acres down to 2ft. Perform AGC on the 47 acres that have been scraped. Assuming 1200 anomalies/acre and 10% of anomalies will be left after sifting. Perform mag and dig on 24.9 acres which are assumed to be inaccessible. OB Grounds are not included.

Remedy 3 – 1000 to 1250 ft: mechanical scrape and sift 21.6 acres down to 2ft. Assuming 1200 anomalies/acre and 10% of anomalies will be left after sifting. Perform AGC on the 21.6 acres that have been scraped. OB Grounds are not included.

Remedy 4 – 1250 to 2500 ft: Surface Clearance first must be performed for safety and quality results of future DGM. Re-map 184.7 acres using EM61. Assuming 84 anomalies/acre. Perform mag and flag on 81.9 acres which are assumed to be inaccessible.

Remedy 5 – 2500ft to road boundaries: Surface Clearance first must be performed for safety and quality results of future DGM. Perform DGM with EM61. Assuming 50 anomalies/acre.

Assuming surveying will be performed for the non-covered acres, 114 acres.
Long Term Management (LTM) includes five-year reviews, site closeout, land use controls, groundwater monitoring and well abandonment.

5. Cost Breakdown:

RACER 11.4 was used to estimate mechanical sifting, groundwater monitoring, five-year reviews, site close-out, well abandonment, MEC institutional controls and Administrative land use controls.

Excel was utilized to perform estimates for field work, including: vegetation removal, surface clearance, geophysics (AGC, DGM, M&D), and surveying.

a. Attachment 1 - Estimate documentation from Excel
b. Attachment 2 – Remedy Background & Assumptions
c. Attachment 3 - Estimate documentation report (EDR) from RACER
d. Attachment 4 – Parson's Acreage Data
e. Attachment 5 - Estimator Experience forms (TBD)

6. Total Cost to Complete for Site SEAD-006-R-01 is $24,882,006.00.

MFR prepared by: Bethanie Thomas (256) 895-5518
SIGNATURE DATE:

MFR reviewed by:
SIGNATURE DATE:

US Army Engineering and Support Center, Huntsville			
SENECA OD GROUNDS			
ROM			
Task	*Description*	*Unit*	*Price*
	Remedy 1	1	
	Mechanical Sifting of OD Hill	1	$1,281,884.00
	Remedy 2	1	
	Vegetation Clearance	1	$95,831.08
	Mechanical Sifting inside 1000ft radius	1	$4,149,573.38
	Geophysics	1	$6,432,246.70
	Remedy 3	1	
	Vegetation Clearance	1	$31,817.56
	Mechanical Sifting 1000ft to 1250ft radius	1	$2,201,573.00
	Geophysics	1	$1,039,919.82
	Remedy 4	1	
	Vegetation Clearance	1	$368,079.79
	Geophysics	1	$4,925,388.49
	Remedy 5	1	
	Vegetation Clearance	1	$226,369.79
	Geophysics	1	$2,738,191.16
	Surveying	1	$113,158.24
	MEC Institutional Controls	1	$772,220.00
	Administrative Land Use Controls	1	$100,296.00
	Long Term Management (LTM)	1	$405,457.00
		Remedy 1	$1,281,884.00
		Remedy 2	$10,677,651.16
		Remedy 3	$3,273,310.38
		Remedy 4	$5,293,468.28
		Remedy 5	$2,964,560.95
		TOTAL	$24,882,006.00

NOTE: This includes the estimates from RACER 11.4.

Seneca OD Grounds Remedy Background & Assumptions

OD Ground estimate was divided into 5 remedies based on past field work and engineering assumptions.

Remedy 1 - Mechanical sifting of the 38,000CY of the OD Hill.

Remedy 2 – OD Hill to 1000 ft: mechanical scrape and sift 47 acres down to 2ft. Perform AGC on the 47 acres that have been scraped. Assuming 1200 anomalies/acre and 10% of anomalies will be left after sifting. Perform mag and dig on 24.9 acres which are assumed to be inaccessible. OB Grounds are not included.

Remedy 3 – 1000 to 1250 ft: mechanical scrape and sift 21.6 acres down to 2ft. Assuming 1200 anomalies/acre and 10% of anomalies will be left after sifting. Perform AGC on the 21.6 acres that have been scraped. OB Grounds are not included.

Remedy 4 – 1250 to 2500 ft: Surface Clearance first must be performed for safety and quality results of future DGM. Re-map 189 acres using EM61. Assuming 84 anomalies/acre. Perform mag and flag on 89 acres which are assumed to be inaccessible.

Remedy 5 – 2500ft to road boundaries: Surface Clearance first must be performed for safety and quality results of future DGM. Perform DGM with EM61. Assuming 50 anomalies/acre.

- Assuming surveying will be performed for the non-covered acres, 114 acres.
- Long Term Management (LTM) includes five-year reviews, site closeout, land use controls, groundwater monitoring and well abandonment.

Background & Assumptions:

Remedy 1 - includes mechanical sifting and disposal based on the information found in FY 17 MFR stating "EPA's disagreement with the planned IRA to include a cap...". The 38,000CY is based on Parson's Additional Munitions Response Site Investigations 2010, Section 3.1.

Remedy 2 – Assuming mechanical scrape and sift will reduce anomaly density down to 10% remaining based on most anomalies lying in the first 18 inches. Parson's divided the 1000ft radius into areas that have been covered and non-covered. CB&I performed DGM on 44 acres and the OD Hill is recorded as 3ac. Therefore, 47 acres are accessible and will be scraped and sifted. 24.9 acres is what is leftover and is inaccessible so mag & dig is the assumed remedy. Based on past field work, the anomaly density is higher the closer to OD Hill. Therefore, 1200 anomaly/acre is the assumed density.

Remedy 3 - Assuming mechanical scrape and sift will reduce anomaly density down to 10% remaining based on most anomalies lying in the first 18 inches. Total acreage of 40.6ac – 1/3 of OB Grounds (10ac.) – 15% of M&D (9ac.) = 21.6ac.

Remedy 4 – Based on the past DGM approach, re-mapping is proposed on 189acres. Total acreage of 338ac. – Parson's M&D (60.3ac.) – Parson's defined No Coverage (88.8ac) = 189 ac. Assuming the 'No Coverage' defined area is inaccessible and therefore will need M&D. Assuming anomaly density will decrease to 84/acre.

Remedy 5 – Due to anomalies being found at the 2500 ft. radius and past the 2500 ft. radius, DGM is proposed out to the roads surrounding OD Grounds. Acreage was determined using Google Earth Pro. Assuming anomaly density will decrease to 50/acre.

Estimate Documentation Report

System:

RACER Version: RACER® Version 11.4.63.0
Database Location: C:\Users\a0edcbnt\Documents\work\OE Design\Seneca CTC\RACER 11.4\OBOD database copy.mdb

Folder:

Folder Name: OBOD Grounds

Project:

ID: NY0213820830
Name: Seneca Army Depot
Category: None

Location
State / Country: NEW YORK
City: SYRACUSE

Location Modifier	Default	User	Reason for changes
	1.120	1.120	

Options
Database: System Costs
Cost Database Date: 2017
Report Option: Fiscal

Description

Seneca Army Depot is located in New York. The Army destroyed ammunition by detonation and open burning at this site, which was in operation from 1948 through 1998. The OB ground consists of elevated burning trays. The site is in the northwest portion of the installation and covers 364 acres. The investigation of this site revealed contamination consisting of ordnance and explosives (OE) and heavy metals. This is a RCRA interim permitted site. This site also encompasses SEAD-023 (not listed in HQAES), OB Grounds, where a CERCLA remediation was completed in 2003.

The distance to the Property is approximately 60 miles (one way) and will be applied to all applicable mileage fields for this MMRP estimate. The distance is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist. For this Property the city selected isSyracuse.

Estimate Documentation Report

Site:

ID: SEAD-006-R-01
Name: Seneca OD Grounds
Type: None

Media/Waste Type

Primary: Ordnance (not residual)
Secondary: Soil

Contaminant

Primary: Metals
Secondary: Ordnance (residual)

Phase Names

Pre-Study ☐
Study ☑
Design ☐
Removal/Interim Action ☐
Remedial Action ☑
Operations & Maintenance ☑
Long Term Monitoring ☑
Site Closeout ☑

Documentation

Description: The Army destroyed ammunition by detonation and open burning at this site, which was in operation from 1948 through 1998. The OB ground consists of elevated burning trays. The site is in the northwest portion of the installation and covers 364 acres. The investigation of this site revealed contamination consisting of ordnance and explosives (OE) and heavy metals. This is a RCRA interim permitted site. This site also encompasses SEAD-023 (not listed in HQAES), OB Grounds, where a CERCLA remediation was completed in 2003.

SEAD-006-R-01 consists of an OD Hill and a 2,500ft radius boundary surrounding the OD Hill. The OB Grounds lay within the boundary and have previously been cleared. SEAD-006-R-01 consists of 421 acres, not including OB grounds. Previous Work of OD Grounds: 1995 Expanded Site Investigation (Section 1.2.6.1 of Final FS), 2000 OE EE/CA (Section 1.2.6.2 Final FS), 2003 Phase 1 Geo Investigation (Section 1.2.6.3 Final FS), 2006 Phase II OE Removal Activities (Section 1.2.6.4 Final FS) and 2010 Supplemental Work (Section 1.2.6.4 Final FS).

Parsons submitted an Engineering Change Request November 2017 in result of additional work requirements identified during the 30 August 2017 meeting with SEDA, EPA, and the New York State Department of Environmental Conservation (NYSDEC). During the meeting it was agreed that additional characterization and documentation of all work conducted at the OD Grounds are required. MMRP work has been conducted at the OD Grounds in different phases, under different contracts, and by different contractors; a comprehensive presentation and evaluation of the OD Grounds is required in order to move forward with the Feasibility Study (FS) and subsequent phases of work.

Support Team: Bethanie Thomas

References:
- Engineering Change Request 2017
- Final Feasibility Study Report (FS), February 2015
- FY17 MFR SEAD-006-R-01

Estimate Documentation Report

Estimator Information

Estimator Name: Bethanie Thomas
Estimator Title: Environmental Engnieer
Agency/Org./Office: CEHNC-ED-EDC-E
Business Address: 4820 University Square
Huntsville, AL 35816
Telephone Number: 256-895-1859
Email Address: bethanie.n.thomas@usace.army.mil
Estimate Prepared Date: 01/24/2018

Estimator Signature: _____ **Date:** _____

Reviewer Information

Reviewer Name:
Reviewer Title:
Agency/Org./Office:
Business Address:
Telephone Number:
Email Address:
Date Reviewed: 01/30/2018

Reviewer Signature: _____ **Date:** _____

Estimate Costs:

Phase Names	Direct Cost	Marked-Up Cost
Remedial Action Operations	$4,525,594	$6,563,197
LTM	$201,482	$405,457
Total Cost:	$4,727,076	$6,968,654
Total Project Cost:	$4,727,076	$6,968,654

Phase Documentation:

Phase Type: Remedial Action
Phase Name: Remedial Action Operations
Description: Remedial Action Operations is to include MEC Sifting, LUCs, LTM plan, well monitoring and site closeout.
Approach: Ex Situ
Start Date: January, 2021
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Estimate Documentation Report

Phase Markup Template: System Defaults

Technology Markups	Markup	% Prime	% Sub.
MEC Institutional Controls	True	100	0
ADMINISTRATIVE LAND USE CONTROLS	True	100	0
MEC Sifting	True	100	0
MEC Sifting	True	100	0
MEC Sifting	True	100	0

Total Marked-up Cost: $6,563,196.93

Technologies:

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		False	n/a
Planning Documents: Start Date		2021	n/a
Implementation		True	n/a
Implementation: Start Date		2021	n/a
Monitoring & Enforcement		False	n/a
Monitoring & Enforcement: Start Date		2021	n/a
Modification/Termination		False	n/a
Modification/Termination: Start Date		2018	n/a
Type of Site		Active Government Installation	n/a
Implementation			
Required Parameters			
Modify Installation (or City) Master Plan		False	n/a
Deed Notification		False	n/a
Deed Notification: Number		0	EA
Negotiating Easements		False	n/a
Negotiating Easements: Number		0	EA
Restrictive Covenants		False	n/a
Restrictive Covenants: Number		0	EA
Equitable Servitudes		False	n/a
Equitable Servitudes: Number		0	EA

Estimate Documentation Report

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	Value	UOM
Implementation			
Required Parameters			
Access Control Signs		True	n/a
Access Control Signs: Number		100	EA
Access Control Signs: Task Complexity		Medium	n/a
Utility Notification Service		False	n/a
Access Control Signs: Number		0	EA
Geographic Information Systems (GIS)/Overlay Maps		False	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
Develop Finding of Suitability to Transfer (FOST)		False	n/a

Comments:

Assuming 100 control signs will be placed on boundary fence.

Site Mileage is 60 miles; the distance is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist.

Technology: ADMINISTRATIVE LAND USE CONTROLS

Element: Implementation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
18010412	Construction Signs	2,400.00	SF	28.00	0.00	0.00	0.00	$67,200.00	False
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	0.00	$0.00	True

Total Element Cost: $67,200.00

Total 1st Year Tech Cost: $67,200.00

Technology Name: **MEC Institutional Controls (#1)**

User Name: **MEC Institutional Controls**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Planning		True	n/a
Implementation		True	n/a
Engineering Controls		True	n/a
Training and Follow Up		False	n/a
Quality Support Visits		False	n/a
Site Distance		60	MI (One-way)
Site Complexity		Moderate	n/a

Estimate Documentation Report

Technology Name: **MEC Institutional Controls (#1)**

User Name: **MEC Institutional Controls**

Description	Default	Value	UOM
Planning			
Required Parameters			
Institutional Analysis		True	n/a
Plan Development		True	n/a
Implementation			
Required Parameters			
Process Agreement		True	n/a
Plan Execution		True	n/a
Deed Notice		True	n/a
Engineering Controls			
Required Parameters			
Type of Fence		Boundary	n/a
Length of Fence		20592	LF

Comments: Planning and Implementation defaults were used.
For the Engineering Controls, a boundary fence was chosen. Google Earth was used to determine fence length. Assuming a fence will be constructed up to the roads, a polygon was drawn inside of the roads that bound OD grounds.

Site Distance is 60 miles to Syracuse which is the distance determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist

Technology: MEC Institutional Controls

Element: Planning

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	240.00	MI	0.00	0.00	0.00	0.56	$134.40	True
33010202	Per Diem (per person)	4.00	DAY	0.00	0.00	0.00	159.00	$636.00	True
33040927	UXO Senior Scientist	64.00	HR	0.00	81.48	0.00	0.00	$5,214.72	False
33040929	UXO Word Processor	12.00	HR	0.00	23.82	0.00	0.00	$285.87	False
33240101	Other Direct Costs	1.00	LS	55.01	0.00	0.00	0.00	$55.01	True
					Total Element Cost:			$6,325.99	

Element: Implementation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	240.00	MI	0.00	0.00	0.00	0.56	$134.40	True
33010202	Per Diem (per person)	6.00	DAY	0.00	0.00	0.00	159.00	$954.00	True

Estimate Documentation Report

Technology: MEC Institutional Controls

33040927	UXO Senior Scientist	196.00	HR	0.00	81.48	0.00	0.00	$15,970.08	False
33240101	Other Direct Costs	1.00	LS	159.70	0.00	0.00	0.00	$159.70	True
33990105	Letter/Brochure Printing and Distribution, per Page	100.00	EA	0.00	0.00	0.00	1.46	$145.60	False

Total Element Cost: $17,363.78

Element: Engineering Controls

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
18040105	Boundary Fence, 5' Galvanized	20,592.00	LF	11.20	9.63	2.31	0.00	$476,616.17	False
18040501	Hazardous Waste Signing	103.00	EA	137.76	29.25	5.16	0.00	$17,734.42	False

Total Element Cost: $494,350.59

Total 1st Year Tech Cost: $518,040.37

Technology Name: **MEC Sifting (#1)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Site Planning		True	n/a
Sifting Field Work		True	n/a
Site Management		True	n/a
Stakeholder Involvement		True	n/a
Sifting Area		10	AC
Vegetation		Heavy shrubs with trees	n/a
Soil Type		Sand-Silt Mixture/Sand-Clay Mixture	n/a
Include Per Diem		False	n/a
Safety Level		E	n/a
Site Planning			
Required Parameters			
Site Visit		True	n/a
Duration		1	Days
Airfare		500	$ / Ticket
Distance to Site		60	Miles
Work Plan ESS Level of Detail		Moderate	n/a
Work Plan		True	n/a
Explosive Safety Submission		True	n/a

Estimate Documentation Report

Technology Name: **MEC Sifting (#1)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Sifting Field Work			
Required Parameters			
Site Preparation		True	n/a
Excavation		True	n/a
Sifting		True	n/a
Backfill		True	n/a
Site Preparation			
Secondary Parameters			
Vegetation Removal: Heavy Removal	5	5	AC
Vegetation Removal: Moderate Removal	2.5	2.5	AC
Vegetation Removal: Light Removal	2.5	2.5	AC
Vegetation Removal: No Removal	0	0	AC
Vegetation Removal: Total Area		10	AC
Surface Clearance	10	10	AC
Excavation			
Secondary Parameters			
Excavation Area	10	10	Acres
Excavation Depth	1	5	FT
Total Quantity to Excavate	80,666.7	80666.7	CY
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Vehicle Modification	True	True	n/a
Sifting			
Secondary Parameters			
Front End Loader	105	105	Days
Front End Loader: Vehicle Modification Required	True	True	n/a
Dump Truck	105	105	Days
Dump Truck: Vehicle Modification Required	True	True	n/a
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Soil to be Sifted	104,866.7	104866.7	CY
Soil to be Hand Sorted	10,486.67	10486.67	CY
Backfill			
Secondary Parameters			
Sifted Material to be Used as Backfill	100.00	100.00	%
Source of Additional Backfill	None	Off-Site	n/a
Site Restoration: Regrading	10	10	Acres
Site Restoration: Reseeding	10	10	Acres
Site Restoration: General Cleanup	10	10	Acres
Site Management			
Secondary Parameters			
Senior UXO Supervisor	168	168	Days
Project Manager	168	168	Days
UXO Supervisor	0	0	Days
Quality Control Supervisor	168	168	Days

Estimate Documentation Report

Technology Name: **MEC Sifting (#1)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Site Management			
Secondary Parameters			
Safety Supervisor	168	168	Days
Stakeholder Involvement			
Secondary Parameters			
Level of Detail Required in Reporting	Moderate	Moderate	n/a
Level of Stakeholder Involvement	Moderate	Moderate	n/a
Number of Community Meetings	2	2	EA
Site Specific Final Report	True	True	n/a

Comments: This MEC Sifting Technology is for Remedy 2. 10 acres was used for MEC sifting because that is the max number that can be entered into RACER 11.4. We only want to sift down to 2ft but in order to reach the amount of actual CY of soil to be sifted, 5 ft removal depth was inserted. 80,666 CY of soil is reached using RACER maximum inputs. However, the actual amount of soil to be sifted is 151,653 CY of soil. Therefore, the final RACER estimate for MEC sifting will be multiplied by a conversion factor to reach the appropriate estimate for siftingl.

Vegetation selection is based on Final Feasibility Study report section 1.2.1.

An average air fare of $500 was assumed.

The distance to site, 60 miles, is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist.

Technology: MEC Sifting

Element: Site Visit

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.56	$33.60	True
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	53.50	$160.51	False
33040921	Senior UXO Supervisor (SUXOS)	8.00	HR	0.00	68.91	0.00	0.00	$551.31	False
33040923	UXO Project Manager	8.00	HR	0.00	109.21	0.00	0.00	$873.69	False
33040925	UXO Staff Engineer	8.00	HR	0.00	64.27	0.00	0.00	$514.12	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	500.00	$1,500.00	True
33041302	Munitions Response Workplan (Moderate Complexity)	1.00	EA	89.60	12,525.56	0.00	0.00	$12,615.16	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33240101	Other Direct Costs	1.00	LS	500.00	0.00	0.00	0.00	$500.00	True

Estimate Documentation Report

Total Element Cost: $39,622.84

Element: Site Preparation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	2.50	ACR	0.00	1,307.47	393.77	0.00	$4,253.10	False
17010402	Chipping brush, medium brush	2.50	ACR	0.00	1,680.95	506.25	0.00	$5,467.99	False
17010403	Chipping brush, heavy brush	5.00	ACR	0.00	3,269.26	984.60	0.00	$21,269.28	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	92.06	$552.38	False
33040933	UXO Technician I	60.00	HR	0.00	36.55	0.00	0.00	$2,192.74	False
33040934	UXO Technician II	79.00	HR	0.00	44.05	0.00	0.00	$3,479.92	False
33040935	UXO Technician III (UXO Supervisor)	59.00	HR	0.00	52.04	0.00	0.00	$3,070.08	False

Total Element Cost: $44,192.83

Element: Excavation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	80,666.67	CY	0.00	0.89	0.95	0.00	$148,412.48	False
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	26.00	SF	260.40	34.16	0.00	0.00	$7,658.53	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	45.36	0.00	0.00	0.00	$5,533.92	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	3.15	55.56	8.57	0.00	$4,709.47	False

Total Element Cost: $166,314.40

Element: Sifting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	1,050.00	HR	0.00	65.11	52.84	0.00	$123,847.27	False
17030427	Sand Bags	1,000.00	EA	1.00	0.00	0.00	0.00	$996.80	False
17030436	0.75 CY Wheel Loader	1,050.00	HR	0.00	103.63	38.80	0.00	$149,548.86	False
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	32.00	SF	260.40	34.16	0.00	0.00	$9,425.88	False

Estimate Documentation Report

Technology: MEC Sifting

33040651	4 X 4 Truck-Rental/Lease	14.00	DAY	0.00	0.00	91.45	0.00	$1,280.34	False
33040662	Trommel Screener	6.00	MO	0.00	0.00	9,002.31	0.00	$54,013.85	False
33040693	Manual Clean Suspended Electromagnet	6.00	MO	0.00	0.00	0.00	1,950.95	$11,705.68	False
33040933	UXO Technician I	440.00	HR	0.00	36.55	0.00	0.00	$16,080.06	False
33040934	UXO Technician II	220.00	HR	0.00	44.05	0.00	0.00	$9,690.91	False
33040935	UXO Technician III (UXO Supervisor)	110.00	HR	0.00	52.04	0.00	0.00	$5,723.87	False
33188605	Adjustable Height Radial Stacker Conveyor	105.00	DAY	0.00	0.00	200.67	0.00	$21,070.25	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	105.00	DAY	0.00	0.00	106.76	0.00	$11,210.29	False
33240101	Other Direct Costs	2.00	LS	20,729.70	0.00	0.00	0.00	$41,459.41	True

Total Element Cost: $456,053.48

Element: Backfill

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030415	On-Site Backfill for Large Excavations, Includes Compaction	80,666.66	ECY	0.00	0.94	1.25	0.00	$176,476.97	False
17040101	Cleaning Up, site debris clean up and removal	10.00	ACR	0.00	546.66	50.91	0.00	$5,975.66	False
18050101	Area Preparation, 67% Level & 33% Slope	10.00	ACR	0.00	20.73	25.56	0.00	$462.81	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	10.00	ACR	1,731.95	862.17	492.38	0.00	$30,864.98	False
18050408	Fertilizer, Hydro Spread	10.00	ACR	975.74	83.06	55.23	0.00	$11,140.31	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False

Total Element Cost: $228,828.09

Element: Site Management

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33040921	Senior UXO Supervisor (SUXOS)	1,680.00	HR	0.00	68.91	0.00	0.00	$115,774.85	False
33040923	UXO Project Manager	1,680.00	HR	0.00	109.21	0.00	0.00	$183,474.82	False
33040930	UXO QC Specialist	1,680.00	HR	0.00	61.33	0.00	0.00	$103,036.42	False
33040931	UXO Safety Officer	1,680.00	HR	0.00	61.68	0.00	0.00	$103,619.71	False

Estimate Documentation Report

Technology: MEC Sifting

	Total Element Cost:	$505,905.79

Element: Stakeholder Involvement

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	12.00	HR	0.00	109.21	0.00	0.00	$1,310.53	False
33040935	UXO Technician III (UXO Supervisor)	12.00	HR	0.00	52.04	0.00	0.00	$624.42	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	179.20	15,914.62	0.00	0.00	$16,093.82	False

	Total Element Cost:	$40,903.22
	Total 1st Year Tech Cost:	$1,481,820.65

Technology Name: **MEC Sifting (#2)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Site Planning		True	n/a
Sifting Field Work		True	n/a
Site Management		True	n/a
Stakeholder Involvement		True	n/a
Sifting Area		5	AC
Vegetation		Heavy shrubs with trees	n/a
Soil Type		Sand-Silt Mixture/Sand-Clay Mixture	n/a
Include Per Diem		True	n/a
Safety Level		E	n/a
Site Planning			
Required Parameters			
Site Visit		True	n/a
Duration		1	Days
Airfare		500	$ / Ticket
Distance to Site		60	Miles
Work Plan ESS Level of Detail		Moderate	n/a
Work Plan		True	n/a
Explosive Safety Submission		True	n/a

Estimate Documentation Report

Technology Name: **MEC Sifting (#2)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Sifting Field Work			
Required Parameters			
Site Preparation		True	n/a
Excavation		True	n/a
Sifting		True	n/a
Backfill		True	n/a
Site Preparation			
Secondary Parameters			
Vegetation Removal: Heavy Removal	2.5	2.5	AC
Vegetation Removal: Moderate Removal	1.25	1.25	AC
Vegetation Removal: Light Removal	1.25	1.25	AC
Vegetation Removal: No Removal	0	0	AC
Vegetation Removal: Total Area		5	AC
Surface Clearance	5	5	AC
Excavation			
Secondary Parameters			
Excavation Area	5	5	Acres
Excavation Depth	1	4.7	FT
Total Quantity to Excavate	37,913.3	37913.3	CY
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Vehicle Modification	True	True	n/a
Sifting			
Secondary Parameters			
Front End Loader	50	50	Days
Front End Loader: Vehicle Modification Required	True	True	n/a
Dump Truck	50	50	Days
Dump Truck: Vehicle Modification Required	True	True	n/a
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Soil to be Sifted	49,287.34	49287.34	CY
Soil to be Hand Sorted	4,928.734	4928.734	CY
Backfill			
Secondary Parameters			
Sifted Material to be Used as Backfill	100.00	100.00	%
Source of Additional Backfill	None	Off-Site	n/a
Site Restoration: Regrading	5	5	Acres
Site Restoration: Reseeding	5	5	Acres
Site Restoration: General Cleanup	5	5	Acres
Site Management			
Secondary Parameters			
Senior UXO Supervisor	80	80	Days
Project Manager	80	80	Days
UXO Supervisor	0	0	Days
Quality Control Supervisor	80	80	Days

Estimate Documentation Report

Technology Name: **MEC Sifting (#2)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Site Management			
Secondary Parameters			
Safety Supervisor	80	80	Days
Stakeholder Involvement			
Secondary Parameters			
Level of Detail Required in Reporting	Moderate	Moderate	n/a
Level of Stakeholder Involvement	Moderate	Moderate	n/a
Number of Community Meetings	2	2	EA
Site Specific Final Report	True	True	n/a

Comments: This MEC Sifting technology is for sifting the OD Hill, Remedy 1. The OD Hill was estimated to consist of 38,000CY of soil to be sifted (Parson's Additional Munitions Response Site Investigations 2010, Section 3.1).

Site Mileage is 60 miles; the distance is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist.

Technology: MEC Sifting

Element: Site Visit

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.56	$33.60	True
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	53.50	$160.51	False
33010202	Per Diem (per person)	3.00	DAY	0.00	0.00	0.00	159.00	$477.00	True
33040921	Senior UXO Supervisor (SUXOS)	8.00	HR	0.00	68.91	0.00	0.00	$551.31	False
33040923	UXO Project Manager	8.00	HR	0.00	109.21	0.00	0.00	$873.69	False
33040925	UXO Staff Engineer	8.00	HR	0.00	64.27	0.00	0.00	$514.12	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	500.00	$1,500.00	True
33041302	Munitions Response Workplan (Moderate Complexity)	1.00	EA	89.60	12,525.56	0.00	0.00	$12,615.16	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33240101	Other Direct Costs	1.00	LS	500.00	0.00	0.00	0.00	$500.00	True
					Total Element Cost:			$40,099.84	

Element: Site Preparation

Estimate Documentation Report

Technology: MEC Sifting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	1.25	ACR	0.00	1,307.47	393.77	0.00	$2,126.55	False
17010402	Chipping brush, medium brush	1.25	ACR	0.00	1,680.95	506.25	0.00	$2,734.00	False
17010403	Chipping brush, heavy brush	2.50	ACR	0.00	3,269.26	984.60	0.00	$10,634.64	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False
33010202	Per Diem (per person)	10.00	DAY	0.00	0.00	0.00	159.00	$1,590.00	True
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	92.06	$552.38	False
33040933	UXO Technician I	30.00	HR	0.00	36.55	0.00	0.00	$1,096.37	False
33040934	UXO Technician II	40.00	HR	0.00	44.05	0.00	0.00	$1,761.98	False
33040935	UXO Technician III (UXO Supervisor)	30.00	HR	0.00	52.04	0.00	0.00	$1,561.06	False

Total Element Cost: $25,964.33

Element: Excavation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	37,913.33	CY	0.00	0.89	0.95	0.00	$69,753.85	False
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	26.00	SF	260.40	34.16	0.00	0.00	$7,658.53	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	45.36	0.00	0.00	0.00	$5,533.92	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	3.15	55.56	8.57	0.00	$4,709.47	False

Total Element Cost: $87,655.78

Element: Sifting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	500.00	HR	0.00	65.11	52.84	0.00	$58,974.89	False
17030427	Sand Bags	1,000.00	EA	1.00	0.00	0.00	0.00	$996.80	False
17030436	0.75 CY Wheel Loader	500.00	HR	0.00	103.63	38.80	0.00	$71,213.74	False
33010202	Per Diem (per person)	350.00	DAY	0.00	0.00	0.00	159.00	$55,650.00	True
33040518	UXO Vehicle Modification - Acrylic	32.00	SF	260.40	34.16	0.00	0.00	$9,425.88	False

	Glass Sheets 3" Thick								
33040651	4 X 4 Truck-Rental/Lease	7.00	DAY	0.00	0.00	91.45	0.00	$640.17	False
33040662	Trommel Screener	3.00	MO	0.00	0.00	9,002.31	0.00	$27,006.93	False
33040693	Manual Clean Suspended Electromagnet	3.00	MO	0.00	0.00	0.00	1,950.95	$5,852.84	False
33040933	UXO Technician I	200.00	HR	0.00	36.55	0.00	0.00	$7,309.12	False
33040934	UXO Technician II	100.00	HR	0.00	44.05	0.00	0.00	$4,404.96	False
33040935	UXO Technician III (UXO Supervisor)	50.00	HR	0.00	52.04	0.00	0.00	$2,601.76	False
33188605	Adjustable Height Radial Stacker Conveyor	50.00	DAY	0.00	0.00	200.67	0.00	$10,033.45	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	50.00	DAY	0.00	0.00	106.76	0.00	$5,338.23	False
33240101	Other Direct Costs	2.00	LS	12,972.44	0.00	0.00	0.00	$25,944.88	True

Total Element Cost: $285,393.66

Element: Backfill

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030415	On-Site Backfill for Large Excavations, Includes Compaction	37,913.34	ECY	0.00	0.94	1.25	0.00	$82,944.20	False
17040101	Cleaning Up, site debris clean up and removal	5.00	ACR	0.00	546.66	50.91	0.00	$2,987.83	False
18050101	Area Preparation, 67% Level & 33% Slope	5.00	ACR	0.00	20.73	25.56	0.00	$231.41	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	5.00	ACR	1,731.95	862.17	492.38	0.00	$15,432.49	False
18050408	Fertilizer, Hydro Spread	5.00	ACR	975.74	83.06	55.23	0.00	$5,570.16	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False

Total Element Cost: $111,073.43

Element: Site Management

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	448.00	DAY	0.00	0.00	0.00	159.00	$71,232.00	True
33040921	Senior UXO Supervisor (SUXOS)	800.00	HR	0.00	68.91	0.00	0.00	$55,130.88	False
33040923	UXO Project Manager	800.00	HR	0.00	109.21	0.00	0.00	$87,368.96	False

Technology: MEC Sifting

33040930	UXO QC Specialist	800.00	HR	0.00	61.33	0.00	0.00	$49,064.96	False
33040931	UXO Safety Officer	800.00	HR	0.00	61.68	0.00	0.00	$49,342.72	False

Total Element Cost: $312,139.52

Element: Stakeholder Involvement

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	12.00	HR	0.00	109.21	0.00	0.00	$1,310.53	False
33040935	UXO Technician III (UXO Supervisor)	12.00	HR	0.00	52.04	0.00	0.00	$624.42	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	179.20	15,914.62	0.00	0.00	$16,093.82	False

Total Element Cost: $40,903.22

Total 1st Year Tech Cost: $903,229.77

Technology Name: **MEC Sifting (#3)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Site Planning		True	n/a
Sifting Field Work		True	n/a
Site Management		True	n/a
Stakeholder Involvement		True	n/a
Sifting Area		10	AC
Vegetation		Heavy shrubs with trees	n/a
Soil Type		Sand-Silt Mixture/Sand-Clay Mixture	n/a
Include Per Diem		True	n/a
Safety Level		E	n/a
Site Planning			
Required Parameters			
Site Visit		True	n/a
Duration		1	Days
Airfare		500	$ / Ticket
Distance to Site		60	Miles
Work Plan ESS Level of Detail		Moderate	n/a

Estimate Documentation Report

Technology Name: **MEC Sifting (#3)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Site Planning			
Required Parameters			
Work Plan		True	n/a
Explosive Safety Submission		True	n/a
Sifting Field Work			
Required Parameters			
Site Preparation		True	n/a
Excavation		True	n/a
Sifting		True	n/a
Backfill		True	n/a
Site Preparation			
Secondary Parameters			
Vegetation Removal: Heavy Removal	5	5	AC
Vegetation Removal: Moderate Removal	2.5	2.5	AC
Vegetation Removal: Light Removal	2.5	2.5	AC
Vegetation Removal: No Removal	0	0	AC
Vegetation Removal: Total Area		10	AC
Surface Clearance	10	10	AC
Excavation			
Secondary Parameters			
Excavation Area	10	10	Acres
Excavation Depth	1	4.3	FT
Total Quantity to Excavate	69,696	69696	CY
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Vehicle Modification	True	True	n/a
Sifting			
Secondary Parameters			
Front End Loader	91	91	Days
Front End Loader: Vehicle Modification Required	True	True	n/a
Dump Truck	91	91	Days
Dump Truck: Vehicle Modification Required	True	True	n/a
Vehicle Protection	Plexiglas/Steel	Plexiglas/Steel	n/a
Soil to be Sifted	90,604.8	90604.8	CY
Soil to be Hand Sorted	9,060.479	9060.479	CY
Backfill			
Secondary Parameters			
Sifted Material to be Used as Backfill	100.00	100.00	%
Source of Additional Backfill	None	None	n/a
Site Restoration: Regrading	10	10	Acres
Site Restoration: Reseeding	10	10	Acres
Site Restoration: General Cleanup	10	10	Acres

Estimate Documentation Report

Technology Name: **MEC Sifting (#3)**

User Name: **MEC Sifting**

Description	Default	Value	UOM
Site Management			
Secondary Parameters			
Senior UXO Supervisor	147	147	Days
Project Manager	147	147	Days
UXO Supervisor	0	0	Days
Quality Control Supervisor	147	147	Days
Safety Supervisor	147	147	Days
Stakeholder Involvement			
Secondary Parameters			
Level of Detail Required in Reporting	Moderate	Moderate	n/a
Level of Stakeholder Involvement	Moderate	Moderate	n/a
Number of Community Meetings	2	2	EA
Site Specific Final Report	True	True	n/a

Comments: This MEC Sifting Technology is included to account for the mechanical sifting needed between 1000ft to 1250ft radius, Remedy 3. The area needing sifting is 21.6 acres; however, RACER has a maximum input of 10 ac. In order to reach the correct CY of soil to be sifted, the removal depth in RACER was increased.

Actual Work to be Performed:
21.6 ac, 2ft removal = 69,696 CY

RACER Estimate:
10ac, 3.32ft removal = 69,696 CY

Average air fare of $500 was assumed.

Site Mileage is 60 miles; the distance is determined based on mileage from the Property to the nearest city from which professional and technical labor is assumed to exist.

Technology: MEC Sifting

Element: Site Visit

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	60.00	MI	0.00	0.00	0.00	0.56	$33.60	True
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	53.50	$160.51	False
33010202	Per Diem (per person)	3.00	DAY	0.00	0.00	0.00	159.00	$477.00	True
33040921	Senior UXO Supervisor (SUXOS)	8.00	HR	0.00	68.91	0.00	0.00	$551.31	False
33040923	UXO Project Manager	8.00	HR	0.00	109.21	0.00	0.00	$873.69	False
33040925	UXO Staff Engineer	8.00	HR	0.00	64.27	0.00	0.00	$514.12	False
33041101	Airfare	3.00	LS	0.00	0.00	0.00	500.00	$1,500.00	True

Estimate Documentation Report

Technology: MEC Sifting

33041302	Munitions Response Workplan (Moderate Complexity)	1.00	EA	89.60	12,525.56	0.00	0.00	$12,615.16	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33240101	Other Direct Costs	1.00	LS	500.00	0.00	0.00	0.00	$500.00	True

Total Element Cost: $40,099.84

Element: Site Preparation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	2.50	ACR	0.00	1,307.47	393.77	0.00	$4,253.10	False
17010402	Chipping brush, medium brush	2.50	ACR	0.00	1,680.95	506.25	0.00	$5,467.99	False
17010403	Chipping brush, heavy brush	5.00	ACR	0.00	3,269.26	984.60	0.00	$21,269.28	False
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False
33010202	Per Diem (per person)	20.00	DAY	0.00	0.00	0.00	159.00	$3,180.00	True
33040268	Schonstedt GA-52Cx Weekly Rental	6.00	WK	0.00	0.00	0.00	92.06	$552.38	False
33040933	UXO Technician I	60.00	HR	0.00	36.55	0.00	0.00	$2,192.74	False
33040934	UXO Technician II	79.00	HR	0.00	44.05	0.00	0.00	$3,479.92	False
33040935	UXO Technician III (UXO Supervisor)	59.00	HR	0.00	52.04	0.00	0.00	$3,070.08	False

Total Element Cost: $47,372.83

Element: Excavation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030279	4 CY, Crawler-mounted, Hydraulic Excavator	69,373.34	CY	0.00	0.89	0.95	0.00	$127,634.74	False
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	26.00	SF	260.40	34.16	0.00	0.00	$7,658.53	False
33040519	UXO Vehicle Modification - Steel Plates 3/4" Thick	122.00	SF	45.36	0.00	0.00	0.00	$5,533.92	False
33040520	UXO Vehicle Modification - Welding Steel Plates 3/4" Thick	70.00	LF	3.15	55.56	8.57	0.00	$4,709.47	False

Total Element Cost: $145,536.66

Estimate Documentation Report

Technology: MEC Sifting

Element: Sifting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030285	12 CY, Dump Truck	910.00	HR	0.00	65.11	52.84	0.00	$107,334.30	False
17030427	Sand Bags	1,000.00	EA	1.00	0.00	0.00	0.00	$996.80	False
17030436	0.75 CY Wheel Loader	910.00	HR	0.00	103.63	38.80	0.00	$129,609.01	False
33010202	Per Diem (per person)	637.00	DAY	0.00	0.00	0.00	159.00	$101,283.00	True
33040518	UXO Vehicle Modification - Acrylic Glass Sheets 3" Thick	32.00	SF	260.40	34.16	0.00	0.00	$9,425.88	False
33040651	4 X 4 Truck-Rental/Lease	12.00	DAY	0.00	0.00	91.45	0.00	$1,097.44	False
33040662	Trommel Screener	5.00	MO	0.00	0.00	9,002.31	0.00	$45,011.55	False
33040693	Manual Clean Suspended Electromagnet	5.00	MO	0.00	0.00	0.00	1,950.95	$9,754.73	False
33040933	UXO Technician I	400.00	HR	0.00	36.55	0.00	0.00	$14,618.24	False
33040934	UXO Technician II	200.00	HR	0.00	44.05	0.00	0.00	$8,809.92	False
33040935	UXO Technician III (UXO Supervisor)	100.00	HR	0.00	52.04	0.00	0.00	$5,203.52	False
33188605	Adjustable Height Radial Stacker Conveyor	91.00	DAY	0.00	0.00	200.67	0.00	$18,260.88	False
33188606	Feeder Conveyor, 50' long with 7 CY Hopper	91.00	DAY	0.00	0.00	106.76	0.00	$9,715.59	False
33240101	Other Direct Costs	2.00	LS	23,056.04	0.00	0.00	0.00	$46,112.09	True

Total Element Cost: $507,232.94

Element: Backfill

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17030415	On-Site Backfill for Large Excavations, Includes Compaction	69,373.34	ECY	0.00	0.94	1.25	0.00	$151,770.22	False
17040101	Cleaning Up, site debris clean up and removal	10.00	ACR	0.00	546.66	50.91	0.00	$5,975.66	False
18050101	Area Preparation, 67% Level & 33% Slope	10.00	ACR	0.00	20.73	25.56	0.00	$462.81	False
18050401	Seeding, 67% Level & 33% Slope, Hydroseeding	10.00	ACR	1,731.95	862.17	492.38	0.00	$30,864.98	False
18050408	Fertilizer, Hydro Spread	10.00	ACR	975.74	83.06	55.23	0.00	$11,140.31	False
33010115	Demobilize Equipment (Soils)	1.00	LS	0.00	1,822.96	2,084.40	0.00	$3,907.35	False

Total Element Cost: $204,121.34

Element: Site Management

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	820.00	DAY	0.00	0.00	0.00	159.00	$130,380.00	True
33040921	Senior UXO Supervisor (SUXOS)	1,460.00	HR	0.00	68.91	0.00	0.00	$100,613.86	False
33040923	UXO Project Manager	1,460.00	HR	0.00	109.21	0.00	0.00	$159,448.35	False
33040930	UXO QC Specialist	1,460.00	HR	0.00	61.33	0.00	0.00	$89,543.55	False
33040931	UXO Safety Officer	1,460.00	HR	0.00	61.68	0.00	0.00	$90,050.46	False

Total Element Cost: $570,036.23

Element: Stakeholder Involvement

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33040923	UXO Project Manager	12.00	HR	0.00	109.21	0.00	0.00	$1,310.53	False
33040935	UXO Technician III (UXO Supervisor)	12.00	HR	0.00	52.04	0.00	0.00	$624.42	False
33041305	Explosive Safety Submission (Moderate Complexity)	1.00	EA	179.20	22,695.24	0.00	0.00	$22,874.44	False
33041314	Site Specific Final Report (Moderate Complexity)	1.00	EA	179.20	15,914.62	0.00	0.00	$16,093.82	False

Total Element Cost: $40,903.22

Total 1st Year Tech Cost: $1,555,303.05

Phase Documentation:

Phase Type: Long Term Monitoring
Phase Name: LTM
Description: Long Term Monitoring of SEAD-006-R-01 will consist of groundwater monitoring, five year reviews, site close-out and well abandonment.
Approach: Ex Situ
Start Date: October, 2021
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Estimate Documentation Report

Phase Markup Template: System Defaults

Technology Markups	Markup	% Prime	% Sub.
Groundwater Monitoring Well	True	100	0
Five-Year Review	True	100	0
Site Close-Out Documentation	True	100	0
Well Abandonment	True	100	0

Total Marked-up Cost: $405,456.93

Technologies:

Technology Name: **Five-Year Review (#1)**

User Name: **Five-Year Review**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Site Complexity		Moderate	n/a
Document Review		True	n/a
Interviews		True	n/a
Site Inspection		True	n/a
Report		True	n/a
Travel		False	n/a
Rebound Study		False	n/a
Start Month		10	n/a
No. Reviews		6	EA
Start Year		2021	n/a
Document Review			
Required Parameters			
5-Year Review Check List		True	n/a
System Definition			
Required Parameters			
Safety Level		D	n/a
Document Review			
Required Parameters			
Record of Decision		False	n/a
Remedial Action Design & Construction		False	n/a
Close-Out Report		False	n/a
Operations & Maintenance Manuals & Reports		False	n/a
Consent Decree or Settlement Records		False	n/a
Groundwater Monitoring & Reports		True	n/a
Remedial Action Required		True	n/a

Estimate Documentation Report

Technology Name: **Five-Year Review (#1)**

User Name: **Five-Year Review**

Description	Default	Value	UOM
Document Review			
Required Parameters			
Previous 5-Year Review Reports		False	n/a
Interviews			
Required Parameters			
Current and Previous Staff Management		True	n/a
Community Groups		True	n/a
State Contacts		False	n/a
Local Government Contacts		False	n/a
Operations & Maintenance Contractors		True	n/a
PRPs		False	n/a
Remedial Design Consultant		False	n/a
Site Inspection			
Required Parameters			
General Site Inspection		True	n/a
Containment System Inspection		False	n/a
Monitoring Systems Inspection		False	n/a
Treatment Systems Inspection		False	n/a
Regulatory Compliance		False	n/a
Site Visit Documentation (Photos, Diagrams, etc.)		True	n/a
Report			
Required Parameters			
Introduction		False	n/a
Remedial Objectives		True	n/a
ARARs Review		False	n/a
Summary of Site Visit		True	n/a
Areas of Non Compliance		True	n/a
Technology Recommendations		False	n/a
Statement of Protectiveness		False	n/a
Next Review		False	n/a
Implementation Requirements		False	n/a

Comments: The five year review start date of 2021 and the selection of reports, reviews, interviews and site inspections are based on FY 17 MFR.
The details of reports, reviews, interviews and site inspections are assumptions.

Technology: Five-Year Review

Element: Document Review

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	12.00	HR	0.00	114.05	0.00	0.00	$1,368.59	False
33220105	Project Engineer	5.00	HR	0.00	78.77	0.00	0.00	$393.84	False

33220108	Project Scientist	3.00	HR	0.00	85.76	0.00	0.00	$257.29	False
33220109	Staff Scientist	7.00	HR	0.00	69.26	0.00	0.00	$484.84	False

Total Element Cost: $2,504.55

Element: Interviews

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	8.00	HR	0.00	114.05	0.00	0.00	$912.39	False

Total Element Cost: $912.39

Element: Site Inspection

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	4.00	HR	0.00	114.05	0.00	0.00	$456.20	False
33220105	Project Engineer	4.00	HR	0.00	78.77	0.00	0.00	$315.08	False
33220108	Project Scientist	4.00	HR	0.00	85.76	0.00	0.00	$343.05	False
33220109	Staff Scientist	4.00	HR	0.00	69.26	0.00	0.00	$277.05	False

Total Element Cost: $1,391.37

Element: Report

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	9.00	HR	0.00	114.05	0.00	0.00	$1,026.44	False
33220105	Project Engineer	22.00	HR	0.00	78.77	0.00	0.00	$1,732.91	False
33220108	Project Scientist	10.00	HR	0.00	85.76	0.00	0.00	$857.62	False
33220109	Staff Scientist	26.00	HR	0.00	69.26	0.00	0.00	$1,800.82	False

Total Element Cost: $5,417.80

Total 1st Year Tech Cost: $10,226.11

Technology Name: **Groundwater Monitoring Well (#1)**

User Name: **Groundwater Monitoring Well**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Number of Aquifers		One	n/a
Include Guard Posts		Yes	n/a

Estimate Documentation Report

Technology Name: **Groundwater Monitoring Well (#1)**

User Name: **Groundwater Monitoring Well**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Depth to Groundwater to Aquifer One		15	FT
Number of Wells to Aquifer One		10	EA
Safety Level		D	n/a
Aquifer One			
Required Parameters			
Aquifer One: Average Well Depth		20	LF
Aquifer One: Formation Type		Unconsolidated	n/a
Aquifer One: Drilling Method		Hollow Stem	n/a
Aquifer One: Well Diameter		2 Inch	n/a
Aquifer One: Well Construction Material		PVC Schedule 40	n/a
Aquifer One: Split Spoon Sample Collection		True	n/a
Aquifer One: Average Number of Soil Samples per Well		5	EA
Aquifer One: Soil Analytical Template		System Soil - Multi-Contaminant	n/a

Comments: Data is based on FY 17 MFR and a Revised Engineering Change Request by Parsons Jan 2018. Parson proposes 10 additional monitoring wells in section 2.3.2.2.

Page 3 of FY 17 MFR:
Well abandonment (LTM):
1. Number of wells: 12
2. Well depth: 15 feet
3. Well diameter: 2 inches
4. Formation type: Unconsolidated
5. Method: Overdrill/excavation

Technology: Groundwater Monitoring Well

Element: Aquifer 1

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33020303	Organic Vapor Analyzer Rental, per Day	3.00	DAY	0.00	0.00	0.00	45.60	$136.80	False
33021709	Testing, TAL metals (6010/7000s)	50.00	EA	0.00	0.00	0.00	192.92	$9,646.00	False
33021717	Pesticides/PCBs (SW 3550B/SW 8081/8082), Soil Analysis	50.00	EA	0.00	0.00	0.00	128.80	$6,440.00	False
33021719	Testing, soil & sediment analysis, chlorinated phenoxy acid herbicides EPA 8150	50.00	EA	0.00	0.00	0.00	181.44	$9,072.00	False

Estimate Documentation Report

Technology: Groundwater Monitoring Well

33021720	Testing, purgeable organics (624, 8260)	50.00	EA	0.00	0.00	0.00	179.20	$8,960.00	False
33021721	Testing, semi-volatile organics (625, 8270)	50.00	EA	0.00	0.00	0.00	334.88	$16,744.00	False
33021803	Testing, non-rad lab tests, tentative id of compounds GC/MS 30/5040/8240	50.00	EA	0.00	0.00	0.00	16.80	$840.00	False
33170808	Decontaminate Rig, Augers, Screen (Rental Equipment)	3.00	DAY	43.12	744.67	0.00	0.00	$2,363.37	False
33220112	Field Technician	48.00	HR	0.00	52.57	0.00	0.00	$2,523.44	False
33230101	2" PVC, Schedule 40, Well Casing	100.00	LF	3.25	6.26	5.35	0.00	$1,486.24	False
33230201	2" PVC, Schedule 40, Well Screen	100.00	LF	4.00	6.26	5.35	0.00	$1,561.28	False
33230301	2" PVC, Well Plug	10.00	EA	10.35	18.79	16.05	0.00	$451.92	False
33231101	Hollow Stem Auger, 8" Dia Borehole, Depth <= 100 ft	210.00	LF	0.00	20.95	25.11	0.00	$9,673.43	False
33231173	Split Spoon Sampling	50.00	LF	0.00	16.47	5.66	0.00	$1,106.62	False
33231401	2" Screen, Filter Pack	120.00	LF	5.88	4.84	4.13	0.00	$1,781.51	False
33231811	2" Well, Portland Cement Grout	70.00	LF	6.41	0.00	0.00	0.00	$448.74	False
33232101	2" Well, Bentonite Seal	10.00	EA	16.11	124.95	106.72	0.00	$2,477.77	False

Total Element Cost: $75,713.13

Element: General Aquifers

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010101	Mobilize/DeMobilize Drilling Rig & Crew	1.00	LS	0.00	1,879.24	806.50	0.00	$2,685.74	False
33231178	Move Rig/Equipment Around Site	9.00	EA	100.46	270.14	115.93	0.00	$4,378.85	False
33231182	DOT steel drums, 55 gal., open, 17C	10.00	EA	114.78	0.00	0.00	0.00	$1,147.78	False
33231504	Surface Pad, Concrete, 2' x 2' x 4"	10.00	EA	56.95	20.90	2.02	0.00	$798.76	False
33232301	5' Guard Posts, Cast Iron, Concrete Fill	40.00	EA	83.77	114.42	0.05	0.00	$7,929.36	False

Total Element Cost: $16,940.49

Total 1st Year Tech Cost: $92,653.62

Estimate Documentation Report

Technology Name: **Site Close-Out Documentation (#1)**

User Name: **Site Close-Out Documentation**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Meetings		True	n/a
Work Plans and Reports		True	n/a
Documents		True	n/a
Site Close-Out Complexity		Moderate	n/a
Meetings			
Required Parameters			
Kick Off/Scoping Meetings		True	n/a
Kick Off/Scoping Meetings: Number of Meetings	1	1	EA
Kick Off/Scoping Meetings: Travel		True	n/a
Kick Off/Scoping Meetings: Travelers		3	EA
Kick Off/Scoping Meetings: Days		2	Days
Kick Off/Scoping Meetings: Air Fare		1500.00	$
Review Meetings		True	n/a
Review Meetings: Number of Meetings	1	1	EA
Review Meetings: Travel		True	n/a
Review Meetings: Travelers		2	EA
Review Meetings: Days		1	Days
Review Meetings: Air Fare		1000.00	$
Regulatory Review Meetings		True	n/a
Regulatory Review Meetings: Number of Meetings	1	1	EA
Regulatory Review Meetings: Travel		True	n/a
Regulatory Review Meetings: Travelers		2	EA
Regulatory Review Meetings: Days		2	Days
Regulatory Review Meetings: Air Fare		1000.00	$
Work Plans & Reports			
Required Parameters			
Work Plans		True	n/a
Draft Work Plan		True	n/a
Final Work Plan		True	n/a
Reports		True	n/a
Draft Close-Out Report		True	n/a
Draft Final Close-Out Report		True	n/a
Final Close-Out Report		True	n/a
Progress Reports		True	n/a
Project Duration	10	10	months
Documents			
Required Parameters			
Draft Decision Document		True	n/a
Draft Final Decision Document		True	n/a
Final Decision Document		True	n/a
Long Term Document Storage		True	n/a

Estimate Documentation Report

Technology Name: **Site Close-Out Documentation (#1)**

User Name: **Site Close-Out Documentation**

Description	Default	Value	UOM
Documents			
Required Parameters			
Number of Boxes		1	EA
Duration of Storage		30	Yrs

Comments: Site Closeout is moderate complexity based on FY17 MFR Section 5.
Kickoff, review and regulatory meetings were chosen based on FY MFR section 5.
Work plans and reports were kept at default values like the FY MFR.
Document storage is based on FY 17 MFR.

Technology: Site Close-Out Documentation

Element: Meetings

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	5.00	DAY	0.00	0.00	0.00	53.50	$267.51	False
33010202	Per Diem (per person)	12.00	DAY	0.00	0.00	0.00	159.00	$1,908.00	True
33041101	Airfare	1.00	LS	0.00	0.00	0.00	8,500.00	$8,500.00	True
33220102	Project Manager	19.00	HR	0.00	114.05	0.00	0.00	$2,166.93	False
33220106	Staff Engineer	17.00	HR	0.00	103.71	0.00	0.00	$1,763.06	False
33220114	Word Processing/Clerical	6.00	HR	0.00	53.38	0.00	0.00	$320.27	False
33220115	Draftsman/CADD	2.00	HR	0.00	50.78	0.00	0.00	$101.56	False

Total Element Cost: $15,027.33

Element: Work Plans & Reports

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220101	Senior Project Manager	10.00	HR	0.00	124.02	0.00	0.00	$1,240.20	False
33220102	Project Manager	83.00	HR	0.00	114.05	0.00	0.00	$9,466.05	False
33220104	Senior Staff Engineer	5.00	HR	0.00	122.91	0.00	0.00	$614.57	False
33220109	Staff Scientist	3.00	HR	0.00	69.26	0.00	0.00	$207.79	False
33220114	Word Processing/Clerical	67.00	HR	0.00	53.38	0.00	0.00	$3,576.30	False
33220115	Draftsman/CADD	8.00	HR	0.00	50.78	0.00	0.00	$406.26	False

Total Element Cost: $15,511.15

Element: Documents

Estimate Documentation Report

Technology: Site Close-Out Documentation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220101	Senior Project Manager	4.00	HR	0.00	124.02	0.00	0.00	$496.08	False
33220102	Project Manager	13.00	HR	0.00	114.05	0.00	0.00	$1,482.63	False
33220104	Senior Staff Engineer	4.00	HR	0.00	122.91	0.00	0.00	$491.65	False
33220106	Staff Engineer	37.00	HR	0.00	103.71	0.00	0.00	$3,837.24	False
33220114	Word Processing/Clerical	14.00	HR	0.00	53.38	0.00	0.00	$747.29	False
33220115	Draftsman/CADD	10.00	HR	0.00	50.78	0.00	0.00	$507.82	False
33440102	Standard Record Storage Carton (Month)	360.00	MO	0.00	0.99	0.00	0.00	$355.35	False
33440105	Standard Storage Carton	1.00	EA	12.07	0.00	0.00	0.00	$12.07	False
33440113	Pickup Boxes (Per Box)	1.00	EA	0.00	35.64	0.00	0.00	$35.64	False

Total Element Cost: $7,965.77

Total 1st Year Tech Cost: $38,504.25

Technology Name: **Well Abandonment (#1)**

User Name: **Well Abandonment**

Description	Default	Value	UOM
System Definition			
Required Parameters			
Safety Level		D	n/a
Abandon Wells			
Required Parameters			
Technology/Group Name		Groundwater Monitoring Well Aquifer - 1	n/a
Number of Wells	10	10	n/a
Well Depth		20	FT
Well Diameter		2	IN
Well Abandonment Method		Abandon In-Place	n/a
Formation Type		Unconsolidated	n/a
Karst Formation Type		False	n/a

Comments: Well abandonment was included based on FY 17 MFR engineering estimate.

Technology: Well Abandonment

Element:

Estimate Documentation Report

Technology: Well Abandonment

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010101	Mobilize/DeMobilize Drilling Rig & Crew	1.00	LS	0.00	1,879.24	806.50	0.00	$2,685.74	False
33220112	Field Technician	24.00	HR	0.00	52.57	0.00	0.00	$1,261.72	False
33231178	Move Rig/Equipment Around Site	10.00	EA	100.46	270.14	115.93	0.00	$4,865.39	False
33231820	Grout Continuous Borehole	4.00	CF	38.62	0.00	0.00	0.00	$154.47	False

Total Element Cost: $8,967.31

Total 1st Year Tech Cost: $8,967.31

Parson's Data		
Description	**Area (s.f.)**	**Area (ac.)**
OD Hill	131507.5	3.0
1000 ft Coverage	1873303.04	43.0
1000 ft No Coverage	1084213.4	24.9
OB Grounds	1314882.6	30.2
1000-2500 ft No Coverage	3870244.0	88.8
2012-2014 Mag & Dig	2626922.9	60.3

Enclosure 11

Enclosure 11 is a separate document titled: "36760.1100 Supp Doc 2 of 2 CX CTC Packet"

And is referenced here with this page

ENCL 11

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Analytical data (metals) from the 1995 ESI and the 2010 Additional Munitions Response were reviewed and compared to the RCRA regulatory limits for hazardous waste (40 CFR 261.24; Table 1 - Maximum Concentration of Contaminants for the Toxicity Characteristic). Since TCLP data were not collected at this site, the TCLP limits of the 8 RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) were multiplied by twenty to determine the maximum adjusted concentration for each metal to approximate if the total metals concentrations in the soil exceeded the TCLP limits. This 'rule of 20' is derived from the 20 to 1 ratio of extraction fluid to solid sample in the TCLP analysis. If the sample concentrations were above 20x the TCLP limit, we assumed that the soil in this area may be considered hazardous if excavated and would require stabilization to render it non-hazardous prior to off-site disposal. The locations that are interpreted to be hazardous are highlighted in the following figures and tables. Based on the highlighted locations, approximately 75% of the OD Hill (including soil in the surrounding area) may be potentially hazardous if removed from the site. As concluded in the 2010 report, the estimated volume of the earthen mound above ground surface is 38,000 cubic yards (cy). The estimated volume of soil in the OD Hill above bedrock surface is 75,000 cy. Under the assumption that the majority of the potentially contaminated soil is located within the earthen mound above the ground surface, we estimate that 28,500 cy may be hazardous and require on-site stabilization. Note that the estimates are approximations based on the available data.

Table A-1A
OD Hill Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-2-01	S45-0DH-3-01	S45-0DH-5-01	S45-0DH-7-01	S45-0DH-9-01	S45-0DH-10-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-2-01	S45-0DH-3-01	S45-0DH-5-01	S45-0DH-7-01	S45-0DH-9-01	S45-0DH-10-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Explosives									
1,3,5-trinitrobenzene	ug/Kg	220000	0	79 J	49 J	57 JJ	65 J	68 J	55 J
1,3-dinitrobenzene	ug/Kg	610	0	6 U	6.1 U	6.8 U	7.7 U	7.1 U	7.7 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	30 J	36 J	40 JJ	46 J	47 J	58 J
2,4-dinitrotoluene	ug/Kg	1600	0	98 J	120	100 J	90 J	110 J	110 J
2,6-dinitrotoluene	ug/Kg	6100	0	26 U	26 U	29 U	34 U	31 U	34 U
2-AM-DNT	ug/Kg	15000	0	120	140	160	180	220	130
2-nitrotoluene	ug/Kg	2900	0	12 U	12 U	13 U	15 U	14 U	15 U
3,5-Dinitroaniline	ug/Kg		0	3.4 U	100 U	3.8 U	120 U	110 U	120 U
3-nitrotoluene	ug/Kg	610	0	7.7 U	7.8 U	8.6 U	9.8 U	9 U	9.8 U
4-AM-DNT	ug/Kg	15000	0	120	140	160	160	220	120 J
4-nitrotoluene	ug/Kg	30000	0	26 U	26 U	29 U	34 U	31 U	34 U
HMX	ug/Kg	380000	0	100	120	120 J	150	190	87 J
nitrobenzene	ug/Kg	4800	0	21 U	22 U	24 U	27 U	25 U	27 U
NITROGLYCERIN	ug/Kg	610	1	120 U	120 U	140 U	150 U	140 U	150 U
PETN	ug/Kg		0	230 U	240 U	260 U	300 U	270 U	300 U
RDX	ug/Kg	5500	0	180	220	210	310	420	190
TETRYL	ug/Kg	24000	0	5.3 U	5.3 U	5.9 U	6.7 U	6.2 U	6.7 U
Metals									
ALUMINUM	mg/Kg	7700	21	**17500**	**17200**	**19400**	**22200**	**20300**	**18000**
ANTIMONY	mg/Kg	3.1	0	0.19 U	0.2 U	0.2 U	0.28 J	0.22 U	0.13 U
ARSENIC	mg/Kg	0.39	21	**12.4**	**11**	**5.6**	**4.8**	**5.5**	**5**
BARIUM	mg/Kg	1500	0	190	179	194	174	266	195
BERYLLIUM	mg/Kg	16	0	0.78	0.77	0.86	0.82	0.88	0.8
CADMIUM	mg/Kg	7	15	**8.7**	**8.6**	**7.5**	**8**	**8**	**8.1**
CALCIUM	mg/Kg		0	26600	43900	23400	24500	22800	24400
CHROMIUM	mg/Kg	12000	0	29.9	29.8	29.7	40.8	30.8	28.1
COBALT	mg/Kg	2.3	21	**12**	**12.9**	**12.3**	**10.6**	**12.4**	**13.5**
COPPER	mg/Kg	310	20	**433**	**477**	**411**	**648**	**490**	**448**
IRON	mg/Kg	5500	21	**34200**	**29600**	**27200**	**25900**	**27700**	**25800**
LEAD	mg/Kg	40	20	**56.3**	**59.9**	**61.9**	**59.3**	**62.5**	**62.6**
MAGNESIUM	mg/Kg		0	6720	6410	7010	6420	7090	6780
MANGANESE	mg/Kg	180	21	**610**	**642**	**618**	**557**	**601**	**742**
MERCURY	mg/Kg	2.3	18	**4.3**	**4.3**	**4.3**	**6**	**3.6**	**3.8**
NICKEL	mg/Kg	150	0	41.2	39.5	41.2	36.1	40.9	39.5
POTASSIUM	mg/Kg		0	2850	2850	3410	3200	3440	2760
SELENIUM	mg/Kg	39	0	0.42 U	0.45 U	0.44 U	0.23 U	0.73 J	0.29 U
SILVER	mg/Kg	39	1	3.4	4	3.2	3.8	4	3.6
SODIUM	mg/Kg		0	110	110	116	120	135	106
THALLIUM	mg/Kg		0	0.18 U	0.19 U	0.19 U	0.1 U	0.2 U	0.12 U
VANADIUM	mg/Kg	0.55	21	**28.5**	**28.7**	**31.7**	**28.4**	**32.5**	**29.2**
ZINC	mg/Kg	2300	0	327	368	337	433	357	359

Notes:
(1) Adjusted USEPA Regional Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value.
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-1A
OD Hill Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-12-01	S45-0DH-13-01	S45-0DH-15-01	S45-0DH-16-01	S45-0DH-18-01	S45-0DH-20-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-12-01	S45-0DH-13-01	S45-0DH-15-01	S45-0DH-16-01	S45-0DH-18-01	S45-0DH-20-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	Units	Criteria Level	Number of Exceedances	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Explosives									
1,3,5-trinitrobenzene	ug/Kg	220000	0	70 J	51 J	54 J	53 J	45 J	42 J
1,3-dinitrobenzene	ug/Kg	610	0	7 U	7.2 U	7.1 U	6.5 U	7.4 U	6.5 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	48 J	40 J	42 J	41 J	62 J	51 J
2,4-dinitrotoluene	ug/Kg	1600	0	100 J	110 J	220	110	1100	220
2,6-dinitrotoluene	ug/Kg	6100	0	30 U	31 U	31 U	28 U	32 U	28 U
2-AM-DNT	ug/Kg	15000	0	190	120	150	160	160	130
2-nitrotoluene	ug/Kg	2900	0	13 U	14 U	14 U	12 U	14 U	13 U
3,5-Dinitroaniline	ug/Kg		0	4 U	120 U	110 U	3.7 U	120 U	100 U
3-nitrotoluene	ug/Kg	610	0	8.9 U	9.2 U	9 U	8.2 U	9.4 U	8.3 U
4-AM-DNT	ug/Kg	15000	0	150	120	160	180	120	120
4-nitrotoluene	ug/Kg	30000	0	30 U	31 U	31 U	28 U	32 U	28 U
HMX	ug/Kg	380000	0	100 J	79 J	98 J	100 J	87 J	68 J
nitrobenzene	ug/Kg	4800	0	25 U	26 U	25 U	23 U	26 U	23 U
NITROGLYCERIN	ug/Kg	610	1	140 U	140 U	140 U	130 U	150 U	130 U
PETN	ug/Kg		0	270 U	280 U	270 U	250 U	280 U	250 U
RDX	ug/Kg	5500	0	290	130	180	230	160	140
TETRYL	ug/Kg	24000	0	6.1 U	6.3 U	6.2 U	5.6 U	6.5 U	5.7 U
Metals									
ALUMINUM	mg/Kg	7700	21	**16500**	**19000**	**19400**	**17100**	**14400**	**18000**
ANTIMONY	mg/Kg	3.1	0	0.2 U	0.5 J	0.19 U	0.18 U	0.36 J	0.24 J
ARSENIC	mg/Kg	0.39	21	**6.2**	**4.7**	**4.7**	**4.9**	**4**	**5.3**
BARIUM	mg/Kg	1500	0	189	171	222	161	138	150
BERYLLIUM	mg/Kg	16	0	0.73	0.85	0.83	0.78	0.65	0.79
CADMIUM	mg/Kg	7	15	6.3	**7.8**	**8.6**	5	4.8	**7.4**
CALCIUM	mg/Kg		0	19400	31400	25300	22200	27600	22900
CHROMIUM	mg/Kg	12000	0	30.1	27.8	32.4	25.9	22	30
COBALT	mg/Kg	2.3	21	**10.8**	**11.2**	**12.3**	**12.6**	**9**	**12.7**
COPPER	mg/Kg	310	20	**314**	**515**	**537**	209	**323**	**434**
IRON	mg/Kg	5500	21	**27700**	**26300**	**27200**	**24200**	**21800**	**27900**
LEAD	mg/Kg	40	20	**43.1**	**51.7**	**67.8**	38.4	**41.5**	**50.8**
MAGNESIUM	mg/Kg		0	5860	7710	6760	6260	6830	7310
MANGANESE	mg/Kg	180	21	**655**	**590**	**627**	**653**	**458**	**580**
MERCURY	mg/Kg	2.3	18	**3.7**	1.6	2	1.4	**3.4**	**3.5**
NICKEL	mg/Kg	150	0	37.8	36.6	41.8	35	31.4	41.3
POTASSIUM	mg/Kg		0	2400	3320	2960	2550	2310	2580
SELENIUM	mg/Kg	39	0	0.43 U	0.24 U	0.42 U	0.4 U	0.21 U	0.35 U
SILVER	mg/Kg	39	1	2.1 J	3.6	3.5	1.2 J	2.6	3.8
SODIUM	mg/Kg		0	103	128	125	115	116	107
THALLIUM	mg/Kg		0	0.18 U	0.1 J	0.18 U	0.17 U	0.2 J	0.15 U
VANADIUM	mg/Kg	0.55	21	**25.9**	**31.7**	**29.6**	**27.6**	**23.7**	**28.7**
ZINC	mg/Kg	2300	0	225	314	321	291	290	299

Notes:
(1) Adjusted USEPA Regional Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-1B
OD Hill Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01D
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	DU
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	Units	Criteria Level	Number of Exceedances	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	ug/Kg	22000	0	93 U	93 U	98 U	93 U	78 U	91 U	89 U	94 U	87 U
1,2-Dichlorobenzene	ug/Kg	190000	0	100 U	100 U	100 U	100 U	85 U	99 U	97 U	100 U	94 U
1,3-Dichlorobenzene	ug/Kg		0	90 U	89 U	94 U	89 U	76 U	88 U	86 U	91 U	84 U
1,4-Dichlorobenzene	ug/Kg	2400	0	99 U	98 U	100 U	98 U	83 U	97 U	94 U	100 U	92 U
2,2'-Oxybis(1-chloropropane)	ug/Kg		0	100 U	100 U	110 U	100 U	86 U	100 U	98 U	100 U	96 U
2,4,5-Trichlorophenol	ug/Kg	610000	0	180 U	180 U	190 U	180 U	150 U	170 U	170 U	180 U	170 U
2,4,6-Trichlorophenol	ug/Kg	44000	0	180 U	180 U	190 U	180 U	150 U	170 U	170 U	180 U	170 U
2,4-Dichlorophenol	ug/Kg	18000	0	170 U	170 U	180 U	170 U	140 U	170 U	160 U	180 U	160 U
2,4-Dimethylphenol	ug/Kg	120000	0	190 U	190 U	200 U	190 U	160 U	190 U	180 U	190 U	180 U
2,4-Dinitrophenol	ug/Kg	12000	0	430 U	430 U	450 U	430 U	360 U	420 U	410 U	440 U	400 U
2,4-Dinitrotoluene	ug/Kg	1600	0	98 U	97 U	100 U	97 U	82 U	96 U	260 J	280 J	91 U
2,6-Dinitrotoluene	ug/Kg	6100	0	91 U	90 U	95 U	90 U	76 U	89 U	87 U	92 U	85 U
2-Chloronaphthalene	ug/Kg	630000	0	100 U	100 U	100 U	99 U	84 U	98 U	96 U	100 U	93 U
2-Chlorophenol	ug/Kg	39000	0	190 U	190 U	200 U	190 U	160 U	180 U	180 U	190 U	180 U
2-Methylnaphthalene	ug/Kg	31000	0	100 U	100 U	110 U	100 U	89 U	100 U	100 U	110 U	99 U
2-Methylphenol	ug/Kg	310000	0	230 U	230 U	240 U	230 U	190 U	220 U	220 U	230 U	210 U
2-Nitroaniline	ug/Kg	61000	0	86 U	86 U	90 U	86 U	73 U	84 U	82 U	88 U	80 U
2-Nitrophenol	ug/Kg		0	190 U	190 U	200 U	190 U	160 U	190 U	180 U	190 U	180 U
3&4-Methylphenol	ug/Kg		0	210 U	210 U	220 U	210 U	180 U	210 U	200 U	220 U	200 U
3,3'-Dichlorobenzidine	ug/Kg	1100	0	130 U	130 U	140 U	130 U	110 U	130 U	120 U	130 U	120 U
3-Nitroaniline	ug/Kg		0	110 U	110 U	110 U	110 U	91 U	100 U	100 U	110 U	100 U
4,6-Dinitro-2-Methylpheno	ug/Kg	610	0	390 U	390 U	400 U	380 U	330 U	380 U	370 U	390 U	360 U
4-Bromophenyl-phenylether	ug/Kg		0	98 U	97 U	100 U	97 U	82 U	96 U	93 U	99 U	91 U
4-Chloro-3-Methylpheno	ug/Kg	610000	0	190 U	190 U	200 U	190 U	160 U	190 U	180 U	190 U	180 U
4-Chloroaniline	ug/Kg	2400	0	140 U	140 U	140 U	140 U	120 U	130 U	130 U	140 U	130 U
4-Chlorophenyl-phenylether	ug/Kg		0	90 U	89 U	94 U	89 U	76 U	88 U	86 U	91 U	84 U
4-Nitroaniline	ug/Kg	24000	0	150 U	150 U	160 U	150 U	130 U	150 U	150 U	160 U	140 U
4-Nitrophenol	ug/Kg		0	360 U	350 U	370 U	350 U	300 U	350 U	340 U	360 U	330 U
Acenaphthene	ug/Kg	340000	0	75 U	74 U	78 U	74 U	63 U	73 U	71 U	76 U	70 U
Acenaphthylene	ug/Kg		0	80 U	80 U	84 U	80 U	68 U	79 U	77 U	82 U	75 U
Anthracene	ug/Kg	1700000	0	96 U	96 U	100 U	96 U	81 U	95 U	92 U	98 U	90 U
Benzo(a)anthracene	ug/Kg	150	0	99 U	98 U	100 U	98 U	83 U	97 U	94 U	100 U	92 U
Benzo(a)pyrene	ug/Kg	15	0	110 U	110 U	110 U	110 U	90 U	100 U	100 U	110 U	100 U
Benzo(b)fluoranthene	ug/Kg	150	0	150 U	150 U	160 U	150 U	130 U	150 U	150 U	160 U	140 U
Benzo(g,h,i)perylene	ug/Kg		0	120 U	120 U	120 U	120 U	100 U	120 U	110 U	120 U	110 U
Benzo(k)fluoranthene	ug/Kg	1500	0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
Bis(2-Chloroethoxy)methane	ug/Kg	18000	0	110 U	110 U	120 U	110 U	93 U	110 U	100 U	110 U	100 U
Bis(2-Chloroethyl)ether	ug/Kg	210	0	93 U	93 U	98 U	93 U	78 U	91 U	89 U	94 U	87 U
bis(2-Ethylhexyl)phthalate	ug/Kg	35000	0	110 U	110 U	120 U	110 U	95 U	110 U	110 U	110 U	100 U
Butylbenzylphthalate	ug/Kg	260000	0	110 U	110 U	110 U	110 U	90 U	100 U	100 U	110 U	100 U
Carbazole	ug/Kg		0	130 U	130 U	130 U	130 U	110 U	120 U	120 U	130 U	120 U
Chrysene	ug/Kg	15000	0	110 U	110 U	110 U	130 J	92 U	110 U	100 U	110 U	100 U
Dibenzo(a,h)anthracene	ug/Kg	15	0	150 U	150 U	150 U	150 U	120 U	140 U	140 U	150 U	140 U
Dibenzofuran	ug/Kg	7800	0	91 U	90 U	95 U	90 U	76 U	89 U	87 U	92 U	85 U
Diethylphthalate	ug/Kg	4900000	0	92 U	92 U	96 U	91 U	78 U	90 U	88 U	93 U	86 U
Dimethyl Phthalate	ug/Kg		0	90 U	89 U	94 U	89 U	76 U	88 U	86 U	91 U	84 U
Di-n-butylphthalate	ug/Kg	610000	0	120 U	120 U	120 U	120 U	98 U	110 U	330 J	120 U	110 U
Di-n-octylphthalate	ug/Kg		0	240 U	240 U	250 U	240 U	200 U	240 U	230 U	250 U	230 U
Fluoranthene	ug/Kg	230000	0	120 U	120 U	130 U	120 U	100 U	120 U	120 U	120 U	110 U
Fluorene	ug/Kg	230000	0	93 U	93 U	98 U	93 U	78 U	91 U	89 U	94 U	87 U
Hexachlorobenzene	ug/Kg	300	0	94 U	94 U	99 U	94 U	79 U	92 U	90 U	96 U	88 U
Hexachlorobutadiene	ug/Kg	6200	0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
Hexachlorocyclopentadiene	ug/Kg	37000	0	94 U	94 U	99 U	94 U	79 U	92 U	90 U	96 U	88 U

Table A-1B
OD Hill Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01D
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	DU
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Hexachloroethane	ug/Kg	35000	0	110 U	110 U	120 U	110 U	93 U	110 U	100 U	110 U	100 U
Indeno(1,2,3-cd)pyrene	ug/Kg	150	0	140 U	140 U	150 U	140 U	120 U	140 U	130 U	140 U	130 U
Isophorone	ug/Kg	510000	0	86 U	86 U	90 U	86 U	73 U	84 U	82 U	88 U	80 U
Naphthalene	ug/Kg	3600	0	100 U	100 U	100 U	99 U	84 U	98 U	96 U	100 U	93 U
Nitrobenzene	ug/Kg	4800	0	100 U	100 U	110 U	100 U	88 U	100 U	100 U	110 U	98 U
N-Nitroso-di-n-propylamine	ug/Kg	69	0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
N-Nitrosodiphenylamine	ug/Kg	99000	0	310 J	250 U	260 U	250 U	210 U	250 U	240 U	260 U	240 U
Pentachlorophenol	ug/Kg	3000	0	270 U	270 U	280 U	270 U	230 U	270 U	260 U	280 U	250 U
Phenanthrene	ug/Kg		0	95 U	95 U	100 U	95 U	80 U	94 U	91 U	97 U	89 U
Phenol	ug/Kg	1800000	0	180 U	180 U	190 U	180 U	150 U	180 U	170 U	180 U	170 U
Pyrene	ug/Kg	170000	0	120 U	120 U	120 U	120 U	98 U	110 U	110 U	120 U	110 U
Explosives												
1,3,5-trinitrobenzene	ug/Kg	220000	0	51 J	62 J	46 J	60 J	84 J	71 J	64 J	56 J	60 J
1,3-dinitrobenzene	ug/Kg	610	0	6.7 U	7.5 U	7.2 U	5.7 U	7.3 U	7.8 U	6.7 U	7.3 U	6.5 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	45 J	45 J	39 J	51 J	46 J	55 J	42 J	59 J	50 J
2,4-dinitrotoluene	ug/Kg	1600	0	150	83 J	64 J	86 J	88 J	92 J	96 J	150	100 J
2,6-dinitrotoluene	ug/Kg	6100	0	29 U	33 U	31 U	25 U	32 U	34 U	29 U	32 U	28 U
2-AM-DNT	ug/Kg	15000	0	140	160	99 J	180	170	200	140	190	220
2-nitrotoluene	ug/Kg	2900	0	13 U	14 U	14 U	11 U	14 U	15 U	13 U	14 U	13 U
3,5-Dinitroaniline	ug/Kg		0	110 U	120 U	120 U	100 U	120 U	120 U	110 U	4.2 U	3.7 U
3-nitrotoluene	ug/Kg	610	0	8.5 U	9.6 U	9.1 U	7.2 U	9.4 U	9.9 U	8.6 U	9.3 U	8.3 U
4-AM-DNT	ug/Kg	15000	0	120	150	94 J	160	150	190	140	180	220
4-nitrotoluene	ug/Kg	30000	0	29 U	33 U	31 U	25 U	32 U	34 U	29 U	32 U	28 U
HMX	ug/Kg	380000	0	72 J	100 J	62 J	150	160	190	100 J	180	92 J
nitrobenzene	ug/Kg	4800	0	24 U	27 U	25 U	20 U	26 U	28 U	24 U	26 U	23 U
NITROGLYCERIN	ug/Kg	610	1	130 U	150 U	140 U	110 U	150 U	160 U	130 U	1500	130 U
PETN	ug/Kg		0	260 U	290 U	280 U	220 U	280 U	300 U	260 U	280 U	250 U
RDX	ug/Kg	5500	0	170	210	120 J	340	440	350	180	540	200
TETRYL	ug/Kg	24000	0	5.8 U	6.6 U	6.2 U	5 U	6.4 U	6.8 U	5.9 U	6.4 U	5.7 U
Herbicides												
2,4,5-T	ug/Kg	0.061	0	18 U	17 U	19 U	18 U	18 U	19 U	18 U	18 U	18 U
2,4-D	ug/Kg	0.069	0	36 U	34 U	38 U	36 U	37 U	38 U	36 U	36 U	35 U
2,4-DB	ug/Kg	0.049	0	26 U	25 U	28 U	26 U	27 U	28 U	26 U	26 U	26 U
Dalapon	ug/Kg	0.18	0	9.2 U	8.7 U	9.7 U	9.2 U	9.6 U	9.7 U	9.4 U	9.2 U	9.1 U
Dicamba	ug/Kg	0.18	0	12 U	12 U	13 U	12 U	13 U	13 U	12 U	12 U	12 U
Dichloroprop	ug/Kg		0	21 U	20 U	22 U	21 U	22 U	22 U	21 U	21 U	21 U
Dinoseb	ug/Kg	0.0061	0	2.9 U	2.7 U	3 U	2.9 U	3 U	3 U	2.9 U	2.9 U	2.8 U
MCPA	ug/Kg	0.0031	0	2600 U	2400 U	2700 U	2600 U	2700 U	2700 U	2600 U	2600 U	2600 U
MCPP	ug/Kg	0.0061	0	2500 U	2300 U	2600 U	2500 U	2600 U	2600 U	2500 U	2500 U	2400 U
Silvex	ug/Kg	0.049	0	14 U	13 U	15 U	14 U	14 U	15 U	14 U	14 U	14 U
Pesticides												
4,4'-DDD	ug/Kg	2000	0	0.23 U	0.22 U	0.24 U	0.23 U	0.23 U	0.23 U	0.2 U	1.4 J	0.22 U
4,4'-DDE	ug/Kg	1400	0	0.82 J	0.21 U	0.89 J	1.1 J	1.3 J	1.2 J	0.95 J	2 J	1.6 J
4,4'-DDT	ug/Kg	1700	0	0.87 J	0.34 U	0.88 J	1.1 J	1.3 JJ	1.2 J	1.1 J	1.9 JJ	1.2 J
Aldrin	ug/Kg	29	0	0.33 U	0.31 U	0.34 U	0.33 U	0.32 U	0.33 U	0.28 U	0.33 U	0.31 U
alpha-BHC	ug/Kg	77	0	0.4 U	0.38 U	0.41 U	0.4 U	0.39 U	0.4 U	0.34 U	0.4 U	0.38 U
alpha-Chlordane	ug/Kg		0	0.24 U	0.23 U	0.25 U	0.25 U	0.24 U	0.24 U	0.21 U	0.24 U	0.24 U
beta-BHC	ug/Kg	270	0	0.38 U	0.36 U	0.4 U	0.39 U	0.38 U	0.38 U	0.33 U	0.39 U	0.37 U
delta-BHC	ug/Kg		0	0.37 U	0.35 U	0.38 U	0.38 U	0.37 U	0.37 U	0.32 U	0.37 U	0.36 U
Dieldrin	ug/Kg	30	0	0.77 J	0.24 U	0.84 J	0.87 J	1 J	0.96 J	0.22 U	0.26 U	0.25 U
Endosulfan I	ug/Kg		0	0.79 J	0.26 U	0.79 J	1 J	32 J	1 J	0.24 U	1.6 J	1.2 J
Endosulfan II	ug/Kg		0	0.4 U	0.38 U	0.41 U	0.4 U	0.39 U	0.4 U	0.34 U	0.4 U	0.88 JJ
Endosulfan sulfate	ug/Kg		0	0.68 U	0.64 U	0.7 U	0.68 U	0.67 U	0.68 U	0.58 U	0.68 U	0.65 U
Endrin	ug/Kg	1800	0	0.99 U	0.94 U	1 U	1 U	0.98 U	0.99 U	0.84 U	1 U	0.95 U

Table A-1B
OD Hill Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-0DH-1-01	S45-0DH-4-01	S45-0DH-6-01	S45-0DH-8-01	S45-0DH-11-01	S45-0DH-14-01	S45-0DH-17-01	S45-0DH-19-01	S45-0DH-19-01D
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	DU
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Endrin Aldehyde	ug/Kg		0	0.57 U	0.54 U	0.59 U	0.57 U	0.56 U	0.57 U	0.49 U	0.57 U	0.55 U
Endrin Ketone	ug/Kg		0	0.46 U	0.44 U	0.48 U	0.47 U	0.58 J	0.47 U	0.4 U	0.47 U	0.45 U
gamma BHC	ug/Kg	520	0	0.31 U	0.3 U	0.32 U	0.32 U	0.31 U	0.31 U	0.27 U	0.32 U	0.3 U
gamma-Chlordane	ug/Kg		0	0.27 U	0.25 U	0.28 U	0.27 U	0.26 U	0.27 U	0.75 J	0.27 U	0.26 U
Heptachlor	ug/Kg	110	0	0.34 U	0.32 U	0.35 U	0.34 U	0.33 U	0.34 U	0.29 U	0.34 U	0.32 U
Heptachlor Epoxide	ug/Kg	53	0	0.26 U	0.24 U	0.26 U	0.26 U	0.25 U	0.26 U	0.22 U	0.26 U	0.25 U
Methoxychlor	ug/Kg	31000	0	0.58 U	45	0.6 U	0.59 U	0.57 U	0.58 U	0.5 U	0.58 U	0.56 U
Toxaphene	ug/Kg	440	0	8.2 U	7.7 U	8.4 U	8.2 U	8 U	8.2 U	7 U	8.2 U	7.8 U
PCBs												
Aroclor-1016	ug/Kg	390	0	7 U	6.6 U	7.2 U	7 U	6.9 U	7 U	6 U	7 U	6.7 U
Aroclor-1221	ug/Kg	140	0	16 U	15 U	17 U	16 U	16 U	16 U	14 U	16 U	16 U
Aroclor-1232	ug/Kg	140	0	11 U	10 U	11 U	11 U	11 U	11 U	9.2 U	11 U	10 U
Aroclor-1242	ug/Kg	220	0	6.8 U	6.4 U	7 U	6.8 U	6.7 U	6.8 U	5.8 U	6.8 U	6.5 U
Aroclor-1248	ug/Kg	220	0	7.1 U	6.8 U	7.3 U	7.2 U	7 U	7.1 U	6.1 U	7.1 U	6.8 U
Aroclor-1254	ug/Kg	220	1	5.5 U	**2000**	5.6 U	5.5 U	5.4 U	5.5 U	4.7 U	5.5 U	5.3 U
Aroclor-1260	ug/Kg	220	0	7 U	6.6 U	7.2 U	7 U	6.9 U	7 U	6 U	7 U	6.7 U
Metals												
ALUMINUM	mg/Kg	7700	21	**19100**	**15000**	**18000**	**17700**	**17900**	**23600**	**16000**	**17500**	**16600**
ANTIMONY	mg/Kg	3.1	0	0.16 J	0.47 U	0.19 U	0.2 U	0.2 U	0.19 U	0.15 U	0.21 U	1.6
ARSENIC	mg/Kg	0.39	21	**5.1**	**12.6**	**4.6**	**4.9**	**8.6**	**4.6**	**4.9**	**6.6**	**7.3**
BARIUM	mg/Kg	1500	0	186	220	163	187	193	182	160	176	203
BERYLLIUM	mg/Kg	16	0	0.85	0.67	0.8	0.81	0.79	0.8	0.71	0.8	0.79
CADMIUM	mg/Kg	7	15	7	**1100**	6.9	**8.8**	**23.6**	**7.4**	4.7	**10.1**	**10.6**
CALCIUM	mg/Kg		0	27800	23200	25500	23300	23200	26700	26000	24400	18600
CHROMIUM	mg/Kg	12000	0	28.5	37.8	28	30.9	446	30.5	25.3	28.8	32
COBALT	mg/Kg	2.3	21	**11.2**	**14**	**11.9**	**14**	**13.1**	**12.6**	**11.2**	**14.2**	**14.9**
COPPER	mg/Kg	310	20	**436**	**1780**	**4180**	**442**	**1060**	**633**	**393**	**411**	**536**
IRON	mg/Kg	5500	21	**27200**	**118000**	**24700**	**28000**	**53100**	**26500**	**24700**	**35100**	**44700**
LEAD	mg/Kg	40	20	**55.6**	**57.2**	**217**	**61.2**	**64**	**56.7**	**54.8**	**81.4**	**74.9**
MAGNESIUM	mg/Kg		0	7140	5680	7190	6870	7040	7000	6220	6430	6180
MANGANESE	mg/Kg	180	21	**581**	**648**	**582**	**710**	**799**	**624**	**555**	**581**	**1080**
MERCURY	mg/Kg	2.3	18	**4**	**3.1**	**3.6**	**3**	**4.5**	**4.4**	**6.8**	**3.3**	**3.6**
NICKEL	mg/Kg	150	0	37.3	46.2	37	43.4	59.3	39.6	35.1	41.9	49.6
POTASSIUM	mg/Kg		0	3400	2160	3190	2700	2880	2980	2460	2720	2430
SELENIUM	mg/Kg	39	0	0.25 U	1.03 U	0.41 U	0.45 U	0.44 U	0.43 U	0.32 U	0.56 J	0.36 U
SILVER	mg/Kg	39	1	3.8	**205**	2.4 J	3.4	5	3.5	2.6	3.3	4
SODIUM	mg/Kg		0	131	103	121	110	112	135	106	114	103
THALLIUM	mg/Kg		0	0.23 J	0.44 U	0.17 U	0.19 U	0.19 U	0.18 U	0.14 U	0.2 U	0.15 U
VANADIUM	mg/Kg	0.55	21	**31.4**	**24.4**	**29.4**	**27.8**	**30.6**	**29.8**	**27.7**	**27.4**	**26.9**
ZINC	mg/Kg	2300	0	327	1270	319	356	421	312	356	369	330

Notes:
(1) Adjusted USEPA Regional Screening Levels (RSL) Residential Soil. Dec 2009
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value.
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U – compound was not detected
J – the reported value is an estimated concentration
UJ the compound was not detected, the associated reporting limit is approximate

Table A-2A
Test Pit Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-02	S45-TP-1-03	S45-TP-1-04	S45-TP-2-02	S45-TP-2-03	S45-TP-2-04	S45-TP-2-05	S45-TP-3-02
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-02	S45-TP-1-03	S45-TP-1-04	S45-TP-2-02	S45-TP-2-03	S45-TP-2-04	S45-TP-2-05	S45-TP-3-02
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/13/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals											
ALUMINUM	mg/Kg	7700	20	**14400**	**17800**	**13000**	**16400**	**12500**	**16500**	**12500**	**16500**
ANTIMONY	mg/Kg	3.1	1	0.63 J	0.2 U	0.13 U	0.2 U	1.5	0.29 J	0.38 J	0.2 U
ARSENIC	mg/Kg	0.39	20	**8.7**	**7.9**	**4.2**	**5.5**	**4.2**	**4.8**	**5.8**	**4.7**
BARIUM	mg/Kg	1500	0	101	171	71.2	126	190	227	191	158
BERYLLIUM	mg/Kg	16	0	0.62	0.78	0.63	0.79	0.55	0.73	0.6	0.75
CADMIUM	mg/Kg	7	8	**13.4**	**8.7**	0.04 J	3.5	4.6	**7.6**	6.1	**7.9**
CALCIUM	mg/Kg		0	62400	25700	53200	28900	101000	29500	30900	23000
CHROMIUM	mg/Kg	12000	0	35	39.2	23.5	26.2	21.3	26.7	19.7	28.1
COBALT	mg/Kg	2.3	20	**12.9**	**13.6**	**13.3**	**12.5**	**10**	**11.3**	**9.6**	**12.1**
COPPER	mg/Kg	310	11	**7310**	**882**	44.4	132	165	**2490**	172	**378**
IRON	mg/Kg	5500	20	**60900**	**37600**	**22100**	**27800**	**20300**	**25600**	**23000**	**26900**
LEAD	mg/Kg	40	15	22.3	**63.8**	15.9	33.4	**62.8**	**91**	**83.6**	**58.3**
MAGNESIUM	mg/Kg		0	9200	7030	10800	7010	7450	7380	6020	7310
MANGANESE	mg/Kg	180	20	**574**	**635**	**409**	**616**	**727**	**407**	**389**	**580**
MERCURY	mg/Kg	2.3	17	**[illegible]**	**5.2**	0.02 J	1.1	**6**	**9.1**	**7.6**	**2.6**
NICKEL	mg/Kg	150	0	54	43.5	45.4	37.1	31	38.2	30	40.8
POTASSIUM	mg/Kg		0	2180	2700	2240	2140	1780	2400	1780	2310
SELENIUM	mg/Kg	39	0	0.59 U	0.43 U	0.28 U	0.43 U	0.32 U	0.4 U	0.23 U	0.44 U
SILVER	mg/Kg	39	1	**53.7**	7.3	0.14 J	0.72 J	0.31 J	0.63 J	0.78 J	2.5 J
SODIUM	mg/Kg		0	151	122	120	199	213	189	199	101
THALLIUM	mg/Kg		0	0.25 U	0.18 U	0.12 U	0.18 U	0.14 U	0.17 U	0.25 J	0.18 U
VANADIUM	mg/Kg	0.55	20	**22.3**	**29.8**	**21.3**	**26.5**	**20.8**	**26.9**	**20.6**	**27.6**
ZINC	mg/Kg	2300	0	150	335	84.4	198	463	1470	535	315

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximat

Table A-2A
Test Pit Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-3-03	S45-TP-3-04	S45-TP-3-05	S45-TP-4-02	S45-TP-4-03	S45-TP-4-04	S45-TP-4-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-3-03	S45-TP-3-04	S45-TP-3-05	S45-TP-4-02	S45-TP-4-03	S45-TP-4-04	S45-TP-4-05
Sample Data				3/13/2010	3/13/2010	3/13/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals										
ALUMINUM	mg/Kg	7700	20	**21700**	**17400**	**14400**	**15000**	**12700**	**9690**	**10800**
ANTIMONY	mg/Kg	3.1	1	**5.1**	0.38 J	0.12 J	0.58 J	0.19 U	0.16 J	0.14 U
ARSENIC	mg/Kg	0.39	20	**4.6**	**4.6**	**3.9**	**5.7**	**5**	**3.3**	**5.4**
BARIUM	mg/Kg	1500	0	173	154	126	153	151	108	76.1
BERYLLIUM	mg/Kg	16	0	0.7	0.74	0.62	0.7	0.58	0.42 J	0.54
CADMIUM	mg/Kg	7	8	6.9	6.1	2.8	**8.1**	4.5	1.8	0.01 U
CALCIUM	mg/Kg		0	34100	28800	37700	30900	41800	40400	53900
CHROMIUM	mg/Kg	12000	0	26.7	26	22.8	25	22.8	14.4	18.8
COBALT	mg/Kg	2.3	20	**9.2**	**9.4**	**10**	**11.3**	**10.4**	**6.4**	**11**
COPPER	mg/Kg	310	11	**716**	**311**	266	**416**	240	115	24.7
IRON	mg/Kg	5500	20	**23400**	**24300**	**21500**	**24800**	**25300**	**15500**	**19000**
LEAD	mg/Kg	40	15	**153**	**46.7**	**42.7**	**57.4**	**50.9**	30.3	11.2
MAGNESIUM	mg/Kg		0	7810	9350	8470	12100	10300	12500	8380
MANGANESE	mg/Kg	180	20	**566**	**502**	**420**	**577**	**466**	**380**	**379**
MERCURY	mg/Kg	2.3	17	**8**	**3.2**	**3.2**	**4.4**	**9.1**	**6.7**	0.04
NICKEL	mg/Kg	150	0	39	33.9	34.8	35.8	35.5	20	34.3
POTASSIUM	mg/Kg		0	3220	3510	2590	2010	1890	1870	1790
SELENIUM	mg/Kg	39	0	0.22 U	0.21 U	0.19 U	0.41 U	0.56 J	0.22 U	0.3 U
SILVER	mg/Kg	39	1	0.33 J	2.9	0.68 J	3.6	1.4 J	0.38 J	0.12 J
SODIUM	mg/Kg		0	149	101	137	195	196	166	188
THALLIUM	mg/Kg		0	0.09 U	0.09 U	0.08 U	0.17 U	0.18 U	0.09 U	0.15 J
VANADIUM	mg/Kg	0.55	20	**29**	**28.3**	**23**	**25.7**	**21.7**	**17.5**	**18.5**
ZINC	mg/Kg	2300	0	585	294	241	304	371	336	80.1

Notes:
(1) Adjusted USEPA Regional Screening Levels (RSL) Residential Soil, Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U – compound was not detected
J = the reported value is an estimated concentration
UJ – the compound was not detected; the associated reporting limit is approximat

Table A-2B
Test Pit Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Semivolatile Organic Compounds								
1,2,4-Trichlorobenzene	ug/Kg	22000	0	92 U	90 U	83 U	89 U	94 U
1,2-Dichlorobenzene	ug/Kg	190000	0	100 U	98 U	90 U	97 U	100 U
1,3-Dichlorobenzene	ug/Kg		0	88 U	87 U	80 U	86 U	90 U
1,4-Dichlorobenzene	ug/Kg	2400	0	97 U	96 U	88 U	95 U	100 U
2,2'-Oxybis(1-chloropropane)	ug/Kg		0	100 U	99 U	91 U	98 U	100 U
2,4,5-Trichlorophenol	ug/Kg	610000	0	180 U	170 U	160 U	170 U	180 U
2,4,6-Trichlorophenol	ug/Kg	44000	0	180 U	170 U	160 U	170 U	180 U
2,4-Dichlorophenol	ug/Kg	18000	0	170 U	170 U	150 U	160 U	170 U
2,4-Dimethylphenol	ug/Kg	120000	0	190 U	180 U	170 U	180 U	190 U
2,4-Dinitrophenol	ug/Kg	12000	0	430 U	420 U	390 U	410 U	440 U
2,4-Dinitrotoluene	ug/Kg	1600	1	96 U	94 U	87 U	94 U	**2500**
2,6-Dinitrotoluene	ug/Kg	6100	0	90 U	88 U	81 U	87 U	92 U
2-Chloronaphthalene	ug/Kg	630000	0	99 U	97 U	89 U	96 U	100 U
2-Chlorophenol	ug/Kg	39000	0	180 U	180 U	170 U	180 U	190 U
2-Methylnaphthalene	ug/Kg	31000	0	100 U	100 U	94 U	100 U	110 U
2-Methylphenol	ug/Kg	310000	0	230 U	220 U	200 U	220 U	230 U
2-Nitroaniline	ug/Kg	61000	0	85 U	83 U	77 U	82 U	87 U
2-Nitrophenol	ug/Kg		0	190 U	180 U	170 U	180 U	190 U
3&4-Methylphenol	ug/Kg		0	210 U	210 U	190 U	200 U	220 U
3,3'-Dichlorobenzidine	ug/Kg	1100	0	130 U	130 U	120 U	120 U	130 U
3-Nitroaniline	ug/Kg		0	110 U	100 U	96 U	100 U	110 U
4,6-Dinitro-2-Methylphenol	ug/Kg	610	0	380 U	370 U	340 U	370 U	390 U
4-Bromophenyl-phenylether	ug/Kg		0	96 U	94 U	87 U	94 U	99 U
4-Chloro-3-Methylphenol	ug/Kg	610000	0	190 U	180 U	170 U	180 U	190 U
4-Chloroaniline	ug/Kg	2400	0	130 U	130 U	120 U	130 U	140 U
4-Chlorophenyl-phenylether	ug/Kg		0	88 U	87 U	80 U	86 U	90 U
4-Nitroaniline	ug/Kg	24000	0	150 U	150 U	140 U	150 U	160 U
4-Nitrophenol	ug/Kg		0	350 U	340 U	320 U	340 U	360 U
Acenaphthene	ug/Kg	340000	0	74 U	72 U	67 U	72 U	75 U
Acenaphthylene	ug/Kg		0	79 U	78 U	72 U	77 U	81 U
Anthracene	ug/Kg	1700000	0	95 U	93 U	86 U	92 U	97 U
Benzo(a)anthracene	ug/Kg	150	0	97 U	96 U	88 U	95 U	100 U
Benzo(a)pyrene	ug/Kg	15	0	100 U	100 U	95 U	100 U	110 U
Benzo(b)fluoranthene	ug/Kg	150	0	150 U	150 U	140 U	150 U	160 U
Benzo(g,h,i)perylene	ug/Kg		0	120 U	120 U	110 U	110 U	120 U
Benzo(k)fluoranthene	ug/Kg	1500	0	94 U	92 U	85 U	91 U	96 U
Bis(2-Chloroethoxy)methane	ug/Kg	18000	0	110 U	110 U	98 U	100 U	110 U
Bis(2-Chloroethyl)ether	ug/Kg	210	0	92 U	90 U	83 U	89 U	94 U
bis(2-Ethylhexyl)phthalate	ug/Kg	35000	0	110 U	110 U	100 U	110 U	110 U
Butylbenzylphthalate	ug/Kg	260000	0	100 U	100 U	95 U	100 U	110 U
Carbazole	ug/Kg		0	120 U	120 U	110 U	120 U	130 U
Chrysene	ug/Kg	15000	0	100 U	100 U	97 U	100 U	110 U
Dibenzo(a,h)anthracene	ug/Kg	15	0	140 U	140 U	130 U	140 U	150 U
Dibenzofuran	ug/Kg	7800	0	90 U	88 U	81 U	87 U	92 U
Diethylphthalate	ug/Kg	4900000	0	91 U	89 U	82 U	88 U	93 U
Dimethyl Phthalate	ug/Kg		0	88 U	87 U	80 U	86 U	90 U
Di-n-butylphthalate	ug/Kg	610000	0	410	110 U	100 U	110 U	2600
Di-n-octylphthalate	ug/Kg		0	240 U	230 U	220 U	230 U	240 U
Fluoranthene	ug/Kg	230000	0	120 U	120 U	110 U	120 U	120 U
Fluorene	ug/Kg	230000	0	92 U	90 U	83 U	89 U	94 U
Hexachlorobenzene	ug/Kg	300	0	93 U	91 U	110 J	90 U	95 U

Table A-2B
Test Pit Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Hexachlorobutadiene	ug/Kg	6200	0	94 U	92 U	85 U	91 U	96 U
Hexachlorocyclopentadiene	ug/Kg	37000	0	93 U	91 U	84 U	90 U	95 U
Hexachloroethane	ug/Kg	35000	0	110 U	110 U	98 U	100 U	110 U
Indeno(1,2,3-cd)pyrene	ug/Kg	150	0	140 U	140 U	120 U	130 U	140 U
Isophorone	ug/Kg	510000	0	85 U	83 U	77 U	82 U	87 U
Naphthalene	ug/Kg	3600	0	99 U	97 U	89 U	96 U	100 U
Nitrobenzene	ug/Kg	4800	0	100 U	100 U	93 U	100 U	100 U
N-Nitroso-di-n-propylamine	ug/Kg	69	0	94 U	92 U	85 U	91 U	96 U
N-Nitrosodiphenylamine	ug/Kg	99000	0	250 U	240 U	220 U	240 U	320 J
Pentachlorophenol	ug/Kg	3000	0	270 U	260 U	240 U	260 U	280 U
Phenanthrene	ug/Kg		0	94 U	92 U	85 U	91 U	96 U
Phenol	ug/Kg	1800000	0	180 U	170 U	160 U	170 U	180 U
Pyrene	ug/Kg	170000	0	110 U	110 U	100 U	110 U	120 U
Explosives								
1,3,5-trinitrobenzene	ug/Kg	220000	0	55 J	59 J	7.1 U	50 J	45 J
1,3-dinitrobenzene	ug/Kg	610	0	7.1 U	6.6 U	6.6 U	6 U	6.4 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	44 J	50 J	68 J	49 J	37 J
2,4-dinitrotoluene	ug/Kg	1600	0	98 J	91 J	120	57 J	86 J
2,6-dinitrotoluene	ug/Kg	6100	0	31 U	29 U	28 U	26 U	28 U
2-AM-DNT	ug/Kg	15000	0	170	190	330	110	150
2-nitrotoluene	ug/Kg	2900	0	14 U	13 U	13 U	12 U	12 U
3,5-Dinitroaniline	ug/Kg		0	120 U	110 U	100 U	100 U	100 U
3-nitrotoluene	ug/Kg	610	0	9.1 U	8.5 U	8.4 U	7.6 U	8.2 U
4-AM-DNT	ug/Kg	15000	0	180	200	500	150	150
4-nitrotoluene	ug/Kg	30000	0	31 U	29 U	28 U	26 U	28 U
HMX	ug/Kg	380000	0	97 J	160	9.1 U	43 J	180
nitrobenzene	ug/Kg	4800	0	25 U	24 U	23 U	21 U	23 U
NITROGLYCERIN	ug/Kg	610	0	140 U	130 U	130 U	120 U	130 U
PETN	ug/Kg		0	280 U	260 U	250 U	230 U	250 U
RDX	ug/Kg	5500	0	190	220	230	75 J	310
TETRYL	ug/Kg	24000	0	6.2 U	5.8 U	5.7 U	5.2 U	5.6 U
Herbicides								
2,4,5-T	ug/Kg	0.061	0	36 U	36 U	34 U	38 U	36 U
2,4-D	ug/Kg	0.069	0	36 U	36 U	34 U	38 U	36 U
2,4-DB	ug/Kg	0.049	0	36 U	36 U	34 U	38 U	36 U
Dalapon	ug/Kg	0.18	0	180 U	180 U	170 U	190 U	190 U
Dicamba	ug/Kg	0.18	0	36 U	36 U	34 U	38 U	36 U
Dichloroprop	ug/Kg		0	72 U	73 U	69 U	76 U	74 U
Dinoseb	ug/Kg	0.0061	0	180 U	180 U	170 U	190 U	190 U
MCPA	ug/Kg	0.0031	0	5400 U	5400 U	5100 U	5700 U	5500 U
MCPP	ug/Kg	0.0061	0	3600 U	3600 U	3400 U	3800 U	3600 U
Silvex	ug/Kg	0.049	0	36 U	36 U	34 U	38 U	36 U
Pesticides								
4,4'-DDD	ug/Kg	2000	0	0.23 U	2.4 JJ	0.2 U	0.23 U	0.24 U
4,4'-DDE	ug/Kg	1400	0	1.2 J	1.5 J	1.1 J	0.67 J	0.9 J
4,4'-DDT	ug/Kg	1700	0	1 J	2.2 JJ	0.31 U	0.68 J	0.77 J
Aldrin	ug/Kg	29	0	0.32 U	0.31 U	0.28 U	0.32 U	0.33 U
alpha-BHC	ug/Kg	77	0	0.39 U	0.38 U	0.34 U	0.39 U	0.4 U
alpha-Chlordane	ug/Kg		0	0.59 J	0.24 U	0.21 U	0.24 U	0.25 U
beta-BHC	ug/Kg	270	0	0.38 U	0.37 U	0.33 U	0.38 U	0.39 U
delta-BHC	ug/Kg		0	0.37 U	0.36 U	0.32 U	0.37 U	0.38 U
Dieldrin	ug/Kg	30	0	0.25 U	1.2 J	0.22 U	0.81 J	0.79 J

Table A-2B
Test Pit Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-TP-1-01	S45-TP-2-01	S45-TP-3-01	S45-TP-3-01D	S45-TP-4-01
Sample Data				3/12/2010	3/12/2010	3/12/2010	3/12/2010	3/12/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Endosulfan I	ug/Kg		0	0.8 J	1.3 J	1.2 J	0.77 J	0.74 J
Endosulfan II	ug/Kg		0	0.39 U	0.38 U	0.34 U	0.39 U	0.4 U
Endosulfan sulfate	ug/Kg		0	0.66 U	0.65 U	0.57 U	0.67 U	0.68 U
Endrin	ug/Kg	1800	0	0.97 U	3.6 J	0.84 U	0.98 U	1 U
Endrin Aldehyde	ug/Kg		0	0.56 U	0.55 U	0.48 U	0.56 U	0.58 U
Endrin Ketone	ug/Kg		0	0.46 U	0.45 U	0.4 U	0.46 U	0.47 U
gamma BHC	ug/Kg	520	0	0.31 U	0.3 U	0.27 U	0.31 U	0.32 U
gamma-Chlordane	ug/Kg		0	0.68 J	1.1 J	0.23 U	0.26 U	0.27 U
Heptachlor	ug/Kg	110	0	0.33 U	0.32 U	0.29 U	0.33 U	0.34 U
Heptachlor Epoxide	ug/Kg	53	0	0.25 U	0.25 U	0.22 U	0.25 U	0.26 U
Methoxychlor	ug/Kg	31000	0	0.57 U	0.56 U	0.5 U	0.58 U	0.59 U
Toxaphene	ug/Kg	440	0	8 U	7.8 U	6.9 U	8 U	8.2 U
PCBs								
Aroclor-1016	ug/Kg	390	0	6.9 U	6.7 U	5.9 U	6.9 U	7.1 U
Aroclor-1221	ug/Kg	140	0	16 U	16 U	14 U	16 U	16 U
Aroclor-1232	ug/Kg	140	0	11 U	10 U	9.2 U	11 U	11 U
Aroclor-1242	ug/Kg	220	0	6.6 U	6.5 U	5.7 U	6.7 U	6.8 U
Aroclor-1248	ug/Kg	220	0	7 U	6.8 U	6 U	7 U	7.2 U
Aroclor-1254	ug/Kg	220	0	5.4 U	5.3 U	4.6 U	5.4 U	5.5 U
Aroclor-1260	ug/Kg	220	0	6.9 U	6.7 U	5.9 U	6.9 U	7.1 U
Metals								
ALUMINUM	mg/Kg	7700	20	**14400**	**16700**	**11900**	**17100**	**17800**
ANTIMONY	mg/Kg	3.1	1	0.14 U	0.21 U	0.15 U	0.2 U	0.12 U
ARSENIC	mg/Kg	0.39	20	**5.4**	**5.5**	**4.3**	**5.1**	**5**
BARIUM	mg/Kg	1500	0	134	146	159	187	170
BERYLLIUM	mg/Kg	16	0	0.67	0.79	0.53	0.76	0.79
CADMIUM	mg/Kg	7	8	**9**	6.8	5.6	**7.7**	**7.3**
CALCIUM	mg/Kg		0	34600	25200	24400 *	28100	27600
CHROMIUM	mg/Kg	12000	0	25.4	27.9	20.9	27.3	27.4
COBALT	mg/Kg	2.3	20	**11.8**	**12.3**	**9.3**	**11.4**	**10.8**
COPPER	mg/Kg	310	11	**853**	**365**	143	**330**	**343**
IRON	mg/Kg	5500	20	**24800**	**30200**	**22200**	**25600**	**27500**
LEAD	mg/Kg	40	15	**54.3**	**54.6**	**86.3**	**70.9**	**64.9**
MAGNESIUM	mg/Kg		0	8140	6780	6170	7980	7170
MANGANESE	mg/Kg	180	20	**519**	**572**	**423**	**515**	**531**
MERCURY	mg/Kg	2.3	17	**2.9**	**2.7**	**7**	**6.8**	**2.4**
NICKEL	mg/Kg	150	0	37.7	40.7	30.6	37.7	37.9
POTASSIUM	mg/Kg		0	1820	2090	1700	2680	2710
SELENIUM	mg/Kg	39	0	0.32 U	0.46 U	0.33 U	0.45 U	0.26 U
SILVER	mg/Kg	39	1	8.7	3 J	0.56 J	2.2 J	2.4
SODIUM	mg/Kg		0	113	88.2 J	146	211	198
THALLIUM	mg/Kg		0	0.27 J	0.19 U	0.14 U	0.19 U	0.11 U
VANADIUM	mg/Kg	0.55	20	**23.8**	**26.9**	**20.8**	**28.5**	**28.1**
ZINC	mg/Kg	2300	0	272	336	387	434	317

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 2009
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value.
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate

Table A-3A
Radius Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R1-01	S45-RI-02	S45-R1-03	S45-R1-04	S45-R1-04	S45-R2-01	S45-R2-02	S45-R2-03	S45-R2-04
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R1-01	S45-RI-02	S45-R1-03	S45-R1-04	S45-R1-04D	S45-R2-01	S45-R2-02	S45-R2-03	S45-R2-04
Sample Data				4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010
Sample Type				SA	SA	SA	SA	DU	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals												
ALUMINUM	mg/Kg	7700	39	**17200**	**16200**	**18200**	**16800**	**20200**	**17800**	**17700**	**19000**	**17900**
ANTIMONY	mg/Kg	3.1	0	0.52 J	0.64 J	0.65 J	0.81 J	0.37 J	0.26 J	0.62 J	0.98 J	0.32 J
ARSENIC	mg/Kg	0.39	40	**5.9**	**5.1**	**5.5**	**4.9**	**5.5**	**6.3**	**5.4**	**5.1**	**5.2**
BARIUM	mg/Kg	1500	0	259	150	168	161	182	144	164	166	150
BERYLLIUM	mg/Kg	16	0	0.75	0.72	0.81	0.76 J	0.85	0.77	0.86	0.83	0.78
CADMIUM	mg/Kg	7	9	**7.6**	**7.7**	**8.2**	**7.9**	**8.1**	4.2	**9.1**	6.6	6.4
CALCIUM	mg/Kg		0	21900	25400	20700	40600	21100	26000	20300	16100	21400
CHROMIUM	mg/Kg	12000	0	35.3	27.4	30.3	27	30.7	27.2	27.7	28.6	29.3
COBALT	mg/Kg	2.3	40	**12.2**	**12.3**	**12.7**	**11.4**	**12.2**	**12**	**11.8**	**12.3**	**11.7**
COPPER	mg/Kg	310	9	**475**	**794**	**478**	**467**	**433**	192	**462**	217	**364**
IRON	mg/Kg	5500	40	**31400**	**25200**	**25800**	**26700**	**28100**	**24400**	**27600**	**26600**	**26500**
LEAD	mg/Kg	40	23	**54.7**	**69.2**	**62.2**	**63.8**	**58**	**50**	**72.3**	**51**	**52.9**
MAGNESIUM	mg/Kg		0	6460	7910	6520	6890	6920	7290	6560	6530	7100
MANGANESE	mg/Kg	180	40	**657**	**676**	**664**	**557**	**561**	**581**	**618**	**676**	**518**
MERCURY	mg/Kg	2.3	12	**5.5**	**3.5**	**3.5**	**3.1**	**4.4**	1.2	**3**	**3.1**	**5.3**
NICKEL	mg/Kg	150	0	43	39.6	41.8	37	40.5	39.9	39.8	40.1	41.4
POTASSIUM	mg/Kg		0	2590	2450	2690	2600	3370	2540	2920	3240	2920
SELENIUM	mg/Kg	39	0	0.89 J	0.7 U	0.75 U	0.7 U	0.85 U	0.59 U	0.72 U	0.81 U	0.69 U
SILVER	mg/Kg	39	0	4.4	3.2	4	3.9	3.2 J	1.4 J	3.6	2.5 J	3
SODIUM	mg/Kg		0	81.2 J	87.7 J	95.6	93.3	86.8 J	99.2	90.9 J	77 J	90.2
THALLIUM	mg/Kg		0	0.28 U	0.29 U	0.32 U	0.3 U	0.36 U	0.25 U	0.3 U	0.34 U	0.29 U
VANADIUM	mg/Kg	0.55	40	**28.5**	**27.3**	**29.8**	**28.3**	**32.8**	**29.7**	**30.9**	**31.7**	**28.6**
ZINC	mg/Kg	2300	0	319	1350	328	404	347	382	321	274	324

Notes:
(1) Adjusted USEPA Regional Screening Levels (RSL) Residential Soil, Dec 2009
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U – compound was not detected
J – the reported value is an estimated concentration
UJ – the compound was not detected; the associated reporting limit is approximate

Table A-3A
Radius Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R3-01	S45-R3-02	S45-R3-03	S45-R3-04	S45-R4-01	S45-R4-02	S45-R4-03	S45-R4-04	S45-R5-02
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R3-01	S45-R3-02	S45-R3-03	S45-R3-04	S45-R4-01	S45-R4-02	S45-R4-03	S45-R4-04	S45-R5-02
Sample Data				4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	4/1/2010	3/16/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals												
ALUMINUM	mg/Kg	7700	39	**20800**	**16800**	**24600**	**18500**	**19000**	**21300**	**19400**	5910	**16700**
ANTIMONY	mg/Kg	3.1	0	0.24 J	0.87 J	0.68 J	0.13 U	0.18 U	0.42 J	0.11 U	2.2	3.1
ARSENIC	mg/Kg	0.39	40	**5.7**	**5.2**	**5.1**	**4.2**	**5.7**	**5**	**4.6**	**4**	**5.1**
BARIUM	mg/Kg	1500	0	140	194	205	122	140	299	89.7	27.9	257
BERYLLIUM	mg/Kg	16	0	0.78	0.72	1	0.78	0.88	0.81	0.69	0.42 J	0.71
CADMIUM	mg/Kg	7	9	6	**8.3**	**8.2**	0.72 J	1.1 J	4.1	0.56 J	0.34 J	3.3
CALCIUM	mg/Kg		0	30000	35000	17500	8950	12200	38500	2900	193000	17100
CHROMIUM	mg/Kg	12000	0	27.9	27.4	35.4	24.7	2804	29.7	25.1	10.6	25.6
COBALT	mg/Kg	2.3	40	**12**	**10.8**	**12.6**	**9.8**	**10.9**	**11.4**	**9.4**	**9.5**	**10**
COPPER	mg/Kg	310	9	284	233	**429**	41.3	82.6	263	39.1	38.9	289
IRON	mg/Kg	5500	40	**25300**	**25400**	**29100**	**22900**	**24000**	**26500**	**23100**	**7600**	**24300**
LEAD	mg/Kg	40	23	**48.9**	**70.3**	**69.4**	28.2	22.5	28.3	21	29.7	**352**
MAGNESIUM	mg/Kg		0	7260	9130	7340	4720	6750	7880	4460	15000	6870
MANGANESE	mg/Kg	180	40	**651**	**530**	**470**	**549**	**428**	**606**	**361**	**363**	**438**
MERCURY	mg/Kg	2.3	12	1.7	**6.4**	**4.2**	2.2	1.4	0.9	0.48	0.15	1.6
NICKEL	mg/Kg	150	0	37.4	38.3	46.6	28.9	37	42.5	26.2	23.8	32.5
POTASSIUM	mg/Kg		0	2980	2550	4020	2260	2970	2880	2610	2620	2470
SELENIUM	mg/Kg	39	0	0.79 J	0.76 U	0.9 U	0.45 U	0.63 U	0.82 U	0.4 U	0.34 U	0.23 U
SILVER	mg/Kg	39	0	0.82 J	1.9 J	3 J	0.29 J	0.42 J	0.47 J	0.23 J	0.04 U	0.75 J
SODIUM	mg/Kg		0	92.2	120	93.7 J	66.2 J	79 J	112	59.1 J	179	110
THALLIUM	mg/Kg		0	0.28 U	0.32 U	0.38 U	0.19 U	0.27 U	0.35 U	0.17 U	0.14 U	0.1 U
VANADIUM	mg/Kg	0.55	40	**30.2**	**27**	**38.9**	**30.8**	**33.6**	**29.5**	**32.2**	**16.6**	**27.5**
ZINC	mg/Kg	2300	0	392	588	421	91.2	160	938	99.2	66.8	335

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA valu
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this tabl
(3) Number of Exceedances represents the total for the Full and Limited Suite Table
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U = compound was not detected
J – the reported value is an estimated concentration
UJ – the compound was not detected; the associated reporting limit is approximat

Table A-3A
Radius Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-06	S45-R5-07	S45-R5-08	S45-R10-01	S45-R10-02	S45-R10-03	S45-R10-03D	S45-R10-04	S45-R10-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-06	S45-R5-07	S45-R5-08	S45-R10-01	S45-R10-02	S45-R10-03	S45-R10-03D	S45-R10-04	S45-R10-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	SA	SA	SA	DU	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals												
ALUMINUM	mg/Kg	7700	39	**21600**	**16100**	**27900**	**20700**	**22100**	**18100**	**16700**	**19100**	**19900**
ANTIMONY	mg/Kg	3.1	0	0.11 U	0.18 J	2.8	0.12 U	0.13 U	0.88 J	2.4	0.09 U	0.14 U
ARSENIC	mg/Kg	0.39	40	**5.2**	**5.1**	**6.4**	**5.3**	**5.1**	**5.1**	**5**	**4.8**	**4.6**
BARIUM	mg/Kg	1500	0	148	111	229	141	109	167	256	108	134
BERYLLIUM	mg/Kg	16	0	0.86	0.75	1.2	0.87	0.88	0.8	0.76	0.77	0.86
CADMIUM	mg/Kg	7	9	0.62 J	**8.3**	1.1	1 J	0.79 J	1.8	1.6 J	0.7 J	1.1 J
CALCIUM	mg/Kg		0	5100	41300	14800	3790	2750	27800	28500	2840	4100
CHROMIUM	mg/Kg	12000	0	28.8	25.6	33.3	24.1	29.6	31.4	29.2	23.9	25.5
COBALT	mg/Kg	2.3	40	**9.2**	**11.8**	**12.5**	**8.9**	**9.9**	**12.4**	**12.5**	**10.5**	**9.6**
COPPER	mg/Kg	310	9	44.4	210	142	32.8	47.2	92.6	132	24.9	44.7
IRON	mg/Kg	5500	40	**25200**	**26800**	**30600**	**22500**	**24900**	**28300**	**28800**	**21900**	**22700**
LEAD	mg/Kg	40	23	12.9	**44.6**	**998**	19.4	**46.4**	**123**	**189**	21.7	25.2
MAGNESIUM	mg/Kg		0	5740	8440	8740	4320	4480	7560	6880	3630	4050
MANGANESE	mg/Kg	180	40	**395**	**591**	**506**	**682**	**256**	**437**	**436**	**999**	**627**
MERCURY	mg/Kg	2.3	12	0.23	1	0.17	0.38	0.28	0.79	1	0.17	0.45
NICKEL	mg/Kg	150	0	29.8	38.9	38.6	23.5	32.2	49.7	46.9	21.6	27.1
POTASSIUM	mg/Kg		0	4140	2640	4880	2920	3400	2950	2610	2580	3250
SELENIUM	mg/Kg	39	0	0.25 U	0.25 U	0.21 U	0.26 U	0.28 U	0.38 U	0.34 U	0.21 U	0.3 U
SILVER	mg/Kg	39	0	0.18 J	0.29 J	0.06 U	0.08 U	0.18 J	0.11 U	0.1 U	0.06 U	0.09 U
SODIUM	mg/Kg		0	98.6 J	132	113	138	76.6 J	126	110	58.7 J	73 J
THALLIUM	mg/Kg		0	0.11 U	0.1 U	0.09 U	0.11 U	0.42 J	0.31 J	0.14 U	0.09 U	0.13 U
VANADIUM	mg/Kg	0.55	40	**37.3**	**25**	**40**	**33.3**	**37.8**	**26.9**	**25.3**	**32.4**	**33**
ZINC	mg/Kg	2300	0	89.5	230	153	85.6	140	185	298	85.7	130

Notes:
(1) Adjusted USEPA Regional Screening Levels (RSL) Residential Soil, Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U – compound was not detected
J – the reported value is an estimated concentration
UJ – the compound was not detected; the associated reporting limit is approximate

Table A-3A
Radius Limited Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R10-06	S45-R10-07	S45-R15-01	S45-R15-02	S45-R15-03	S45-R15-04	S45-R15-05	S45-R15-06
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R10-06	S45-R10-07	S45-R15-01	S45-R15-02	S45-R15-03	S45-R15-04	S45-R15-05	S45-R15-06
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/17/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	SA	SA	SA	SA	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	**Units**	**Criteria Level**	**Number of Exceedances**	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Metals											
ALUMINUM	mg/Kg	7700	39	**17400**	**16500**	**19900**	**25000**	**14200**	**18700**	**17000**	**20700**
ANTIMONY	mg/Kg	3.1	0	0.11 U	1.8	0.25 U	0.12 U	0.41 U	0.1 U	0.09 U	0.12 U
ARSENIC	mg/Kg	0.39	40	**4**	**4.5**	**7.6**	**5.4**	**4.9**	**4.8**	**3.9**	**5.1**
BARIUM	mg/Kg	1500	0	107	263	287	175	55.4	108	107	135
BERYLLIUM	mg/Kg	16	0	0.68	0.76	1	1	0.65	0.85	0.77	1
CADMIUM	mg/Kg	7	9	1.1 J	1.5 J	1.8 J	0.74 J	0.45 J	0.55 J	0.52 J	0.86 J
CALCIUM	mg/Kg		0	3700	14500	3630	4370	9010	2150	3560	2340
CHROMIUM	mg/Kg	12000	0	22.4	29.2	24.6	30.8	26.6	24.2	23.3	27.5
COBALT	mg/Kg	2.3	40	**7.7**	**12.1**	**26.8**	**10**	**12.1**	**10.1**	**9.1**	**12.9**
COPPER	mg/Kg	310	9	64	129	22.8	25.6	43.1	20	23.4	23.3
IRON	mg/Kg	5500	40	**20500**	**27500**	**35300**	**26200**	**26000**	**22500**	**20400**	**24000**
LEAD	mg/Kg	40	23	35.4	**198**	22	26.6	**53.2**	20.6	22.8	27.9
MAGNESIUM	mg/Kg		0	3650	6640	4080	4460	6180	3770	3800	4210
MANGANESE	mg/Kg	180	40	**446**	**393**	**5040**	**552**	**328**	**735**	**466**	**1080**
MERCURY	mg/Kg	2.3	12	0.71	0.38	0.21	0.1	0.1	0.06	0.09	0.1
NICKEL	mg/Kg	150	0	21.4	47.4	29.8	27.1	52.1	24.8	29.4	32.7
POTASSIUM	mg/Kg		0	2320	2400	2780	3850	2140	2740	2780	3410
SELENIUM	mg/Kg	39	0	0.25 U	0.92 J	0.56 U	0.27 U	0.9 U	0.21 U	0.21 U	0.26 U
SILVER	mg/Kg	39	0	0.08 U	0.11 U	0.17 U	0.08 U	0.27 U	0.06 U	0.06 U	0.08 U
SODIUM	mg/Kg		0	70.3 J	97.1	87.4 J	87 J	73.8 J	61.6 J	53.1 J	67.5 J
THALLIUM	mg/Kg		0	0.11 U	0.31 J	0.24 U	0.12 U	0.38 U	0.09 U	0.09 U	0.11 U
VANADIUM	mg/Kg	0.55	40	**29.6**	**24.5**	**30.7**	**41.9**	**22.5**	**31.3**	**27.1**	**33.8**
ZINC	mg/Kg	2300	0	136	237	101	104	114	76	80	114

Notes:
(1) Adjusted USEPA Regional Screening Levels (RSL) Residential Soil, Dec 200
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Level

U – compound was not detected
J = the reported value is an estimated concentration
UJ – the compound was not detected; the associated reporting limit is approximate

Table A-3B
Radius Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	Units	Criteria Level	Number of Exceedances	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Semivolatile Organic Compounds								
1,2,4-Trichlorobenzene	ug/Kg	22000	0	100 U	100 U	98 U	100 U	97 U
1,2-Dichlorobenzene	ug/Kg	190000	0	110 U	110 U	110 U	110 U	100 U
1,3-Dichlorobenzene	ug/Kg		0	98 U	100 U	94 U	97 U	93 U
1,4-Dichlorobenzene	ug/Kg	2400	0	110 U	110 U	100 U	110 U	100 U
2,2'-Oxybis(1-chloropropane)	ug/Kg		0	110 U	120 U	110 U	110 U	110 U
2,4,5-Trichlorophenol	ug/Kg	610000	0	200 U	200 U	190 U	190 U	180 U
2,4,6-Trichlorophenol	ug/Kg	44000	0	200 U	200 U	190 U	190 U	180 U
2,4-Dichlorophenol	ug/Kg	18000	0	190 U	190 U	180 U	190 U	180 U
2,4-Dimethylphenol	ug/Kg	120000	0	210 U	210 U	200 U	200 U	200 U
2,4-Dinitrophenol	ug/Kg	12000	0	470 U	490 U	450 U	470 U	450 U
2,4-Dinitrotoluene	ug/Kg	1600	0	110 U	110 U	100 U	110 U	100 U
2,6-Dinitrotoluene	ug/Kg	6100	0	99 U	100 U	95 U	99 U	95 U
2-Chloronaphthalene	ug/Kg	630000	0	110 U	110 U	100 U	110 U	100 U
2-Chlorophenol	ug/Kg	39000	0	210 U	210 U	200 U	200 U	200 U
2-Methylnaphthalene	ug/Kg	31000	0	120 U	120 U	110 U	110 U	110 U
2-Methylphenol	ug/Kg	310000	0	250 U	260 U	240 U	250 U	240 U
2-Nitroaniline	ug/Kg	61000	0	94 U	97 U	90 U	94 U	90 U
2-Nitrophenol	ug/Kg		0	210 U	220 U	200 U	210 U	200 U
3&4-Methylphenol	ug/Kg		0	240 U	240 U	220 U	230 U	220 U
3,3'-Dichlorobenzidine	ug/Kg	1100	0	140 U	150 U	140 U	140 U	140 U
3-Nitroaniline	ug/Kg		0	120 U	120 U	110 U	120 U	110 U
4,6-Dinitro-2-Methylphenol	ug/Kg	610	0	420 U	440 U	410 U	420 U	400 U
4-Bromophenyl-phenylether	ug/Kg		0	110 U	110 U	100 U	110 U	100 U
4-Chloro-3-Methylphenol	ug/Kg	610000	0	210 U	220 U	200 U	210 U	200 U
4-Chloroaniline	ug/Kg	2400	0	150 U	150 U	140 U	150 U	140 U
4-Chlorophenyl-phenylether	ug/Kg		0	98 U	100 U	94 U	97 U	93 U
4-Nitroaniline	ug/Kg	24000	0	170 U	170 U	160 U	170 U	160 U
4-Nitrophenol	ug/Kg		0	390 U	400 U	370 U	380 U	370 U
Acenaphthene	ug/Kg	340000	0	82 U	84 U	78 U	81 U	78 U
Acenaphthylene	ug/Kg		0	88 U	91 U	84 U	87 U	84 U
Anthracene	ug/Kg	1700000	0	100 U	110 U	100 U	100 U	100 U
Benzo(a)anthracene	ug/Kg	150	0	110 U	110 U	100 U	110 U	100 U
Benzo(a)pyrene	ug/Kg	15	0	120 U	120 U	110 U	120 U	110 U
Benzo(b)fluoranthene	ug/Kg	150	0	170 U	170 U	160 U	170 U	160 U
Benzo(g,h,i)perylene	ug/Kg		0	130 U	130 U	120 U	130 U	120 U
Benzo(k)fluoranthene	ug/Kg	1500	0	100 U	110 U	100 U	100 U	99 U
Bis(2-Chloroethoxy)methane	ug/Kg	18000	0	120 U	120 U	120 U	120 U	120 U
Bis(2-Chloroethyl)ether	ug/Kg	210	0	100 U	100 U	98 U	100 U	97 U
bis(2-Ethylhexyl)phthalate	ug/Kg	35000	0	120 U	130 U	120 U	120 U	120 U
Butylbenzylphthalate	ug/Kg	260000	0	120 U	120 U	110 U	120 U	110 U
Carbazole	ug/Kg		0	140 U	140 U	130 U	140 U	130 U
Chrysene	ug/Kg	15000	0	120 U	120 U	110 U	120 U	110 U
Dibenzo(a,h)anthracene	ug/Kg	15	0	160 U	170 U	150 U	160 U	150 U
Dibenzofuran	ug/Kg	7800	0	99 U	100 U	95 U	99 U	95 U
Diethylphthalate	ug/Kg	4900000	0	100 U	100 U	96 U	100 U	96 U
Dimethyl Phthalate	ug/Kg		0	98 U	100 U	94 U	97 U	93 U
Di-n-butylphthalate	ug/Kg	610000	0	130 U	130 U	120 U	130 U	120 U
Di-n-octylphthalate	ug/Kg		0	260 U	270 U	250 U	260 U	250 U
Fluoranthene	ug/Kg	230000	0	130 U	140 U	130 U	130 U	130 U
Fluorene	ug/Kg	230000	0	100 U	100 U	98 U	100 U	97 U
Hexachlorobenzene	ug/Kg	300	0	100 U	110 U	99 U	100 U	98 U

Table A-3B
Radius Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	Units	Criteria Level	Number of Exceedances	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Hexachlorobutadiene	ug/Kg	6200	0	100 U	110 U	100 U	100 U	99 U
Hexachlorocyclopentadiene	ug/Kg	37000	0	100 U	110 U	99 U	100 U	98 U
Hexachloroethane	ug/Kg	35000	0	120 U	120 U	120 U	120 U	120 U
Indeno(1,2,3-cd)pyrene	ug/Kg	150	0	150 U	160 U	150 U	150 U	150 U
Isophorone	ug/Kg	510000	0	94 U	97 U	90 U	94 U	90 U
Naphthalene	ug/Kg	3600	0	110 U	110 U	100 U	110 U	100 U
Nitrobenzene	ug/Kg	4800	0	110 U	120 U	110 U	110 U	110 U
N-Nitroso-di-n-propylamine	ug/Kg	69	0	100 U	110 U	100 U	100 U	99 U
N-Nitrosodiphenylamine	ug/Kg	99000	0	280 U	280 U	260 U	270 U	260 U
Pentachlorophenol	ug/Kg	3000	0	300 U	310 U	280 U	300 U	280 U
Phenanthrene	ug/Kg		0	100 U	110 U	100 U	100 U	99 U
Phenol	ug/Kg	1800000	0	200 U	200 U	190 U	190 U	190 U
Pyrene	ug/Kg	170000	0	130 U	130 U	120 U	130 U	120 U
Explosives								
1,3,5-trinitrobenzene	ug/Kg	220000	0	8.5 U	8 U	7.4 U	7.5 U	7.3 U
1,3-dinitrobenzene	ug/Kg	610	0	7.9 U	7.4 U	6.8 U	6.9 U	6.7 U
2,4,6-trinitrotoluene	ug/Kg	19000	0	8.5 U	8 U	7.4 U	7.5 U	470
2,4-dinitrotoluene	ug/Kg	1600	0	19 U	18 U	16 U	17 U	840
2,6-dinitrotoluene	ug/Kg	6100	0	34 U	32 U	30 U	30 U	29 U
2-AM-DNT	ug/Kg	15000	0	27 U	25 U	23 U	23 U	23 U
2-nitrotoluene	ug/Kg	2900	0	15 U	14 U	13 U	13 U	13 U
3,5-Dinitroaniline	ug/Kg		0	4.5 U	4.2 U	3.9 U	3.9 U	3.8 U
3-nitrotoluene	ug/Kg	610	0	10 U	9.5 U	8.7 U	8.8 U	8.6 U
4-AM-DNT	ug/Kg	15000	0	22 U	20 U	19 U	19 U	18 U
4-nitrotoluene	ug/Kg	30000	0	34 U	32 U	30 U	30 U	29 U
HMX	ug/Kg	380000	0	11 U	10 U	9.5 U	9.6 U	9.3 U
nitrobenzene	ug/Kg	4800	0	28 U	26 U	24 U	24 U	24 U
NITROGLYCERIN	ug/Kg	610	0	160 U	150 U	140 U	140 U	130 U
PETN	ug/Kg		0	300 U	290 U	260 U	270 U	260 U
RDX	ug/Kg	5500	0	8.6 U	8.2 U	7.5 U	7.6 U	7.4 U
TETRYL	ug/Kg	24000	0	6.9 U	6.5 U	6 U	6 U	5.9 U
Herbicides								
2,4,5-T	ug/Kg	0.061	0	20 U	21 U	20 U	19 U	18 U
2,4-D	ug/Kg	0.069	0	40 U	43 U	41 U	38 U	37 U
2,4-DB	ug/Kg	0.049	0	29 U	31 U	30 U	28 U	27 U
Dalapon	ug/Kg	0.18	0	10 U	11 U	10 U	9.8 U	9.5 U
Dicamba	ug/Kg	0.18	0	14 U	15 U	14 U	13 U	13 U
Dichloroprop	ug/Kg		0	23 U	25 U	24 U	22 U	22 U
Dinoseb	ug/Kg	0.0061	0	3.2 U	3.4 U	3.3 U	3 U	3 U
MCPA	ug/Kg	0.0031	0	2900 U	3100 U	3000 U	2800 U	2700 U
MCPP	ug/Kg	0.0061	0	2800 U	2900 U	2800 U	2600 U	2500 U
Silvex	ug/Kg	0.049	0	16 U	17 U	16 U	15 U	14 U
Pesticides								
4,4'-DDD	ug/Kg	2000	0	0.24 U	0.28 U	0.24 U	0.26 U	0.24 U
4,4'-DDE	ug/Kg	1400	0	1.6 J	1.7 J	0.23 U	0.24 U	0.85 J
4,4'-DDT	ug/Kg	1700	0	0.38 U	1.2 J	0.37 U	0.4 U	0.37 U
Aldrin	ug/Kg	29	0	0.34 U	0.38 U	0.33 U	0.36 U	0.34 U
alpha-BHC	ug/Kg	77	0	0.42 U	0.47 U	0.4 U	0.44 U	0.41 U
alpha-Chlordane	ug/Kg		0	0.26 U	0.29 U	0.25 U	0.27 U	0.25 U
beta-BHC	ug/Kg	270	0	0.4 U	0.45 U	0.39 U	0.42 U	0.4 U
delta-BHC	ug/Kg		0	0.39 U	0.44 U	0.38 U	0.41 U	0.38 U
Dieldrin	ug/Kg	30	0	0.96 J	1.1 J	0.26 U	0.28 U	0.79 JJ

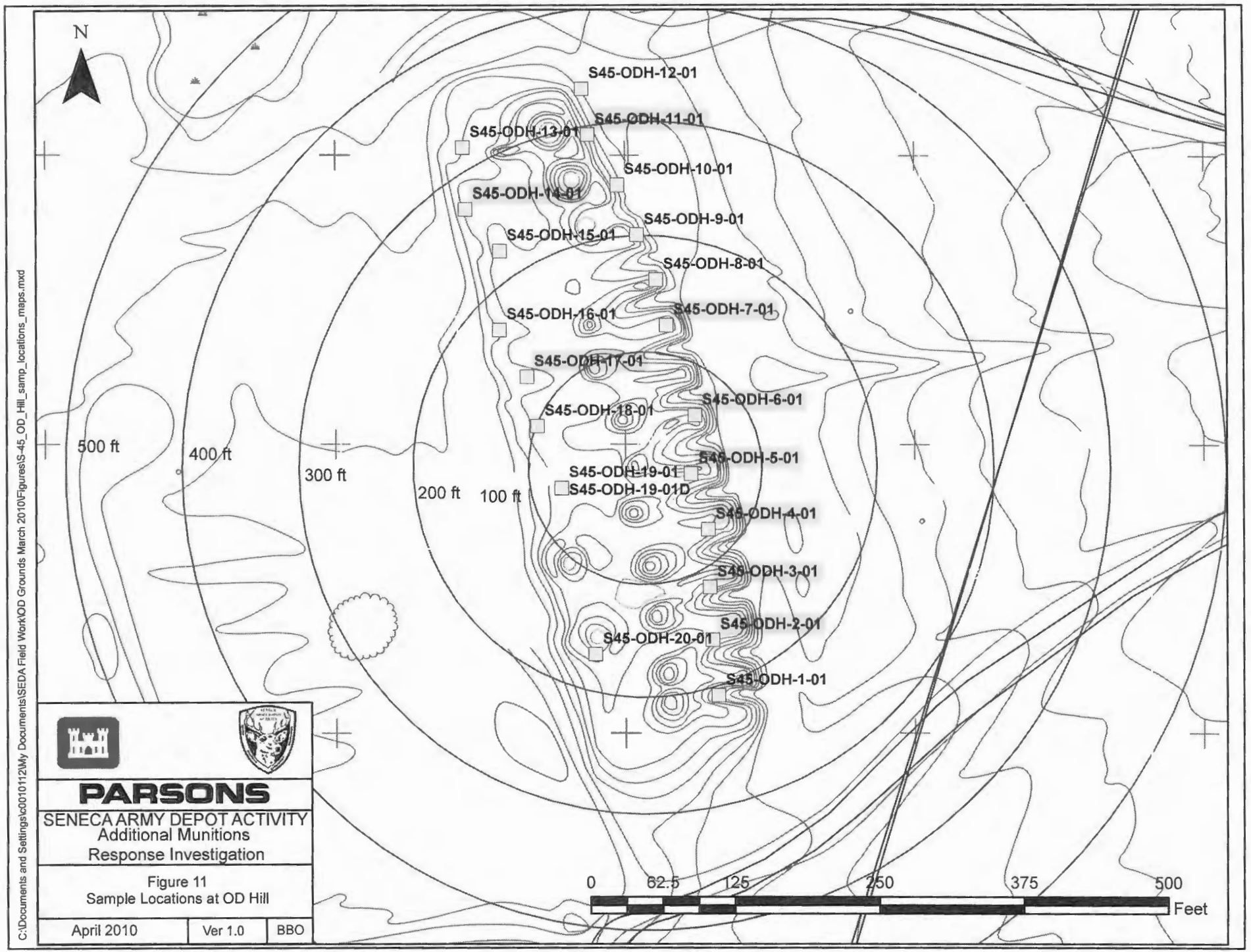
Table A-3B
Radius Full Suite Samples Compared to USEPA Residential 1/10th Levels
Additional Munitions Response Investigation
Seneca Army Depot Activities

Area				SEAD-45	SEAD-45	SEAD-45	SEAD-45	SEAD-45
Loc_ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Matrix				SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID				S45-R5-01	S45-R5-03	S45-R5-04	S45-R5-04D	S45-R5-05
Sample Data				3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
Sample Type				SA	SA	SA	DU	SA
Study ID				Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.	Initial Invest.
Parameter	Units	Criteria Level	Number of Exceedances	Value (Q)	Value (Q)	Value (Q)	Value (Q)	Value (Q)
Endosulfan I	ug/Kg		0	23 J	1.3 JJ	0.28 U	55 J	0.29 U
Endosulfan II	ug/Kg		0	0.42 U	0.47 U	0.4 U	0.44 U	0.41 U
Endosulfan sulfate	ug/Kg		0	0.71 U	0.8 U	0.69 U	0.74 U	0.69 U
Endrin	ug/Kg	1800	0	1 U	1.2 U	1 U	1.1 U	1 U
Endrin Aldehyde	ug/Kg		0	0.6 U	0.68 U	0.58 U	0.63 U	0.59 U
Endrin Ketone	ug/Kg		0	0.49 U	0.55 U	0.48 U	0.51 U	0.48 U
gamma BHC	ug/Kg	520	0	0.33 U	0.37 U	0.32 U	0.35 U	0.32 U
gamma-Chlordane	ug/Kg		0	0.28 U	0.32 U	0.27 U	0.3 U	0.28 U
Heptachlor	ug/Kg	110	0	0.36 U	0.4 U	0.34 U	0.37 U	0.35 U
Heptachlor Epoxide	ug/Kg	53	0	0.27 U	0.3 U	0.26 U	0.28 U	0.26 U
Methoxychlor	ug/Kg	31000	0	0.61 U	0.69 U	0.6 U	0.64 U	0.6 U
Toxaphene	ug/Kg	440	0	8.6 U	9.6 U	8.3 U	9 U	8.4 U
PCBs								
Aroclor-1016	ug/Kg	390	0	7.4 U	8.3 U	7.1 U	7.7 U	7.2 U
Aroclor-1221	ug/Kg	140	0	17 U	19 U	17 U	18 U	17 U
Aroclor-1232	ug/Kg	140	0	11 U	13 U	11 U	12 U	11 U
Aroclor-1242	ug/Kg	220	0	7.1 U	8 U	6.9 U	7.4 U	6.9 U
Aroclor-1248	ug/Kg	220	0	7.5 U	8.4 U	7.3 U	7.8 U	7.3 U
Aroclor-1254	ug/Kg	220	0	5.8 U	6.5 U	5.6 U	6 U	5.6 U
Aroclor-1260	ug/Kg	220	0	7.4 U	8.3 U	7.1 U	7.7 U	7.2 U
Metals								
ALUMINUM	mg/Kg	7700	39	**17200**	**18900**	**18100**	**18800**	**18700**
ANTIMONY	mg/Kg	3.1	0	0.14 J	0.15 U	0.09 U	0.12 U	0.11 U
ARSENIC	mg/Kg	0.39	40	**5**	**5.4**	**5.5**	**7**	**5.2**
BARIUM	mg/Kg	1500	0	152	177	106	114	165
BERYLLIUM	mg/Kg	16	0	0.74	0.85	0.9	0.95	0.79
CADMIUM	mg/Kg	7	9	6	6.4	0.33 J	0.46 J	5.1
CALCIUM	mg/Kg		0	31200	20600	3290	3490	29300
CHROMIUM	mg/Kg	12000	0	26.1	29.7	26.4	28	26.7
COBALT	mg/Kg	2.3	40	**11.1**	**13.4**	**11**	**16.4**	**10**
COPPER	mg/Kg	310	9	221	**350**	31.5	33.6	219
IRON	mg/Kg	5500	40	**26000**	**25400**	**25800**	**30400**	**25400**
LEAD	mg/Kg	40	23	**86.2**	**60**	11.9	15.4	**42.9**
MAGNESIUM	mg/Kg		0	7210	7260	4980	5330	7140
MANGANESE	mg/Kg	180	40	**583**	**662**	**336**	**787**	**489**
MERCURY	mg/Kg	2.3	12	**3.7**	**4.7**	0.03 J	0.04 J	1.3
NICKEL	mg/Kg	150	0	38.1	40.1	43	56	33.4
POTASSIUM	mg/Kg		0	2780	3060	2670	2960	3220
SELENIUM	mg/Kg	39	0	0.23 U	0.33 U	0.19 U	0.26 U	0.24 U
SILVER	mg/Kg	39	0	0.71 J	2.6	0.06 U	0.08 U	0.46 J
SODIUM	mg/Kg		0	135	103	65.8 J	70.2 J	127
THALLIUM	mg/Kg		0	0.1 U	0.14 U	0.08 U	0.11 U	0.1 U
VANADIUM	mg/Kg	0.55	40	**26.7**	**31.8**	**29.7**	**31.2**	**30.1**
ZINC	mg/Kg	2300	0	284	304	80.2	83.9	360

Notes:
(1) Adjusted USEPA Regionial Screening Levels (RSL) Residential Soil. Dec 2009
Carcinogenic compounds set at 1 X EPA value, non-carcinogenic compounds set at 0.1 X EPA value.
(2) Sample/Duplicate pairs are evaluated as separate and discrete samples in this table.
(3) Number of Exceedances represents the total for the Full and Limited Suite Tables.
(4) A bolded and outlined cell indicates a concentration that exceeded the USEPA RSL Residential 1/10th Levels

U = compound was not detected
J = the reported value is an estimated concentration
UJ = the compound was not detected; the associated reporting limit is approximate


N
0 62.5 125 250 375 500 Feet
W E S
Yellow highlight indicates surface samples. Pink highlight indicates subsurface samples.
S45-R5-01
S45-TP-3-02
S45-TP-3-01
S45-TP-3-04
S45-ODH-12-01
S45-R5-07
S45-R4-02
S45-ODH-13-01
S45-ODH-11-01
S45-ODH-10-01
SS45-1
SS45-6
S45-ODH-14-01
S45-R3-02
S45-ODH-15-01
TP45-11
S45-ODH-8-01
S45-R3-03
TP45-1
S45-ODH-7-01
S45-R2-03
S45-ODH-16-01
S45-TP-4-03
S45-TP-4-04
S45-R1-02
S45-TP-4-05
SS45-9
S45-ODH-17-01
TP45-2
S45-R1-03
SS45-4
S45-ODH-18-01
S45-R5-03
S45-R5-08
S45-ODH-19-01
TP45-3
S45-ODH-5-01
SS45-2
SS45-7
S45-R1-01
S45-R1-04
SB45410
TP45-4
S45-ODH-3-01
SS45-5
S45-R2-01
S45-R2-04
S45-ODH-20-01
S45-ODH-2-01
TP45-5
S45-R3-01
S45-ODH-1-01
S45-R2-04
S45-R4-01
S45-R4-04
SS45-3
S45-R5-06
S45-R5-06
S45-R10
S45-R10-03
N
2500 ft
1500 ft
500 ft
Figure 1-5B
Figure 1-5A
OD Grounds Site
Area of Inset
PARSONS
SENECA ARMY DEPOT ACTIVITY
FEASIBILITY STUDY REPORT
FOR THE OPEN DETONATION
GROUNDS (SEAD-45)
Figure 1-5B
Historic Soil Sample Locations at
OD Grounds (OD Hill Area)
March 2013
BBO
Legend
500 ft
Radius Rings from OD Hill
Distance from the Center
Center Point of all Radius Rings
(N 1012812, E 738375)
OB Grounds
Boundary
Surface Soil Sample Location
Subsurface Soil Sample Location
Path: Y:\TO#13 - OD Grounds RI-FS\Documents\FS\Dist\Final FS\Figures_Revised\Figure 1-5B.mxd


N
S45-ODH-12-01
S45-ODH-11-01
S45-ODH-13-01
S45-ODH-10-01
S45-ODH-14-01
S45-ODH-9-01
S45-ODH-15-01
S45-ODH-8-01
S45-ODH-16-01
S45-ODH-7-01
S45-ODH-17-01
S45-ODH-6-01
S45-ODH-18-01
S45-ODH-5-01
S45-ODH-19-01
S45-ODH-19-01D
S45-ODH-4-01
S45-ODH-3-01
S45-ODH-2-01
S45-ODH-20-01
S45-ODH-1-01
500 ft
400 ft
300 ft
200 ft
100 ft
0
62.5
125
250
375
500
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure 11
Sample Locations at OD Hill
April 2010
Ver 1.0
BBO
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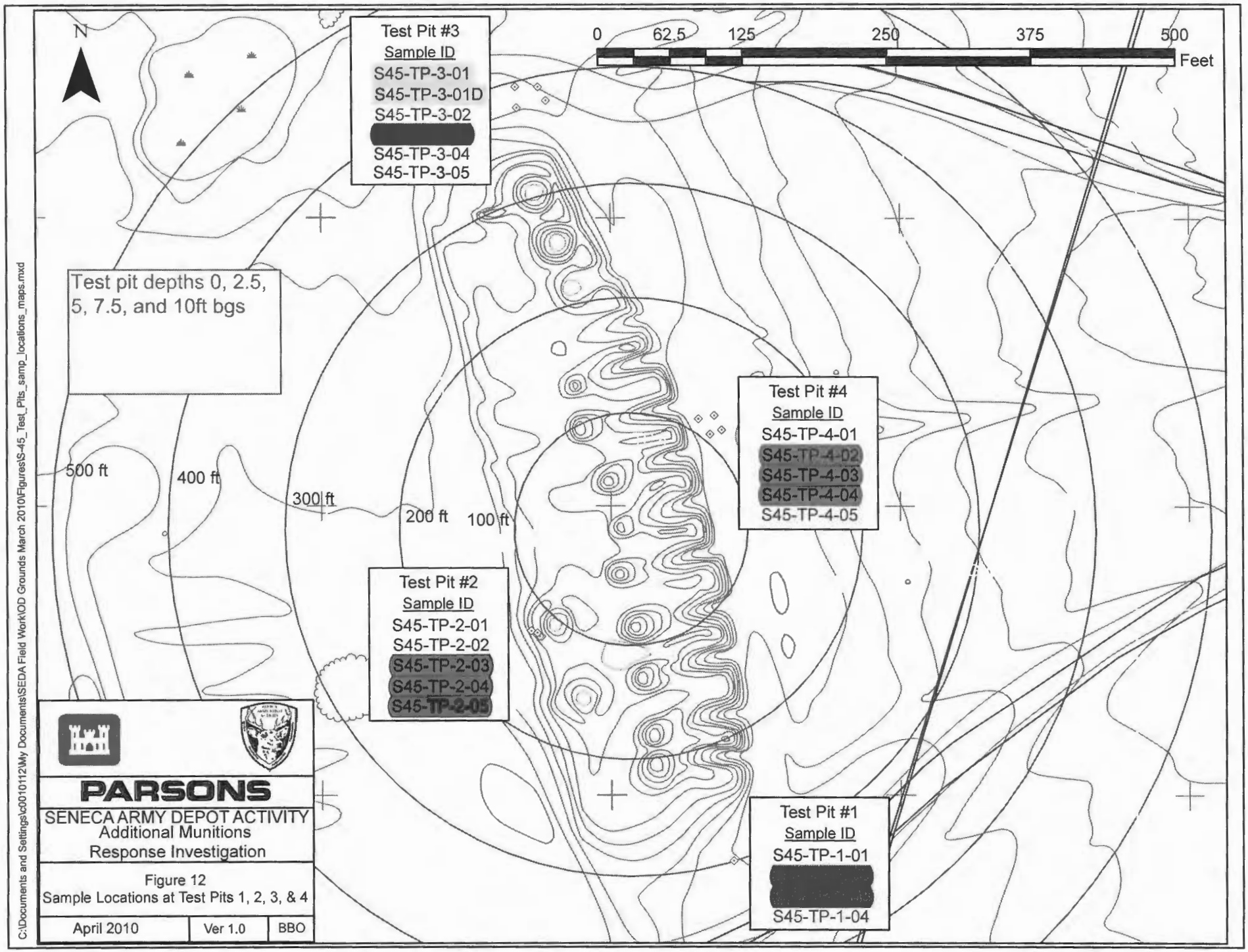
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0 62.5 125 250 375 500
Feet
Test Pit #3
Sample ID
S45-TP-3-01
S45-TP-3-01D
S45-TP-3-02
[redacted]
S45-TP-3-04
S45-TP-3-05
Test pit depths 0, 2.5, 5, 7.5, and 10ft bgs
500 ft
400 ft
300 ft
200 ft
100 ft
Test Pit #4
Sample ID
S45-TP-4-01
S45-TP-4-02
S45-TP-4-03
S45-TP-4-04
S45-TP-4-05
Test Pit #2
Sample ID
S45-TP-2-01
S45-TP-2-02
S45-TP-2-03
S45-TP-2-04
S45-TP-2-05
Test Pit #1
Sample ID
S45-TP-1-01
[redacted]
S45-TP-1-04
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure 12
Sample Locations at Test Pits 1, 2, 3, & 4
April 2010
Ver 1.0
BBO
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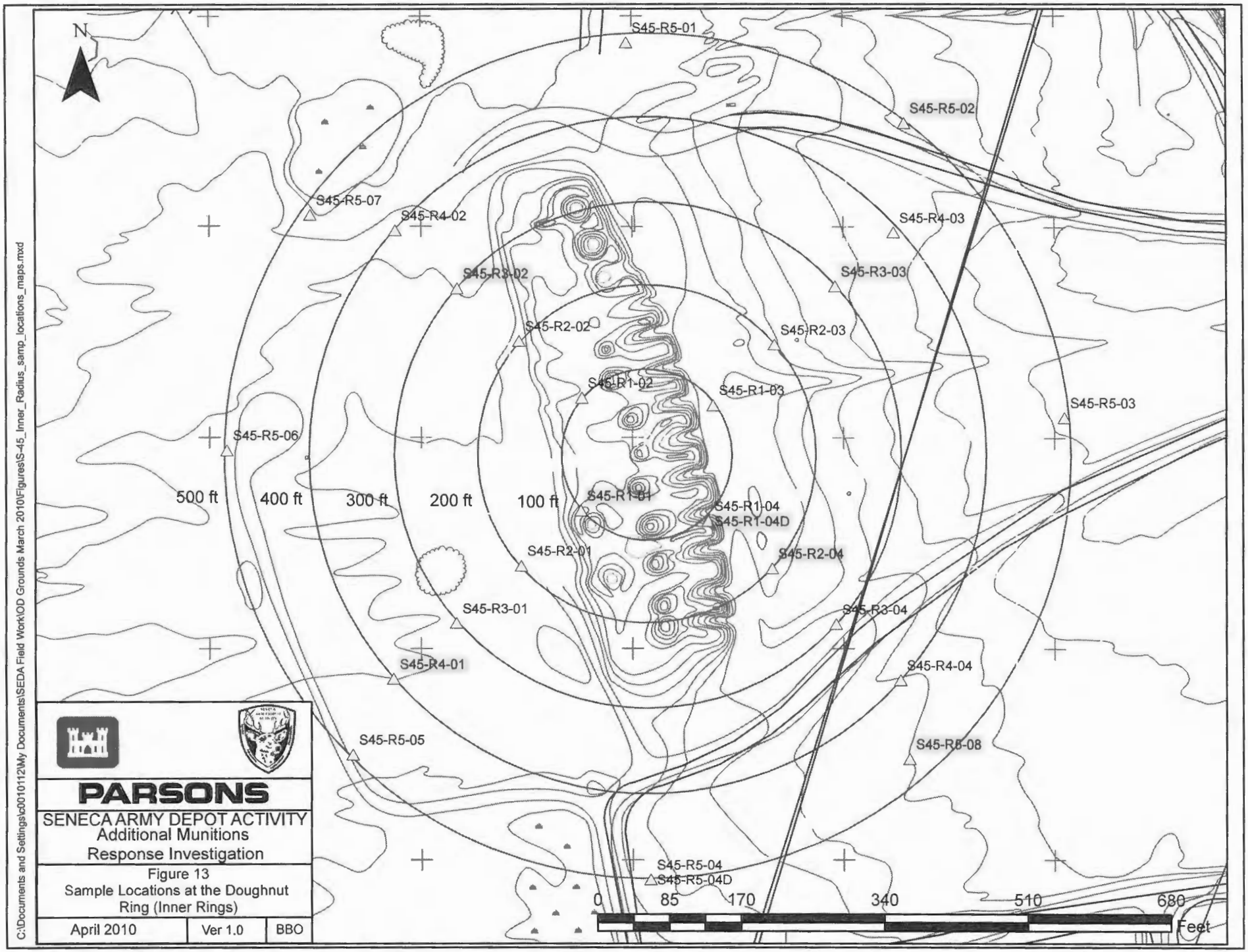
N
S45-R5-01
S45-R5-02
S45-R5-07
S45-R4-02
S45-R4-03
S45-R3-02
S45-R3-03
S45-R2-02
S45-R2-03
S45-R1-02
S45-R1-03
S45-R5-03
S45-R5-06
500 ft
400 ft
300 ft
200 ft
100 ft
S45-R1-01
S45-R1-04
S45-R1-04D
S45-R2-01
S45-R2-04
S45-R3-01
S45-R3-04
S45-R4-01
S45-R4-04
S45-R5-05
S45-R5-08
S45-R5-04
S45-R5-04D
0
85
170
340
510
680
Feet
PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure 13
Sample Locations at the Doughnut
Ring (Inner Rings)
April 2010
Ver 1.0
BBO
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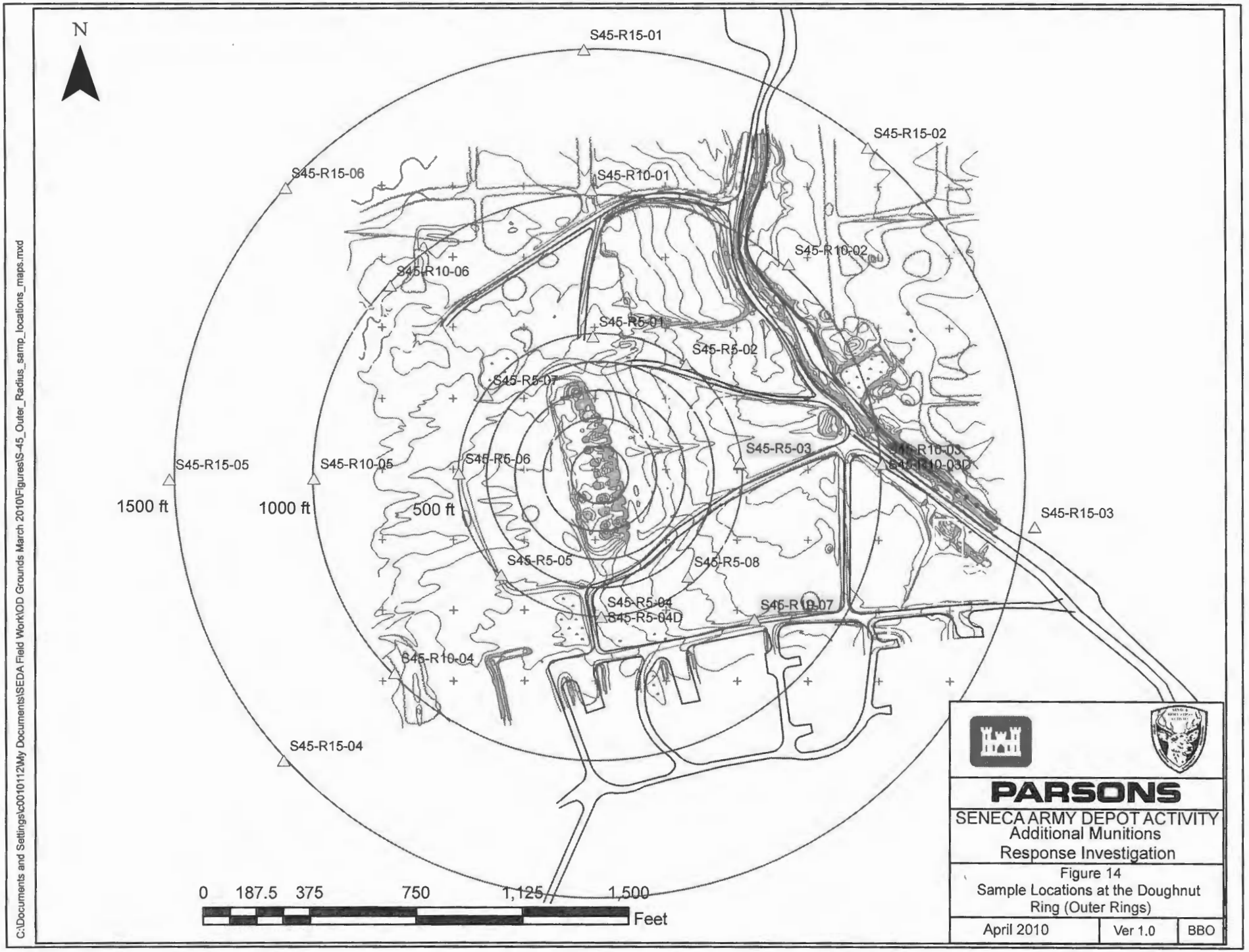
N
S45-R15-01
S45-R15-02
S45-R15-03
S45-R15-04
S45-R15-05
S45-R15-06
S45-R10-01
S45-R10-02
S45-R10-03
S45-R10-03D
S45-R10-04
S45-R10-05
S45-R10-06
S45-R10-07
S45-R5-01
S45-R5-02
S45-R5-03
S45-R5-04
S45-R5-04D
S45-R5-05
S45-R5-06
S45-R5-07
S45-R5-08
1500 ft
1000 ft
500 ft
0 187.5 375 750 1,125 1,500
Feet
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PARSONS
SENECA ARMY DEPOT ACTIVITY
Additional Munitions
Response Investigation
Figure 14
Sample Locations at the Doughnut
Ring (Outer Rings)
April 2010
Ver 1.0
BBO

TABLE 4.7-1

SOIL ANALYSIS RESULTS
SENECA ARMY DEPOT
SEAD-45 EXPANDED SITE INSPECTION

COMPOUND	MATRIX LOCATION DEPTH (FEET) SAMPLE DATE ES ID LAB ID UNITS	MAXIMUM	FREQUENCY OF DETECTION	TAGM	NO. ABOVE TAGM	SOIL SEAD-45 0-0.2 10/25/93 SS45-1 202506	SOIL SEAD-45 0-0.2 10/25/93 SS45-2 202507	SOIL SEAD-45 0-0.2 10/25/93 SS45-3 202508	SOIL SEAD-45 0-0.2 10/25/93 SS45-4 202509	SOIL SEAD-45 0-0.2 10/25/93 SS45-5 202512	SOIL SEAD-45 0-0.2 10/25/93 SS45-10 202517 SS45-5DUP	SOIL SEAD-45 0-0.2 10/25/93 SS45-6 202511	SOIL SEAD-45 0-0.2 10/25/93 SS45-7 202514	SOIL SEAD-45 0-0.2 10/25/93 SS45-8 202515
VOLATILE ORGANICS														
Tetrachloroethene	ug/kg	18	35.7%	1400	0	12 U	11 U	12 U	11 UJ	12 U	12 U	11 U	11 U	12 U
HERBICIDES														
MCPA	ug/kg	9400	14.3%	NA	NA	9400	6300	6000 U	5400 U	5900 U	6000 U	5500 U	5700 U	6300 U
NITROAROMATICS														
HMX	ug/kg	470	42.9%	NA	NA	130 U	130 U	130 U	130 U	120 J	140 J	130 U	130 UJ	130 UJ
RDX	ug/kg	5800	78.6%	NA	NA	130 U	130 U	100 J	82 J	280 J	290 J	1800	83 J	130 UJ
1,3,5-Trinitrobenzene	ug/kg	190	42.9%	NA	NA	130 U	130 U	100 J	100 U	130 UJ	130 UJ	120 J	130 UJ	130 UJ
Tetryl	ug/kg	330	28.6%	NA	NA	130 U	130 U	130 U	90 J	130 UJ	130 J	330	130 UJ	130 UJ
2,4,6-Trinitrotoluene	ug/kg	1400	64.3%	NA	NA	130 U	130 U	96 J	130 U	84 J	80 J	190	130 UJ	130 UJ
4-amino-2,6-Dinitrotoluene	ug/kg	270	7.1%	NA	NA	130 U	130 U	130 U	130 U	130 UJ	130 UJ	130 U	130 UJ	130 UJ
2-amino-4,6-Dinitrotoluene	ug/kg	680	57.1%	NA	NA	130 U	130 U	99 J	130 U	280 J	270 J	590	130 UJ	130 UJ
2,4-Dinitrotoluene	ug/kg	180	57.1%	NA	NA	130 U	130 U	130 U	110 J	150 J	140 J	160	130 UJ	130 UJ
SEMIVOLATILE ORGANICS														
Hexachloroethane	ug/kg	1100	35.7%	NA	NA	410 U	380 U	400 U	360 U	390 U	390 U	21 J	380 U	420 U
Naphthalene	ug/kg	30	28.6%	13000	0	410 U	380 U	400 U	360 U	21 J	390 U	360 U	380 U	420 U
Acenaphthylene	ug/kg	30	14.3%	41000	0	410 U	380 U	400 U	360 U	30 J	390 U	360 U	380 U	420 U
2,6-Dinitrotoluene	ug/kg	700	14.3%	1000	0	410 U	380 U	400 U	360 U	390 U	390 U	41 J	380 U	420 U
2,4-Dinitrotoluene	ug/kg	14000	50.0%	NA	NA	410 U	380 U	400 U	360 U	180 J	75 J	830	380 U	420 U
Diethylphthalate	ug/kg	35	7.1%	7100	0	410 U	380 U	400 U	360 U	390 U	390 U	360 U	380 U	420 U
N-Nitrosodiphenylamine	ug/kg	1600	35.7%	50000 *	0	410 U	380 U	400 U	360 U	390 U	390 U	110 J	380 U	420 U
Hexachlorobenzene	ug/kg	62	57.1%	410	0	410 U	380 U	400 U	20 J	43 J	41 J	55 J	380 U	420 U
Phenanthrene	ug/kg	46	50.0%	50000 *	0	410 U	380 U	400 U	360 U	38 J	31 J	25 J	380 U	420 U
Anthracene	ug/kg	18	14.3%	50000 *	0	410 U	380 U	400 U	360 U	18 J	390 U	360 U	380 U	420 U
Di-n-butylphthalate	ug/kg	6800	50.0%	8100	0	410 U	380 U	400 U	360 U	110 J	31 J	900	380 U	420 U
Fluoranthene	ug/kg	68	64.3%	50000 *	0	410 U	380 U	400 U	23 J	66 J	44 J	42 J	380 U	22 J
Pyrene	ug/kg	110	71.4%	50000 *	0	410 U	380 U	400 U	35 J	100 J	76 J	79 J	380 U	30 J
Benzo(a)anthracene	ug/kg	50	42.9%	220	0	410 U	380 U	400 U	360 U	50 J	32 J	31 J	380 U	420 U
Chrysene	ug/kg	68	64.3%	400	0	410 U	380 U	400 U	19 J	68 J	55 J	52 J	380 U	20 J
bis(2-Ethylhexyl)phthalate	ug/kg	740	50.0%	50000 *	0	410 U	380 U	700	430	740	700	380 U	210 J	470
Benzo(b)fluoranthene	ug/kg	55	50.0%	1100	0	410 U	380 U	400 U	360 U	55 J	33 J	36 J	380 U	420 U
Benzo(k)fluoranthene	ug/kg	58	35.7%	1100	0	410 U	380 U	400 U	360 U	58 J	18 J	360 U	380 U	420 U
Benzo(a)pyrene	ug/kg	82	42.9%	61	1	410 U	380 U	400 U	360 U	82 J	44 J	45 J	380 U	420 U
Indeno(1,2,3-cd)pyrene	ug/kg	52	28.6%	3200	0	410 U	380 U	400 U	360 U	52 J	390 U	360 U	380 U	420 U
Benzo(g,h,i)perylene	ug/kg	66	35.7%	50000 *	0	410 U	380 U	400 U	360 U	39 J	27 J	360 U	380 U	420 U

TABLE 4.7-1

SOIL ANALYSIS RESULTS
SENECA ARMY DEPOT
SEAD-45 EXPANDED SITE INSPECTION

COMPOUND	MATRIX LOCATION DEPTH (FEET) SAMPLE DATE ES ID LAB ID UNITS	MAXIMUM	FREQUENCY OF DETECTION	TAGM	NO. ABOVE TAGM	SOIL SEAD-45 0-0.2 10/25/93 SS45-1 202506	SOIL SEAD-45 0-0.2 10/25/93 SS45-2 202507	SOIL SEAD-45 0-0.2 10/25/93 SS45-3 202508	SOIL SEAD-45 0-0.2 10/25/93 SS45-4 202509	SOIL SEAD-45 0-0.2 10/25/93 SS45-5 202512	SOIL SEAD-45 0-0.2 10/25/93 SS45-10 202517 SS45-5DUP	SOIL SEAD-45 0-0.2 10/25/93 SS45-6 202511	SOIL SEAD-45 0-0.2 10/25/93 SS45-7 202514	SOIL SEAD-45 0-0.2 10/25/93 SS45-8 202515
PESTICIDES/PCB														
Endosulfan I	ug/kg	2.2	35.7%	900	0	2.1 U	2 U	2 U	1.8 U	1.8 J	2 U	1.8 U	1.9 U	2.1 U
Dieldrin	ug/kg	3.2	23.1%	44	0	4.1 U	3.8 U	4 U	2.5 J	3.9 U	3.8 U	3.2 J	3.8 U	4.1 U
4,4'-DDE	ug/kg	4.2	42.9%	2100	0	4.1 U	3.8 U	4 U	3.2 J	3.9 U	3.4 J	4.2 J	3.8 U	4.1 U
4,4'-DDT	ug/kg	3.4	30.8%	2100	0	4.1 U	3.8 U	4 U	3.8 U	3.9 U	3.4 J	2.6 J	3.8 U	4.1 U
alpha-Chlordane	ug/kg	2	23.1%	540	0	2.1 U	2 U	2 U	1.5 J	2 U	1.1 J	2 J	1.9 U	2.1 U
Aroclor-1254	ug/kg	110	7.6%	1000(a)	0	41 U	38 U	40 U	36 U	39 U	110 J	36 U	38 U	41 U
METALS														
Aluminum	mg/kg	22800	100.0%	15523	15	17300	19400	18900	14900	17800	15600	16300	18000	18600
Arsenic	mg/kg	8.2	100.0%	7.5	1	5	5.5	5.1	5.1	8.2	6.4	5.5	6.8	6.4
Barium	mg/kg	365	100.0%	300	1	122	194	115	143	161	151	160	163	355
Beryllium	mg/kg	1.1	100.0%	1	1	0.7 J	0.77 J	0.83 J	0.83 J	0.72 J	0.7 J	0.71 J	0.82 J	0.69 J
Cadmium	mg/kg	13.1	100.0%	1	12	2.8	2.4	1.1	3.9	9.5 J	9.5 J	6.8	1.6 J	4.8 J
Calcium	mg/kg	47000	100.0%	120725	0	8510	10300	21800	47000	26000	47000	23400	6930	16800
Chromium	mg/kg	39.3	100.0%	24	14	24.1	39.3	27.4	22.9	28.9	23.6	24.2	24.8	27.2
Cobalt	mg/kg	24.3	100.0%	30	0	10.8	24.3	14.1	12.4	12.9	12.2	11.7	13.1	12.1
Copper	mg/kg	1240	100.0%	25	16	79.4	192	55.8	155	538	405	491	69.8	293
Iron	mg/kg	75700	100.0%	28986	13	25800	75700	30500	26700	31400	30400	28100	28900	29400
Lead	mg/kg	67.8	100.0%	30	12	20.4	15.7	12	34.9	63.6	54.9	63.2	21.9	68.9
Magnesium	mg/kg	9270	100.0%	12308	0	5530	5950	6790	8420	7320	7000	6440	5170	6740
Manganese	mg/kg	1380	100.0%	759	5	562	1150	627	530	575	599	555	1050	489
Mercury	mg/kg	4.3	100.0%	0.1	16	0.43	0.63	0.17	0.43	1.5 J	2.1 J	2.4	0.41 J	1.9 J
Nickel	mg/kg	51	100.0%	37	8	29.4 R	41.3 R	40.5 R	35.2 R	40.5	36.4	34.2 R	35.1	39.4
Potassium	mg/kg	3280	100.0%	1548	16	2310	3140	2720	2100	2140	1980	2060	2080	2530
Selenium	mg/kg	1.1	0.0%	2	0	0.27 U	0.16 U	0.21 U	0.23 U	0.18 UJ	0.22 UJ	0.18 U	0.22 UJ	0.24 UJ
Silver	mg/kg	26.2	57.1%	0.5	11	1.3 UJ	1.5 UJ	2.1	1 UJ	3.5 J	2.7 J	4.3	1.2 UJ	2.3 J
Sodium	mg/kg	418	100.0%	114	9	67.1 J	100 J	114 J	142 J	110 J	104 J	112 J	136 J	93.5 J
Vanadium	mg/kg	38	100.0%	150	0	28.6	35.4	30.5	23.7	27.9	25.8	27.3	32.5	30
Zinc	mg/kg	557	100.0%	80	9	148 R	122 R	115 R	208 R	427	381	347 R	126	306
Cyanide	mg/kg	8.3	14.3%	NA	NA	0.56 U	0.57 U	0.58 U	0.54 U	0.72 U	0.67 U	0.52 U	0.66 U	0.72 U
OTHER ANALYSES														
Nitrate/Nitrite-Nitrogen	mg/kg	28	100.0%	NA	NA	0.42	0.38	0.05	1.34	0.13	0.05	11.8	6	0.12
Total Solids	%W/W	91.9				80.4	85.7	82.6	91.9	84	84.2	91.6	87.4	78.7

TABLE 4.7-1

SOIL ANALYSIS RESULTS
SENECA ARMY DEPOT
SEAD-45 EXPANDED SITE INSPECTION

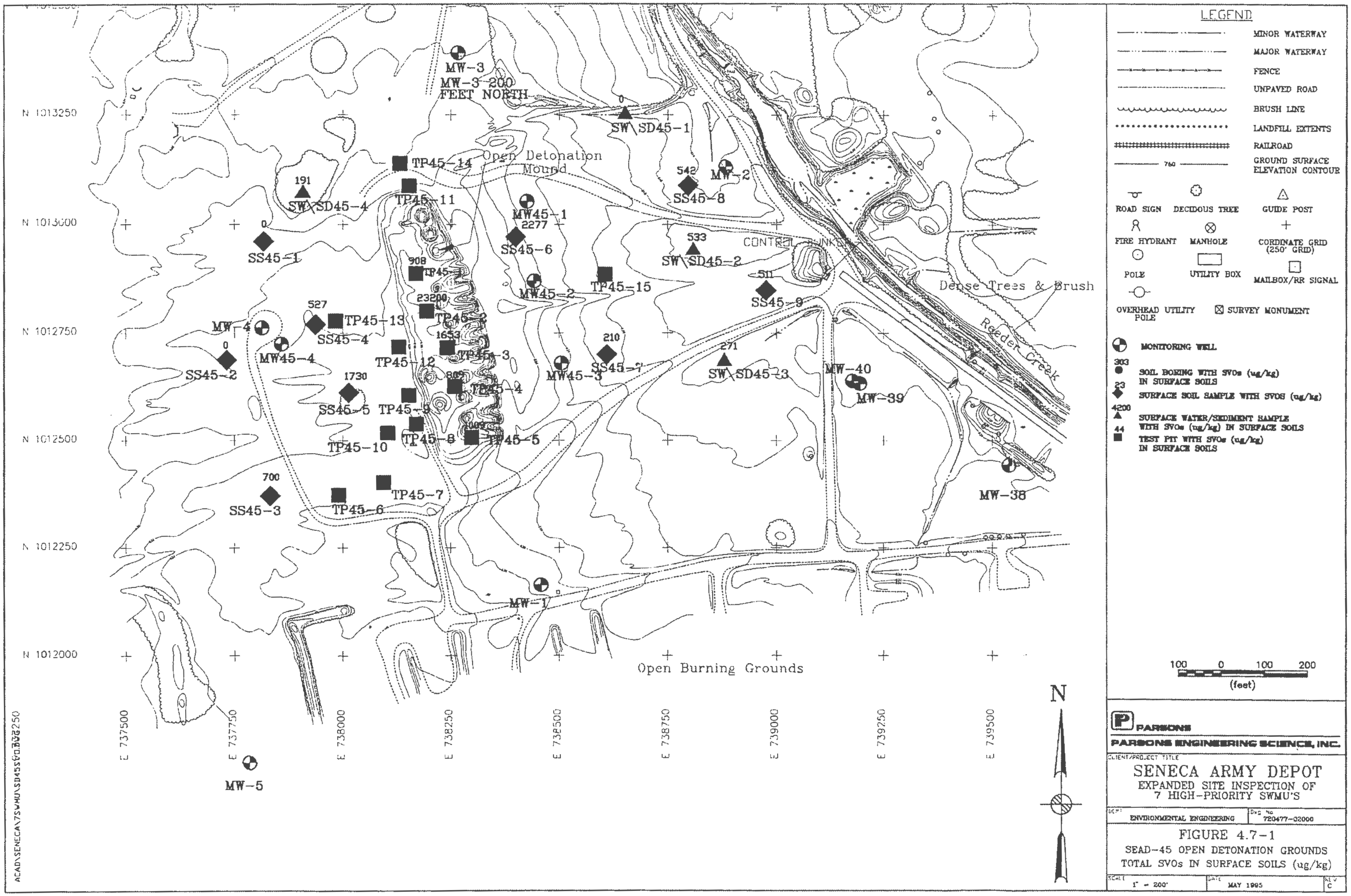
COMPOUND	MATRIX LOCATION DEPTH (FEET) SAMPLE DATE ES ID LAB ID UNITS	MAXIMUM	FREQUENCY OF DETECTION	TAGM	NO. ABOVE TAGM	SOIL SEAD-45 0-0.2 10/25/93 SS45-9 202516	SOIL SEAD-45 3 11/08/93 TP45-1 203648-203648	SOIL SEAD-45 3 11/08/93 TP45-11 203656-203658 TP45-1DUP	SOIL SEAD-45 3 11/08/93 TP45-2 203650-203652	SOIL SEAD-45 3 11/08/93 TP45-3 203654	SOIL SEAD-45 3 11/09/93 TP45-4 204026-204028	SOIL SEAD-45 3 11/09/93 TP45-5 204030-204032
VOLATILE ORGANICS												
Tetrachloroethene	ug/kg	19	35.7%	1400	0	12 U	4 J	6 J	8 J	19	2 J	3 J
HERBICIDES												
MCPA	ug/kg	9400	14.3%	NA	NA	5900 U	5600 U	5500 U	5800 U	6000 U	6900 U	5600 U
NITROAROMATICS												
HMX	ug/kg	470	42.9%	NA	NA	130 UJ	250 J	430 J	470 J	240 J	350	200
RDX	ug/kg	5800	78.6%	NA	NA	5800 J	2500 J	1600 J	2700 J	2500 J	4300	1300
1,3,5-Trinitrobenzene	ug/kg	190	42.9%	NA	NA	130 UJ	150 J	170 J	190 J	130 UJ	180	140
Tetryl	ug/kg	330	28.6%	NA	NA	130 UJ	130 UJ	130 UJ	130 UJ	130 UJ	130 U	180 J
2,4,6-Trinitrotoluene	ug/kg	1400	64.3%	NA	NA	1400 J	330 J	340 J	600 J	400 J	330	280
4-amino-2,6-Dinitrotoluene	ug/kg	270	7.1%	NA	NA	270 J	130 UJ	130 UJ	130 UJ	130 UJ	130 U	130 U
2-amino-4,6-Dinitrotoluene	ug/kg	680	57.1%	NA	NA	130 UJ	430 J	430 J	680 J	530 J	480	350
2,4-Dinitrotoluene	ug/kg	190	57.1%	NA	NA	130 UJ	130 UJ	140 J	190 J	120 J	110 J	90 J
SEMIVOLATILE ORGANICS												
Hexachloroethane	ug/kg	1100	35.7%	NA	NA	390 U	72 J	68 J	1900 U	1100	41 J	36 J
Naphthalene	ug/kg	30	28.6%	13000	0	390 U	30 J	27 J	1900 U	24 J	30 J	370 U
Acenaphthylene	ug/kg	30	14.3%	41000	0	390 U	19 J	17 J	1900 U	400 U	460 U	370 U
2,6-Dinitrotoluene	ug/kg	700	14.3%	1000	0	390 U	370 U	360 U	700 J	400 U	480 U	370 U
2,4-Dinitrotoluene	ug/kg	14000	50.0%	NA	NA	390 U	100 J	190 J	14000	84 J	59 J	230 J
Diethylphthalate	ug/kg	35	7.1%	7100	0	390 U	370 U	360 U	1900 U	400 U	35 J	370 U
N-Nitrosodiphenylamine	ug/kg	1600	35.7%	50000 *	0	390 U	370 U	30 J	1600 J	20 J	460 U	25 J
Hexachlorobenzene	ug/kg	62	57.1%	410	0	30 J	62 J	54 J	1900 U	52 J	48 J	42 J
Phenanthrene	ug/kg	46	50.0%	50000 *	0	18 J	46 J	38 J	1900 U	38 J	44 J	34 J
Anthracene	ug/kg	18	14.3%	50000 *	0	390 U	17 J	360 U	1900 U	400 U	460 U	370 U
Di-n-butylphthalate	ug/kg	6800	50.0%	6100	0	390 U	35 J	170 J	6800	27 J	75 J	230 J
Fluoranthene	ug/kg	68	64.3%	50000 *	0	30 J	59 J	50 J	1900 U	52 J	68 J	58 J
Pyrene	ug/kg	110	71.4%	50000 *	0	36 J	110 J	98 J	100 J	90 J	110 J	97 J
Benzo(a)anthracene	ug/kg	50	42.9%	220	0	390 U	32 J	30 J	1900 U	22 J	36 J	32 J
Chrysene	ug/kg	68	64.3%	400	0	27 J	46 J	44 J	1900 U	37 J	51 J	47 J
bis(2-Ethylhexyl)phthalate	ug/kg	740	50.0%	50000 *	0	350 J	65 J	50 J	1900 U	400 U	460 U	370 U
Benzo(b)fluoranthene	ug/kg	55	50.0%	1100	0	20 J	38 J	36 J	1900 U	24 J	39 J	42 J
Benzo(k)fluoranthene	ug/kg	58	35.7%	1100	0	390 U	26 J	26 J	1900 U	21 J	34 J	23 J
Benzo(a)pyrene	ug/kg	62	42.9%	61	1	390 U	46 J	41 J	1900 U	28 J	45 J	42 J
Indeno(1,2,3-cd)pyrene	ug/kg	52	28.6%	3200	0	390 U	37 J	360 U	1900 U	400 U	29 J	26 J
Benzo(g,h,i)perylene	ug/kg	66	35.7%	50000 *	0	390 U	66 J	58 J	1900 U	34 J	53 J	45 J

TABLE 4.7-1

SOIL ANALYSIS RESULTS
SENECA ARMY DEPOT
SEAD-45 EXPANDED SITE INSPECTION

COMPOUND	MATRIX LOCATION DEPTH (FEET) SAMPLE DATE ES ID LAB ID UNITS	MAXIMUM	FREQUENCY OF DETECTION	TAGM	NO. ABOVE TAGM	SOIL SEAD-45 0-0.2 10/25/93 SS45-9 202516	SOIL SEAD-45 3 11/08/93 TP45-1 203646-203648	SOIL SEAD-45 3 11/08/93 TP45-11 203656-203658 TP45-1DUP	SOIL SEAD-45 3 11/08/93 TP45-2 203650-203652	SOIL SEAD-45 3 11/08/93 TP45-3 203654	SOIL SEAD-45 3 11/09/93 TP45-4 204026-204028	SOIL SEAD-45 3 11/09/93 TP45-5 204030-204032
PESTICIDES/PCB												
Endosulfan I	ug/kg	2.2	35.7%	900	0	1 J	1.9 J	2.2 J	1.9 J	1.6 J	2.4 U	1.9 U
Dieldrin	ug/kg	3.2	23.1%	44	0	3.8 U R	3.7 U	3.6 U	3.8 U	4 U	2.4 J	3.7 U
4,4'-DDE	ug/kg	4.2	42.9%	2100	0	3.3 J	3.7 U	3.6 U	3.8 U	4 U	3.2 J	1.9 J
4,4'-DDT	ug/kg	3.4	30.8%	2100	0	3.8 U R	3.7 U	2.3 J	3.8 U	2.9 J	4.6 U	3.7 U
alpha-Chlordane	ug/kg	2	23.1%	540	0	2 U R	1.9 U	1.9 U	2 U	2 U	2.4 U	1.9 U
Aroclor-1254	ug/kg	110	7.6%	1000(a)	0	38 U R	37 U	36 U	38 U	40 U	46 U	37 U
METALS												
Aluminum	mg/kg	22800	100.0%	15523	15	17600	20100	18500	20800	22800	20600	17300
Arsenic	mg/kg	8.2	100.0%	7.5	1	8.1	6.8	6.3	7.1	8.2	6 J	5.1 J
Barium	mg/kg	365	100.0%	300	1	202	208	177	201	248	216	174
Beryllium	mg/kg	1.1	100.0%	1	1	0.79 J	0.9 J	0.8	0.91 J	1.1 J	0.94 J	0.8 J
Cadmium	mg/kg	13.1	100.0%	1	12	5.5 J	10.4 J	9.6 J	9.5 J	13.1 J	10.9 R	7.4 R
Calcium	mg/kg	47000	100.0%	120725	0	22600	42700	31500	26400	32500	30400	32100
Chromium	mg/kg	39.3	100.0%	24	14	27.4	31.3	25.7	30.1	35.5	32.1	27.6
Cobalt	mg/kg	24.3	100.0%	30	0	15	13.2	13.2	12.8	16.9	15.3	12.1
Copper	mg/kg	1240	100.0%	25	16	267	722	555	561	791	1240 J	449 J
Iron	mg/kg	75700	100.0%	26986	13	32500	35700	31900	31500	41300	37500	31600
Lead	mg/kg	87.8	100.0%	30	12	77.7	54.1	73.3	69.4	87.8	74.7	61.9
Magnesium	mg/kg	9270	100.0%	12308	0	7110	7910	7760	7800	9270	8940	7570
Manganese	mg/kg	1380	100.0%	759	5	912	1380	813	805	827	726	600
Mercury	mg/kg	4.3	100.0%	0.1	16	1.8 J	3.1 J	1.4 J	3.1 J	4 J	3.6	4.3
Nickel	mg/kg	51	100.0%	37	8	42.5	41.8	39.1	40.5	51	48.3	39.2
Potassium	mg/kg	3280	100.0%	1548	16	2260	3040	1960	3280	3010	2400	1950
Selenium	mg/kg	1.1	0.0%	2	0	0.24 UJ	0.23 UJ	0.15 UJ	0.16 UJ	0.23 UJ	0.27 UJ	0.2 UJ
Silver	mg/kg	26.2	57.1%	0.5	11	1.3 J	3.2 J	4.7 J	5 J	6.6 J	26.2 J	3.9 J
Sodium	mg/kg	418	100.0%	114	9	93.4 J	141 J	105 J	116 J	135 J	136 J	122 J
Vanadium	mg/kg	38	100.0%	150	0	28.9	32.4	26.7	34.4	38	32.6	27.3
Zinc	mg/kg	557	100.0%	90	9	363	345	360	390	536	557 J	333 J
Cyanide	mg/kg	8.3	14.3%	NA	NA	0.7 U	0.7	0.54 U	0.55 U	0.55 U	0.62	0.51 U
OTHER ANALYSES												
Nitrate/Nitrite-Nitrogen	mg/kg	28	100.0%	NA	NA	0.55	27	28	19.5	16.6	9.8	13.3
Total Solids	%W/W	91.9				85.2	90.3	90.7	86.7	82.9	72.2	89.3

Notes:
a) The TAGM value for PCBs is 1000 ug/kg for surface soils and 10,000 ug/kg for subsurface soils.
b) * = As per proposed TAGM, total VOCs < 10ppm; total SemI-VOCs <500ppm; individual semI-VOCs < 50 ppm.
c) NA = Not Available
d) U = Compound was not detected.
e) J = the reported value is an estimated concentration.
f) R = the data was rejected in the data validating process.
g) UJ = the compound was not detected; the associated reporting limit is approximate.



PARSONS
PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE: SENECA ARMY DEPOT
EXPANDED SITE INSPECTION OF 7 HIGH-PRIORITY SWMU'S

DEPT: ENVIRONMENTAL ENGINEERING | DWG No: 720477-02000

FIGURE 4.7-1
SEAD-45 OPEN DETONATION GROUNDS
TOTAL SVOs IN SURFACE SOILS (ug/kg)

SCALE: 1" = 200' | DATE: MAY 1995 | REV: C

ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF 40

1. CONTRACT/PURCH ORDER/ AGREEMENT NO	2. DELIVERY ORDER/CALL NO	3. DATE OF ORDER/CALL (YYYYMMMDD)	4. REQ. PURCH. REQUEST NO	5. PRIORITY
W912DY-10-D-0014	0005	2011 Nov 23	W31RY013254857	

6. ISSUED BY CODE W912DY
US ARMY ENGINEERING & SUPPORT CENTER
CEHNC-CT
4820 UNIVERSITY SQUARE
HUNTSVILLE AL 35816-1822

7. ADMINISTERED BY *(if other than 6)* CODE
SEE ITEM 6

8. DELIVERY FOB
[X] DESTINATION
[ ] OTHER
(See Schedule if other)

9. CONTRACTOR CODE 8X202 FACILITY 8X202
NAME AND ADDRESS
SHAW ENVIRONMENTAL & INFRASTRUCTURE, INC
WILLIAM WINKLER
312 DIRECTORS DR
KNOXVILLE TN 37923-4705

10. DELIVER TO FOB POINT BY (Date) *(YYYYMMMDD)*
SEE SCHEDULE

11. MARK IF BUSINESS IS
[ ] SMALL
[ ] SMALL DISADVANTAGED
[ ] WOMEN-OWNED

12. DISCOUNT TERMS
Net30 Days

13. MAIL INVOICES TO THE ADDRESS IN BLOCK
See Item 15

14. SHIP TO CODE W912DY
US ARMY ENGINEERING & SUPPORT CENTER
NO CONTACT SPECIFIED
CEHNC-CT
4820 UNIVERSITY SQUARE
HUNTSVILLE AL 35816-1822

15. PAYMENT WILL BE MADE BY CODE 964145
US ARMY ENG & SUP CENTER - FINANCE OFFIC
US ARMY CORPS OF ENGRS FINANCE CTR
5722 INTEGRITY DRIVE
MILLINGTON TN 38054-5005

MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.

16 TYPE OF ORDER			
	DELIVERY/ CALL	X	This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract
	PURCHASE		Reference your quote dated Furnish the following on terms specified herein. REF

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

Shaw E & I Inc	Stephen G Moran	Stephen G Moran PG PMP Program Manager	2011 Nov 24
NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED (YYYYMMMDD)

[ ] If this box is marked, supplier must sign Acceptance and return the following number of copies:

17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE
See Schedule

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/ SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE SCHEDULE				

* If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.

24. UNITED STATES OF AMERICA
TEL:
EMAIL:
BY: CONTRACTING/ ORDERING OFFICER

25. TOTAL $5,460,010.54
26. DIFFERENCES

27a. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE | c. DATE (YYYYMMMDD) | d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE

f. TELEPHONE NUMBER | g. E-MAIL ADDRESS

36. I certify this account is correct and proper for payment.
a. DATE (YYYYMMMDD) | b. SIGNATURE AND TITLE OF CERTIFYING OFFICER

28. SHIP NO. | 29. DO VOUCHER NO. | 30. INITIALS

[ ] PARTIAL [ ] FINAL

31. PAYMENT
[ ] COMPLETE [ ] PARTIAL [ ] FINAL

32. PAID BY

33. AMOUNT VERIFIED CORRECT FOR

34. CHECK NUMBER

35. BILL OF LADING NO.

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED (YYYYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NO.	42. S/R VOUCHER NO.

DD Form 1155, DEC 2001 PREVIOUS EDITION IS OBSOLETE.

ENCL 13

ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF 40

1. CONTRACT/PURCH. ORDER. AGREEMENT NO.	2. DELIVERY ORDER. CALL NO.	3. DATE OF ORDER. CALL (YYYYMMMDD)	4. REQ.. PURCH. REQUEST NO.	5. PRIORITY
W912DY-10-D-0014	0005	2011 Nov 23	W31RYO13254857	

6. ISSUED BY CODE W912DY
US ARMY ENGINEERING & SUPPORT CENTER
CEHNC-CT
4820 UNIVERSITY SQUARE
HUNTSVILLE AL 35816-1822

7. ADMINISTERED BY *(if other than 6)* CODE
SEE ITEM 6

8. DELIVERY FOB
[X] DESTINATION
[ ] OTHER
(See Schedule if other)

9. CONTRACTOR CODE 8X202 FACILITY 8X202
NAME AND ADDRESS
SHAW ENVIRONMENTAL & INFRASTRUCTURE, INC
WILLIAM WINKLER
312 DIRECTORS DR
KNOXVILLE TN 37923-4705

10. DELIVER TO FOB POINT BY (Date) (YYYYMMMDD)
SEE SCHEDULE

11. MARK IF BUSINESS IS
[ ] SMALL
[ ] SMALL DISADVANTAGED
[ ] WOMEN-OWNED

12. DISCOUNT TERMS
Net 30 Days

13. MAIL INVOICES TO THE ADDRESS IN BLOCK
See Item 15

14. SHIP TO CODE W912DY
US ARMY ENGINEERING & SUPPORT CENTER
NO CONTACT SPECIFIED
CEHNC-CT
4820 UNIVERSITY SQUARE
HUNTSVILLE AL 35816-1822

15. PAYMENT WILL BE MADE BY CODE 964145
US ARMY ENG & SUP CENTER - FINANCE OFFIC
US ARMY CORPS OF ENGRS FINANCE CTR
5722 INTEGRITY DRIVE
MILLINGTON TN 38054-5005

MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.

16. TYPE OF ORDER			
	DELIVERY/ CALL	X	This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.
	PURCHASE		Reference your quote dated Furnish the following on terms specified herein. REF:

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

NAME OF CONTRACTOR | SIGNATURE | TYPED NAME AND TITLE | DATE SIGNED (YYYYMMMDD)

[ ] If this box is marked, supplier must sign Acceptance and return the following number of copies:

17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE
See Schedule

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/ SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE SCHEDULE				

* *If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.*

24. UNITED STATES OF AMERICA
TEL:
EMAIL:
BY: CONTRACTING / ORDERING OFFICER

25. TOTAL $5,460,010.54
26. DIFFERENCES

27a. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE | c. DATE (YYYYMMMDD) | d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE

f. TELEPHONE NUMBER | g. E-MAIL ADDRESS

36. I certify this account is correct and proper for payment.
a. DATE (YYYYMMMDD) | b. SIGNATURE AND TITLE OF CERTIFYING OFFICER

28. SHIP NO. | 29. DO VOUCHER NO. | 30. INITIALS

[ ] PARTIAL [ ] FINAL

31. PAYMENT
[ ] COMPLETE [ ] PARTIAL [ ] FINAL

32. PAID BY

33. AMOUNT VERIFIED CORRECT FOR

34. CHECK NUMBER

35. BILL OF LADING NO.

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED (YYYYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NO.	42. S/R VOUCHER NO.

Seneca ADA OB/OD Grounds Remedial Action				
Task, Title, Type	Qty	Unit	Price	Funded
Task 2c, Area of 0-1000 foot radius for the existing OD Hill. The Contractor shall mag, flag and prosecute identified targets in wooded or severely overgrown or sloped terrain in this area. For purposes of estimation, the cost for this task shall be based upon 700 anomalies per acre and an FUP cost per additional anomaly given as well	9,800	Anomalies	$28.42	$278,564.32
Task 2g, Open Burning Tray. The Contractor shall close the Open Burning Tray IAW the approved work plan	1.0	LS	$82,556.23	$82,556.23
Task 3, Environmental Sampling & Analysis (Optional): (FFP/FUP)	2	EA/SDG	$57,740.48	$115,480.96
Task 4, Remedial Action Report (FFP)	1.0	LS	$54,324.63	$54,324.63
Task 5, Installation of an Engineered Cap (FFP)	1.0	LS	$2,655,220.43	$2,655,220.43
Task 6, Preparation of a Long Term Monitoring Plan	1.0	LS	$23,333.12	$23,333.12
Task 7, Performance of Long Term Monitoring	1.0	LS	$160,509.05	$160,509.05
Task 10, Project Management	1.0	LS	$290,313.02	$290,313.02
OPTIONAL TASKS				
Task 8. Performance of Additional Long Term Monitoring (Optional)				
Task 8.1, Performance of An Additional Year of Long Term Monitoring (Optional). If awarded, the Contractor shall provide LTM for an additional (2nd overall) year on a quarterly basis.	1.0	LS	$99,875.46	
Task 8.2, Performance of An Additional Year of Long Term Monitoring (Optional). If awarded, the Contractor shall provide LTM for an additional (3rd overall) year on a quarterly basis.	1.0	LS	$98,282.29	
Task 8.3, Performance of An Additional Year of Long Term Monitoring (Optional). If awarded, the Contractor shall provide LTM for an additional (4th overall) year on a semi-annual basis.	1.0	LS	$49,663.35	
Task 9, Performance of Five Year Review (Optional).	1.0	LS	$76,255.29	
			Total Funded	$5,460,010.54

The following Payment Milestone Schedule is acceptable for use on this project task order:

Payment Milestone Schedule	
Final Submittals	Upon government acceptance
Field Work	For defined units and activities completed and QA review and acceptance
Meetings	After completion of meetings with government acceptance of meeting minutes

SOLICITATION, OFFER, AND AWARD (Continued)

(Construction, Alteration, or Repair)

OFFER *(Must be fully completed by offeror)*

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NO. *(Include area code)*
Welch Construction, Inc. P. O. Box 228 4331 Slate Hill Road Marcellus, NY 13108	(315) 673-2076
	16. REMITTANCE ADDRESS *(Include only if different than Item 14)* See Item 14
CODE / FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within 120 calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation – give number and date of each)

AMENDMENT NO.	0001	0002	0003	0004	0005					
DATE	10-26-12	11-1-12	11-14-12	11-28-12	12-12-12					

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE
Mark Welch, President		12-18-12

AWARD *(To be completed by Government)*

21. ITEMS ACCEPTED:

See continuation page

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA
$20,000.00	See continuation page

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c) ☐ 41 U.S.C. 253(c)

26. ADMINISTERED BY / CODE	27. PAYMENT WILL BE MADE BY: / CODE
Seneca Office - U.S. Army Engineer District New York Seneca Army Depot, Bldg. 139 Romulus, NY 14541-5010	USACE Finance Center Millington ATTN: CEFC-AO-P, Accounts Payable Branch 5722 Integrity Drive Millington, TN 38054-5005

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☒ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return 1 copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses representations, certifications, and specifications or incorporated by reference in or attached to this contract.

☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*	30B. SIGNATURE	30C. DATE
Mark Welch, President		9-6-13

31A. NAME OF CONTRACTING OFFICER *(Type or print)*	TELEPHONE	EMAIL
J. David King	917-790-8087	j.david.king@usace.army.mil

31B. UNITED STATES OF AMERICA	31C. AWARD DATE
BY	6 SEP 2013

NSN 7540-01-155-3212 STANDARD FORM 1442 BACK (REV. 4-85)

FAR (48 CFR) 53.236-1(e)

ENCL 13

SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. W912DS-12-R-0003-0006	2. TYPE OF SOLICITATION [ ] SEALED BID (IFB) [X] NEGOTIATED *(RFP)*	3. DATE ISSUED 06-Sep-2013	PAGE OF PAGES 1 OF 63

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO. W912DS-13-D-0005	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO.

7. ISSUED BY CODE W912DS	8. ADDRESS OFFER TO *(If Other Than Item 7)* CODE
US ARMY CORPS OF ENGINEERS, NEW YORK 26 FEDERAL PLAZA, RM 1843 NEW YORK NY 10278-0090 TEL: 212 264-0238 FAX: 212 264-3013	**See Item 7** TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. *(Include area code)* *(NO COLLECT CALLS)*
	MATTHEW E LUBIAK	917-790-8089

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

A. Project: Job Order Contract (JOC) for construction and maintenance projects at the Seneca Army Depot Activity, Romulus, NY

B. provide all work, materials, supplies, parts (to include system components), transportation, plant, supervision, labor, and equipment, except when specified as Government-furnished, needed to repair, or construct real property facilities at Seneca Army Depot.

C. The estimated value is capped at $3,000,000 for the base period and $1,000,000 for each option period.

D. Contract Specialist: Matthew Lubiak, 917-790-8089, matthew .lubiak@usace.army.mil

E. This acquisition is a 100% SDVOSB set aside. The NAICS code is 236220.

F. Submit proposals to the Contracting Office NLT October 30, 2012 at 2:00 PM EST:
U.S Army Corps of Engineers
Contracting Division
26 Federal Plaza, RM1843
New York, NY 10278

G. Offerors are advised to allow ample time to pass through security checks in order to have their proposals delivered by 2:00 PM.

11. The Contractor shall begin performance within _____ calendar days and complete it within _____ calendar days after receiving [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See* Each Job Order *.)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)* [X] YES [ ] NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 5 copies to perform the work required are due at the place specified in Item 8 by 02:00 PM *(hour)* local time 18 Dec 2012 *(date)*. If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [X] is, [ ] is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 120 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

Section 00010 - Solicitation Contract Form

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001		3,000,000	Dollars, U.S.	$1.00	$3,000,000.00

BASE PERIOD - Normal working hours
FFP
Unit work requirements to be performed during normal working hours on Depot as ordered in individual Task Orders against this contract. Base period is 36 months.

Contractor's Coefficient = 1.335

NOTE: The $3,000,000 quantity referenced in CLIN 0001 represents the total capacity for the base period of this Job Order Contract for all work that may be performed under both CLIN 0001 (normal working hours) and CLIN 0002 (other than normal working hours).

FOB: Destination

NET AMT	$3,000,000.00

CSI	UOM	DESCRIPTION	MINOR	TOTAL DIRECT UNIT COST	DEMOLITION UNIT COST

02 65 00 00-0123 Secondary Containment Berm (02 65 00 00-0111)

02 65 00 00-0124	EA	Secondary Containment Berm Monthly Rental		944.98	

02 80 Facility Remediation (02)

02 81 Transportation And Disposal Of Hazardous Materials (02 80)

02 81 00 00-0001 Subcontracted Shipping Of Hazardous Waste (02 81)

02 81 00 00-0002	MI	Transport 80, 55-Gallon Drums Of Solid Hazardous Waste		8.84	
02 81 00 00-0003	MI	Transport 20 CY Bulk Solid Hazardous Waste		8.84	
02 81 00 00-0004	MI	Transport 18 Ton Bulk Solid Hazardous Waste		8.84	
02 81 00 00-0005	MI	Transport 5000 Gallon Bulk Sludge/ Liquid Hazardous Waste		10.10	

02 81 00 00-0006 Hazardous Material Disposal (02 81)

02 81 00 00-0007	TON	Hazardous Material Stockpiled On Site Within 25 Miles		27.41	
02 81 00 00-0008	TON	Hazardous Material Disposal And/Or Treated Or Recycled To A Non-Hazardous Designation		175.08	
		For Hazardous Soil Materials Only, Deduct		*-70.03*	
02 81 00 00-0009	TON	RCRA/TSCA Regulated Waste Burial In Class I Landfill		343.15	
02 81 00 00-0010	TON	RCRA/TSCA Regulated Waste Solidification/Stabilization		581.25	
02 81 00 00-0011	TON	RCRA/TSCA Regulated Waste Incineration		1,050.45	
02 81 00 00-0012	TON	Additional Costs For Stockpiles Per Mile, Greater Than 25 Miles		0.21	
02 81 00 00-0013	GAL	Drain Hazardous (PCB) Oil Filled Equipment And Dispose In Approved Container Note: Includes handling of container and disposal at approved site.		7.77	
02 81 00 00-0014	CF	Hazardous (PCB) Oil Filled Equipment Disposal At Approved Site Note: Includes handling of equipment and disposal at approved site. Excludes draining of PCB contaminated oil prior to disposal.		52.52	
02 81 00 00-0015	JOB	Asbestos And / Or Lead Abatement Plan Note: Applicable only when required by regulating authority. Includes preparation of plan, certification of plan by registered professional engineer, and processing plan through designated regulating agency for approval prior to beginning abatement operations.		1,225.52	

02 82 Asbestos Remediation (02 80)

Note: Tasks include materials, equipment (e.g. ladders, high volume vacuum with sound suppression system where required, etc.), mobilization, preparation, critical barriers (e.g. electrical outlets, registers, windows, etc.), signage, removal, clean-up, vacuuming, transportation for up to 25 miles, disposal, personnel health monitoring, negative air, fees, documentation and other associated costs necessary for the complete abatement and disposal of the ACM in accordance with EPA, OSHA, and local regulations. Where types of ACM are listed by quantity, the quantity of the entire project, not a particular work area, is to be used in determining which task applies. For certain types of work, there are tasks with a unit of measure of EA for a quantity of less than 10 LF or SF (10 LF to 20 LF for ACM pipe insulation), followed by a series of tasks for other quantities. For those tasks the contractor will be paid the first task with a unit of measure of EA, plus an additional task to arrive at the appropriate quantity for the project. See CSI section 01 74 19 00-0025 for hauling in excess of 25 miles to transfer or disposal site, 02 81 00 00-0000 for hauling in excess of 25 miles to transfer or disposal site, 02 89 00 00-0002 for solid isolation barriers, 02 89 00 00-0008 for supplied air tank when required, 02 89 00 00-0015 for plastic sheeting for containment construction, 02 89 00 00-0019 for decontamination chambers.

02 82 00 00-0001 Pipe And Pipe Fittings Insulation (02 82)

02 82 00 00-0002 Pipe Insulation (02 82 00 00-0001)

Note: Diameter is outer size of insulation. Treat fittings as additional lf of insulation.

02 82 00 00-0003 Pipe Insulation, Up To 6" Diameter (02 82 00 00-0002)

See CSI section 02 82 00 00-0017 for projects with less than 10 LF.

02 82 00 00-0004	EA	10 To 20 LF Pipe Insulation, Up To 6" Diameter		502.03	
02 82 00 00-0005	LF	21 To 250 LF Pipe Insulation, Up To 6" Diameter		25.67	
02 82 00 00-0006	LF	251 To 500 LF Pipe Insulation, Up To 6" Diameter		19.25	
02 82 00 00-0007	LF	501 To 2500 LF Pipe Insulation, Up To 6" Diameter		14.44	
02 82 00 00-0008	LF	2501 To 10000 LF Pipe Insulation, Up To 6" Diameter		10.83	
02 82 00 00-0009	LF	Over 10000 LF Pipe Insulation, Up To 6" Diameter		9.42	

02 82 00 00-0010 Pipe Insulation, Greater Than 6" Diameter (02 82 00 00-0002)

See CSI section 02 82 00 00-0017 for projects with less than 10 LF.

02 82 00 00-0011	EA	10 To 20 LF Pipe Insulation, > 6" Diameter		502.03	
02 82 00 00-0012	LF	21 To 250 LF Pipe Insulation, > 6" Diameter		29.52	
02 82 00 00-0013	LF	251 To 500 LF Pipe Insulation, > 6" Diameter		22.14	
02 82 00 00-0014	LF	501 To 2500 LF Pipe Insulation, > 6" Diameter		16.61	
02 82 00 00-0015	LF	2501 To 10000 LF Pipe Insulation, > 6" Diameter		12.45	
02 82 00 00-0016	LF	Over 10000 LF Pipe Insulation, > 6" Diameter		10.83	

02 82 00 00-0017 Pipe Insulation, Glove Bag Method (02 82 00 00-0002)

Note: Solid isolation barriers and plastic sheeting for containment construction (except on floor) are not required for glove bag projects unless required by local codes.

02 82 00 00-0018	EA	Glove Bag for First 3 LF Pipe Insulation		544.51	
02 82 00 00-0019	LF	Additional Glove Bag Work for Pipe Insulation		80.67	

02 82 00 00-0020 Other Thermal Insulation (02 82)

CSI	UOM	DESCRIPTION	TOTAL DIRECT UNIT COST	DEMOLITION UNIT COST
02 41 19 16-0045	SF	Demo Interior Plaster With Lath, Walls, 2 Sides	1.06	
		For Heights > 14' To 20', Add	*0.16*	
		For Heights > 20', Add	*0.21*	
02 41 19 16-0046	SF	Demo Interior Metal Partition With Or Without Glass	1.33	
		For Heights > 14' To 20', Add	*0.20*	
		For Heights > 20', Add	*0.27*	
02 41 19 16-0047		Elevated Concrete Removal *(02 41 19 16)*		
02 41 19 16-0048	CF	Elevated Concrete Beam/Slab/Steps Removal, Reinforced	6.94	

02 43 Structure Moving *(02 40)*

02 43 13 Structure Relocation *(02 43)*

Note: Includes disconnection of utilities, moving of structure, one day move (excludes travel expenses and lodging), up to 24' wide. Reset on new foundations and hook up to utilities.

02 43 13 00-0001 Move Structures, Complete *(02 43 13)*

Note: Based on ground floor SF. Includes resetting on new foundation and reconnecting utilities.

02 43 13 00-0002	SF	Move Wood Frame Building Based On Ground Floor Area	24.00	
		For Building > 24' Wide, Add	*3.60*	
02 43 13 00-0003	SF	Move Concrete Or Masonry Building Based On Ground Floor Area	32.09	
		For Building > 24' Wide, Add	*4.81*	
02 43 13 00-0004	SF	Move Steel Frame Building Based On Ground Floor Area	27.39	
		For Building > 24' Wide, Add	*4.11*	

02 43 13 00-0005 Move Relocatable Structures (Trailer, Mobile Facilities, etc.), Complete *(02 43 13)*

Note: Includes disconnect portable from foundation, separate relocatable unit and attachments as needed for transport, secure all relocatable attachments (awnings, steps, ramps, railing, etc.) for transport, transport relocatable and attachments to new location, including permits and police escort, connect to foundation per approved specifications/details, including welding and/or hurricane anchoring as needed.

02 43 13 00-0006	SF	Move Relocatable Metal Frame Building, < 801 SF	20.84
02 43 13 00-0007	SF	Move Relocatable Metal Frame Building, > 800 And < 921 SF	19.69
02 43 13 00-0008	SF	Move Relocatable Metal Frame Building, > 920 SF	18.43
02 43 13 00-0009	SF	Move Relocatable Wood Frame Building, < 801 SF	16.72
02 43 13 00-0010	SF	Move Relocatable Wood Frame Building, > 800 And < 921 SF	15.63
02 43 13 00-0011	SF	Move Relocatable Wood Frame Building, > 920 SF	13.82
02 43 13 00-0012	SF	Move Relocatable Wood/Metal Frame Building, > 800 And < 921 SF	18.43
02 43 13 00-0013	SF	Move Relocatable Wood/Metal Frame Building, < 801 SF	20.25
02 43 13 00-0014	SF	Move Relocatable Wood/Metal Frame Building, > 920 SF	15.63

02 50 Site Remediation *(02)*

02 58 Snow Control *(02 50)*

02 58 13 Snow Fencing *(02 58)*

02 58 13 00-0001 Snow Fence On Steel Posts *(02 58 13)*

02 58 13 00-0002	LF	Steel Fence Post, 10' On Center With 4' Snow Fence	4.82	1.13

02 60 Contaminated Site Material Removal *(02)*

02 61 Removal And Disposal Of Contaminated Soils *(02 60)*

02 61 13 Excavation And Handling Of Contaminated Material *(02 61)*

See CSI section 31 23 16 00-0000 for excavation.

02 61 13 00-0001 Excavation Of Contaminated Soil *(02 61 13)*

See CSI section 02 65 00 00-0006 for testing.

02 61 13 00-0002 Excavate Non-Petroleum Contaminated Soil *(02 61 13 00-0001)*

02 61 13 00-0003	CY	Excavate Non-Petroleum Contaminated Soil Note: Includes excavation, making a determination if the soil is reusable or contaminated, and stockpiling as per determination.	5.31

02 61 13 00-0004 Excavate Contaminated Soil *(02 61 13)*

02 61 13 00-0005	CY	Excavate Contaminated Soil Note: Includes excavation, making a determination if the soil is reusable or contaminated, and stockpiling as per determination.	7.97
02 61 13 00-0006	CY	Load Excavated Contaminated Soil	4.83
02 61 13 00-0007	CY	Disposal Fees Of Contaminated Soil	48.54

02 61 13 00-0008 Accessories For Contaminated Soil Stockpile *(02 61 13)*

See CSI section 31 25 14 23-0001 for sand bags.

02 61 13 00-0009	SF	30 Mil Base Liner Note: 9.93 SF of liner per 1 ton of petroleum contaminated soil.	0.68

MINOR CSI	UOM	DESCRIPTION	TOTAL DIRECT UNIT COST	DEMOLITION UNIT COST
01 74 19 00-0025		Hauling *(01 74 19)* Note: Includes driver and equipment, ten (10) to fifteen (15) minutes load time, time for travel, dump time and return (roundtrip). The task quantity is the number of miles to the disposal site/transfer station (one way mileage) times the number of cubic yards being transported. For example, to haul 8 CY to a site 14 miles away, the quantity is calculated as follows: 14 miles x 8 CY = 112 CYM. Use both hauling tasks for distances greater than 15 miles. To haul 28 CY to a site 32 miles away, the quantity for the task to haul the first 15 miles is calculated: 15 miles x 28 CY = 420 CYM. The quantity for the additional hauling task over the first 15 miles is calculated: 32 total miles less 15 initial miles equals 17 miles x 28 CY = 476 CYM.		
01 74 19 00-0026	CYM	Hauling On Paved Roads, First 15 Miles	0.57	
01 74 19 00-0027	CYM	Hauling On Paved Roads, Miles Over Initial 15 Miles	0.38	
01 74 19 00-0028	CYM	Hauling On Unimproved Roads, First 15 Miles	0.88	
01 74 19 00-0029	CYM	Hauling On Unimproved Roads, Miles Over Initial 15 Miles	0.69	

01 74 23 Final Cleaning *(01 74)*

01 74 23 00-0001		Glass *(01 74 23)*		
01 74 23 00-0002	CSF	Clean Existing Glass Surfaces	15.83	

END OF SECTION 01