452-93

FINAL

OE REMOVAL REPORT

UXO AND SOIL REMEDIATION
OPEN BURNING GROUNDS
SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Contract No. DACW33-00-D-0007
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Prepared for:

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 Virginia Road
Concord, Massachusetts 01742-2751

Prepared by:

WESTON SOLUTIONS, INC.
One Wall Street
Manchester, New Hampshire 03101-1501

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SECTION 1

INTRODUCTION

1. INTRODUCTION

This Ordnance and Explosives (OE) Removal Report summarizes and documents the site activities performed by Weston Solutions, Inc. ($WESTON_{SM}$) for the OE Removal project located at the Open Burning Ground (OBG) within the Seneca Army Depot Activity (SEDA) in Romulus, New York (Site). This Task Order was performed for the U.S. Army Corps of Engineers (USACE), New England District (CENAE) under the Hazardous Toxic and Radioactive Waste (HTRW) program as a continuation of OE Removal services at the Site. Direct oversight was provided by USACE, New York District under Contract No. DACW33-00-D-0007 (Task Order No. 0003). Additional support was provided by USACE, Baltimore and Rock Island Districts.

The main objective of this project was to complete the removal of OE from the OBG Site so that the 30-acre property can be released by the U.S. Department of Defense (DOD) for transfer. The future use of the OBG property is projected to fall under "Conservation/Recreation", which includes, but is not limited to, wildlife habitation, wildlife viewing, hiking/walking, and/or picnicking. Therefore, the Explosives Safety Submission (ESS) clearance depth was based on meeting the Public Access scenario for surface recreation. This report documents OE removal activities completed to date at the OBG Site.

All OE removal activities were performed under the direct oversight of USACE in accordance with the U.S. Department of Defense Explosive Safety Board (DDESB) approved ESS dated July 1998 through June 1999, prepared by the Huntsville USACE Engineering and Support Center and the Statement of Work dated 23 June 1997, prepared by Huntsville USACE Engineering and Support Center as amended with corrections.

The ESS described the Phased approach required during the removal of OE, the tasks that were chosen to complete the objective, and expected conclusions to be drawn from the project. This included removal of the top 1 foot (ft) of soil, screening of soils to remove OE, oversized sorting, geophysical mapping, conclusions on OE contamination and depth, and demilitarization/disposal of OE. As the project continued, it became necessary to change the processing of soil (See Correction to the ESS), inspection of oversize material (Amendment 1), as well as

1.2 SITE DESCRIPTION

The SEDA is located between Seneca and Cayuga Finger Lakes as shown in the Site Location Map in Figure 1-1. The SEDA is located on an uplands area, at an elevation of approximately 600 ft above mean sea level. New York State Highways 96 and 96A bound SEDA on the east and west, respectively. Sparsely populated farmland covers most of the surrounding area. The interior of the SEDA consists mainly of sparsely vegetated brush, grasses, and concrete bunkers.

The OBG Site is located on gently sloping terrain in the northwest corner of SEDA. The OE removal section within the OBG Site comprises an area of approximately 30 acres within the 10,587-acre SEDA property in Romulus, New York. The limits of the OE Removal effort are shown in the Site Map in Figure 1-2.

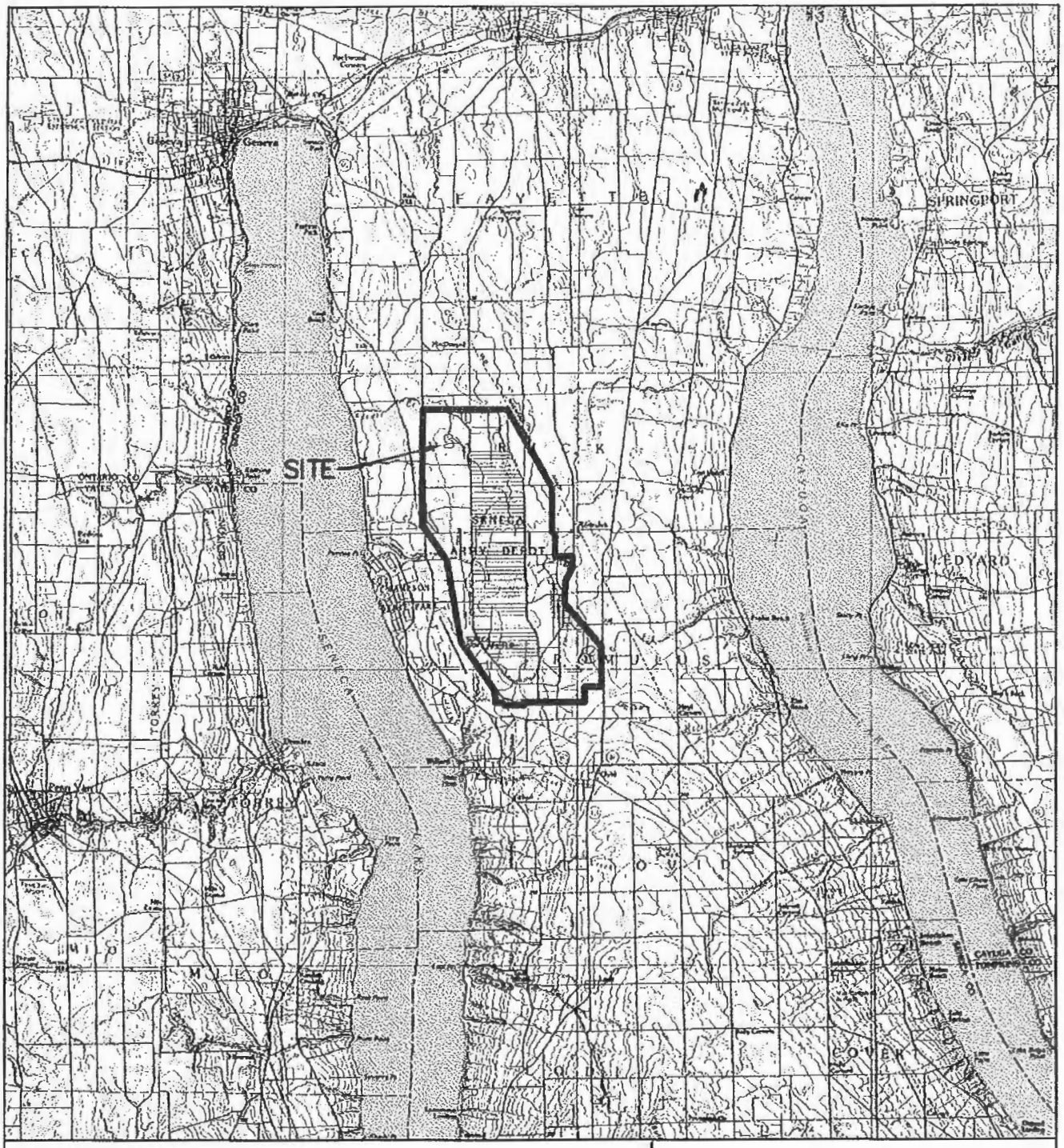
Within the OBG Site, the land surface drops in elevation from the west towards the east. The overall surface relief is approximately 15 ft over a west to east distance of approximately 4,000 ft. Surface water drains through a series of ditches and surface swales. Existing drainage areas are poorly defined and may be blocked and/or collapsed in some areas.

The burn pads at the Site were built on top of natural glacial till soils. Each burn pad had up to 2 ft of broken shale at the surface. Natural soils and/or glacial till lie below. The berms were composed of soils and burn wastes, and surrounded each burn pad on three sides. There were a total of nine burn pads located within the OBG, ranging in size from approximately 100 by 100 ft for Pad D to 300 by 800 ft for Pad G. Each of the burn pad surfaces are approximately 2 to 3 ft above the surrounding land surface. The former burn pad and berm locations are shown in the Site Map in Figure 1-2.

1.3 PROJECT OBJECTIVES

The main objective of this project was to continue the OE removal efforts, and, to the maximum extent possible, remove all OE from the OBG Site. Specific project objectives included the following:

- Excavate soil associated with the 1-ft cut material to remove surface clutter caused by extensive OE, Ordnance Related Scrap (ORS), and Non-OE scrap metal contamination.



SOURCE:
USGS TOPOGRAPHY MAPS; GENEVA SOUTH, DRESDEN, OVID, & ROMULUS – NEW YORK QUADS

GRAPHIC SCALE
3 1.5 0 1.5 3
APPROXIMATE SCALE IN MILES

OPEN BURNING GROUNDS SITE
SENECA ARMY DEPOT ACTIVITY (SEDA)
ROMULUS, NEW YORK

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

SITE LOCATION MAP

WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

DRAWN	BEG
DATE	AUG 2003
FIGURE NO.	1-1

M:\...dn\DWG\ACOE\SENECA\2nd phase\OBG LOCUS.dwg, Layout1, 4/25/2005 2:43:10 PM, glr , 1:1

SOURCE:
WWW.GISDATADEPOT.COM – DIGITAL ORTHOPHOTOS (DOQQ)
1 METER, COLOR; SENECA COUNTY, NEW YORK
GENEVA SOUTH, NY (42076g8) – SE QQ – TILE 1
GENEVA SOUTH, NY (42076g8) – SE QQ – TILE 2

GRAPHIC SCALE
500 250 0 250 500
APPROXIMATE SCALE IN FEET

OPEN BURNING GROUNDS SITE
SENECA ARMY DEPOT ACTIVITY (SEDA)
ROMULUS, NEW YORK

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

SITE MAP

WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

DRAWN BEG
DATE AUG 2003
FIGURE NO. 1-2

M:\...gn\DWG\ACOE\SENECA\2nd phase\OBG FIG 2.dwg, Layout1, 4/25/2005 2:44:20 PM, girk 1:1

- Screen stockpiled soils down to ½-inch minus to remove oversize material and OE.
- Perform oversize sorting to remove and dispose of OE from the oversized material.
- Detect and remove OE to a depth of 2 ft (3 ft below original grade [BOG]).
- Remove, demilitarize, destroy, and dispose of site related OE, ORS, and scrap metal.
- Review data collected from the OE Removal and Geophysical mapping effort to draw a conclusion on the presence of OE below the new surface.

1.4 PRIOR ORDNANCE AND EXPLOSIVES SITEWORK AND SUPPORT ACTIVITIES

During prior OE activities at the OBG Site, the USACE completed "Phase I" Surface Clearance Activities and "Phase II" Geophysical Test Grid Activities as described in the ESS. During the investigations, significant amounts of OE and ORS were identified between 8 and 9 inches BOG. The removal of soil to a 12-inch depth resulted in significantly reduced noise in the EM-61 and the White's Spectrum XLT instruments resulting in greater probabilities for detection of subsurface OE. This 12-inch removal depth was eventually chosen and served as the basis for the 1-ft cut in the OBG Site for full-scale operations.

Between June 1999 through December 1999, and between September 2000 through November 2000, EOD Technology, Inc. (EODT) performed excavation and soil screening at the OBG Site under Contract No. DACA87-97-D-0005 for the United States Army Engineering Support Center, Huntsville (USAESCH). This effort was performed in accordance with the ESS "Phase III" Pad/Berms & Low Lying Hill Excavation and Sifting requirements, and "Phase IV" Surface Cut requirements. During this period, EODT excavated and screened soils from the following: Burn Pads A-Hand J, berms, and low-lying hills. In addition, a majority of the surface soils were stripped to a depth of 1 ft BOG to remove the "interference layer" in accordance with the ESS. Over 120,000 cubic yards (yd^3) were sifted and stockpiled for further processing. In November 2000, all OE Removal activities were discontinued based on the demobilization of the Huntsville Unexploded Ordnance (UXO) prime contractor EODT.

On 29 May 2001, USACE scoped WESTON to complete OE Removal activities at the OBG Site under Contract No.: DACW33-00-D-0007. In June 2001, WESTON performed a topographical survey of the OBG Site to document existing conditions. The survey information was utilized to

SECTION 2

SITEWORK

2. SITEWORK

2.1 MOBILIZATION

Weston Solutions, Inc. mobilized personnel, equipment, materials, and subcontractors to the SEDA OBG between 24 and 29 September 2001, to perform sitework and OE Removal activities following the Notice to Proceed. The crew consisted of a Site Manager, Site Safety and Health Officer, Project Engineer/Quality Control Officer, and a UXO QC/Safety Supervisor. This included mobilization of OE subcontractor SpecPro, Inc. (SpecPro), and sitework subcontractor Sessler Wrecking.

The following list summarizes the primary equipment that was used at the Site during various phases of work.

Sitework Equipment	Manufacturer
▪ Excavators (4):	Hitachi, JD 450, Komatsu, Kobelco
▪ Screening Plant	1200 Powerscreen
▪ trommel Screen (2)	Retec & Commander
▪ 65-ft. Conveyor	M-65
▪ Front-end Loader (6):	Volvo L90, BM861, & L120, CAT 980, JD 644G, & Michigan
▪ Bulldozer (3):	CAT D6(2) & JD850
▪ 10-Wheel Dump Truck:	TBD
▪ Off-Road Dump Truck (2):	Volvo A35C
▪ Fork Lift:	4WD Lull
▪ Water Trucks (2):	Miscellaneous
▪ Safety Booth	Per ESS (App. D)
▪ Magnetometer	Fisher 1266 XB
▪ Global Positioning System	Trimble RTK

All earthmoving equipment that was utilized during the OE removal effort was fitted with 3-inch Plexiglas® protective shields in order to protect all equipment operators. The shields were applied over the existing equipment cab(s). The required thickness of 2.91 inches of Plexiglas® was calculated and approved by USAESCH, using THOR equations for fragment penetration from TM 5-1300 and by using the Q-D Most Probable Munitions, for the 37 millimeter (mm) MK II Projectile and the MK II Grenade. In addition to the protective shields, sifting equipment,

(less than the feed hopper screen size) would drop out through the screen onto a central conveyor at the bottom of the trommel and discharged from the unit to a side conveyor. The side conveyor was used to transfer the soil into an articulated dump truck. Oversized material was discharged out the end of the trommel barrel onto a conveyor belt into a separate articulated dump truck. From the mechanical screening process, a total of two temporary waste streams were formed.

- Oversize material greater than or equal to ½ inch (rocks, roots, soil, small rocks, OE, ORS, scrap metal, etc.)
- Fines material less than ½ inch.

The first waste stream (greater than or equal to ½ inch) consisted of oversized material that was retained on the ½-inch trommel barrel screen. This material was continually transferred to the central oversized stockpile using articulated dump trucks or reprocessed through the trommel to remove additional fines. This material was processed further by UXO technicians as detailed in Subsection 2.4 Oversized Sorting.

The second waste stream consisted of fines that passed through the ½-inch rotating screen. As the fines exited the screening plant, they were collected and transferred to one of two separate stockpiles. The first stockpile (created by EODT) was located approximately 500 ft southeast of the screening operation and consisted of the 1-ft cut "screened" material. This stockpiled material was located on an area previously cleared by Parsons Engineering, i.e., grids L5, K6-M6, and M7. All the remaining 1-ft cut material was stockpiled by WESTON following screening operations and placed into this existing pile for future use by SEDA. The second stockpile designated as "fines" material was located outside the 1,181-ft PWD in a lined and bermed staging area that was constructed previously by WESTON. This soil was stockpiled outside the PWD in order to characterize the soil for off-site disposal. This material was inspected by UXO technicians and certified as being free of OE by the Senior UXO Supervisor prior to off-site disposal.

During mechanical screening, if the UXO technician stationed in the observation booth observed a potentially hazardous item, the unit was shut down until the specific OE item could be inspected. This occurred once during initial setup of mechanical screening. Additionally, on at least two occasions mechanical sorting operations were halted and personnel evacuated when

Non-OE, and ORS. This material was placed into 5-gallon containers and inspected by the Senior UXO Supervisor (SUXOS) and QC Supervisor at the end of the day. In the event an OE item was identified on the belt, that was determined to be hazardous or suspect hazardous, all operations would stop and the OE item would be cleared by the SUXOS after determining the item(s) were safe for transport and later destruction. In addition, a UXO technician positioned in a safety booth monitored the operation for hazardous conditions and would shut down the operation if necessary.

All soil that was conveyed to the end of the belt was discharged into a temporary stockpile, reloaded into a front-end loader, and hauled to the fines staging area for QC inspection.

During the initial hand sorting operation, WESTON processed approximately 240 yd^3 (360 tons) over a 15-day period or 16 yd^3 (24 tons) per day. This operation generated a total of 16,686 pounds (lbs.) (8.4 tons) of ORS and 13,039 lbs. (6.5 tons) of Non-OE scrap metal. This low productivity was the result of UXO technicians experiencing difficulty in sorting through the clayey soil matrix while searching for OE and ORS. In addition, the quantity of ORS and Non-OE scrap metal (4% by weight of soil processed on the belt) required that the belt speed be reduced to safely remove all potential hazardous items.

This operation was re-evaluated with USACE and resulted in a correction to the ESS. The USACE issued approval to implement a ferrous metals separation process as well as an alternative oversize material (less ferrous items) inspection and acceptance process. The original hand sorting operation was also re-evaluated for productivity, less the ferrous material. Photos showing the material removed from the metals separation process are included in Attachement A-1 to Appendix A.

As WESTON's subcontractor (SpecPro) was performing the hand sorting operation they considered all OE to be suspect/hazardous. This included 75 mm projectiles, 60 mm mortars, fuzes, 2.36-inch rocket motors, 2.36-inch WP warheads, 20 mm, 30 mm, 37 mm, and 57 mm, projectiles. Of those items destroyed the following were considered to contain energetic material; 30 mm projectiles, 37 mm projectiles, 57 mm projectiles, and several

In addition to the hand sorting line, a separate sorting method was utilized in accordance with the Corrected ESS to evaluate alternative methods for the removal of remaining OE. This included spreading the oversized material out into 1-ft lifts and clearing the grid manually by UXO technicians. Although, the productivity was highly dependent on the soil conditions, WESTON averaged approximately 40 yd^3 (60 tons) per day per four-man crew with a Team Leader. Based on this lower productivity rate, the traditional hand sorting line was maintained as detailed in Subsection 2.6.

As with SpecPro's hand sorting line, all OE that was removed from the conveyor belt was considered suspect/hazardous unless the item could be immediately inspected and certified as ORS. Since many of the suspect OE items were packed with mud and/or dirt, all of these items were treated as suspect/hazardous items until verified by UXO technicians. This included 75 mm projectiles, 20 mm projectiles, 2.36-inch WP warheads, 2.36-inch rocket motors, and fuzes.

2.7 GEOPHYSICAL PROVE OUT GRID

Two 10-ft x 25-ft test grids consisting of twenty dummy ordnance seeded items were established on 25 April 2002, and surveyed prior to each days mapping activities. One of the prove out grids included 7-75 mm items while the other prove out grid included a total of 13 randomly seeded dummy ordnance items. The objective of mapping the prove out grids was to demonstrate the performance of devices including geophysical/navigation hardware; data analysis systems, target re-acquisition, and data transfer systems. This test grid procedure was also utilized to determine peak detection and cut-off levels for each day's activities.

2.8 GEOPHYSICAL MAPPING

Enviroscan, Inc. (Enviroscan) performed geophysical mapping services for WESTON between 30 April 2002 and 20 June 2002, at the OBG Site as stated in Phase V of the ESS. In accordance with the ESS, the specific objective of the mapping effort was to confirm the presence or absence of OE items below the 1-ft cut (stripped) depth to a total depth of 2 ft. (2-ft. clearance depth). In

A summary of the 10,524 targets identified by the geophysical mapping effort by category is provided below in Table 2-1 for informational purposes.

Table 2-1

Summary of Targets by Category

Target Type	No. of Targets	Discriminator
EM-61[1]	4,619	"EM"
Magmapper[2]	4,054	"M"
Supplemental[3]	192	"S"
Initial Magmapper[4]	507	None
High Correlation[5]	1,152	"C"

Note: [1] EM-61 data was generated using Geosoft automated anomaly software.

[2] MAG data was generated using Magpicks Geometric software.

[3] Hand picked targets (data generated manually due to Geosoft program limitations for gap data).

[4] Initial data points placed by Enviroscan

[5] Targets that matched based on location and size (EM and MAG).

The target list presented in Table 2-1 above represents the minimum quantity of targets that were investigated during anomaly investigation and clearing activities. In addition to this target list, a total of 30 "Clutter" areas were identified by Enviroscan and investigated by WESTON.

2.9 ANOMALY INVESTIGATION

Intrusive investigations were performed using UXO technicians following completion of the geophysical mapping effort. Once a grid was completely flagged, UXO technicians swept the area within 24 inches of the flagged locations to remove any signal resulting from surface and/or subsurface OE, ORS, and Non-OE scrap metal items. In the event an item was located deeper than 2 ft below ground surface, the item was removed and logged on the dig sheet with the appropriate removal depth. Excavation would continue vertically to 2 ft or deeper until the anomaly was located or until the signal was eliminated. The spoils material was left on the surface to allow for QC inspection of the open excavation; the OE items were removed. ORS and non-ORS scrap metal items that were deemed not to be hazardous were left in place.

portion of the OBG Site previously investigated by Enviroscan between April and May of 2002. Electromagnetic and magnetic surveys were conducted using an EM-61 and a G-858 magnetometer, i.e., the same instruments used during Enviroscan's primary site survey in order to confirm the accuracy of the initial mapping data.

A total of 14 separate grids (out of 113) were chosen based on pre-selected criteria to confirm the accuracy of the initial mapping effort (by Enviroscan) and clearance effort (by WESTON UXO technicians). The criteria for each grid chosen for QC was determined by the CENAE geophysicist and is listed below.

Grid	Criteria
C4	One clutter area where OE was removed
B5	OE was found 2-3 ft BOG
C5	OE was found 1-2 ft BOG
A9	Trash pit area not originally detected
F4	OE was found 1-2 ft BOG
F5	OE was found 1-2 ft BOG
H7	Mag anomaly identified without coincident EM anomaly
E9	One (formerly) ponded area that was cleared with Fischer vs. EM/MAG
J4	Random area
J5	EM anomaly without coincident Mag
J8	Trash pit area originally detected
I9	Many target anomalies mapped with very few actual hits identified
P7	Random area
O10	Clutter area where no OE was found at former Pad A area

The surveys were conducted to identify anomalies indicative of OE for investigation.

2.10 GEOPHYSICAL QUALITY CONTROL CLEARANCE

Following completion of the EM-61 and G-858 QC surveys, WESTON UXO technicians marked out the 2,300 targets and removed all anomalies in conjunction with an excavator. An itemization of all items found during the QC mapping and clearing of the 14 grids for the EM-61 and G-858 QC surveys is included on the dig sheets found in Attachment C-4 in Appendix C. During this effort a total of 643 OE items were found at depths ranging between 6 and 18 inches. No additional OE was identified at depths below 18 inches during the QC mapping and clearing. A separate list of all OE items recovered during QC mapping and clearing is included in Attachment C-5 in Appendix C. If an item could be inspected on the spot, i.e., cleaned enough for thorough inspection and found to be empty it was classified as ORS or Non-OE. If the item

items were considered OE. No additional OE was identified at depths below 12 inches during the QC audit. Ordinance and Explosive items are currently stockpiled at the oversized material stockpile pending demilitarization and disposal. Dig sheet summaries for both are included in Attachments C-6 and C-7 in Appendix C.

2.11 ORDNANCE AND EXPLOSIVES DEMILITARIZATION AND DISPOSAL

All ORS, Non-OE, and scrap metal items were collected by UXO technicians on a daily basis, transferred to a staging area, inspected by the SUXOS and UXO QC Supervisor, and placed into a locked metal storage container for temporary storage. Prior to disposal, these items were inspected a total of four times (once by UXO technicians, a second time prior to being transferred to OBG by Senior QC Supervisor, and again by the Senior QC Supervisor, and SUXOS).

Some OE items that were located and removed by WESTON personnel or their subcontractor were detonated/vented intentionally. Permission was given to WESTON to dispose of all excess OE left on Site by both EODT and SpecPro. This material was either detonated/vented, open burned, and/or demilitarized prior to disposal. Fuzes, pyrotechnics, and 20 mm projectiles were thermally retreated and certified by open burning prior to disposal. In addition, larger projectiles such as 75 mm projectiles, 4-inch projectiles, 105 mm projectiles, and 155 mm projectiles and other OE containing potential energetic material were also open burned if it was determined by both the SUXOS and UXO Safety Officer that due to the condition of the OE there would be no detonation and that any energetic material would vent instead of detonate. All demilitarized OE, ORS, and Non-OE scrap metal were disposed of directly following certification and inspection.

Intentional Detonations

Disposal operations at OBG were conducted in accordance with Section 6.0 Phase IX of the ESS. Items that could be removed were consolidated in accordance with "Procedures for Demolition of Multiple Rounds (Consolidate Shots) on OE Sites", dated August 1998 and approved by DDESB on 27 October 1998. Ammunition Consumption Records are included in Attachment D-3 in Appendix D.

and determined to be empty. All materials from the three burns were inspected and disposed of off-site.

A fourth burn was conducted in August of 2003. The burn was conducted to thermally treat, demilitarize, and dispose of OE, ORS, and Non-OE that was acquired during the geophysical QC clearance. Those items listed in Attachment C-5 and C-7 were thermally treated and disposed of off-site. A total of 1,340 lbs of OE, Non-OE, and ORS were disposed of.

Other Demilitarization Procedures

All projectiles were demilitarized by either explosive venting or by the removal/deformation of the rotating bands and fuze wells following inspections. During OE removal operations the UXO Safety Officer soaked and cleaned the mud from over 20-75 mm projectiles. These projectiles were reclassified as ORS needing further demilitarization i.e., removal of rotating bands prior to disposal off-site.

Disposal

Following detonation, open burning, and/or demilitarization procedures, all demilitarized OE, ORS, and Non-OE scrap metal were disposed of off-site. The procedures outlined in DOD 4160.21.M were utilized. A total of 61,980 lbs (30.99 tons) of demilitarized OE, ORS, and Non-OE scrap metal was generated and disposed of off-site from the Site. A total of 16,720 lbs. of demilitarized OE and 45,260 lbs. of mixed demilitarized OE, ORS, and Non-OE Scrap metal were disposed of offsite.

A listing of all OE demilitarized by WESTON is included in Attachment D-5 in Appendix D. This includes items that were previously left on-site by EODT. The DOD Form 1348-1 was completed by the UXO Safety Officer and accompanied each load. Completed Form 1348's along with weight tickets from the facility are included in Attachment D-6 in Appendix D.

2.12 DEMOBILIZATION

Demobilization occurred in December 2002 following completion of the 10% QC inspection by WESTON and QA inspections by USACE.

SECTION 3

CONCLUSIONS

3. CONCLUSIONS

Between September 2001 and December 2002, WESTON performed OE Removal operations under contract with USACE to complete the original ESS requirements. This included completion of the following:

- Phase III requirements - Excavation and sifting of pad, berm, and low-lying hills soil
- Phase IV requirements - Excavation and sifting of the 1-ft cut material
- Phase V requirements - Geophysical mapping and clearing of the Site
- Phase VI - Geophysical mapping and clearing of the former pad areas
- Phase VII - Completion of excavation and sifting of soils between pad areas

The following conclusions are presented for each Phase listed above in accordance with the ESS:

Phase III

Excavation and sifting of the pads, berms, and low-lying hills enabled WESTON to process soil from the targeted areas to remove OE and ORS. This operation facilitated the start-up of sifting operations for the 1-ft cut area since all overburden was removed as a result of the pad and berm excavations. The only drawback occurred as a result of simultaneous 1-ft cut and pad/berm excavations and sifting activities (performed by others). In the future these activities should remain independent. Data is not available for the total quantity of OE recovered from the pads, berms, etc., since additional oversize material from these areas still needs to be cleared.

Phase IV

Removal of the 1-ft cut sitewide (80% by others vs. 20% by WESTON) reduced the amount of OE and ORS and eliminated a majority of the surface interference in the top 12 inches. However, this objective only allowed for partial removal of the interference layer.

Although the initial design depth of the OBG surface cut resulted in removal of a significant amount of OE and ORS items and substantial quantities of Non-OE scrap, additional OE remained. Most of this was detected and removed during the geophysical activities in accordance with the ESS Phase V requirements. However, a significant amount of OE and ORS was

processing. Based on visual inspections of the trash pit areas during excavations, many of the OE and/or ORS items appeared to be small arms residue.

Phase VIII

In accordance with the ESS requirements, the Site passes the QC/QA requirements based on the finding that no UXO was found within the OE limits of the OBG Site (See Subsection 2.11). In addition, an area of greater than 22% combined QC/QA inspection was completed and 948's are on file for the 22% areas cleared by WESTON.

During OE removal activities, a number of different OE items were identified and removed. The smallest OE items consisted of 20 mm projectiles, however larger 12-inch naval shore battery projectiles were also found. Between this range, 25 mm, 37 mm, 40 mm, 57 mm 75 mm, 90 mm, 105 mm, 105 mm, 155 mm projectiles, 3-inch and 4.2-inch stokes mortars, 2.36-inch WP warheads, MKII grenade bodies, and fuzes of various types were found. In addition, 2-37 mm projectiles were found along the west side of Reeder Creek. Currently all 20 mm projectiles and fuzes, MKII Grenade Bodies, and some 3-inch and 4.2-inch stokes mortars are awaiting demilitarization and disposal. Most 2.36-inch WP warheads were disposed of by detonation with several containing WP. However, there are additional WP warheads awaiting disposal. The following projectiles detonated were determined to contain energetic material (live) 25 mm, 37 mm, 40 mm, and 57 mm projectiles.

During the excavation of a trash pit adjacent to Reeder Creek two 105 mm projectiles and one 155 mm projectile were discovered. The three projectiles were fuzed and had been cut in half lengthwise, it is believed these items were used as training aids. All three projectiles were detonated and determined to contain energetic (live) material.

During WESTON's efforts in investigating 13,363 geophysically mapped anomalies, 1,986 QC anomalies, and 3,024 manually removed anomalies generating 1,518 OE items (8.3% of total anomalies) from the 30-acre site, it is assumed that additional OE items could exist on-site. The likelihood of encountering hazardous OE on the surface of the Site is low based on the surface clearance that was performed. However, additional OE items could be expelled to the surface in

SECTION 4

REFERENCES

4. REFERENCES

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U.S. Army Engineer Division. Huntsville, Alabama. July 1998-June 1999. *Explosive Safety Submission, Ordnance and Explosive Removal at the Open Burning Grounds*, Seneca Army Depot Activity, Romulus, New York.

U.S. Army Corps of Engineers, June 2001, EP 385-1-05a, *Basic Safety Concepts and Considerations for Ordnance and Explosives Operations.*

APPENDIX A

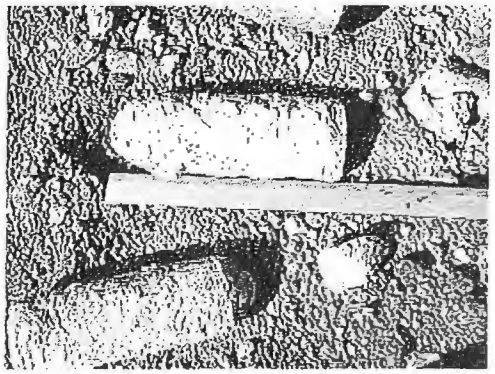
ATTACHMENT A-1

LIST OF PHOTOS

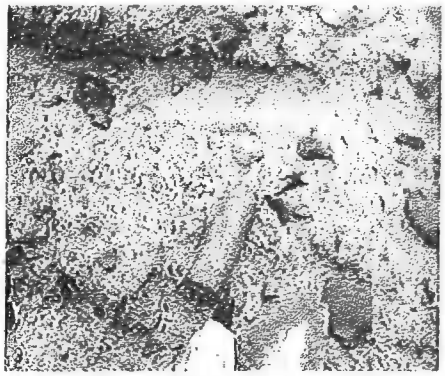
Attachment A-1
Site Photos - Open Burning Grounds

1. 75mm Projectile found on OBG (Oct. 8, 2001)
2. 20mm Projectile on OBG (Nov. 30, 2001)
3. 75mm Projectile found below 1 ft Cut (Nov. 30, 2001)
4. 60mm Projectile found on OBG (Nov. 30, 2001)
5. End of SpecPro Hand Sorting Line (Nov. 28, 2001)
6. SpecPro Hand sorting line w/side guards (Nov. 28, 2001)
7. Scrap collected from OBG (Nov. 9, 2001)
8. SpecPro Hand Sorting Line w/ sandbag wall (Nov. 7, 2001)
9. 75mm Projectiles after explosive demilitarization (Jan. 17, 2002)
10. 75mm Proj. being prepared for demil. using explosive shaped charges (Jan.17, 2002)
11. Double row of 75mm proj. set with shaped charges on rotating bands (Jan. 14, 2002)
12. Soil Sifter w/safety booth (Dec. 18, 2001)
13. Sessler Metal Separator (Dec. 18, 2001)
14. Conveyor hopper for metal to be separated (Jan. 7, 2002)
15. Discharge end of conveyor hopper (Jan. 7, 2002)
16. Hand sorting line inside metal shed w/safety shield (Jan. 7, 2002)
17. Metal barricade used instead of sandbags (Jan. 7, 2002)
18. Metal Barricade made of two pieces of 5/8" steel (Jan. 7, 2002)
19. Hand sorting line seen from inside safety booth (Jan. 7, 2002)
20. Emergency exit for UXO technicians (Jan. 7, 2002)
21. Emergency shield outside emergency exit for UXO technicians.
22. Discharge belt for metal scrap (Jan. 7, 2002)
23. Haul truck used to transport metal scrap (Jan. 7, 2002)
24. Front end loader loading metal separator of OE and other metal (Jan. 7, 2002)
25. UXO Technicians working hand-separating line (Jan. 7, 2002)
26. View from backside of blast shield (Jan. 7, 2002)
27. Varied OE/ORS/Non-OE material traveling hand-sorting line (Jan. 7, 2002)
28. Scrap metal traveling up chute after being inspected by UXO techs. (Jan. 7, 2002)
29. Setting up Open Burn Tray (Jan 11, 2002)
30. Kingsford charcoal used for open burn (Jan. 11, 2002)
31. Loading OE material into burn cage (Jan. 11, 2002)
32. Using excavator to place burn cage on dunnage (Jan. 11, 2002)
33. OE material being soaked with diesel (Jan. 11, 2002)
34. Smokeless powder used for burn initiation (Jan. 11, 2002)
35. Burn initiation (Jan 11, 2002)
36. Burn cage engulfed (Jan. 11, 2002)
37. 20lb Fragmentation Bomb set for explosive demilitarization
38. 20lb Fragmentation Bomb demilitarized
39. 75mm Projectile set for explosive demilitarization
40. 75mm Projectile w/explosive vent holes
41. Explosive demilitarization shot set up
42. Demo shot set up with sand barricade
43. OE, ORS, and scrap metal from Magnetic Separator in trailer dump
44. OE scrap inside metal catch bin
45. OE scrap disposed of at Seneca Iron and Metal

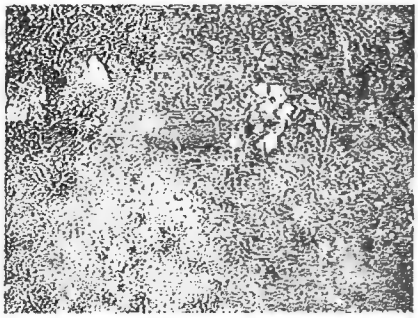
PHOTOS - OPEN BURNING GROUNDS
SENECA ARMY DEPOT
ROMULUS, NY



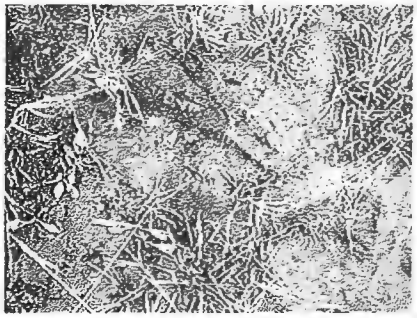
1. 75mm Projectile found on OBG



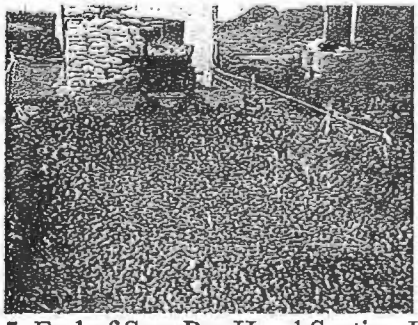
2. 20mm Projectile on OBG



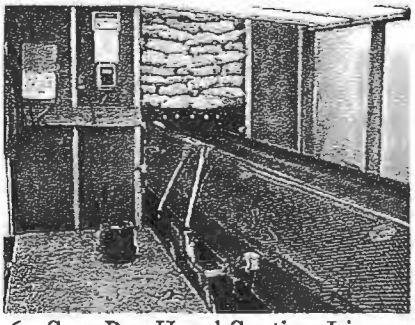
3. 75mm Projectile found below 1 ft Cut



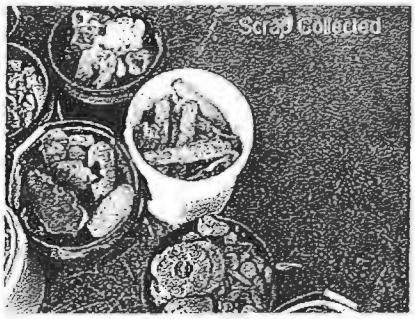
4. 60mm Projectile found on OBG



5. End of SpecPro Hand Sorting Line

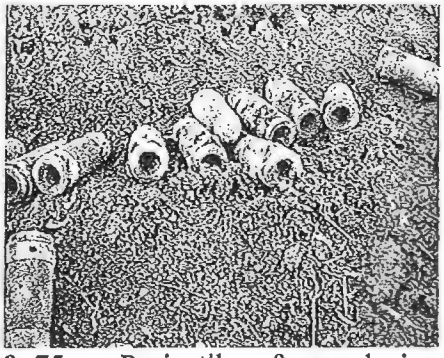


6. SpecPro Hand Sorting Line w/side guards

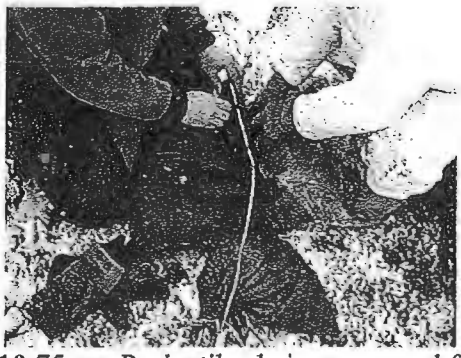


7. Scrap collected from OBG

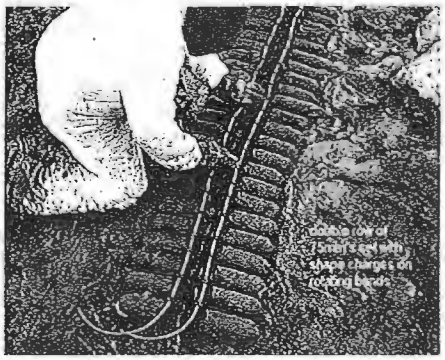
8. SpecPro Hand Sorting Line w/sandbag wall



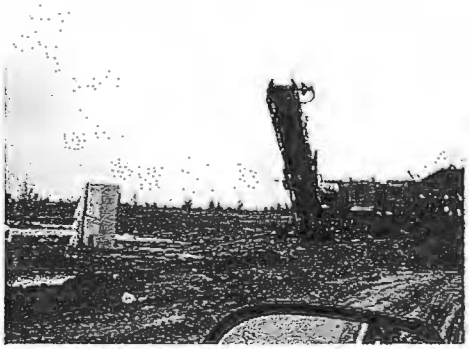
9. 75mm Projectiles after explosive demilitarization



10. 75mm Projectiles being prepared for demilitarization using explosive shaped charges

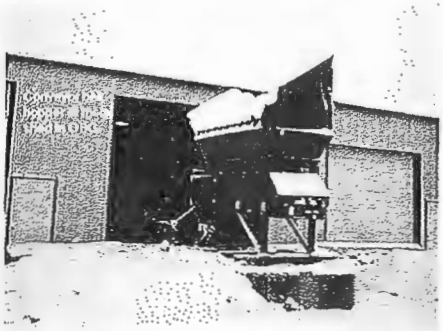


11. Double Row of 75mm Projectiles set With shape charges on rotating bands



12. Soil Sifter w/Safety Booth

13. Sessler Metal Separator

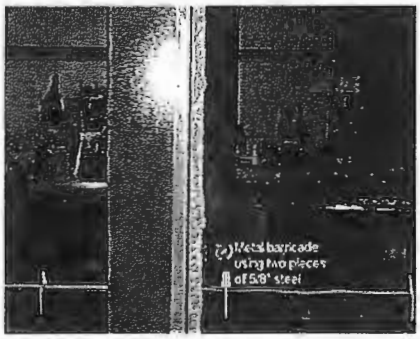


14. Conveyor hopper for metal to be Separated

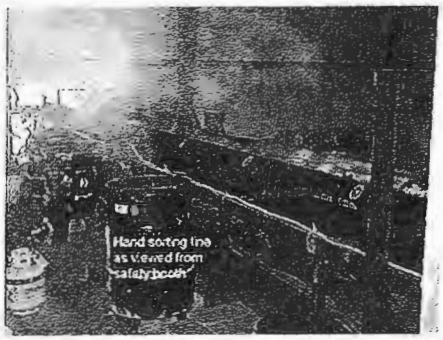
15. Discharge end of conveyor hopper

16. Hand sorting line inside metal shed w/safety shield

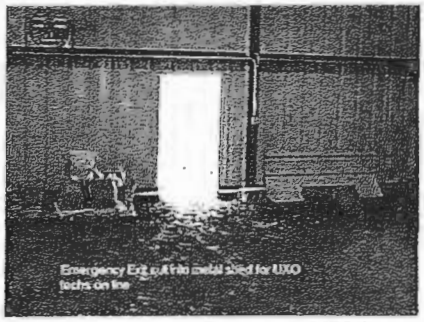
17. Metal barricade used instead of sandbags



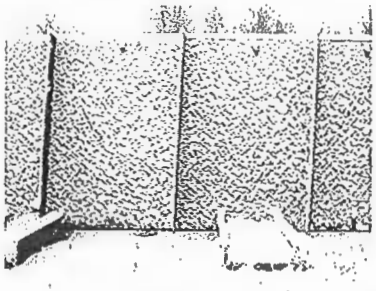
18. Metal Barricade made of two pieces of 5/8 in. steel



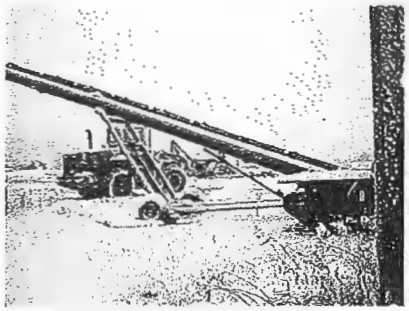
19. Hand sorting line seen from inside safety booth



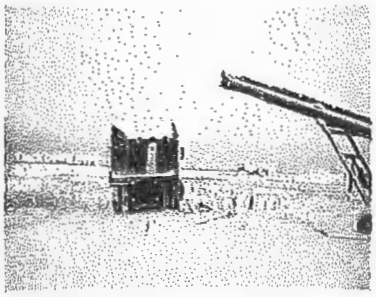
20. Emergency Exit for UXO Technicians



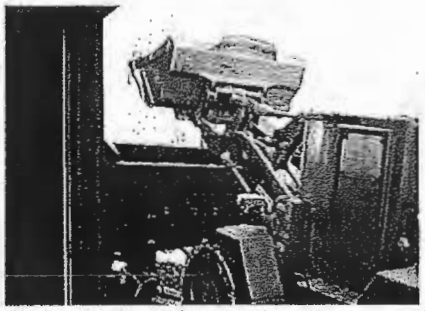
21. Emergency shield outside emergency exit for UXO technicians. Material made of two pieces of 5/8" steel



22. Discharge belt for metal scrap

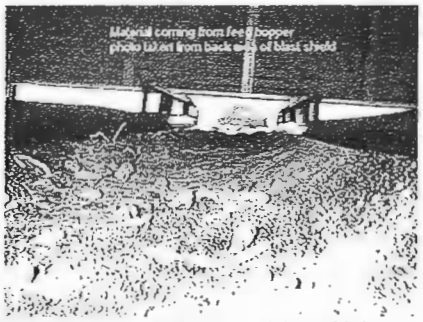


23. Haul truck used to transport metal scrap



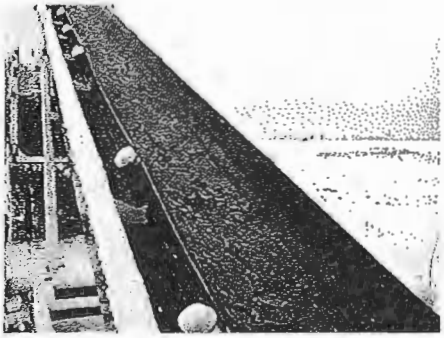
24. Front end loader loading metal separator of OE and other metal

25. UXO Technicians working hand-separating line.

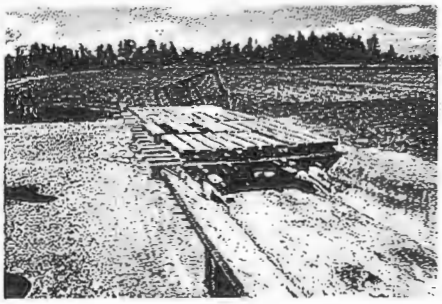


26. View from back side of blast shield

27. Various OE/ORS/Non-OE material on hand-sorting line



28. Scrap metal traveling up back chute after being inspected by UXO technicians

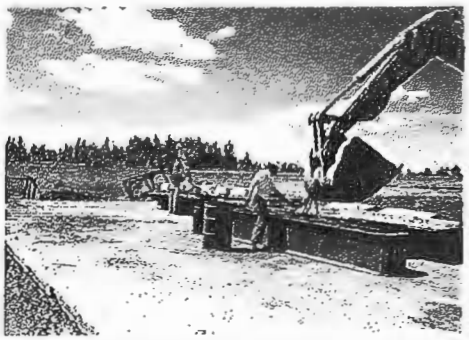


29. Setting up open burn tray

This Space Left Empty

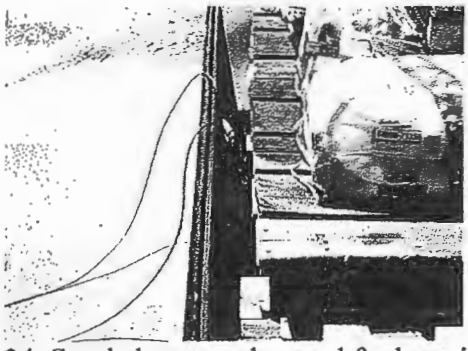
30. Charcoal used for open burn

31. Loading OE Material into burn cage

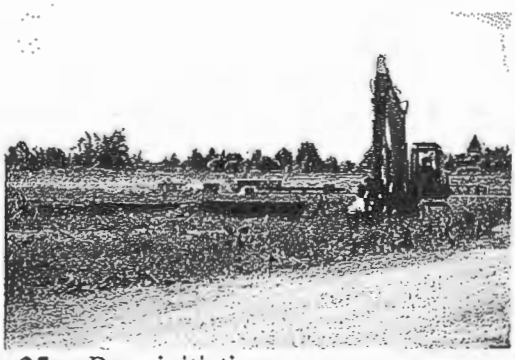


32. Using excavator to place burn cage on dunnage

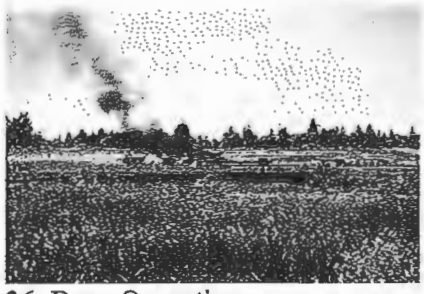
33. OE Material being soaked with diesel



34. Smokeless powder used for burn initiation

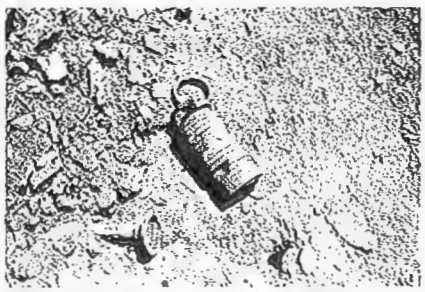


35. Burn initiation

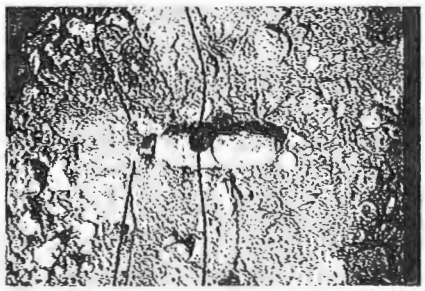


36. Burn Operation

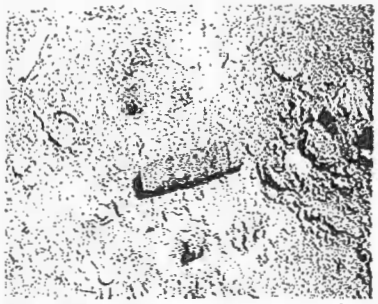
37. 20lb Fragmentation Bomb set for explosive demilitarization



38. 20lb Fragmentation Bomb after demilitarizing

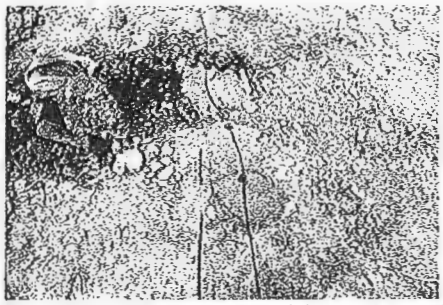


39. 75mm Projectile set for explosive demilitarization

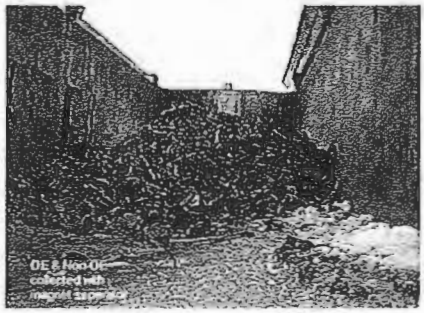


40. 75mm Projectile w/explosive vent holes

41. Explosive demilitarization shot set up

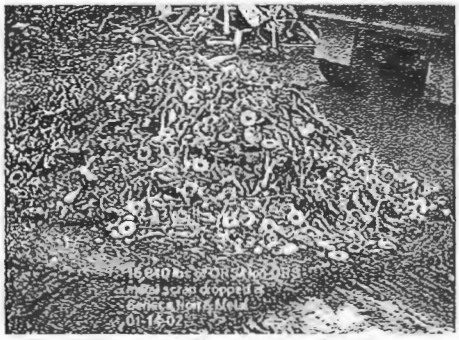


42. Demo shot set up with sand barricade



43. Metal in back of trailer dump

44. OE scrap inside metal catch bin



45. OE scrap disposed of at Seneca Iron and Metal

APPENDIX B

ATTACHMENT B-1

INSTRUMENT QUALITY CONTROL PROCEDURES AND DATA MANAGEMENT

Attachment B-1

Instrument Quality Control Procedures and Data Management

Instrument Quality Control Procedures

Prior to and following each days mapping exercise, Quality Control procedures including static tests, static spike tests, and vibration cable shake tests were conducted to determine instrument functionality and performance ability. Concurrent with data down load and backup, a first order analysis of each survey was completed to determine surface coverage and data quality. Areas "missed" or insufficiently covered areas were reacquired and combined with original data. Portions of the Open Burning Grounds may have been missed due to difficult terrain, debris piles, standing water, and other scenarios deemed unsafe. However, these areas were subsequently identified, flagged, and cleared manually by Unexploded Ordnance technicians.

Data Management

Post-processing and analysis of each data set were performed using the integrated UX-Detect application with Oasis contour plotting software. Target picks were generated automatically using set controls determined by the daily test grid parameters. Data were then analyzed manually to ensure the quality of these automatic picks. Supplemental anomalies that were not selected automatically were manually identified and incorporated into the target summary by the geophysicist. A combined database was imported to Geosoft Oasis Montaj program to generate contour plots.