104-09

US Army Corps
of Engineers
HUNTSVILLE DIVISION

Explosive Safety Submission

Ordnance And Explosives Removal
at the
Open Burning Grounds,
Seneca Army Depot Activity,
Romulus, New York

May 1998

Prepared by
US ARMY CORPS OF ENGINEERS
Engineering and Support Center, Huntsville

CONTENTS

INTRODUCTION

This Explosive Safety Submission is for the removal of Ordnance and Explosives (OE) from the Open Burning Grounds, Seneca Army Depot Activity (SEDA), New York. It outlines the safety aspects of the plan for cleanup of Unexploded Ordnance (UXO) and OE on property that is owned by the Department Of Defense (DoD).

SEDA is a US Army facility located in Seneca County, New York. SEDA occupies approximately 10,600 acres (Appendix A, Figure 1). It is bounded on the west by State Route 96A and on the east by State Route 96. The cities of Geneva and Rochester are located to the northwest (14 and 50 miles, respectively); Syracuse is 53 miles to the northeast and Ithaca is 31 miles to the south. The surrounding area is generally used for farming.

SEDA was included on the Federal Facilities National Priorities List on 13 July 1989. Consequently, all work to be performed under this contract will be performed according to Comprehensive Environmental Response Compensation and Liability Act (CERCLA) guidance and the "Federal Facility Agreement under CERCLA Section 120 in the matter of Seneca Army Depot, Romulus, New York,".

SEDA was included on the 1995 Base Realignment and Closure List and is due to be closed. The Seneca County Industrial Development Agency (IDA) has prepared a reuse report entitled "Seneca Army Depot Reuse Plan and Implementation Strategy". The majority of the installation will be used for housing developments, industrial development, institutional and conservation/recreation uses upon transfer. The current OB Grounds site will fall within the area designated for "Conservation/Recreation".

The intended uses which fall within the definition of "Conservation/Recreation" are: wildlife habitation, wildlife viewing, hiking/walking and picnicking. Although there is

currently no plan for establishing camping facilities, the IDA does not wish to restrict such a possibility in the future. Therefore, this ESS is based upon the assumption that some shallow, intrusive activities (digging fire pits/placing tent poles) may occur in the future.

1.0 REASON FOR OE.

Open detonation/open burning operations have been conducted for more than forty years in the munitions destruction area (90 acres) in the northwest portion of the installation. The OB Grounds occupies an area of approximately 30 acres within the southern portion of this site (Appendix A). The Open Burning Grounds is the sole subject of this Explosives Safety Submission. The OD Grounds will be remediated separately.

The burning pads were used from the early 1960's till the late 1980's. During this time, items burned included explosive trash from an old washout plant and fuzes containing lead compounds. Operations were conducted by preparing combustible beds of pallets and wooden boxes and placing ammunition or components to be destroyed on the beds. A trail of propellant was placed on the ground and an electric squib was activated by an operator from a distance.

Originally open burning was conducted directly on the clay ground surface. Due to the seasonally wet nature of the local soils, the individual burn pads were subsequently built up with shale to provide a drier environment in which to perform the munitions burning. The berms around the burn pads were formed by bulldozing the surrounding soils, including those soils which contained residues of the burning process. The base material of the pads is composed of crushed shale which was quarried from a nearby area on SEDA and placed over the till to provide a solid base with good drainage. The burning of munitions was performed at nine burning pads labeled A through H and J. Of the nine burn

pads, five are small (A,B,C,D and E; each approximately 70' x 100'). Two are of intermediate size (F and H; each approximately 120' x 210') and two are rather large (G and J; each approximately 200' x 460').

Pads A and J were the first to be abandoned. Pads I and J were only used for trash and rubbish while Pads B, C, D, E, F, G and H were used for explosives and propellants. The practice of open burning was discontinued in 1987. Currently, burning of munitions is done with an open air, steel enclosure located immediately west of Burning Pad D.

2.0 MAPS.

Maps detailing the location and extent of the area of concern and presenting the relevant Public Withdrawal Distances, Q-D Distances, etc., are presented in Appendix A to this submission.

3.0 AMOUNT AND TYPE OF OE.

A list of items that were demilled at the Munitions Destruction Area is included in Appendix B. Examples of items burned at the OB Grounds include blasting caps, various cartridges, flares and fuzes. The HE items shown on the list (grenades, both hand and rifle), were only detonated at the OD Grounds, so no items of a high explosive nature are to be expected at the OB Grounds (personal communication with Mr. Jim Jones, former supervisor of munitions destruction operations at Seneca; 15 and 19 May 1998).

The Most Probable Munition (MPM) for this site was chosen to be the MK II Hand Grenade. Although not expected at the OB Grounds, it was decided that using the smallest of the high explosive items detonated at the OD area would be conservative without being ridiculous. The Public Withdrawal Distance (PWD) for this MPM is 842 feet, which was computed using HNC-ED-CS-S-98-1 (approved by DDESB on 6 April 1998) by Dr. Michelle Crull, USAESC, Huntsville, Engineering Division, Structures Branch, 4-

10-98. However, 850 feet will be used for this site. If a larger OE item (i.e., has a greater fragment throw distance) is found, its withdrawal distances will be determined in accordance with the procedures defined in 98-03. Until the appropriate distances are determined by 98-03, the default distances in DoD 6055.9-STD (Chapter 5, Paragraph E.4.a) will be used.

4.0 START DATE.

Work is anticipated to start in July 1998 beginning with survey work and progressing to intrusive work. Intrusive work should begin by 20 July.

5.0 FROST LINE DEPTH.

The design frost depth for this site is 40 inches. However, due to the fact that OE burned on this site will have tended to remain at the surface where placed, penetration to a depth of 40 inches is not a reasonable expectation. Clearance to a depth of two feet (see Appendix E, Justification of Chosen Removal Depth) will be more than adequate to remediate OE at this site and frost heave will not be a factor once the clearance is completed.

6.0 CLEARANCE TECHNIQUES.

This section presents information concerning the techniques to be used during the removal of OE at this site. For additional detail, Appendix C contains excerpts from the Work Plan for OE investigation, excavation, and disposal activities to be conducted at the site.

OE remediation at the SEDA OB Grounds will take place in four phases:

1. Phase I. The thirty acre site, minus the existing berms and the low-lying hill, will be surface cleared of all OE and scrap.

2. Phase II. The thirty acre site, minus the existing berms and the low-lying hill, will be subsurface cleared of all OE and scrap to a depth of two feet.

3. Phase III. The pad berms, the low-lying hill area and certain lead-contaminated subsurface areas of depth greater than 2 feet will be excavated/moved and sifted to remove all OE and scrap. The sifted soils will then be stockpiled for remediation as part of a follow-on Hazardous/Toxic and Radiological Waste (HTRW) remediation project.

4. Phase IV. The areas underneath the pad berms and the low-lying hill will be subsurface cleared of all OE and scrap to a depth of two feet.

Surveying will be completed by contractor survey teams. As such, UXO escort will be automatic during survey operations. Surveying activities will consist of the location of site grids for clearance activities. Removal grids will be 200' by 200'.

The contractor's proposed method of subsurface geophysical survey will be capable of detecting an inert rifle grenade (M31 HEAT or similar, inert item) to a depth of two feet and an inert hand grenade (Mk II Hand Grenade or similar, inert item) to a depth of one foot. (Past test data (AEC at JPG, and others) have demonstrated that a typical Maximum Detection Depth of 1.7 to 2.0 feet is to be expected for detection of a rifle grenade by magnetometry). During subsurface clearance, the contractor shall dig to a depth of two (2) feet to determine the identity of any anomaly. If anomalies are found to exist below the two foot clearance depth, they will be pursued.

For surface clearance, each grid will be swept with a towed magnet. The towed magnet will be tested on a separate area prior to initiation of the sweep to determine if soil magnetization is induced. If soil magnetization is induced, then the initial towed magnet sweep will be deleted. Following the towed magnet sweep (or initially if the towed magnet is banned), the surface

will be walked and visually checked for the presence of ordnance.

For subsurface clearance, each grid will be divided into 5 foot transects or lanes. Operators will walk each lane with a Schonstedt 52 CX/72 CD and mark all anomalies with pin flags for retrieval by another team.

This OE remediation project will also include the sifting of approximately 34,000 cubic yards of soil. A standard operating procedure for the sifting operations is included in Appendix D Of this ESS. All soil excavation and movement (to the sifter and away from the sifter) will be performed by a local excavation contractor with UXO supervision. No additional equipment protection is considered necessary due to the fact that all physical evidence to date shows that burned out pieces of munitions (not full, potentially explosive rounds) are all that are present. All sifting and separation activities will be performed by UXO-qualified personnel.

With respect to OE destruction, of specific concern are the location of explosives storage facilities and detonation operations with respect to facilities and people and any effects thereon. Explosives for destruction operations will be provided by the contractor. It is anticipated that perforators, det cord and electric detonators are all that will be used. These are considered Class 1.3 and 1.4B explosives.

Explosives will be stored in the SEDA OB/OD area double igloo type, earthen-covered magazine. The existing magazine is constructed to DDESB and Army standards and is complete with the required lightning protection. Each of the two magazines is designed for a maximum NEW of 450 pounds. At no time will the contractor be storing more than 100 pounds NEW in either magazine. Perforators and det cord will be stored in one magazine and the electric detonators in the other. As for security, access into the SEDA ammunition area is, itself,

extremely restricted. The OB Grounds is remotely located within the ammunition area. Additionally, the contractor will establish and enforce strict area and site access at the OB site proper. Access into a work site exclusion zone will be limited to contractor personnel specifically authorized to work on site and Corps of Engineers safety personnel. All other personnel will be restricted from entering the exclusion zone or be escorted by contractor or Corps safety personnel.

Disposal operations will be carried out daily. Items which can be moved will be consolidated for later disposal, most likely at the OD Grounds which is adjacent to the OB site. Items which can not be moved will be blown-in-place.

QA/QC requirements are presented in the Work Plan excerpt included as part of Appendix C. Pass/fail criteria are specifically discussed in Sections 8.7.2 through 8.7.4 in the excerpt.

Scrap that is collected from this action will be handled as discussed in Sections 2.7.1 and 8.7.5 of the Work Plan (both included as excerpts in Appendix C to this submission).

7.0 ALTERNATE TECHNIQUES. NA.

8.0 QUANTITY-DISTANCES.

The appropriate Quantity-Distances are shown on the site map enclosed in Appendix A of this submission. For ease of review, the distances are repeated here. The rationale for the MPM and citation for the calculation method are presented in Section 3.0 of this submission. In general, team separation distances will be determined by the greater of 200 feet or the K50 (0.9 psi overpressure distance. The separation distance for all unrelated personnel for an accidental detonation will be determined by the greater of 200 feet, the K50 distance or the maximum fragment throw distance. The separation distance for all personnel

(related and unrelated) for intentional detonations will be determined by the maximumof 200 feet, the K328 distance or the maximum fragment throw distance.

OE Areas: Minimum of 850 feet (via approved calculation).

Magazines: Minimum of 500 feet (Front) and 250 feet (Rear and Sides), IAW Table 9-1 of DoD 6055.9-STD. The back and sides of the existing magazines face the removal site. Therefore, 250 feet will govern for the vast majority of the proposed removal.

Planned Detonations: Minimum of 850 feet (via approved calculation). The NEW of all combined shots will not exceed 12 pounds so as to maintain the minimum distance of 850 feet. (This maximum NEW assumes no tamp. However, all planned detonations on this site will be tamped so the 12 pound maximum NEW is conservative).

9.0 OFF-SITE DISPOSAL. NA.

10.0 TECHNICAL SUPPORT.

No Chemical Warfare Materials (CWM) are suspected at this site. The contractor will positively identify all OE uncovered before items are removed or destroyed. If a suspect CWM is encountered, the Site Safety Officer will stop all operations on site and notify the on site CEHNC representative. The CEHNC Safety Specialist will notify the appropriate Explosive Ordnance Disposal (EOD) Detachment (725th Ordnance Company (EOD) out of Fort Drum) and/or Technical Escort Unit.

11.0 LAND USE RESTRICTIONS.

There will be no reuse restrictions required following this action. The site will be transferred (sometime during the closure process) for use as discussed in the INTRODUCTION, above.

12.0 PUBLIC INVOLVEMENT.

This removal is being performed under the CERCLA umbrella since Seneca is a BRAC federal facility on the National Priorities List. Consequently, the required public involvement process is

already in place (BCT, RAB, general public involvement) with the SEDA PAO taking the lead.

13.0 AFTER ACTION REPORT.

Following the OE Removal Project at the Open Burning Grounds, a copy of the Final Removal Report will be provided to all who reviewed this ESS for review and approval.

14.0 AMENDMENTS AND CORRECTIONS.

An amendment or correction discussing any changes in the procedures to be used or the conditions encountered during this removal will be provided for review and approval as warranted in the guidance.

15.0 REFERENCES

General

a. AR 385-64, Ammunition and Explosives Safety Standards, dtd 22 May 1987

b. AR 385-64 (Draft), US Army Explosives Safety Program

c. Department of Defense Explosives Safety Board, Interim Guidance on Land Clearance Planning and Removal Depth for Ammunition and Explosives. 1993.

d. DDESB, Guidance for Clearance Plans, 27 January 1998.

e. Interim Final, "Guidance for Conducting Remedial Investigations/Feasibility Studies Under CERCLA", U.S. EPA, Office of Solid Waste and Emergency Response, October 1988.

f. "U.S. Corps of Engineers Safety and Health Requirements Manual," U.S. Army Engineering Manual No. EM-385-1-1, April 1981.

g. "Safety Concepts and Basic Considerations for Unexploded Ordnance (UXO) Operations", U. S. Army Engineering and Support Center, Huntsville, Revised 16 February 1996.

Specific

h. "Federal Facility Agreement under CERCLA Section 120 in the matter of Seneca Army Depot, Romulus, New York," Docket No. II-CERCLA-FFA-00202, USEPA, U.S. Department of the Army, and the New York State Department of Environmental Conservation, November 1990.

i. "Work Plan Architectural-Engineering Services For Performing A Remedial Investigation/Feasibility Study (RI/FS) At The Open Burning (OB) Grounds, Seneca Army Depot, Romulus, New York," Chas. T. Main, Inc., 1991.

j. "Preliminary Site Characterization Report at the Open Burning (OB) Grounds," Chas. T. Main, Inc., 1992.

k. Final, "Remedial Investigation Report at the Open Burning (OB) Grounds", Parsons Engineering Science, Inc., September 1994.

l. Final, "Feasibility Study at the Open Burning (OB) Grounds", Parsons Engineering Science, Inc., June 1996.

m. Draft-Final, "Superfund Proposed Plan, the Open Burning (OB) Grounds at the Seneca Army Depot Activity (SEDA), Romulus, New York.", Parsons Engineering Science, Inc., January 1997.

n. Preliminary-Draft, "Record of Decision, Former Open Burning (OB) Grounds Site, Seneca Army Depot Activity, Romulus, New York.", Parsons Engineering Science, Inc., March 1997.

APPENDIX A

MAPS

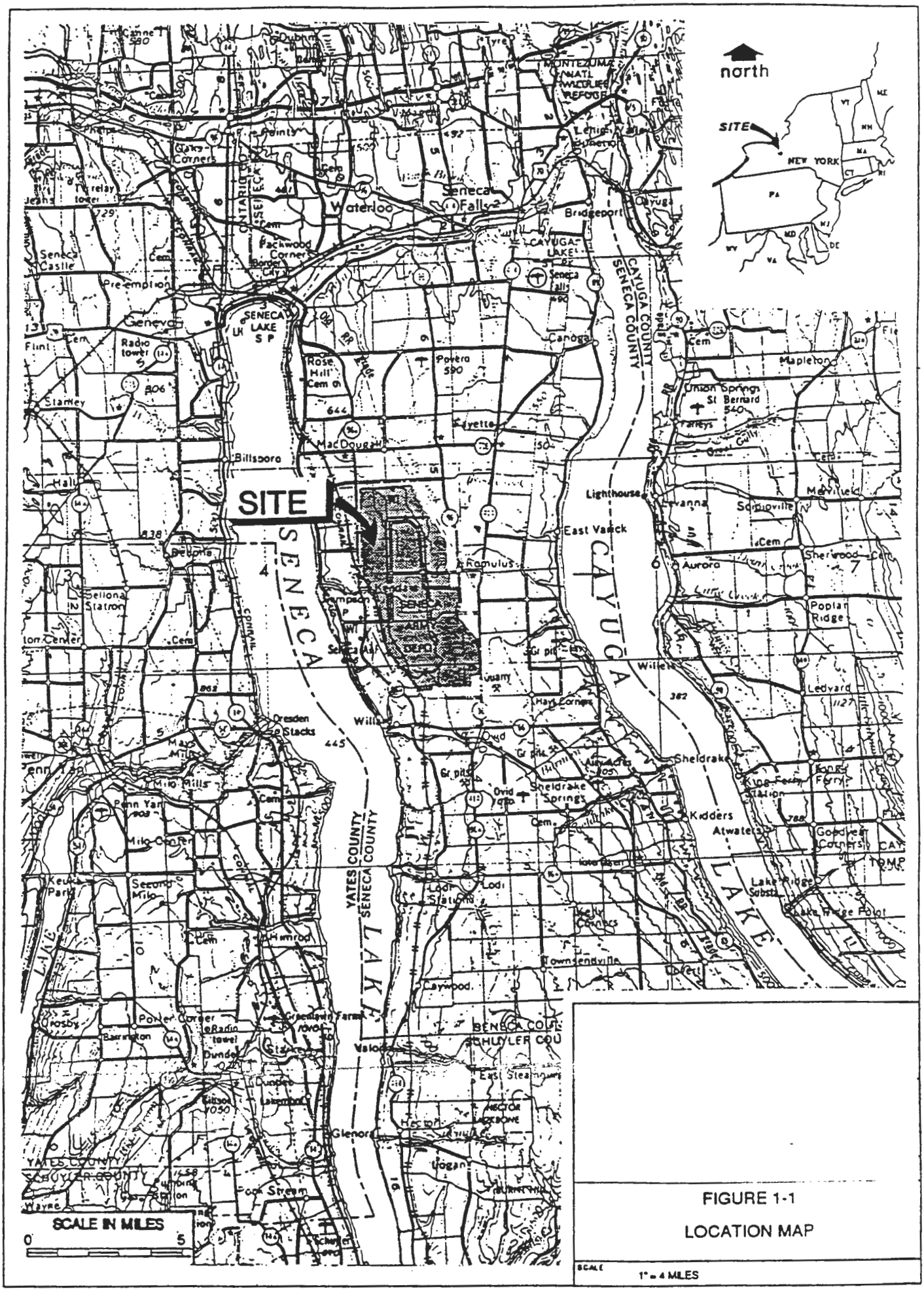


FIGURE 1-1

LOCATION MAP

SCALE 1" = 4 MILES

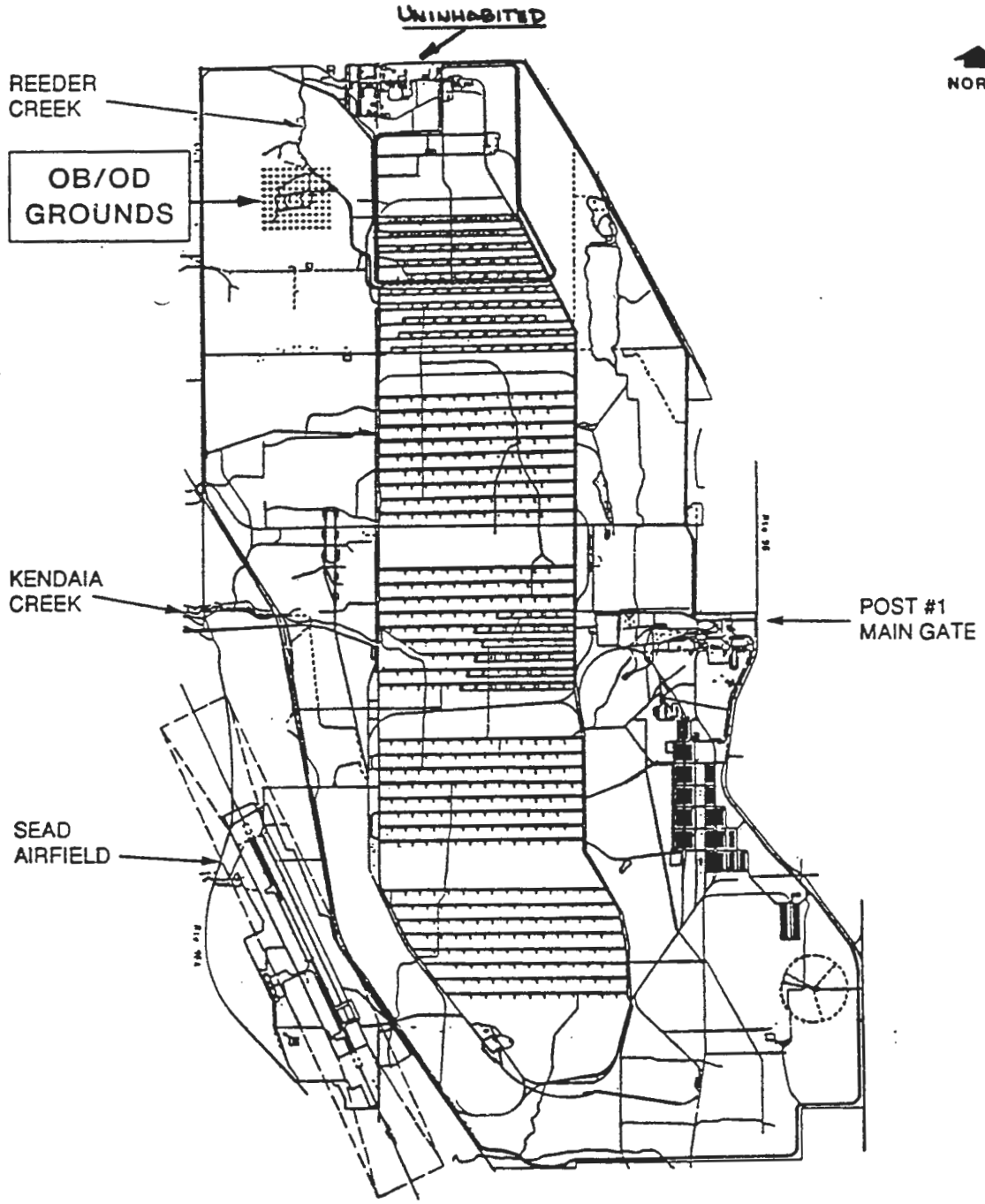
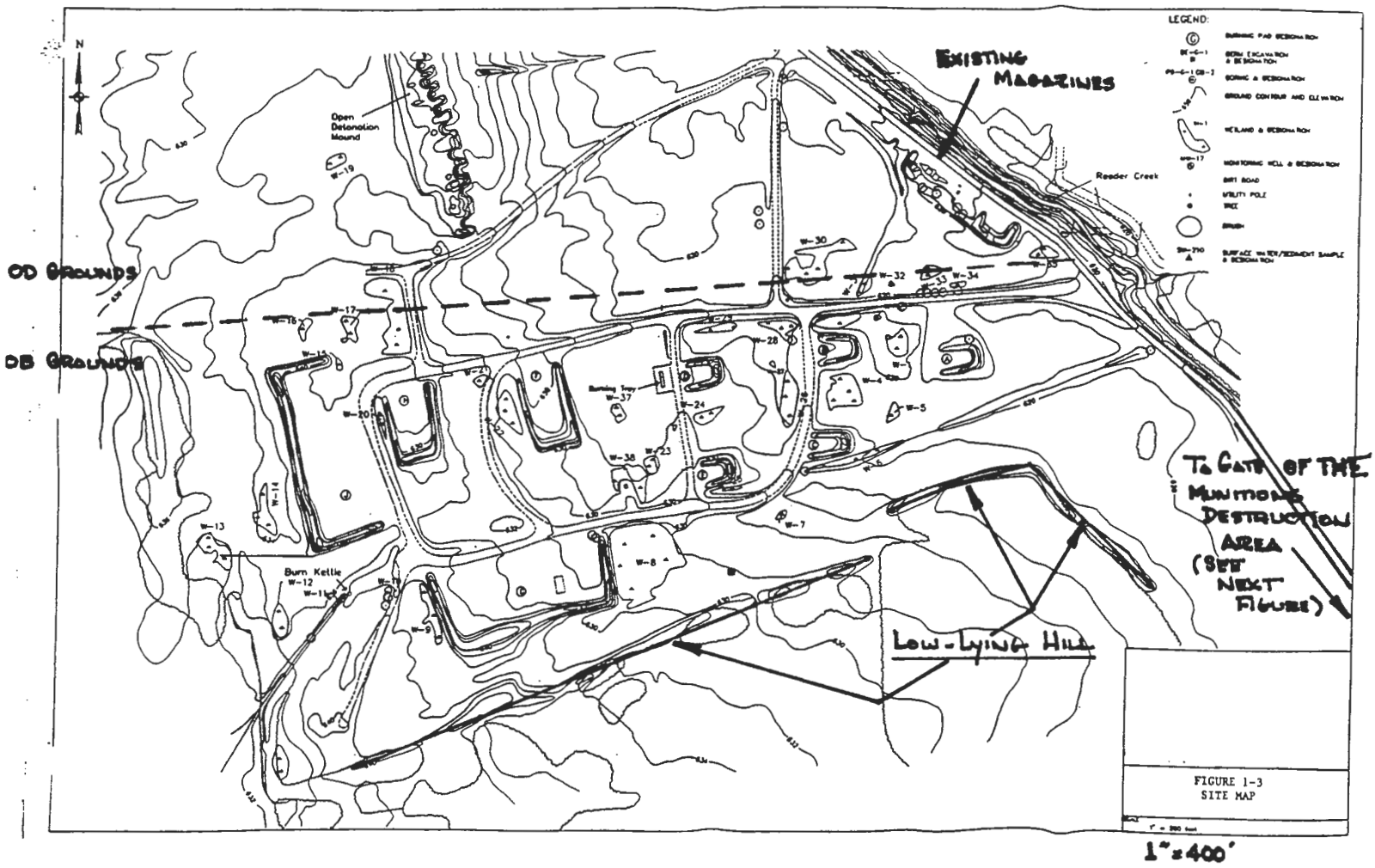


FIGURE 1-2

SENECA army DEPOT MAP

SOURCE: Seneca Army Depot

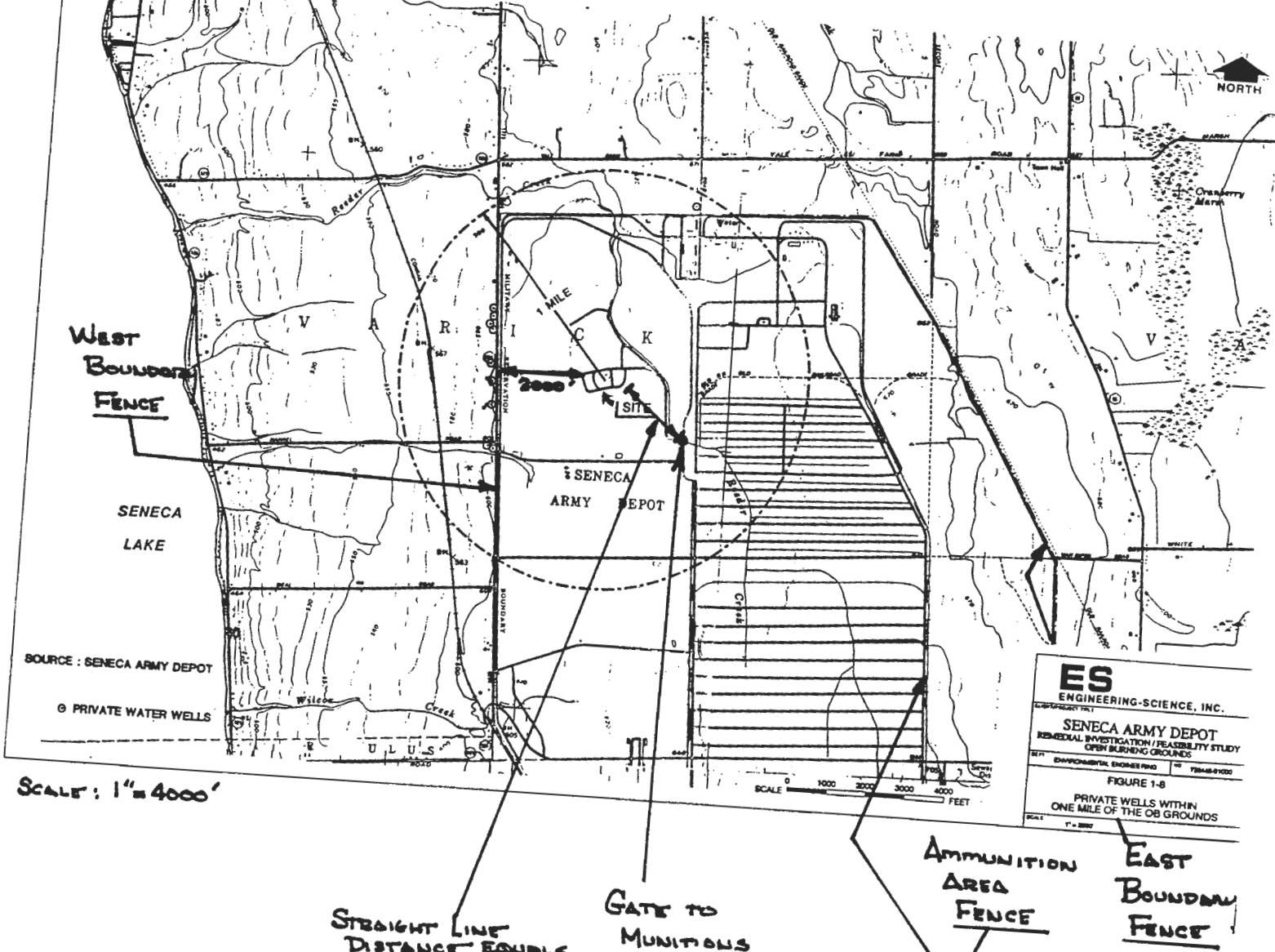
SCALE 1" = 3000' (APPROXIMATE)



MPM = Mk II Hand Grenade

PWD = 842' ⟹ 850'

Site Map 1
General Site Layout

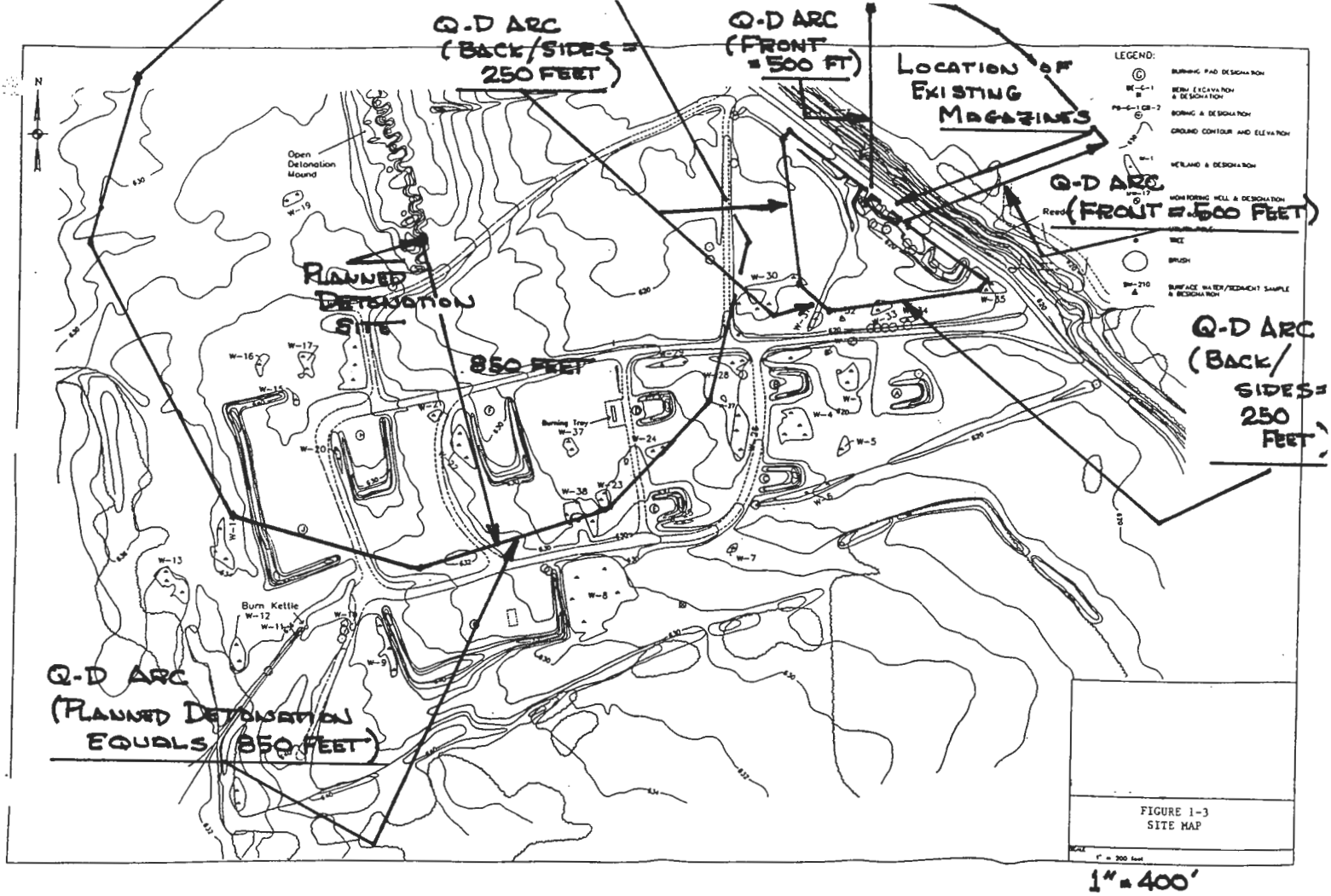


(CLOSEST POSSIBLE PRESENCE OF THE "PUBLIC" i.e. NON-UXO QUALIFIED, NON-UXO ESCORTED CONTRACTOR, DEPOT, SECURITY PERSONNEL)

MPM = MK II HAND GRENADE
PWD = 842' → 850'

SITE MAP 2

DISTANCES TO THE NEAREST POSSIBLE PRESENCE OF THE GENERAL PUBLIC



NOTE: REFER TO SITE MAP 2 TO SEE RELATIONSHIP OF DISTANCES SHOWN HERE TO OVERALL OB GROUNDS SITE AND THE NEAREST POSSIBLE PRESENCE OF THE GENERAL PUBLIC.

NOTE: Q-D ARCS FOR ALL OE AREAS ARE NOT SHOWN FOR OBVIOUS REASONS. AS ONE CAN GRASP FROM REFERENCE TO SITE MAP 2, THE SHORTEST DISTANCES TO THE NEAREST POSSIBLE PRESENCE OF THE GENERAL PUBLIC ARE:

1880' ± TO THE ENTRANCE TO THE MUNITIONS DESTRUCTION AREA FROM THE EXTREME SE PORTION OF THE SITE (A EXTREME SE TIP OF THE LOW-LYING HILL)

2000' ± TO THE WEST BOUNDARY FENCE

2000' ± TO THE PATROL ROAD SOUTH OF THE SITE

4000' ± TO THE PATROL ROAD NORTH OF THE SITE

SITE MAP 3
Q-D ARCS FOR MAGAZINES AND PLANNED DETONATIONS

APPENDIX B

List of Items Demilled
at the SEDA Munitions Destruction Area

ATTACHMENT 2

List of Demilled Items

73-1-[illegible]	Burster, M14
73-1-197	Burster, M19
73-1-202	Burster, M21
3-1-215	Burster, M23
3-2-21	Burster, M24
797832	Burster, M55
73-1-264	Burster, M57
73-1-258	Burster, M40 Series
73-1-226	Burster, M41
73-1-230	Burster, M47
8886484	Burster, M48
8861032	Burster, M71
8434390	Cam, Catapult, Firing
H22-47-18	Cap, Blasting Electric
H22-47-14	Cap, Blasting Electric

APPENDIX A Cont'd

DRAWING NUMBER or MIL-SPEC	ITEM
A18-60-255	Cap, Blasting, Electric, Commercial #6
H22-47-05	Cap, Blasting, Electric, #8
Spec. AXS 1234	Cap, Blasting, Electric, #6, 1st, 2nd, 3rd and 4th Delay
8830972	Cap, Blasting, Electric, J2, PETN Type 2 and M6
8830948	Cap, Blasting, Nonelectric J1, PETN, RDX Type 1 and M7
MIL-C-4546	Cap, Blasting, Nonelectric #6 and 8
MIL-C-20496	Cap, Blasting, Nonelectric Tetryl Type A
TA96713	Cartridge, Activating Device
LD 491836 (Navy)	Cartridge, Activating Device, MK 17, Mod 0
300051-1	Cartridge, Powder Actuated
841155	Cartridge, Aircraft, Fire Extinguisher
398796 (Navy)	Cartridge, Bomb, Ejection, MK1, Mod 2 and 3
[illegible]08	Cartridge, Bomb, Ejection, MK2, Mod 0
[illegible]-31-1	Cartridge, Bomb, Ejection, M3
[illegible].1-2 (Air Force)	Cartridge, Bomb, Ejection, ARD 863-1
TA47155	Cartridge, Cutting Blade
8886478	Cartridge, Delay, XM252
C 3001	Cartridge, Delay - MI - Shear Corp.
00-33 (Air Force)	Cartridge, Engine Starter, MXU41A and

MIL-C-27658	Cartridge, Engine Starter, MXU 129A
10022246	Cartridge, Explosive
8026-001	Cartridge, Igniter, Turboset Engine Type 2
9851	Cartridge, Ignition, M2
32287	Cartridge, Ignition, M2A2
-19-78	Cartridge, Ignition M5A1
75-19-71	Cartridge, Ignition, M6
75-19-79	Cartridge, Ignition, M8
75-19-82	Cartridge, Ignition, M66
1283661 (Navy)	Cartridge, Impulse, MK2, Mod 1.
1013-40 (Navy)	Cartridge, Impulse, MK24, Mod 0.
2518426 (NAVAIR)	Cartridge, Impulse, MK131MOD 0
75-1-227	Cartridge, Impulse, M2SA1
75-1-280	Cartridge, Impulse, M29A2
75-1-288	Cartridge, Impulse, M50
75-1-290	Cartridge, Impulse, M51A1
ILX1-95-1-11	Cartridge, Impulse, M56
3594084	Cartridge, Impulse, M57
2595295	Cartridge, Impulse, M67
85079	Cartridge, Impulse, MK104, Mod 0
10521610	Cartridge, Impulse, M141
10521960	Cartridge, Impulse, M150

APPENDIX A Cont'd

DRAWING NUMBER or MIL-SPEC	ITEM
FE 31831	Cartridge, Impulse, M151
1283660	Cartridge, Impulse, ARD 446-1 :
9311660	Cartridge, Impulse, M796
95-1-15	Cartridge, Initiator, M38
95-1-22	Cartridge, Initiator, M46
8593274	Cartridge, Initiator, M70
8594157	Cartridge, Initiator, M73
9465	Cartridge, Initiator, M91
8593512	Cartridge, Initiator, M93
58D46856 (Air Force)	Cartridge, Kit, Bomb
61D14986 (Air Force)	Cartridge, Kit, Parachute
6RS2C3268	Cartridge, Line Throwing Device
2434364	Cartridge, Mine Safety Appliance
78-0-114	Cartridge, Photo Flash, M112 Series
78-0-132	Cartridge, Photo Flash, M121 Series
78-0-134	Cartridge, Photo Flash, M123 Series
78-0-137	Cartridge, Photo Flash, M124 Series
Commercial Cartridge, Powder Actuated Tool, Cal .22 and Cal .30	
P822S7AK	Cartridge, Release Cargo, Parachute, 1.0 sec delay
8858662	Cartridge, Release Cargo, Parachute, 2.0 sec delay
Commercial Cartridge, Set, Escape System-4, MK2	
5-1-17	Cartridge, Thruster, M42
F7365	Cartridge, Thruster, M43
FF7367	Cartridge, Thruster, M44
596708	Cartridge, Thruster, M94
D20674	Cartridge, Thruster, M119
8797470	Cartridge, Thruster, T238
82-0-158	Charge Assembly, Demolition, M37
9216416	Charge Assembly, Demolition, M183
83-0-93	Charge, Demolition Block, M2 and M3
P84025	Charge, Demolition Block, M5
82-13-9	Charge, Demolition Block, M5A1
117476	Charge, Demolition Block, M112
117651	Charge, Demolition Block, M118
8797111J	Charge, Demolition Block, 1/4-lb TNT
82-13-24	Charge, Demolition Block, 1/2-lb and 1-lb TNT
MIL-E20308	Charge, Demolition Block, 1-lb Nitro-Starch
F84857	Charge, Demolition Chain, M1
D4306-5-1	Charge, Demolition Linear, Component of Demo Kit, M2
D5234-6	Charge, Demolition Linear, Component of Demo Kit, M2A1 and M6
82-13-23	Charge, Demolition Linear, Component Expl. Kit, Earth Rod
D3803	Charge, Demolition, Shaped, M2A1
83-0-120	Charge, Demolition, Shaped, M2A3
1025	Charge, Demolition, Shaped, M3
2843	Charge, Demolition, Shaped, 10-lb
8837975	Charge, Demolition, Shaped, 40-lb

APPENDIX A Cont'd

DRAWING NUMBER or MIL-SPEC	ITEM
82-15-26	Charge, Practice, M8 Mine
71-9-257	Charge, Propelling, Earth Rod, M12
D4014-1	Cord, Detonating - Fuse, Primacord PETN
8837262	Coupling Base, Firing Device
82-0-126	Cutter, Powder Actuated, Cable M1
82-0-159	Cutter, Powder Actuated, Line M2, M2A1, M21 and M22 Series
None	Demolition Equipment Set, Expl Initiating, Electric and Non-Electric
82-0-84	Demolition Kit, Bangalor Torpedo, M1A1 No. 1, 2, 5 and 7
8796266	Demolition Kit, Projected Charge, M1 Series
D4306-1 thru 6	Demolition Kit, Projected Charge, M2
D5234-1 thru 12	Demolition Kit, Projected Charge, M2A1 and M3
274935 (Navy)	Destructor, Explosive, MK2 Mod 0
82-0-209	Destructor, Explosive, Universal, M10
85355	Destructor, Explosive, M19
10-3137	Destructor, Explosive Type 131
73-9-104	Detonator Kit, Concussion, M1
73-9-110	Detonator, Percussion, M1A2
[illegible] 7909	Detonator, Percussion, M2A1
M[illegible]-D-45413	Dynamite, Military, M1
[illegible] 546	Expendable Firing Package
None	Explosive Kit, Earth Rod, Set No. 1
58AH5989	Explosive Kit, Parachute
D9981-1	Fastener Unit, Powder Actuated Tool
8246784	Firing Device, Delay, M1
8797612	Firing Device, Pull Type, M1
D3961-1-2	Firing Device, Release, M1
73-9-70	Firing Device, Pressure Type, M1A1
73-9-100	Firing Device Pull Type, M2
8537267	Firing Device, Pull Release, M3
7296865	Firing Device, Demolition, Multipurpose M5
8247437	Firecracker, M80
1434390	Firing Mechanism Assembly
64790 (Navy)	Flare, AC, Parachute, MK6, Mod 6
64663 (Navy)	Flare, AC, AN-MK9 Mod 2
8-0-07	Flare, AC, Parachute, M5A1
8-0-11	Flare, AC, Parachute, M9A1
8-0-39	Flare, AC, Parachute, M26 Series
8-0-45	Flare, Surface, Trip, M48
311623	Flare, Countermeasure, M206

APPENDIX A Cont'd

DRAWING NUMBER or MIL-SPEC	ITEM
8836957	Flare, Surface, Trip, M49 Series
78-0-44	Flare, Tow Target, M50
78-0-93	Flare, Surface, Airport M76
78-0-95	Flare, AC, Towed, M77, M78 and M79
78-0-153	Flare, AC, Parachute, M138 and M139
78-0-94	Fuses, Red, 20 minute, M72
2506736 (Navy)	Fuze, Auxiliary Detonating, MK396 Mod 0
2512190 (Navy)	Fuze, Auxiliary Detonating, MK935 Mod 1
73-2-168	Fuze, Base Detonating, M62 Series
73-2-178	Fuze, Base Detonating, M66 Series
73-2-181	Fuze, Base Detonating, M68 Series
73-2-239	Fuze, Base Detonating, M91 Series
73-9-17	Fuze, Base, Bullet Impact M1
82-1-31	Fuze, Hand Grenade, M6 Series
82-1-46	Fuze, Hand Grenade, M10 Series
13-10-22	Fuze, Hand Grenade, M201 Series
7548570	Fuze, Hand Grenade, M204, M205 and M206 Series
8822131	Fuze, Hand Grenade, M213
10963447	Fuze, Hand Grenade M217
9235210	Fuze, Hand Grenade, Practicce, M228
399141 (Navy)	Fuze, MK 177 Mod 0
73-7-29	Fuze, Mechanical Time, M43 Series
73-7-71	Fuze, Mechanical Time, M61 Series
D 165255	Fuze, Mechanical Time, MK 61 Mod 1
-7-97	Fuze, Mechanical Time, M67 Series
-7-97	Fuze, Mechanical Time, 208 MK3 (British)
-7-110	Fuze, Mechanical Time, 214 MK1 (British)
052291	Fuze, Mechanical Time, M565
73-7-135	Fuze, Mechanical Time & Superquick M500 Series
73-7-136	Fuze, Mechanical Time & Superquick, M501 Series
73-7-98	Fuze, Mechanical Time & Superquick, M502 Series
8596001	Fuze, Mechanical Time & Superquick, M548 Series
10534286	Fuze, Mechanical Time & Superquick, M564
Series	
73-9-13	Fuze, Mine, Combination, M6 and M7 Series
73-9-56	Fuze, Mine, Combination, M10A1
73-9-26	Fuze, Mine, AT, Practice, M12
73-9-55	Fuze, Mine, AT, M603
73-9-86	Fuze, Mine, AT, M604
73-2-311	Fuze, Point Detonating, M8
73-2-312	Fuze, Point Detonating, M9
73-2-140	Fuze, Point Detonating, M48 Series
73-2-145	Fuze, Point Detonating, M51 Series
73-1-161	Fuze, Point Detonating, M52 Series
73-2-137	Fuze, Point Detonating, M57 Series

APPENDIX A Cont'd

DRAWING NUMBER or MIL-SPEC	ITEM
73-2-214	Fuze, Point Detonating, M78 Series
73-2-251	Fuze, Point Detonating, M21 Series
73-1-195	Fuze, Point Detonating, M82 Series
73-2-374	Fuze, Point Detonating, T234 Series
73-2-320	Fuze, Point Detonating, M503 Series
73-2-359	Fuze, Point Detonating, M508 Series
73-2-393	Fuze, Point Detonating, M519 Series
9311100	Safety and Arming Device, Guided Missile XM143
11711435	Fuze, Electronic Time, M587
11711268	Fuze, Electronic Time, M724
12551000	Fuze, Electronic Time, M762
12550850	Fuze, Electronic Time, M767
9226650	Fuze, PIBD, XM579
8797514	Fuze, Point Detonating, M524E1 NOTE: This SOP does not apply to the basic model Fuze, M524
8800197	Fuze, Point Detonating, M525 Series
73-2-393	Fuze, Point Detonating, M526 Series
73-1-195	Fuze, Point Detonating, M527 Series
73-2-141	Fuze, Point Detonating, M535 Series
8863535	Fuze, Point Detonating, M557 Series
8880696	Fuze, Point Detonating, M572
9258605	Fuze, Point Detonating, M739
[illegible] 5332	Fuze, Point Detonating, M739A1
[illegible] 2-236	Fuze, Point Initiating, M90 Series
[illegible] 9735	Fuze, Point Initiating, Base Detonating, M509 Series
779525	Fuze, Proximity, M504 Series
1310367	Fuze, Proximity, M513 Series
795245	Fuze, Proximity, M514 Series
795368	Fuze, Proximity, M515 Series
542838	Fuze, Proximity, M517 Series
0976900	Fuze, Proximity, M532 Series
1716451	Fuze, Proximity, M732
44523 (Navy)	Fuze, Rocket, Nose, MK137 Series
93783 (Navy)	Fuze, Rocket, Nose, AN-MK149 Series
23844 (Navy)	Fuze, Rocket, Nose, MK154 Series
23845 (Navy)	Fuze, Rocket, Nose, MK155 Series
0993581	Fuze, Rocket, Nose, M414 Series
383745	Fuze, Rocket, Point Detonating, M423 and M423A Series
5-3-166	Fuze, Time M84

APPENDIX A Cont'd

DRAWING NUMBER or MIL-SPEC	ITEM
73-3-154	Fuze, Time Superquick, M54
73-3-155	Fuze, Time Superquick, M55
563141	Fuze, MT, MK25 Mod 5 (1390-N257)
253190	Fuze, MT, MK51-4 (1390-N247)
2428426	Fuze, MT, MK342 Mod 0 (1390-N250)
10520791	Fuze, Mechanical Time, M62
10520688	Fuze, Mechanical Time, M63
8594044	Fuze, Mechanical Time, Superquick, M520 Series
9236500	Fuze, Mechanical Time, Superquick, M577
9352381	Fuze, Mechanical Time, Superquick, M577A1
9236701	Fuze, Mechanical Time, Superquick, M582
9352382	Fuze, Mechanical Time, Superquick, M582A1
053001-1	Generator, Gas Pressure, Prop, Actuated
82-0-143	Grenade, Hand, Fragmentation, MK2 Series
75-14-546 PRESSED FIBER BODY, NOT CRITICAL	Grenade, Hand, Offensive, MK3 Series
82-0-1 INERT	Grenade, Hand, Practice, M2182-0-190
82-0-190	Grenade, Hand, Fragmentation, M26 Series
82-0-191 INERT, MAYBE SMALL SEPARATE BLACK POWDER CHARGE	Grenade, Hand, Practice, M30
13-7-4	Grenade, Hand and Rifle: Smoke, WP, M34
82-0-109 NOT CRITICAL	Grenade, Rifle, Smoke, WP, M19 Series
82-0-117 NOT CRITICAL	Grenade, Rifle, Smoke, M22 Series
82-0-139 NOT CRITICAL	Grenade, Rifle, Smoke, Streamer, M23
82-2-204 NOT CRITICAL	Grenade, Rifle, Illuminating, M27 Series
82-0-195	Grenade, Rifle, HEAT, M31
6-9-62	Igniter, Blasting Fuse, M1 & M2
78-0-127	Igniter, Ram Jet Engine, M113
838168	Igniter, Ram Jet Engine, M114
76-2-590	Igniter, Ram Jet Engine, M132
78-2-592	Igniter, Ram Jet Engine, M133
78-0-155	Igniter, Ram Jet Engine, M134 & M135
8886428	Igniter, Rocket, M20A1
81-1-454	Ignition Cylinder, Portable, Portable Flame Thrower: M1 (MIL-I-11525) NSN 1375-00-219-8583-M680)
75-14-652	Mine, AP, NM, M14
P85738	Mine, AP, Practice, NM, M17
73-9-25	Primer, Igniter, M10 Series Mine Fuze
74-2-63	Primer, Percussion, M1B1A2
B4760-1	Primer, Percussion, Cap, MCC, Improved No. 2 or 3
74-2-21	Primer, Percussion, Electric MK2A4
36392 (Navy)	Primer, Percussion, Electric MK13
437780 (Navy)	Primer, Percussion, Electric MK 13 Mod 1
437780 (Navy)	Primer, Percussion, Electric MK 13 Mod 2
79132 (Navy)	Primer, Percussion, Electric MK 14 Mod 1
528952 (Navy)	Primer, Percussion, MK22 Mod 0 for 40MM Ammunition
538589 (Navy)	Primer, Percussion, MK22 Mod 1 for 40MM Ammunition

SHAPED CHARGE (ANTI-TANK)

OD GROUND ONLY

APPENDIX A Cont'd

DRAWING NUMBER or MIL-SPEC	ITEM
39130	Primer, Percussion, M28 and M31 Series
4-2-49	Primer, Percussion, M32
74-2-50	Primer, Percussion, M33
74-2-51	Primer, Percussion, M34
74-2-63	Primer, Percussion, M38 (MK22), M40, M47, M60, M64 and M65 Series
839472	Primer, Percussion, M49 Series
74-2-86	Primer, Percussion, M57 Series
797087	Primer, Percussion, M58 Series
74-2-68	Primer, Percussion, M62 Series
85557	Primer, Percussion, M70 Series
74-2-87	Primer, Percussion, M71 Series
861197	Primer, Percussion, M82 Series
863394	Primer, Percussion, XM92 Series
74-8-5	Primer, Electric and Percussion, MK15, Mod 1.
39166 (Navy)	Primer, Electric, MK34, Mod 0
63471 (Navy)	Primer, Electric, MK39 Mod 0
548520	Primer, Percussion, Electric, M67
839499	Primer, Electric M80 Series
62308 (Navy)	Primer, Electric, MK 35 Mod 1
97568 (Navy)	Primer, Electric, MK 40 for 6"/47
63478 (Navy)	Primer, Percussion, MK 41 Mod 0
86277 (Navy)	Primer, Electric, MK 42 Mod 0
86281 (Navy)	Primer, Electric, MK 42 Mod 2
9 7 (Navy)	Primer, Electric, MK 45 Mod 0
26 (Navy)	Primer, Electric, MK 48 Mod 1 for 5"/38
82 (Navy)	Primer, Electric MK 15 Mod 3
50 (Navy)	Primer, Percussion, MK 10 Mod 9
25774 (Navy)	Primer, Percussion, Electric, MK 20 Mod 0
141770 (Navy)	Primer, Electric, MK 48 Mod 1
250628 (Navy)	Primer, Electric MK 42 Mod 3
42368 (Navy)	Primer, Electric MK 49 Mod 1
9213 (Navy)	Primer, MK 101, Mod 3
34637 (Navy)	Primer, Electric, MK 153 Mod 0
34756 (Navy)	Primer, Electric, MK 46 Mod 1
-5-1	Release, Firing Pin, M1 Series
-1-282	Remover, Aircraft Canopy, M1 Series
242725	Rocket, Practice, 35MM, Sub-caliber, M73
3760 (Navy)	Signal, Smoke, Marine, AN-MK1, Mod 1
-0-82	Signal, Illum, Marine, Two-Star-Red, AN M75
-0-37	Signal, Illum, Grd, Parachute, M17, M19 M21 and M51 Series
-0-38	Signal, Illum, Grd Cluster, M18, M20, M22 and M52 Series
0-33	Signal, Illum, AC, Double Star, AN-M37, M38, M39, M40, M41 and M42 Series
0-34	Signal, Illum, AC, Tracers AN-M53, M54 M55, M56, M57 and M58 Series
7920	Signal, Illum, Grd, Green Star Cluster, M125 Series

APPENDIX A Cont'd

DRAWING NUMBER or MIL-SPEC	ITEM
8797968	Signal, Illum, Parachute, M126 and M127 Series
8797996	Signal, Ground, Smk, M128 and M129 Series
8838071	Signal, Illum, Grd, Parachute, M131 Series
78-0-96	Simulator, Proj Air Burst, M74A1
78-0-115	Simulator, Gun Flash, M110
7549246	Simulator, Proj Ground Burst, M115 Series
8835109	Simulator, Hand Grenade, M116 Series
78-0-120	Simulator, Booby Trap, Flash, M117
78-0-122	Simulator, Booby Trap, Illum, M118
78-0-124	Simulator, Booby Trap, Whistling, M119
9322059	Simulator, Flash, Artillery, M21
11745290	Simulator, Launching, Antitank Guided Missile and Rocket, M22
71-13-3	Simulator, Projectile Airburst: Charge Smoke Puff White *
82-5-146	Squib, Electric, M1 Series
75-17-11	Tracer, M5 Series
8849014	Tracer, XM10 Series
9220866	Fuze, PD, XM716
9220867	Fuze, PD, XM717
9220850	Fuze, PD, XM719
1310347	Fuze, Proximity, M516 Series
727728(S)	Fuze, Proximity, FMU-110/B
727272(S)	Fuze, Proximity, FMU-113

APPENDIX C

Excerpts from Work Plan: UXO Operations

Chapter 2.0 UXO Operations Plan

Chapter 8.0 Quality Control Plan

CHAPTER 2: UXO OPERATIONAL PLAN

2.0 INTRODUCTION

This plan details the organization, personnel responsibilities, approach, and operational procedures (both OE related and technical) to be employed by EODT to meet the objectives of the Task Order 0003 SOW to be performed at the SEDA OBG . This plan further describes the individual activities to be conducted by EODT during each task, and outlines the methodologies to be employed to accomplish these activities.

2.1 PROJECT ORGANIZATION

The project team consists of the CEHNC Project Manager (Alicia Allen), the CEHNC Project Engineer (Kevin Healy); the on-site CEHNC SREP (to be determined); and EODT. Figure 2-1 depicts the overall project organization, and shows the key responsible personnel and project organizational details. Figure 2-2 depicts the project site organization which EODT will use to accomplish the on-site tasks.

2.2 EODT PERSONNEL RESPONSIBILITIES

The following paragraphs describe the specific responsibilities of the EODT personnel shown on the project organizational chart. All EODT personnel assigned to this project meet the CEHNC training and experience requirements for the position to which they are assigned. In addition to the project management responsibilities presented below, additional responsibilities have been given to specific key personnel and are defined further in this WP and the SSHP.

2.2.1 Program Manager

Mr. Jeffrey Bleke is the EODT Program Manager for this project and is responsible for the overall implementation of this project. Mr. Bleke is a registered Professional Engineer with extensive experience in the management of multiple project OE programs. Mr Bleke's qualifications and experience are presented in Appendix F of the WP. In this role, Mr. Bleke will be responsible for the management of the EODT resources needed for the implementation of site operations.

2.2.2 Project Manager

Mr. John (Jack) Scott, the EODT PM, is a registered Professional Engineer with substantial experience in the management of USACE and CEHNC projects, including in excess of 20 years of experience in project planning, design, implementation and management. As the PM for this project, he has the following management responsibilities:

1. Reports directly to the Program Manager for all project and operational matters;
2. Manages the funding, manpower and equipment necessary to conduct site operations;

EXCERPT 1 OF 2
23 PAGES

3. Acts as the point of contact for CEHNC project personnel, and communicates with the CEHNC through the CEHNC PM;
4. Oversees the overall performance of all EODT individuals assigned to the project;
5. Reviews the SEDA SOW to ensure necessary elements are addressed in project plans; and
6. Coordinates all contract and subcontract work and controls contractual costs and schedules;.

2.2.3 Senior UXO Supervisor/Site Safety and Health Officer

Mr. Salvatore Molle, will be the SUXOS and the Site Safety and Health Officer (SSHO) for this project. As both the SUXOS and the SSHO, Mr Molle will address all ordnance and non-ordnance related safety issues, as well as all operational issues. Due to the small size of the field crew, Mr. Molle will be able to provide the site with over 50% of his time dedicated to safety, without compromising his duties as the SUXOS. Mr. Molle is a master EOD technician and a graduate of the Basic and Advanced Naval EOD School, Indian Head, Maryland. Mr. Molle has over 18 years combined military and civilian EOD experience, with extensive experience as a SUXOS. As the SUXOS, Mr. Molle will be responsible for the following:

1. Manages the EODT on-site manpower and equipment necessary to conduct site operations;
2. Detects and identifies any problem areas and coordinates with the EODT PM to institute corrective measures;
3. Ensures that all site activities are conducted according to this WP and relevant Federal, state and local regulations;
4. Acts as the lead technical consultant for all on-site OE related matters; and
5 Directly interfaces with, and relays concerns to, the CEHNC SREP.

2.2.4 Occupational Safety and Health Manager

Mr. Andrew Bryson, the EODT OSHM, is an American Board of Industrial Hygienist (ABIH) Certified Industrial Hygienist (CIH) with over seven years of industrial hygiene, safety, and hazardous waste experience, including over four years of experience with sites contaminated with OE. During the performance of this project, Mr. Bryson will provide occupational safety and health management and technical support to the SSHO and other EODT project personnel.

2.2.5 Site Safety and Health Officer

As the SSHO, Mr. Molle will work closely with the on-site CEHNC SREP for issues related to OE safety, and will coordinate with the EODT OSHM for issues related to on-site implementation of the SSHP. In this role, Mr. Molle will have the following general responsibilities:

1. Authorizes STOP WORK for safety and health conditions;
2. Identifies and evaluates any known or potential safety problems and implements safety-related corrective actions; and

3. Coordinates with the SUXOS for the implementation of safety and health requirements in the SSHP.

2.2.6 QUALITY CONTROL MANAGER

Mr. Michael Short is the Quality Control Manager (QCM) for this project. He is a Master Explosives Ordnance Technician with over 10 years of experience in the planning, design and implementation of OE projects and quality control (QC). As the QCM, Mr. Short will have the responsibility of ensuring that all site deliverables meet the requirements of the SOW and the QC Plan presented in Chapter 8.0 of this WP.

2.3 APPROACH AND OPERATIONAL SEQUENCE

2.3.1 General

The systematic approach to be used by EODT on-site personnel is presented in this Chapter, and detailed information related to personnel, hours and costs is presented in the Work Data Cost Management Plan found in Chapter 9 of this WP. To complete the Task Order 0003 SOW, EODT on-site personnel will complete the activities identified below according to the planned approach for this project.

2.3.2 Project Operational Sequence

EODT will perform site operations at the SEDA in a systematic manner using proven operating techniques and methods. Based on EODT's experience with UXO operations and information obtained during the site visit, site operations will include the required elements as specified in Task Order 0003 which will be executed in four phases. These phases and the tasks associated with each phase are listed below and are discussed in detail in paragraph 2.4 to 2.7.

PHASE 1 - PRE-MOBILIZATION

- Procure, package, and ship equipment to the site;
- Coordinate with subcontractors to ensure availability of subcontractor personnel and equipment, and schedule mobilization of same; and
- Coordinate with local agencies via telephone.

PHASE 2 - MOBILIZATION

- Mobilizing personnel and remaining EODT equipment to the SEDA site;
- Conduct site-specific and public relations training; and
- On-site coordination with local agencies.

PHASE 3 - OE REMEDIATION

- Set up field office in the Government furnished offices located at the entrance to the Munitions Destruction Area;
- Set-up site work zones, to include a support area near the OBG site;
- Conduct location surveying and mapping;
- Perform a visual survey of the 30 acre site;
- Vegetation removal;
- Sweep site with a towed magnet;
- Magnetometer survey of approximately 22.5 acres not covered by the berms and low lying hill;
- Anomaly investigation in the 22.5 acres, to include demolition of OE located;
- Excavation, sifting, and stockpiling of soils from the berms, low lying hill and other areas, as indicated by personnel from Parsons Engineering, and approved by the SREP;
- Screen and sort oversize material; and
- Magnetometer survey, anomaly investigation and OE demolition of remaining 7.5 acres previously located under the berms and low lying hill.

PHASE 4 - PROJECT CLOSE-OUT

- Scrap turn in;
- Break down site;
- Close accounts;
- Removal of equipment;
- Demobilization of workforce; and
- Generation of the Final Removal Report.

2.3.3 Project Assumptions

The above sequence of events and its timely completion is predicated on the following assumptions:

- The 30-acre OBG will be accessible to all EODT personnel and subcontractors, without interruption, during the course of the project.
- The actual volume of soil to be excavated, sifted and stockpiled, as stipulated in the Task 0003 SOW (in cubic yards), is no greater than the estimated volume of 33,400 cubic yards.
- The government furnished towed magnet will remove the surface metallic scrap without magnetizing the soil.
- The various levels of contaminated soils to be excavated are clearly delineated by the CEHNC using flags, wooden stakes, or a similar marking system prior to EODT's readiness to initiate soil excavation and this identification does not slow or impede EODT or its subcontractor

IAW DID OT-045, all site personnel will be instructed in the public relations procedures. During this training, all site personnel will be informed that they are to refer all inquiries from the public to the SUXOS, who will in turn forward the request to the CEHNC for action. Site personnel will not make any public statements to the media without prior coordination with and approval of the Public Affairs Office (PAO), USACE New York District, and the CEHNC. In the event the CEHNC requests assistance in public meetings, media days, and press/news releases, EODT personnel will assist as directed.

Note:

In addition to the mobilization training specified above, all EODT and subcontractor personnel will have current OSHA hazardous waste and emergency response operations (HAZWOPER) training as specified in the SSHP and will meet the medical surveillance requirements outlined in the SSHP.

2.5.1 Set-up Support Facilities and Assemble Equipment

It is EODT's intention to use, to the maximum extent possible and allowable, any previous facilities whose location logistically supports site operations. During the site visit, EODT coordinated with CEHNC and SEDA for the use of igloo type explosives storage magazines and office space.

2.5.1.1 Field Office and Storage Facilities

EODT will establish its administrative field office in the office located at the entrance to the Munitions Destruction Area. This area will also serve as storage for hand-held field equipment and supplies.

2.5.1.2 Communications Equipment

EODT will install, inspect, and test all site communications equipment, to include:.

- Hand-held five-watt portable radios, with a range of five-to-eight miles that will be used to maintain communications between SEDA, subcontractors, and the field team.
- EODT will use cellular telephones, acquired through a local cellular service (very high frequency band 150-174), as back up communications between the field office and SEDA.

2.5.1.3 Explosives Storage

EODT will utilize double igloo-type earthen covered magazines for storage of demolition material. These magazines are located adjacent to the OBG inside of a fenced enclosure. The magazines are double locked with the required lightning system installed. (Line deleted)

2.5.2 Coordinate with Local Agencies

The PM, SUXOS/SSHO and QCS will coordinate with the following agencies:

- CEHNC, to reconfirm priorities/schedules, and to identify any changes in the SOW;
- Local vendors and suppliers;
- The Air Traffic Controller; and
- SEDA fire, medical, and police agencies.

2.6 REMEDIATION

2.6.1 General Site Organization and Practices

Upon completion of mobilization activities, EODT will commence the OE remediation portion of this project. Team composition for the SEDA is organized as indicated in Table 2-1. The permanent on-site team consists of four personnel as shown in Table 2-2. The subparagraphs presented below describe the general work practices that EODT will follow during all operations, and the specific procedures and methods EODT will use to implement these practices.

TABLE 2-1: TEAM COMPOSITION

TEAM	LABOR CATEGORY	QUANTITY
Pre-Mobilization Team	PM SUXOS/SSHO	1 1
Pre-mobilization Total		**2**
Location Survey & Mapping Team	UXO Specialist Surveyor Rodman	1 1 1
Location, Survey & Mapping Team Total		**3**
OE Remediation	SUXOS/SSHO QCS UXO Specialist	1 1 2
Remediation Team Total		**4**
Soil Excavation Team	Subcontractor UXO Specialists	TBD 2
Soil Excavation Team Total		**TBD**
Close-out Team	SUXOS/SSHO QCS UXO Specialists	1 1 2
Close-out Team Total		**4**

TABLE 2-2: PERMANENT ON-SITE FIELD PERSONNEL

LABOR CATEGORY	QUANTITY
UXOS/SSHO	1
CS	1
UXO Specialist	2
Soil-handling Subcontractor	TBD
Surveyor	1
Rodman	1
TOTAL	**6**

All operational activities at SEDA will be performed under the supervision and direction of qualified UXO personnel. Non-UXO qualified personnel will be prohibited from entering work areas, or performing any operation, unless they are accompanied, and supervised, by a UXO technician. Throughout the entire operation, EODT will strictly adhere to the following general practices.

1) **Work Hours:** Operations will be conducted only during daylight hours, which is thirty minutes after sunrise until thirty minutes prior to sunset. EODT intends to work four 10-hour days, with five 8-hour days as an option. In no case will personnel work more than ten hours in any day, or more than forty hours in any week, and will have a minimum 48-hour rest prior to the start of the next work week. The five 8-hour day schedule will be used during the project as required. The soil handling subcontractor will work longer hours with EODT personnel acting as safety observers. EODT personnel will be scheduled in such a manner that the above requirements are met.
2) **Site Access:** EODT will control access into work areas and will limit access to only those personnel necessary to accomplish the specific operations or to those personnel who have a specific purpose and authorization to be on the site. No hazardous operations will be conducted when unauthorized personnel are in the vicinity.
3) **Handling of OE:** OE items will be handled by qualified UXO personnel only. Non-UXO site personnel will be instructed and closely supervised to ensure they do not handle any OE. Ordnance related scrap (ORS) will not be handled or touched by non-UXO qualified personnel until it has been checked by a UXO technician and it has been determined to be free of explosive hazards.

2.6.2 Compliance with Plans and Procedures

All personnel will strictly adhere to approved plans and established procedures. If operational parameters change and there is a corresponding requirement to change procedures or routines, careful

evaluation of such changes will be conducted by on-site supervisory personnel in close liaison with the CEHNC SREP. Any new course of action, or desired change in procedures, will be submitted in writing, with justification for approval, as required. Approved written changes will be implemented in a manner that will ensure procedural uniformity and end-product quality on the part of EODT.

2.6.3 Safety and Operational Training and Briefings

EODT will conduct safety and operational briefings daily. In addition, the SUXOS or the SSHO may hold a safety stand-down any time a deviation/degradation of safety warrants a review. The safety and operational training and briefings listed below shall be conducted and documented as specified.

1) **Daily Tailgate Safety Briefing**: Each day, prior to the commencement of work, a tailgate safety brief will be conducted for all site personnel by the SSHO or SUXOS. A written record of this training will be maintained on the EODT Safety Meeting Attendance Log found in Appendix E of this WP. The briefing will focus on specific daily hazards, potential hazards and risks that may be encountered, and the safety measures that should be used to eliminate or mitigate those hazards. Additionally, a detailed review of site-specific topics (ie; specific safety equipment, emergency medical procedures, accident forms, and notification procedures) will be included in this brief at least once a week. The Certification of Task Hazard Assessment Form, found in Attachment 2 of the SSHP, (Appendix A to the WP) will be used to conduct daily briefings. These briefings will provide personnel with task-specific known or potential hazards associated with conducting specific tasks related to the day's operation. These forms also delineate the required personal protective equipment (PPE).
2) **Visitor Safety Brief**: All visitors entering the site must sign in at the EODT site office. Site visitors must receive a safety briefing, as outlined in the SSHP, prior to entering any work area. Visitors must be escorted at all times by a UXO-qualified individual.
3) **Environmental Concerns**: The promotion of environmental sensitivity will be ongoing as a part of the daily safety and operational briefs.
4) **UXO Refresher**: All UXO personnel will be given a UXO refresher by the SSHO and SUXOS on the known ordnance to be encountered on site. The refresher includes identification features, hazards and disposal methods.
5) **Additional Training**: Chapter 6 of the SSHP, found in Appendix A, lists in detail additional specific training required for site operations.

2.6.4 Preparation of Work Areas

Prior to initiating work in a new area, the SUXOS will review the area and determine what preparatory measures are needed. Preparatory measures may include, but are not limited to, the items listed below.

1) In some cases, dirt roads and tracks into a grid site may require repair or fill. If such repair does not deter from the SOW, and is within EODT's capability, it will be undertaken immediately. Approval from the CEHNC Contracting Officer/Contracting Officer Representative (CO/COR) approval will be obtained prior to any major unforseen work being attempted.
2) Access routes and work areas will be searched and cleared of all UXO prior to the commencement of grid activities to ensure safe ingress/egress routes for all personnel and equipment.
3) To ensure the safety and health of all site personnel, EODT will establish three work zones on the OBG site. The first zone will be the exclusion zone (EZ) that will be used to control access to the lead contaminated site. At no time will personnel enter the EZ without authorization. The second zone will be the contamination reduction zone (CRZ) that will be used for the decontamination of site personnel and field equipment, and will contain a personal decontamination station (PDS) and an equipment wash area. The final zone will be the support zone (SZ) which will be established according to prevalent site conditions. Since the field office will be located a significant distance from the work site, the SZ will serve as a staging area for personnel and equipment. The SZ will be located in an area known to be free of lead soil contamination, and will to the extent possible, be established up-wind of the EZ. The CRZ will exit into the SZ, and site personnel will be able to use the SZ as a break area during morning and afternoon breaks.

2.6.5 Location Surveying and Mapping

The mapping team will consist of a surveyor, a rodman, and a UXO specialist. The team will survey and map the 30 acre project site into approximately 53 - 200 foot by 200 foot grids, IAW Chapter 5, Location, Surveying and Mapping Plan, of this WP. The team will survey the grids in the order agreed to by EODT and CEHNC and proceed from there as directed by CEHNC. The team reports directly to the SUXOS and will keep him apprized of their progress. The team will use instrumentation capable of accurate measurements to within one foot. The site boundary will be marked at the corners using Schedule 40 PVC and the individual 200 foot by 200 foot grids will be marked at the corners using highly visible wooden stakes with the grid number on the wooden stake. Any unusual terrain or other peculiar features in the grid, as well as any OE encountered, will be annotated on the grid map and reported to the SUXOS. A magnetometer check will be made at each location where a stake, or other marker, is to be set to ensure the location is free of anomalies.

2.6.6 Visual Survey

The team will conduct a visual survey of each grid within the thirty-acre site by lining up search personnel in a line and extending arms to the side, fingertip to fingertip, to obtain proper interval. Once the interval is established, arms are dropped and personnel will then advance to the end of the grid. The team then turns around, moves over, and proceeds as above. The process is repeated until the grid is completed. Any OE encountered will be marked with two crossed pin flags. The OE will either be blown-in-place (BIP) or, if the item is unfuzed and identified as safe to move, it will be moved to the adjacent open detonation range for disposal.

2.6.7 Vegetation Removal

The team will commence vegetation removal operations in a manner similar to the survey and mapping team. The equipment used for vegetation clearing will consist of weedeaters with blades, a bush hog, and a hydro-ax. The equipment used in each grid is dependent on the features and characteristics of the grid. All vegetation removal activities will be IAW Chapter 7, Environmental Protection Plan and the SSHP found in Appendix A of this WP, and only those items necessary to conduct the magnetometer survey will be removed. Grass and brush will be removed to within at least six inches of the surface and tree limbs will be removed to a height of six feet. No trees greater than three inches in diameter will be cut down without the prior approval of the CEHNC.

2.6.8 Towed Magnet Sweep

Once the vegetation removal is complete, the team will use a tractor to pull a wheel mounted magnet over the entire 30 acre OBG site, excluding the berms and low-lying hill. The collected metallic debris will be stockpiled and sorted. To ensure that the magnet does not magnetize the soil, a test area will be established outside the OBG. The results will determine the practicality and efficiency of the process. In the event the process magnetizes the soil, precluding the use of magnetometers, this step will be eliminated.

2.6.9 OE Magnetometer Survey

The SOW for this project requires that the entire 30 acre OBG site be visually and magnetically swept, and cleared to a depth of two feet. To conduct the magnetometer sweeps, EODT personnel will follow the procedures outlined below for each 200 by 200 foot grid. EODT personnel will initially sweep the approximate 22.5 acre area not covered by the berms or the low lying hill. OE clearance of the berms and low lying hill will occur during the soil excavation and sifting operations. Once the berms and low lying hill have been removed the areas under these areas will be swept with the magnetometers and cleared of OE to a depth of two feet.

1) **Search Lanes:** Once the grid location has been surveyed and the vegetation removed, the magnetometer survey team can commence their search. Each grid will be subdivided into

individual search lanes (see Figure 2-3). These lanes will be five foot wide paths adjacent to each other and will run parallel to the east/west boundary line of the grid, (i.e., 40 lanes per grid). To lay out the search lanes, the EODT personnel will lay out pre-marked base lines along the North and South boundary lines, then lay out cones between the marks on both base lines to delineate the lanes.

2) **Grid Search:** This activity will be performed using all four of the EODT on-site personnel, with the SUXOS acting as the team supervisor. To conduct the grid search, a sweep line will be established that is comprised of three UXO magnetometer operators. After the individual search lanes have been assigned, the SUXOS will direct personnel to begin searching their respective lane with the magnetometer. Search personnel will start at one end of each lane and will move forward toward the opposing base line. During the forward movement, the searcher will move the magnetometer from one side of the lane to the other. Both the forward movement and the swing of the magnetometer will be performed at a pace that ensures that the entire lane is searched and that the instrument is able to appropriately respond to subsurface anomalies. Whenever a surface or subsurface anomaly is encountered, either visually or with the magnetometer, the trailing UXO Technician will mark the object or anomaly with a pin flag at that location. Once personnel reach the opposing base line, the sweep line will shift to the next three lanes and will proceed back to the original base line. This process will be repeated until all lanes have been searched.

4) **Equipment:** The equipment to be utilized for this activity includes:
   - Schonstedt GA-72 CD;
   - Wooden stakes or traffic cones will be used to subdivide the grid into individual search lanes;
   - Colored pin flags will be used to mark anomaly locations;
   - Miscellaneous common hand tools; and
   - Forms and logbooks to record activities.

2.6.10 Anomaly Investigation for Subsurface Clearances

Once the grid has been searched, excavation of anomalies will be performed IAW CEHNC Safety Concepts and Basic Considerations for Unexploded Ordnance (UXO) Operations, and will follow the procedures outlined in this paragraph.

1) **Subsurface Clearance:** The subsurface clearance to be conducted in the 33 grids will be to a depth of two feet as required by the SOW. Anomaly investigation will be conducted using a shovel and smaller hand tools. Periodically during digging, the UXO technician will use a magnetometer to verify the location, and approximate depth of the anomaly, based on the signal strength. Once verified, the UXO technician will continue digging with either the shovel or hand tools. In the event an anomaly is determined to be at a depth greater than two

feet, the SUXOS, in conjunction with the CEHNC SREP, will determine the appropriate action: a) continue the excavation; or b) record the location of the anomaly for pursuing at later time.

2) **Location Recording:** The SUXOS will direct and supervise the following operations for UXO/OE encountered.
   - Complete a Grid Survey Summary Log Form and an OE Operations Grid Map, examples of these can be found in Appendix E of the WP.
   - Measure the approximate distance to within one foot from the southwest grid corner to the OE item of concern, and also record the depth at which the item was found.
   - If the item is determined to be fuzed, or is otherwise unsafe to move, its location will be marked with crossed pin flags, so that the item may be relocated for BIP demolition.
3) **Records.** The SUXOS will maintain in a hard bound notebook, a detailed accounting of activities performed at each grid, which will include information pertaining to the following:
   - The date and time operations began;
   - Team composition and personnel names and positions;
   - The date and time operations were completed;
   - Any event which impacted on the day's operations; and
   - The number of OE located, with the identification, condition, depth, disposition and location recorded on the Grid Survey Summary Log and OE Operations Grid Map.
4) **Removal and Disposal of Scrap Metal:** Within, or adjacent to, each operating grid, the SUXOS will establish a temporary collection point for ORS. During operations, the anomaly investigation team member who uncovers an item will inspect the OE item for the presence of explosives. OE items that are free of explosive contamination and do not require venting will be placed in the grid ORS collection point. Upon completion of operations in that grid, the material in the temporary collection point will be collected and loaded into containers, weighed and the weight entered in the team log book. Inspection of ORS will be conducted IAW the QC requirements outlined in Chapter 8 of this WP.

2.6.11 Disposal Operations

All OE-related material containing explosives will be disposed of by detonation utilizing standard demolition procedures as outlined in TM 60A-1-1-31 and the EODT Disposal/Demolition Operations SOP found in Appendix G, Tab 14 of this WP. The following paragraphs describe in general the procedures EODT will use to detonate OE related items at the SEDA.

1) **Procedures:** EODT will dispose of explosively contaminated OE and OE related materials on a daily basis. Demolition operations will begin in a grid site, or at the open demolition range, when all nonessential personnel are out of the public withdrawal distance (PWD) of the ordnance being detonated. OE that is unfuzed and safe to move may be consolidated

within the grids or open demolition range to reduce the number of shots. The SSHO will be at the demolition site at all times during disposal operations. The operation will be performed under the direction and supervision of the SUXOS, who is charged with the responsibility of ensuring that the procedures contained in this WP and the referenced documents are followed. The SSHO will monitor compliance with the safety measures contained in the WP and associated documents, and in the event of noncompliance, the SSHO is vested with the authority to stop or suspend operations. Disposal activities are inherently hazardous and require strict adherence to approved safety and operational procedures. IAW Appendix A, Site Safety and Health Plan, violations of procedures will result in immediate removal from this project and termination of employment. Prior to the start of disposal activities, the SSHO will verify that the exclusion zone, which is the PWD, consisting of the safe blast and fragmentation zone around the demolition site, is clear of all non-UXO personnel, and that other UXO supervisors have been notified. The minimum PWD distance required will be 850 feet, which is the PWD for a MK2 hand grenade. According to CEHNC provided documents, EODT believes the MK2 will be the largest ordnance item that may be encountered at the former OBG. However, depending on the actual type and number of munitions being destroyed, the PWD distance may be increased or decreased (with the approval of the on-site CEHNC SREP) based on data contained in CEHNC-OE-CX (200-1c) dated 30 September 97. Personnel remaining on-site will be limited to those personnel needed to safely and efficiently prepare the item(s) for destruction.

2) **Equipment:** Standard demolition equipment will be used. The procedures to be followed will meet the guidelines dictated by TM 60A-1-1-31, Chapter 4 and Appendix G of this WP.

3) **Demolition material:** EODT will utilize either jet perforators and electric detonators connected to detonating cord, or the detonating cord and electric detonators, in its shots to control the operation and reduce the net explosive weight. EODT uses Department of Transportation (DOT) Class 1.3 and 1.4 explosives whenever possible, which are safer to handle, easier and less expensive to ship and store and more readily available. The demolition materials anticipated for use on the SEDA are:

DESCRIPTION	WEIGHT	DOT EXPLOSIVE CLASS [1]	COMPATIBILITY GROUP [2]
Perforators	19 grams	1.3	D
Detonating Cord	80 grain	1.3	C
Electric Detonators	No. 8	1.4B	B

1 - The explosive classes are those provided to EODT from the supplier on the product data sheets and they reflect commercial classifications that are usually lower than US Army classifications for the same items.
2 - The compatibility codes were obtained from TM9-1300-206.

4) **Evacuation and Site Control:** Prior to initiation of demolition operations, all nonessential personnel will be evacuated to a distance outside the PWD for the item being detonated. Prior to priming of demolition charges, all avenues of ingress will be physically blocked by site personnel. The SUXOS will coordinate the blocking of the main road with SEDA personnel, if required. Radio communications will be maintained among all concerned parties. Avenues of ingress will not be opened without the express permission of the SUXOS. A constant state of vigilance must be maintained by all personnel to detect any intrusion into the PWD. EODT will use the appropriate number of personnel to ensure the area is properly secured.

5) **Explosive Acquisition, Accountability, and Transportation:** EODT will supply all explosives and maintain total control of the explosives while on site IAW the company SOP found in Appendix G, Tab 15 of this WP. Explosives will be removed from the SEDA explosive storage as required, and only the amount of explosives required for the day's operation will be issued each day. EODT will comply with the requirements listed below:
   - Strict accountability of explosives will be maintained at all times. EODT will maintain explosives accountability logs, found in Appendix E of this WP, and will reconcile amounts daily.
   - Only UXO qualified personnel will be issued explosives and allowed to transport explosive materials.
   - All vehicles transporting explosives will be properly inspected, equipped, and placarded prior to the loading of explosives onto the vehicle.

6) **Disposal Shots:** While preparing UXO for detonation, the SSHO will ensure that the number of personnel on site is kept to the minimum required to safely accomplish the task. Authority to initiate demolition operations will rest solely with the SUXOS. This individual is responsible for ensuring all personnel have been evacuated from the area and accounted for, and that the area is secure prior to authorizing the detonation of explosive charges. The QCS will ensure all pertinent parties have been notified of an impending demolition shot. Prior to priming the demolition shots, the SUXOS will: direct all personnel not involved in the priming process to evacuate the area and assemble at the designated assembly point; ensure that the roadblocks are posted; ensure that a minimum of three feet of tamping soil has been placed on the demolition shot; and sound the required warning as indicated in Appendix D of this submittal.

   Should multiple OE items be encountered that preclude individual detonation (e.g., the items are so close together that one shot would interfere with the others and the items cannot be moved), the disposal team will explosively link these shots using detonating cord. If this situation occurs, the SUXOS, in conjunction with the CEHNC SREP, will recalculate the PWD according to the procedures listed in item 1 presented above.

Upon completion of the demolition shot, the SUXOS and one UXO Technician will visually inspect each disposal shot. While one of these individuals performs a visual inspection of the disposal site(s), the second one will stand by at a safe distance and be prepared to render assistance in the event of an emergency. Upon completion of this inspection and providing there are no residual hazards, the SUXOS will authorize the resumption of site operations.

7) **Transporting OE and Demolition Materials:** EODT's SOP for the safe transport of explosives is included in Appendix G of the WP. Since the explosive storage magazines will be located within the SEDA, all transport will be on dirt/gravel roads, thereby eliminating the necessity to transport over public highways. The transport vehicle shall meet all the requirements of 49 CFR 100-199, CEHNC Safety Concepts and EODT's SOP's.
8) **Explosive Storage:** EODT will utilize an earthen covered double igloo type magazine for the storage of demolition materials. The igloos are constructed to Army and DDESB standards, including lightning protection and lighting. According to SEDA personnel, the design net explosive weight (NEW) of each magazine is 450 pounds, however, EODT does not anticipate storing more than 100 pounds NEW in either magazine. Additionally, as stated above, EODT will utilize Class 1.3 and 1.4 explosives, further reducing the explosive hazard. The perforators (Class 1.3, compatibility group D) and detonating cord (Class 1.3, compatibility group C) will be stored in one magazine, and the electric detonators (Class 1.4B, compatibility group B) will be stored in the second magazine.

2.6.12 Soil Excavation and Processing

The soil processing subcontractor, will excavate, sift and stockpile approximately 33,400 cubic yards of soil from the berms, low lying hill and selected areas of the OBG according to the procedures outlined below. During all soil penetration and handling EODT will provide OE avoidance services.

1) Soil Identification: Parsons Engineering Science, Inc. (Parsons), a CEHNC contractor, will provide at least one person who will stake out the two levels of lead contaminated soils using visual markings such as wooden stakes or pin flags. In addition, the depth of these marked areas will be annotated on a map provided by Parsons.
2) High Contamination Soils: This category of soils is defined as having lead concentrations greater the EPA Toxicity Characteristic Leaching Procedure (TCLP) limit (to be established). Approximately 3,800 cubic yards of this soil will be removed and cleared of OE prior to being stockpiled. Using a combination of backhoes and excavators, the earthmoving subcontractor will excavate this soil and transport it in dump trucks to the sifting operation. The sifting operation will consist of a Reed Screen, using a one-inch mesh screen as the final screen. The soil and miscellaneous debris which is smaller than one inch will fall through the screen onto a series of conveyor belts for transportation away from the sifter where it will be collected and transported to the stockpile area. The soil will be

stockpiled on one of three 20mm, poly liners, surrounded by a geo-membrane reinforced with hay bales. At the end of each day's operations, the pile will be covered with an 8mm liner and secured in place using rubber tires. Geo-membrane will also be used when applicable to control run-on/off around excavations to control contamination migration. A potential change to the above is the collection of the soil by SEDA personnel and equipment as the soil comes off the conveyor belt for transportation to a solidification treatment facility, thereby avoiding the need to stockpile the material. In the contingency, some of the soil may need to be temporarily stockpiled and, if so, the above process will be utilized. If immediate soil collection is performed, the process will be overseen by UXO-qualified personnel.

3) **Moderately contaminated soil:** This soil type is defined as having lead concentrations greater than 500 mg/kg, but below the TCLP limit. Approximately 4,200 cubic yards of this soil will be removed from the berms and low lying hill, and approximately 9,400 cubic yards of this soil will be removed from other areas in the OBG that are not part of the berms or low lying hill. The moderately contaminated soils will be sifted and cleared of OE prior to being stockpiled. Upon the completion of the heavily contaminated soil processing, the same procedures as those listed in Item 2 of this paragraph, will be used to process the 13,600 cubic yds. of moderately contaminated soil. This soil will be stockpiled, underlain and covered by EODT after excavation and sifting to be land filled at a future date by others.
4) **Non-contaminated soil:** The remainder of the approximate 16,000 cubic yards of soil to be removed from the berms and low lying hill will be transported to the sifting operation using either dump trucks or a bulldozer. The processed soil will be stockpiled in its own pile and will be covered at the end of each day as outlined above and may be used for fill after the OE remediation is completed.
5) **Oversize material:** The material which is greater than one inch in diameter will fall onto a second conveyor belt and will be collected in a roll-on/off container. This material will be processed by EODT personnel using the procedures listed in the next paragraph.

2.6.13 Oversize Material Processing

All oversize material, i.e., items greater than one inch in diameter, will be processed by EODT personnel at the conclusion of soil processing. EODT will use a hopper and conveyor system to process the scrap. The sorting process will involve the gradual feeding of the oversize material onto a slow moving, waist high conveyor belt which will move the material past the EODT personnel stationed along the conveyor. As the soil proceeds along the conveyor, the EODT personnel will search for, and remove OE related hazardous items and will place them in plastic pails to be destroyed later. The items remaining on the belt will proceed to a roll-on/off container and will be disposed of according to the procedure outlined in paragraph 2.7.1 of this Chapter.

2.6.14 Quality Control Inspections

EODT will utilize QC procedures for controlling and measuring quality of all work performed during site activities. All QC activities will be performed and documented IAW applicable professional and technical standards, USACE requirements, and project goals and objectives. All site activities will be monitored and documented for precision, accuracy and completeness IAW Chapter 8 of this WP.

2.7 PROJECT CLOSE-OUT

During this phase, EODT will remove its operational capability from the area and will reallocate its personnel and equipment to other projects. The SUXOS will closely monitor operational performance throughout the execution of this task order. When a clear projection can be made of the actual completion date, the SUXOS will, with the approval of the CEHNC PM, initiate actions to demobilize personnel and equipment. Demobilization and close-out activities will be performed by EODT's SUXOS, SSHO, and UXO Specialist.

2.7.1 Scrap Turn In

Upon completion of the project, all inert, stockpiled ordnance and ORS greater than one square inch in size will be turned in to a local scrap dealer. The procedures outlined in DoD 4160.21.M will be followed and the shipment certified as being free of explosive hazards. A DD Form 1348-1 will be utilized as the Turn-In Documentation, and will include the statement "I certify that the property listed hereon has been inspected by me, and to the best of my knowledge and belief, contains no item of a dangerous nature." The DD Form 1348-1 will be signed by the SUXOS and all turn-in documentation included in the Removal Report.

2.7.2 Break Down Site

This paragraph and Chapter 7 of this WP will be followed in the break down of the site. All temporary facilities will be removed and the site returned, as nearly as feasible, to its original condition. All holes and excavations will be filled in, graded and re-seeded with indigenous grasses.

2.7.3 Removal of the Workforce

EODT will demobilize site personnel as activities are completed and a workforce reduction is warranted. The decision to reduce personnel will be based on operational requirements and will be submitted to CEHNC for review and approval.

2.7.4 Close Out Accounts

Following the completion of operations, EODT's SUXOS will take action to close all accounts with local vendors and suppliers. Final billing for these accounts will be forwarded to the EODT Knoxville office for payment. In the event that CEHNC has other activities scheduled at the SEDA,

EODT will work with the incoming contractor(s) to identify qualified and competitive vendors/suppliers.

2.7.5 Removal of Facilities and Equipment

During demobilization, EODT will remove and return all facilities and equipment used to support this project IAW Chapter 7 of this WP. The procedures for documenting equipment transfers, as outlined in Chapter 5 of this WP, will be followed and executed by the SUXOS. Equipment will be removed as specified below.

1) **EODT Equipment:** EODT will remove all of its operating equipment from the SEDA. The equipment, which will be in a clean and operable condition, will either be returned to the EODT corporate office in Knoxville or shipped to another project.
2) **Government Furnished Equipment:** The GFE which has been utilized will be turned-in according to guidance provided by the CEHNC. All GFE will be returned in clean and operable condition.
3) **Termination of Services.** As part of its demobilization activities, EODT will close all utility accounts and terminate its hardwire and cellular telephone service. Should CEHNC desire that these services be transferred to an incoming contractor, EODT will work with the incoming contractor to ensure that uninterrupted service is maintained.

2.8 PROJECT SUBMITTALS

EODT will submit a Draft Removal Report within 30 working days after field work is completed. A Final Removal Report shall be submitted within 30 days after receipt of comments from the CEHNC. The Draft Removal Report will contain, as a minimum, the items identified below.

- All original survey and mapping data IAW Task 3 of the SOW;
- Detailed accounting, by listed area, of all OE and related materials that have been located and disposed of on site.
- A financial breakdown by area and task of all costs and labor hours used to perform the SOW.
- Daily journals of all activities associated with the job site.
- A recapitulation of exposure data. This will include total number of man-hours worked on site, total motor vehicle mileage, total number of flying hours, and total number of flights.
- Scrap material turn-in documentation IAW Task 5.
- Documentation of QC activities.
- A minimum of 20 original four by six inch color photographs depicting major action items and OE discoveries.
- A description of major problems or issues encountered with supporting documentation if available.

- Video tape (VHS with voice narration, minimum 60 minutes) showing major activities and OE discoveries.
- Written record of all endangered or threatened flora and fauna destroyed during OE removal activities.

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Figure 2-1. Project Organization and Chain of Command

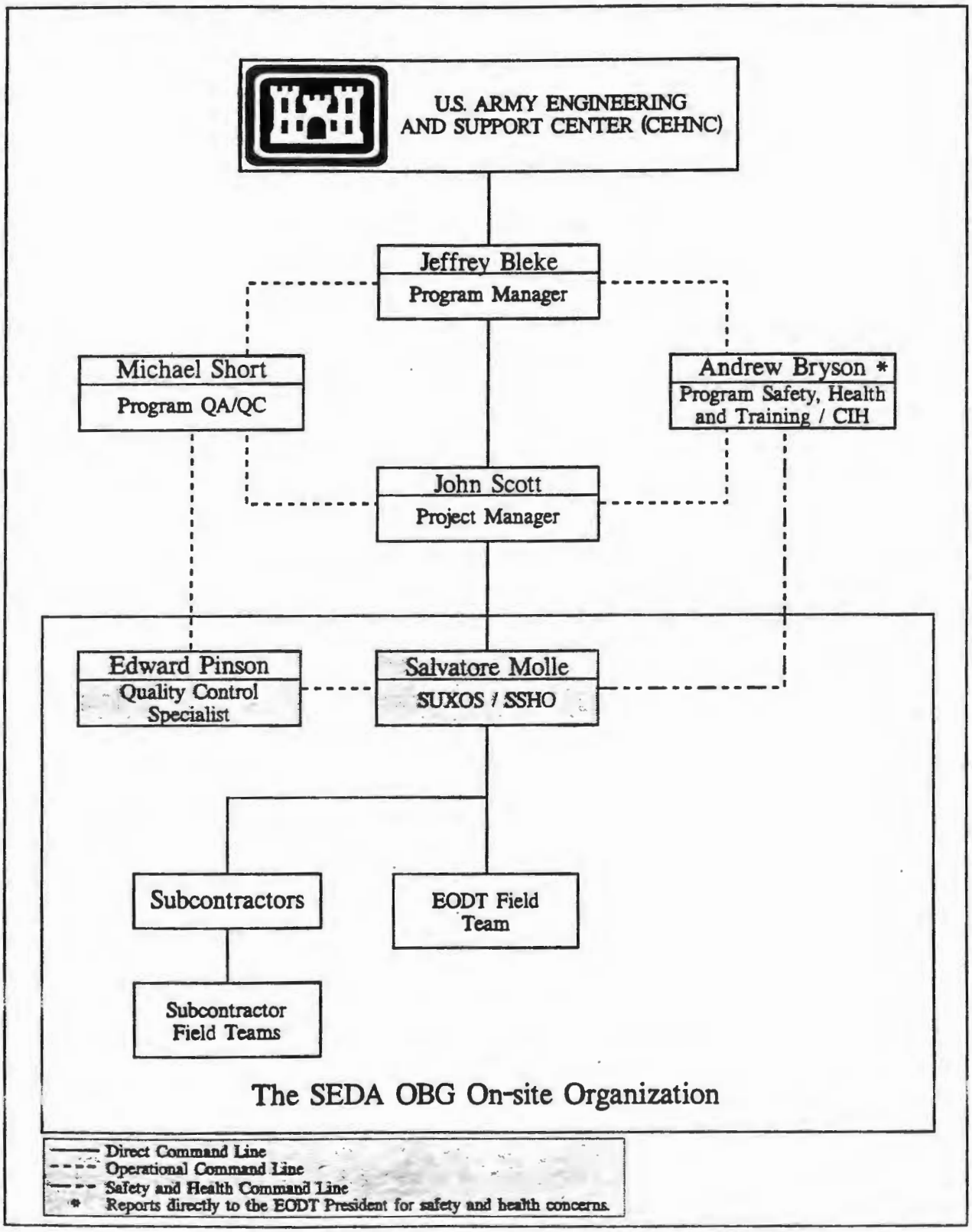


Figure 2-2. The SEDA Open Burning Grounds On-site Organization

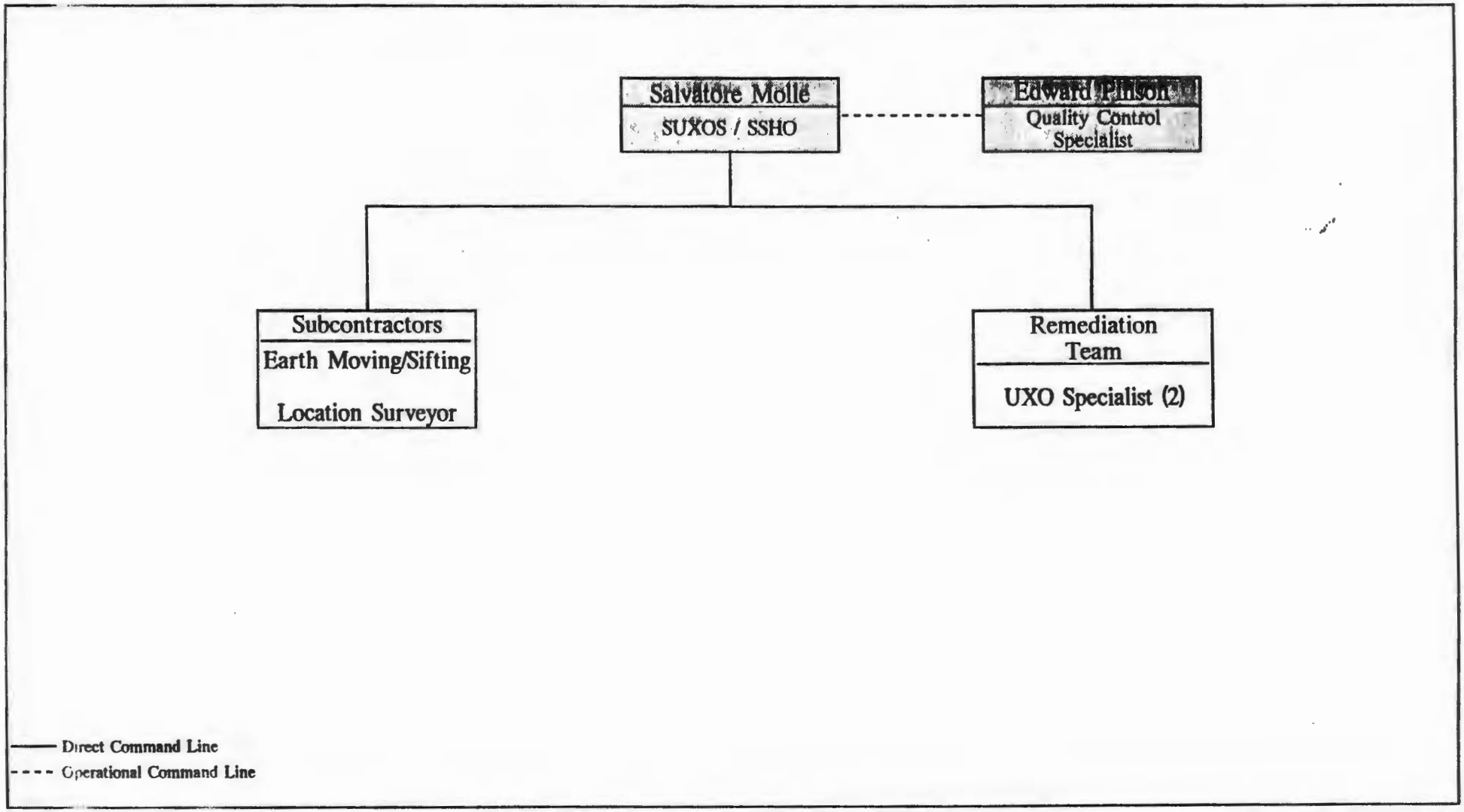
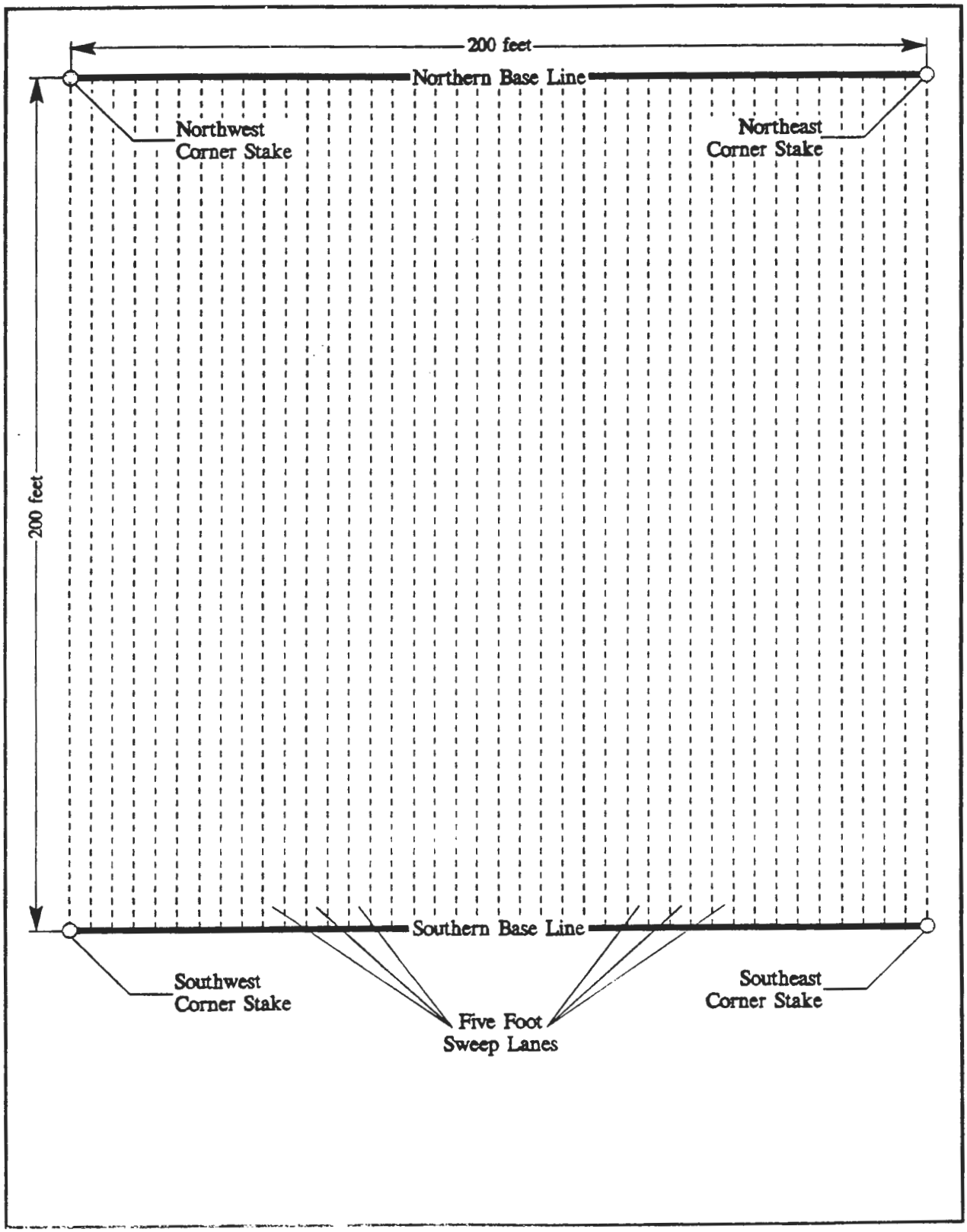


Figure 2-3. Typical Magnetometer Grid Survey Sweep Lane Layout



8.3.3 Publications

EODT has conducted a technical review of the SOW and all pertinent data, and compiled a list of required publications to be maintained at the site. In addition to this list, EODT will make available, in a timely manner, any additional manuals the SUXOS may require. Prior to the start of operations and periodically throughout the project, the QCS will check to ensure that site publications are present and in good repair. Results of this inspection will be recorded and reported. The currently identified publications include:

- Copy of Task Order 0003;
- EODT Corporate Safety and Health Program;
- OSHA, 29 CFR 1910, Occupational Safety and Health Standards;
- OSHA, 29 CFR 1926, Construction Standards;
- Applicable sections of DOT, 49 CFR parts 100 to 199, Transportation;
- CEHNC EM 385-1-1, Safety and Health Requirements Manual;
- CEHNC ER 385-1-92, Safety and Occupational Health Document Requirements for Hazardous Waste Remedial Actions;
- Bureau of Alcohol, Tobacco and Firearms (BATF) P 5400-7; and
- Material Safety Data Sheets (MSDS) for hazardous substance used on site.

Note

The CEHNC SREP will obtain any TM 60-series publications for this project.

8.3.4 Equipment Calibration and Tests

Measurement equipment utilized on site, e.g., sampling pumps, magnetometers, real-time monitors, etc., will be checked for operational reliability and calibration in accordance with the manufacturers specifications. EODT has reviewed the equipment requirements of this delivery order and identified the equipment listed below as requiring daily tests and/or calibration. Calibration/testing of these instruments will be accomplished as follows:

- Communications Equipment: Prior to commencing operations each morning, radios and cellular phones will be checked. Radios will be function checked to ensure batteries are charged and the radio is operational. Cellular phones will be checked to ensure they are operational. If communications are lost, either between teams and the command post or off site to emergency services, work will cease until communications are restored.
- Magnetometers: The 52 CX magnetometers will be inspected and field tested daily to ensure that they are operating properly. According to paragraph 3.4.1.7 of the SOW, this shall be accomplished by burying an inert rifle grenade (M31, HEAT, or similar inert item) at two feet, and an inert hand grenade (fragmentation, MK2 Series, or similar inert item) at one foot, and determining the standard indication for each magnetometer. When the first

EXCERPT 2 OF 2
8 PAGES

response check is performed, a standard indication will be obtained and recorded, which will then be used to gauge the future responsiveness of the instrument. The purpose of this test/calibration is to ensure that the instruments are operating properly and to appropriately adjust the sensitivity level of the instruments. The QCS will monitor the test and complete the Magnetometer Response Check Log (see Appendix E for an example of this form) and any instruments that do not meet the standard during the daily check will be re-calibrated, repaired or replaced.

- Sound level meter: The sound level meter will be calibrated, prior to use, IAW the manufacturer's recommendations and procedures.
- Galvanometer: Prior to demolition operations, the galvanometer will be checked by placing a metal object across the two terminal posts and observing the LED readout, which should indicate the number "1". Any other reading may indicate a defective instrument, at which time the manufacturer's suggested checks will be followed. If there is no reading, the battery must be replaced, after which the continuity check will be repeated.
- Blasting machine: Prior to demolition operations, the blasting machine is checked IAW the manufacturer's suggested sequence.
- Real-time dust monitors: Prior to use each day, the real-time dust monitor will be zeroed and response checked according to the manufacturer's specified procedures.
- Personal sampling pumps: Personal sampling pumps used for the collection of breathing zone (BZ) samples will be pre-calibrated prior to use, and post-calibrated after use. The pre-calibration will be conducted to set the air sampling flow rate and the post-calibration will be conducted to determine the air sampling flow rate at the end of the sampling period. Any pump that does not post-calibrate to within 25% of the pre-calibration flow rate will be removed from service.

All equipment used at the OBG will be dedicated solely to the project until the project is completed, or until it is no longer needed. If equipment field checks indicate that any piece of equipment is not operating correctly, and field repair cannot be made, the equipment will be tagged and removed from service. The EODT SUXOS will be notified and a request for replacement equipment will be placed immediately. Replacement equipment will meet the same specifications for accuracy and precision as the equipment removed from service.

8.3.5 Maintenance Program

1) Preventive Maintenance: The assigned operator of each piece of equipment will perform scheduled, and when necessary, unscheduled, preventative maintenance to ensure the equipment is maintained in a satisfactory operating condition Preventive maintenance consists of before,

during and after operational checks and documentation of these activities, either in the operators log book or in the team leader's field log book.

2) Routine Repair and Adjustment: Routine repair and adjustment is based on the manufacturer's schedule for adjustment, calibration or replacement. All equipment used on site will be maintained and submitted for routine repair and adjustment IAW the manufacturer's specifications.
3) Emergency Repair: Emergency repair includes any unscheduled repair. This type of repair will be conducted using manufacturer required replacement parts and procedures to ensure the continued integrity of the equipment.
4) Included Equipment: Equipment included in the maintenance program will be checked as follows:
   A) Magnetometers: Before-operation checks shall include battery insertion, the location of a rifle grenade (or similar object) at a depth of two feet and a hand grenade (or similar object) at a depth of one foot, with the check being conducted as prescribed by the manufacturer and this chapter. During-operation checks shall include frequent checks to ensure the sensitivity level is on the designated setting. In addition, the operator will check the batteries at breaks. After-operation checks shall include battery removal and cleaning.
   B) Radios/Cellular Phones: Before-operation checks shall include verification of a complete battery charge and a communications check to ensure the unit is operating properly. During-operation checks shall include periodic checks to ensure battery charge remains adequate and a communications check once an hour for the radios and once a day for the cellular phones. After-operation maintenance shall include a communications check, cleaning, turning off and placing in battery charger.
   C) Vehicles/EMM: Before-operation checks shall include an operator general inspection of the entire unit to include fluid levels, safety equipment operation and tire condition. During-operation shall include frequent checks of the dials and gauges and a tire check at breaks. After-operation checks shall include topping off of any fluids which are low, a general cleaning and a recheck of all safety related equipment.
   D) Monitoring and Sampling Equipment: Before-operation checks shall include calibration IAW manufacturers guidance, and, if applicable, a battery charge check. During-operation use will include frequent checks to ensure unit is operating properly and the battery charge is sufficient. After-operation checks shall include a general cleaning, turning off the unit and placing in a battery charger if applicable.
   E) Demolition Equipment: Before-operation checks shall include a check of all batteries in the blasting machines and galvanometers. Some blasting machines do not contain batteries, so a check will be made to ensure they operate properly. During-operation checks shall include

an inspection of the terminals and condition of the units. After-operation checks shall include a general cleaning and battery removal if applicable.

F) Government Furnished Property (GFP)/CAP: Upon receipt, an examination will be conducted to ensure completeness and operational condition. Periodic inspections will be conducted to ensure adequate storage and to guard against damage or theft. Function testing to determine satisfactory operation will be conducted by the assigned operator/user. The property will be maintained IAW FAR Subpart 45.5.

8.3.6 Logs and Records

For all site work, bound log books with consecutively numbered pages will be used by field personnel. The field log books will be used to record the daily activities of the field team, provide sketch maps and locations of UXOs and other pertinent items, and to note any observations which might affect the quality of data. The field log books and site records will be utilized to record the data discussed below:

1) **Daily Journal**: The SUXOS will maintain the daily journal. This journal will provide a summary of all operations conducted to include information on weather conditions, problem areas, work plan modifications, injuries, start/stop times, tailgate safety briefs, equipment discrepancies, UXO/OE located, training conducted, visitors, and any additional items deemed appropriate.
2) **Field Log Books**: The UXO supervisors will maintain field log books. These log books will be maintained in a neat and legible manner and will provide an historic record of the team's site activities. These log books will include the respective team's daily activities, to include start/stop times.
3) **OE Accountability Log**: The UXO supervisors will prepare individual records for each operating grid at the OBG. The records will consist of a series of sheets that will be used to record data on OE items encountered. Each OE item will be given a unique identifying number to differentiate it from the others. For example, the third OE item encountered in grid A-1 would be A-1-3. These sheets will be consolidated in one log.
4) **Safety Log Book**: The SSHO will maintain this log. The log will be used to record all safety related matters associated with the specific project such as: safety briefings/meetings, including items covered and attendees; safety audits; near-misses/accidents/incidents. It will include cause and corrective action taken; weather conditions; and any other matters encompassing safety.
5) **Training Records**: The SUXOS will maintain training records for all site personnel. These records will contain training certificates, licenses and other qualifying data for an individual's duty position.

6) **Quality Control Log**: The QCS will maintain this log and will record the performance and results of QC checks and audits, as well as calibrations.
7) **Visitors Log Book**: The SUXOS will maintain this log for all personnel that are not directly involved in the project site activities. This log will identify visitors by name, company, date, time in/out and a contact phone number.
8) **Photographic Log**: The SUXOS will maintain a photographic log to record all video recording and photographs taken to document work and/or site conditions. Photographs and video tapes will be marked with a unique identifying number relating back to the photographic log, and will be maintained on file until the end of the project. Photographic negatives will be forwarded to the EODT corporate office in Knoxville, Tennessee for safekeeping.
9) **Site Maps**: The SUXOS will maintain in the field office working maps of the operating areas. These maps will be used to document OE findings, task progression and other pertinent activities and locations.
10) **Document Control Log**: The QCS will maintain this log, which will include identifying numbers and the responsible party for all logs and any other documents of importance.

Log books and records will be inspected by the QCS on a weekly basis. These inspections will focus on the completeness, accuracy, and legibility of the entries and records. Results of these inspections will be forwarded to the SUXOS. The log keeper's immediate supervisor will review and initial in the log book concurrence with the log book's entries on a daily basis.

Note

The log books are utilized to formulate the final report and serve as an "Official Document" in the event of any problem area addressed after the completion of the project. All log books will be maintained on file for a period of seven years after project completion.

8.4 ORDNANCE VERIFICATION, ACCOUNTABILITY AND CONTROL

All OE items located will be positively identified by a qualified UXO specialist and the SUXOS. The specialist and SUXOS will also identify the condition of the item (i.e., misfire, unfired, dud) and associated hazards [high explosives (HE), fragmentation, white phosphorus (W.P.), ejection, chemical, etc.]. The identification, condition, and associated hazards of all items will be verified by the SSHO, and the SUXOS will be responsible for maintaining the Ordnance Accountability Log, and the traceability of all ordnance items located. If the item cannot be moved, the SUXOS and the CEHNC SREP will determine an appropriate course of action IAW the WP and SSHP, which will then be recorded by the SSHO or SUXOS.

8.5 GRID SIZES

All sites to be surveyed, investigated or cleared of OE will be marked off in grids and/or lanes. The size of the grids has been established as 200' x 200' and the lanes will be five feet wide. Determining factors for modifying grid/lane size will be terrain, vegetation density and suspected density of OE contamination.

8.6 QA/QC AUDITS AND SURVEILLANCE

As part of the EODT QP for work performed at specific sites, EODT will conduct both internal and external audits and surveillance at the OBG. This is to ensure that all procedures and protocols are being followed and that the resulting data is accurate and defensible. Field audits will concentrate on both surface and subsurface sweep procedures, removal/clearance operations, proper documentation, and checks of resulting data for completeness and accuracy within established QC limits.

8.7 QC INSPECTIONS

To ensure that quality work is conducted, QC inspections (QCIs) will be conducted according to the criteria specified in the following paragraphs. All inspections will be conducted by the responsible personnel and documented accordingly.

8.7.1 Daily QC Inspections

The QCS will perform random, unscheduled audits of the various site activities to ensure that personnel accomplish all work and record keeping as specified in this WP. The QCS will then submit a report of findings to the SUXOS, QCM and PM. These QCI's shall include property accountability, UXO related tasks, equipment operator maintenance, PPE usage and WP compliance. The EODT QCI and Audit Log Form (see Appendix E of this WP) will be used for these QCI's and maintained on file at the site.

8.7.2 Grid Clearance QC Audits

The QCS will conduct a grid clearance QC audit in the completed grids to ensure the effectiveness of the OE removal operations. EODT policy requires a minimum 10% of a grid be checked, regardless of the stated requirements in the SOW, unless the SOW requires more than 10%, in which case the SOW takes precedence. The QCS will start in one corner of the grid and will proceed on a zig-zag pattern covering at least 10% of the entire grid and will use the pass/fail criteria presented in paragraph 8.7.4 to determine if the OE removal actions have been adequate. Upon completion of the grid clearance audit, the QCS will submit a report of the findings to the SUXOS. If the QCS does not pass the site, it is scheduled by the SUXOS for re-work. In addition, the QCS will conduct an audit of all grid clearance logs and reports as to their completeness.

8.7.3 Scheduled Audits

Depending upon the nature and duration of the project, audits may be conducted periodically by the EODT QCM. This audit will include a surface and subsurface check of an additional 10% of the work completed. The EODT QCM, assisted by the QCS, will proceed on a pre-determined pattern starting on the opposite side from the QCS's check, which will provide a total combined QC audit of approximately 20%. As with the QCS's check, if the site fails, it is scheduled for re-work. In addition, an inspection of all logs and a check of contractor and subcontractor personnel will be conducted to ensure that they are complying with the WP.

8.7.4 Pass/Fail Criteria

The pass/fail criteria for the final clearance of a site is set by the CEHNC. This criteria specifies that a grid will be failed if one UXO item is found during a QC or QA audit conducted by either EODT or CEHNC personnel. If this occurs, the entire grid will be failed and must be re-surveyed and cleared. Upon completion of the grid re-work, an additional QC or QA audit will be conducted again by the responsible parties. Any failure will be reported to the CEHNC CO/COR, EODT QCM, PM and SUXOS.

8.7.5 Ordnance Related Scrap Inspections

When ORS is located on site, it is inspected by at least two UXO technicians prior to being removed from the grid. Whenever ORS is to be placed in the roll on/off container, the QCS and SSHO will conduct a third and fourth inspection for the presence of explosive components or residues. In the event that any are discovered, the item will be removed and destroyed and the incident will be recorded and thoroughly discussed at the next daily tailgate safety meeting. The incident will be reviewed by the SUXOS and QCS and a recommended course of action presented to the PM, i.e., reprimand or dismissal of the two previous inspectors.

8.8 NON-CONFORMANCE/CORRECTIVE ACTION

Any non-conformance to contractual requirements will be documented and reported. Non-conformance includes:

- Delivery of items or services by EODT that do not meet the contractual requirements;
- Errors made in following work instructions or improper work instructions;
- Unforeseeable or unplanned circumstances that result in items or services that do not meet quality/contractual/technical requirements;
- Technical modifications to the project by individuals that do not have the responsibility and authority; and
- Errors in craftsmanship and trade skills.

Immediately upon receipt of a notice of non-conformance, the SUXOS will take the following corrective actions:

- Identify the impact the non-conformance may have on other project activities;
- Identify and implement the actions required to bring the project/activity back into compliance; and
- Identify and implement procedures to preclude recurrence of the non-conformance.

8.9 PROJECT CORRESPONDENCE

All written and verbal (i.e., person-to-person or via telephone) correspondence will be documented and routed to the EODT PM. All written communications from the CEHNC or designee must be addressed to the EODT PM. Incoming written communications will be annotated with the date received. Telephone communications to field personnel must be logged by site personnel into the daily activity logs. Telephone communications to office personnel must be recorded on a Telephone Conversation/Correspondence Record Form. Of critical importance is the documentation of activities that stop work or require a communication to, or from, the CEHNC.

8.9.1 Delivery Order Correspondence

Correspondence concerning these delivery orders should be sent to:

- Mailing Address:
  EOD Technology, Inc.
  P. O. Box 24173
  Knoxville, Tennessee 37933-2173
- Federal Express Address:
  EOD Technology, Inc.
  10938 Hardin Valley Road
  Knoxville, Tennessee 37932

8.9.2 Project Manager Address

The EODT PM is John (Jack) Scott. He can be contacted through the following:

- Mailing address
  EOD Technology, Inc.
  P.O. Box 24173
  Knoxville, Tennessee 37933-2173
- Telephone
  423/690-6061
- Facsimile
  423/690-6065
- Electronic mail
  eodtg@aol.com

APPENDIX D

Soil Sifting Standard Operating Procedure

STANDARD OPERATING PROCEDURE 120-B
UXO/OEW OPERATIONS - MECHANICAL SIFTING

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to provide the minimum safety and health requirements and procedures applicable to the conduct of material separation operations involving the use of mechanical sifting equipment.

2.0 SCOPE

This SOP applies to all site personnel, to include contractor and subcontractor personnel, and operations involving the separation of material through the use of mechanical sifting equipment. This SOP is not intended to contain all requirements needed to ensure regulatory compliance. Consult the documents listed in section 3.0 of this SOP for additional for compliance issues.

3.0 REGULATORY REFERENCES

The following Occupational Safety and Health Administration (OSHA) standards and U.S. Army Corps of Engineers (USACE) requirements directly apply to the conduct of operations associated with the SOP. In the event other hazards are associated with the conduct of this SOP, consultation of other SOPs and regulatory references may be needed.

- OSHA Construction Industry Standard 29 CFR Part 1926, Subpart O;
- OSHA General Industry Standard 29 CFR Part 1910, Subparts N and O; and
- USACE EM 385-1-1, Sections 16 A and B and Section 17 A.

4.0 RESPONSIBILITIES

4.1 PROJECT MANAGER

The Project Manager shall be responsible for ensuring the availability of the resources needed to implement this SOP, and shall also ensure that this SOP is incorporated in plans, procedures and training for sites where this SOP is to be implemented.

4.2 SENIOR UXO SUPERVISOR

The Senior UXO Supervisor (SUXOS) will ensure that this SOP is implemented for sifting operations. The SUXOS will also ensure that relevant sections of this SOP are discussed in the tailgate safety briefings and that information related to its daily implementation is documented in the Site Operational Log.

4.3 UXO SUPERVISOR

The UXO Supervisor (UXOS) shall be responsible for the field implementation of this SOP and for implementing the safety and health requirements outlined in section 5.0 of this SOP. In the absence

of a SUXOS, the UXOS shall be responsible for implementing the SUXOS responsibilities outlined in para 4.2.

4.4 SITE SAFETY AND HEALTH OFFICER

The Site Safety and Health Officer (SSHO) will be responsible for ensuring that the safety and health hazards and control techniques associated with this SOP are discussed during the initial site hazard training and the daily tailgate safety briefings. The SSHO will also be responsible for daily inspection of site operations and conditions to ensure their initial and continued compliance with this SOP and other regulatory guidelines.

5.0 PROCEDURE

All personnel, including contractor and subcontractor personnel, involved in sifting operations shall be familiar with the potential safety and health hazards associated with the conduct of this operation, and with the work practices and control techniques to be used to reduce or eliminate these hazards.

5.1 SAFETY HAZARDS AND OPERATIONAL CONTROL TECHNIQUES

The safety and health hazards and operational control techniques to be used during conduct of sifting operations are discussed below:

1. Daily tailgate safety meetings will be conducted, and noted in the Safety Log, as to the safety and health concerns pertaining to that days use of sifting equipment;
2. Sifting equipment and support vehicles shall be equipped with fire extinguishers;
3. When maintenance or servicing is to be accomplished on power driven equipment, the immediate source of power shall be controlled (refer to lockout/tagout SOP);
4. Sifting operations shall be restricted to daylight hours;
5. All site personnel shall be informed of the location of the "Kill Switch" for each piece of sifting related equipment on site;
6. Refer to SOP for heavy equipment for safety concerns relating to the use of the heavy equipment which will be used to load the sifter and remove sifted soils;
7. One UXOS will be assigned to each piece of sifting equipment, and will be responsible for its operation and the safety and health of its operators;
8. Only UXO qualified personnel will conduct sifting operations and debris separation;
9. Personnel will be positioned at their designated work stations prior to the start of sifting operations, and the sifting operation will start at the UXOS signal;
10. Once operations begin, only UXO-Qualified personnel may enter the work area;
11. Due to potential ordnance contamination, the heavy equipment operators will carefully place the material to be sifted into the sifting equipment hoper;
12. Any overflow form the sifter will be inspected by UXO-Qualified personnel, segregated as required, and returned to the hopper for processing;

13. Material passing down the conveyor belts will be visually inspected for UXO/OEW and any items identified as being UXO/OEW related will be removed and segregated into non-sparking containers;
14. As each load of soil processes through the sifting screens, the UXOS will periodically inspect the sifting screens to determine if UXO/OEW have been separated from the soil;
15. If UXO/OEW is present on the sifter screens, the UXOS will inspect the UXO/OEW to ensure it is safe to remove from the sifter and that it is not CWM;
16. If an ordnance item is identified being too hazardous to handle, all operations at that sifting unit will be discontinued and the personnel in that area will be evacuated;
17. If the UXO is determined to be CWM, all personnel with in 500 meters of the CWM will be evacuated, with the exception of two UXO qualified personnel who will be positioned at a safe distance up wind to observe the sifter unit with the CWM;
18. If an unsafe UXO or a CWM UXO is identified, the SUXOS will be notified. The SUXOS will notify the Corps of Engineers On Site Representative who will then summon military EOD or TEU support, and control of the site will be turned over to the military EOD upon their arrival.

5.2 SAFETY AND PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

The following safety measures and personal protective equipment shall be used in preventing or reducing exposures associated with sifting operations. These requirements will be implemented unless superseded by site specific requirements stated in the Site Safety and Health Plan.

1. Hard hats, steel-toe safety boots and protective gloves shall be worn when sifting equipment is in operation and when maintenance is being performed on the equipment;
2. Safety glasses shall be worn around sifting equipment unless full face respirators are required to be worn; and
3. Hearing protection shall be worn when sifting equipment is in operation unless the SSHO has measured and determined the noise levels to be less than 85 dBA TWA.

6.0 AUDIT CRITERIA

The following items related to sifting operations will be audited to ensure compliance with this SOP:

1. The Daily Operational and Safety Logs;
2. The Documentation of Training form for the initial site hazard training;
3. The Documentation of Training form for the Daily Tailgate Safety Briefings; and
4. The Daily Safety Inspection Checklist.

7.0 ATTACHMENTS

No attachments associated with this SOP.

APPENDIX E

Justification for Chosen Clearance Depth

Based Upon Penetration Analysis

As per the penetration analysis performed by Dr. Crull (following), the critical munition for fragmentation at the OB Grounds was determined to be an MK II Fragmentation Hand Grenade. A fragment from this munition would penetrate sand to a depth of 5 inches. In glacial till, the penetration would be less.

Based Upon Default Values

As discussed previously, the future use of the OB Grounds site is to be defined as "Conservation/Recreation": wildlife habitation, wildlife viewing, hiking/walking and picnicking. Although there is currently no plan for establishing camping facilities, the IDA does not wish to restrict such a possibility in the future. Therefore, this ESS is based upon the assumption that some shallow, intrusive activities (digging fire pits/placing tent poles) may occur in the future.

The default value for the intended future use would fall between 1 foot (wildlife with no intrusive activities) and 4 foot (unrestricted for possible future intrusive activities). However, default values may be decreased with proper justification.

Chosen Clearance Depth

A clearance depth of 2 feet will be used. Considering the relatively small size of OE items expected at this site, the analysis which shows little likelihood of penetration and the fact that the HTRW remediation will involve placement of 9 inches of soil fill over the entire site (to protect ecological receptors from exposure to lead in soils), clearance to two feet will give an overall depth of safety of roughly three feet (including overbuild for consolidation of fill). This will exceed the one foot default value (wildlife with no intrusive activities) and approach the four foot default value (unrestricted for possible future intrusive activities). This is considered to be appropriate enough for this site.

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