

**Final
Site Specific Final Report
M1.01 Parcel and M3 Miscellaneous Property
Fort McClellan, Alabama**

Prepared for:

**Contracting Agency:
U.S. Army Corps of Engineers Engineering and Support Center
Huntsville, Alabama**



**Task Order 0015,
Contract Number DACA87-99-D-0010**

Geographical Corps District:

US Army Corps of Engineers, Mobile District

Prepared by:

**Foster Wheeler Environmental Corporation
Ft. McClellan, Alabama
March 2003**

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ACRONYMS AND ABBREVIATIONS

3	ADEM	Alabama Department of Environmental Management
4	ALDOT	Alabama Department of Transportation
5	AP	Armor Piercing
6	AP-T	Armor Piercing-Tracer
7	AT	Anti-Tank
8	HE	High Explosive
9	ASR	Archives Search Report
10	bgs	below ground surface
11	BW	Biological Warfare
12	CEHNC	U. S. Army Corps of Engineers, Engineering and Support Center, Huntsville
13	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
14	CWM	Chemical Warfare Materiel
15	DDESB	Department of Defense Explosives Safety Board
16	DID	Data Item Description
17	DoD	Department of Defense
18	EA	Environmental Assessment
19	EE/CA	Engineering Evaluation and Cost Analysis
20	EPA	Environmental Protection Agency
21	ESS	Explosives Safety Submission
22	FMC	Fort McClellan
23	FS	Sulfur Trioxide-Chlorosulfuric Acid Solution
24	ft	feet
25	FWENC	Foster Wheeler Environmental Corporation
26	GIS	Geographic Information System
27	HC	Hexachloroethane Smoke
28	HTRW	Hazardous, Toxic, and Radioactive Waste
29	Hz	hertz
30	IAW	in accordance with
31	JPA	Anniston-Calhoun County FMC Joint Powers Authority
32	kHz	kilohertz
33	mm	millimeter
34	MPM	Most Probable Munition
35	MSD	Minimum Separation Distance
36	OE	Ordnance and Explosives
37	ORNL	Oak Ridge National Laboratory
38	OSHA	Occupational Safety and Health Administration
39	PM	Project Manager
40	QA	Quality Assurance
41	QC	Quality Control
42	SI	Site Inspection
43	SOP	Standard Operating Procedures
44	SUXOS	Senior Unexploded Ordnance Supervisor
45	TDEM	Time Domain Electromagnetics
46	TF	FMC Transition Force
47	USA	USA Environmental, Inc.
48	USATCES	United States Army Technical Center for Explosives Safety
49	USDOT	United States Department of Transportation
50	USRADS	Ultrasonic Ranging and Data System
51	UXO	Unexploded Ordnance
52	UXOQCS	Unexploded Ordnance Quality Control Specialist
53	UXOSO	Unexploded Ordnance Site Safety and Health Officer
54	WP	White Phosphorous

1 **1.0 INTRODUCTION**

2 **1.1 PURPOSE AND SCOPE**

3 1.1.1 The purpose of this Task Order was to complete an Ordnance and Explosive (OE)
4 Removal Action for the M1.01 Parcel and M3 Miscellaneous Property at Fort McClellan
5 (FMC), Alabama. This removal action was decided upon after completion of the M1.01
6 Parcel Engineering Evaluation/Cost Analysis (EE/CA) and the Action Memorandum,
7 which was signed on January 18, 2002. The Action Memorandum recommends a
8 *Clearance to 1 Foot Depth* be completed, prior to transfer of the M1.01 Parcel and M3
9 Miscellaneous Property to the Anniston-Calhoun County Fort McClellan (FMC) Joint
10 Powers Authority (JPA) for possible retail/office, residential, mixed business, or passive
11 recreation re-use. The M1.01 Parcel EE/CA listed 6 alternatives as follows:

- 12
- 13 • Alternative 1 – No Action
 - 14 • Alternative 2 – Land Use Controls
 - 15 • Alternative 3 – Construction Support
 - 16 • Alternative 4 – Surface Clearance
 - 17 • Alternative 5 – Clearance to One-Foot Depth
 - 18 • Alternative 6– Clearance to Depth
- 19

20 1.1.2 The Base Realignment and Closure (BRAC) Cleanup Team (BCT) is comprised of
21 representatives from the EPA, ADEM, and the Fort McClellan Transition Force, with
22 support from the U.S. Army Corps of Engineers. This group has been directly involved
23 throughout the EE/CA process to ensure protection of human health and the environment
24 and consistency with Federal and state environmental regulations and policies.
25 Regulatory acceptance of the findings of the EE/CA is considered in the final
26 recommendations of the alternative(s) presented in the EE/CA Action Memorandum. The
27 EE/CA document was reviewed by the BCT and placed on file in the information
28 repositories established at the Anniston Calhoun County Library and the Houston Cole
29 Library on November 1, 2001, for the public to review. The availability of the EE/CA in
30 the Administrative Record was announced in the local newspaper, The Anniston Star, and
31 the public was provided a 30-day review and comment period. A public meeting was
32 held on November 19, 2001, to allow the public an opportunity to ask questions or
33 comment on any aspect of the project. Comments received from the Public were
34 considered in the Final EE/CA document.

35

36 1.1.3 The Action Memorandum states: “The selected alternative for the M1.01 Parcel is
37 based on existing site conditions and an understanding of the projected land use and
38 represents conclusions based on the data previously developed for areas inclusive within
39 and adjacent to the M1.01 Parcel area. If, during implementation of response actions in
40 accordance with this Action Memorandum, ordnance items are found that are not
41 consistent with the characterization data, appropriate procedures will be implemented to
42 assess the situation.”

1 1.1.4 The purpose of the Action Memorandum is to document the U.S. Army's decision
2 regarding the selected risk-reduction alternative taken to address the presence of
3 ordnance and explosives (OE) that pose a threat to human health and the environment in
4 the area of the M1.01 Parcel, Fort McClellan, Alabama. The U.S. Army implemented the
5 selected risk-reduction alternative based on the Engineering Evaluation/ Cost Analysis
6 (EE/CA) (FWENC, 2001). The alternative that was selected for the M1.01 Parcel
7 includes clearance to one-foot depth and a deed notice describing notification procedures
8 if OE is found on the property after transfer. The U.S. Environmental Protection Agency,
9 Region 4 (EPA) and the Alabama Department of Environmental Management (ADEM)
10 have concurred with the Action Memorandum.

11
12 1.1.5 The scope of services included work plan preparation, Explosive Safety Submission
13 (ESS) preparation, location surveys, brush clearing, UXO removal, turn-in of inert
14 ordnance and metallic debris, quality control, and preparation of this document, the
15 Ordnance and Explosives Removal Action Report. Draft and Final work plans were
16 reviewed by the U.S. Army Engineering and Support Center, Huntsville; Fort McClellan;
17 Alabama Department of Environmental Management (ADEM); and Environmental
18 Protection Agency (EPA, Region 4). The final work plan was approved by the United
19 States Army Engineering and Support Center, Huntsville (USAESCH). The ESS was
20 reviewed and approved by the U. S. Army Technical Center for Explosives Safety
21 (USATCES) and the Department of Defense Explosives Safety Board (DDESBS). A copy
22 of the Notice to Proceed and Action Memorandum are included in Appendix A.

23 **1.2 AUTHORIZATION**

24 1.2.1 This project was authorized on December 11, 2001 as Task Order (TO) 0015, under
25 Contract DACA87-99-D-0010, Ordnance and Explosives Response at Fort McClellan,
26 Alabama.

27 **1.3 SITE LOCATION**

28 1.3.1 The M1.01 Parcel and M3 Miscellaneous Property consists of approximately 97
29 acres and is located on the western boundary of Fort McClellan on the northern end of the
30 Eastern Bypass Right of Way. Figure 1- 1 shows the location of Fort McClellan and the
31 M1.01 Parcel and M3 Miscellaneous Property within Fort McClellan and a close up of
32 the M1.01 Parcel and M3 Miscellaneous Property, the grid lay out and the surrounding
33 features.

34 **1.4 OE BACKGROUND**

35 1.4.1 The M1.01 Parcel and M3 Miscellaneous Property had been identified as part of a
36 much larger undocumented training area. Although the full extent of the training area had
37 not been delineated, other site investigations determined that the potential presence of OE
38 extends east from the Summerall Gate along the proposed route of the Eastern Bypass as
39 well as encompassing the M1.01 Parcel and M3 Miscellaneous Property. In previous
40 investigations and OE clearance actions, OE and OE Scrap was found in the M1.01

1 Parcel and M3 Miscellaneous Property and are identified in Table 1-1 and shown in
2 Figure 1-2. This information was a part of the M1.01 Parcel EE/CA report.

3

4 **Table 1-1. Ordnance and Explosives (OE) and OE Scrap Found In and**
5 **Adjacent to the M1.01 Parcel and M3 Miscellaneous Property Prior to the Removal**
6 **Action (From M1.01 Parcel EE/CA Report)**

7

Table 1-1 Ordnance and Explosives (OE) and OE Scrap Found In and Adjacent to the M1.01 Parcel and M3 Miscellaneous Property		
Item Description (number found)	Depth, inches^{1,2}	Location
M2 Parcel Removal Action		
OE Items:		
3" live flame thrower cartridge	2	Grid B07
WP hand grenade, fuzed (UXO)	0	Grid G16/G17
OE scrap:		
3.5 inch empty rocket motor	3	Grid F14/F15
M15 WP grenade, expended	2	Grid F14/F15
M15 WP grenade, fragments	2	Grid E16
Rifle grenade illum, expended	1	Grid C13
M15 fuze and WP grenade, expended	1	Grid C14
Rifle grenade tail boom	4	Grid F16/F17
Smoke grenade, expended	0	Grid F16/F17
Rifle grenade, smoke, expended	30 ³	Grid F16/F17
Rifle grenade, smoke, tail boom (2)	1	Grid F16/F17
Rifle grenade, tail boom (2)	2	Grid B15
Fuze M15 top of grenade WP, expended (2)	0	Grid D15/D16
Surface flare, expended	1	Grid D07
Rifle flare, expended (2)	6	Grid A13
Rifle flare, expended	0	Grid A14
Top of grenade, WP	3	Grid A15
Expended slap flare	1	Grid D06
Tail fin assembly	1	Grid E04
Rifle grenade adapter	0	Grid F16
M-1 anti-tank mine, practice	0	Grid F16
Training grenade, empty	0	Grid B07

8

1

Table 1-1 Ordnance and Explosives (OE) and OE Scrap Found In and Adjacent to the M1.01 Parcel and M3 Miscellaneous Property		
Eastern Bypass EE/CA		
OE Items:		
M1 Practice Mine Activator (UXO)	2	Area 5
OE Scrap:		
2.36 inch rockets, practice (6)	12 & 4	Area 4
Slap flares, expended (2)	12 & 4	Area 4
MK II hand grenade, practice (2)	2, 0	Area 4
Ground signal flare, expended	1	Area 4
60mm Mortar, practice (3), M69	4 & 3	Area 5
Rifle smoke grenade, expended (2)	2	Area 5
M8 Practice Mine	3	Area 1
Rifle smoke grenade, expended (2)	2	Area 1
Trip flare, expended	6	Area 1
Eastern Bypass Construction Support Clearance to One Foot		
OE Items:		
None reported.		
OE Scrap:	Depth Not Reported	
60mm mortar, practice, M69		Grid 11
60mm mortar, practice., M69		Grid 23
60mm mortar, practice, M69		Grid 24
60mm mortar, practice, M69 (2)		Grid 25
60mm mortar, practice, M69		Grid 41
60mm mortar, practice, M69		Grid 42
60mm mortar, practice, M69 (2)		Grid 59
60mm mortar, practice, M69 (2)		Grid 73
60mm mortar, practice, M69 (2)		Grid 78
60mm mortar, practice, M69 (2)		Grid 98
60mm mortar, practice, M69 (2)		Grid 115
60mm mortar, practice, M69		Grid 209
60mm mortar, practice, M69 (2)		Grid 221
60mm mortar, practice, M69		Grid 9156
81mm mortar practice, M68		Grid 9085
3 inch Stokes mortar		Grid 194
37mm APT		Grid 231
2.36 inch rocket, practice (3)		Grid 211
2.36 inch rocket, practice (4)		Grid 219
2.36 inch rocket, practice (4)		Grid 220
2.36 inch rocket, practice (5)		Grid 228

**Table 1-1
Ordnance and Explosives (OE) and OE Scrap Found In and
Adjacent to the M1.01 Parcel and M3 Miscellaneous Property**

2.36 inch rocket, practice		Grid 235
2.36 inch rocket, practice		Grid 236
2.36 inch rocket, practice (2)		Grid 247
2.36 inch rocket, practice		Grid 9136
2.36 inch rocket, practice		Grid 9157
2.36 inch rocket, motor		Grid 133
2.36 inch rocket, motor		Grid 221
2.36 inch rocket, motor		Grid 321
2.36 inch rocket, motor		Grid 322
2.36 inch rocket, motor (2)		Grid 9181
Slap flare, expended		Grid 133
Trip flare		Grid 175
M-12 practice mine		Grid 186
Grenade, hand, practice, MK 2		Grid 9052
Grenade, hand, practice, MK 2 (2)		Grid 9078
Grenade, training, M-69		Grid 115
Grenade, smoke, M-18 (4)		Grid 191
Fuze, hand grenade, expended		Grid 9046
Rifle grenade, expended, M-9 (2)		Grid 169
Rifle grenade, expended, M-9 (2)		Grid 184
Rifle grenade, expended, M-9 (2)		Grid 194
Rifle grenade, expended, M-9 (2)		Grid 195
Rifle grenade, expended, M-9		Grid 235
Rifle grenade, expended, M-11		Grid 174
Rifle grenade, expended, M-11		Grid 192
Rifle grenade, smoke, expended		Grid 9003
Rifle grenade, smoke, tail boom (2)		Grid 9085
Rifle grenade, illumination, expended		Grid 9004
Rifle grenade, illumination, expended (2)		Grid 9007
Rifle grenade, illumination, expended		Grid 9033
Rifle grenade, illumination, expended		Grid 9034
Rifle grenade, illumination, expended (2)		Grid 9049

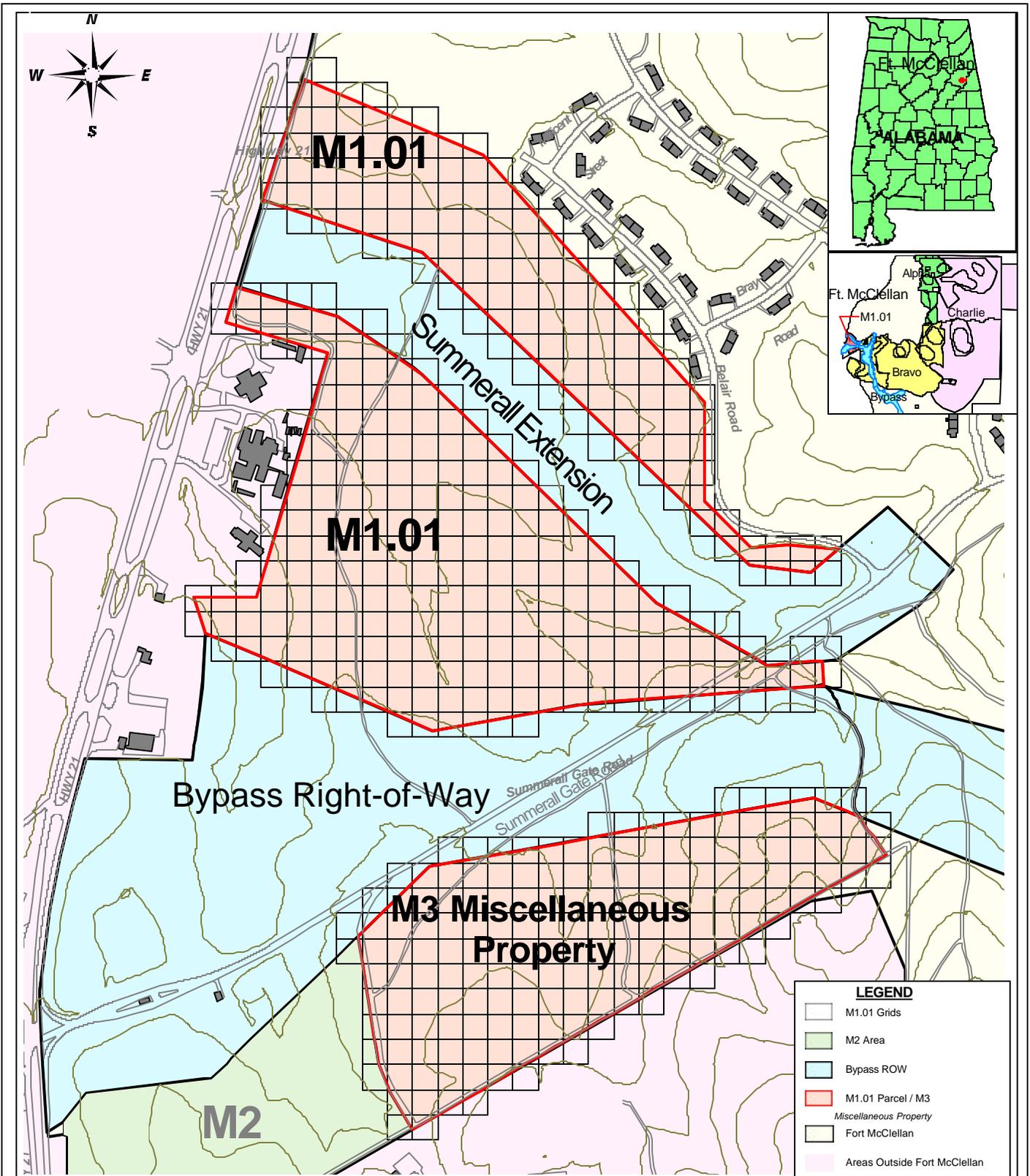
Footnotes:

¹ “0” inches means item located on surface.

² OE Scrap Depth was not reported for the Eastern Bypass Construction Support

³ item was located on the surface at the bottom of an open 30-inch deep hole.

1
2

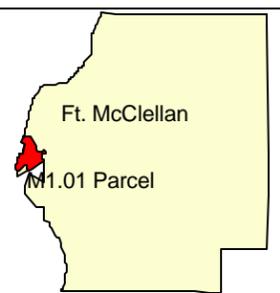
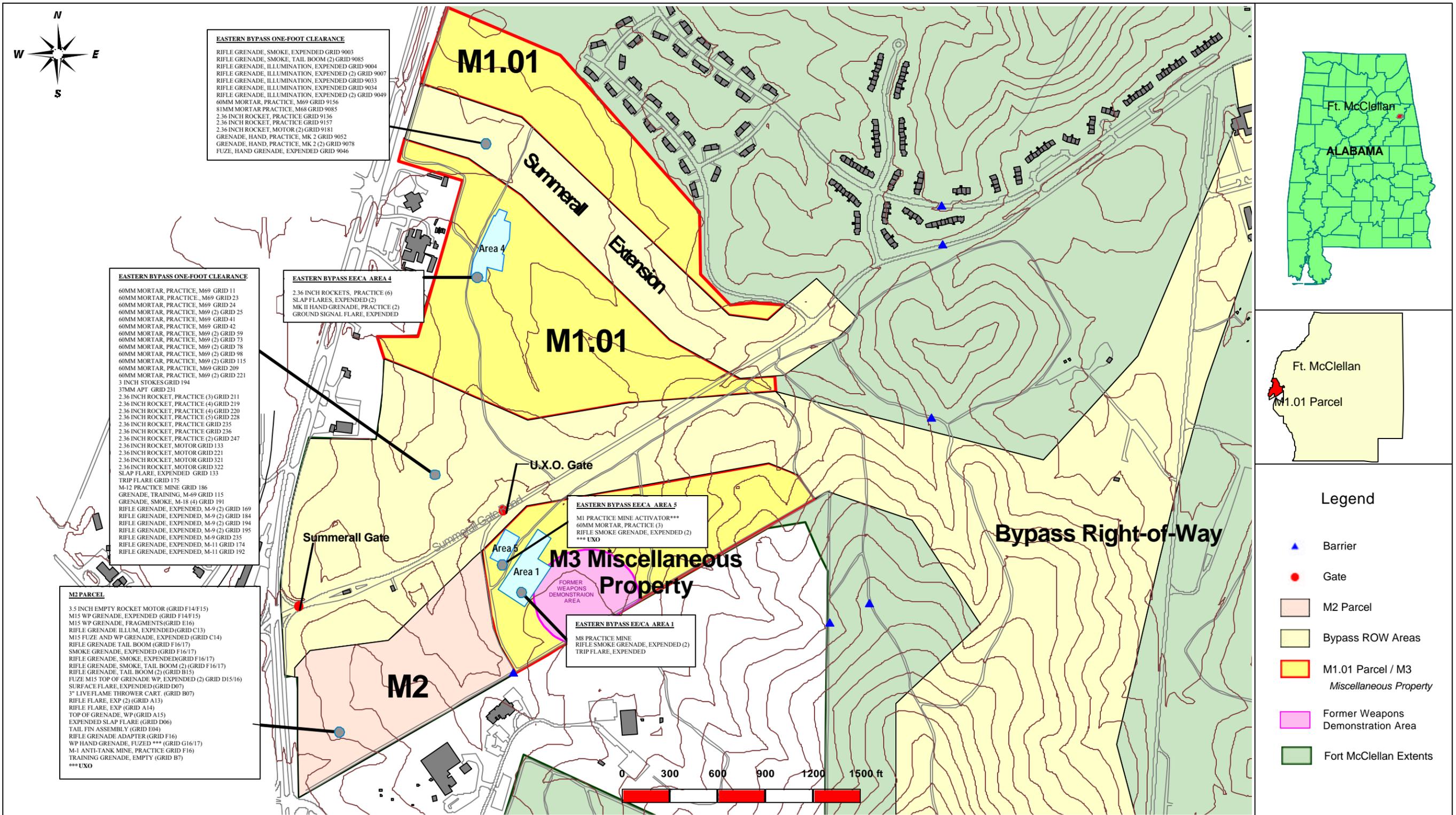


U.S. Army Engineering and Support Center

Huntsville, Alabama

FIGURE 1-1
M1.01 Parcel Site Map
M1.01 Parcel Removal Report

Fort McClellan, Alabama
 October 2002



- Legend**
- ▲ Barrier
 - Gate
 - M2 Parcel
 - Bypass ROW Areas
 - M1.01 Parcel / M3 Miscellaneous Property
 - Former Weapons Demonstration Area
 - Fort McClellan Extents


FOSTER WHEELER ENVIRONMENTAL CORPORATION
 Huntsville, Alabama

U.S. Army Engineering and Support Center
 Huntsville, Alabama
 Contract DACA 87-99-D-0010 Delivery Order 0015

FIGURE 1-2
OE Findings of Previous Investigations and Clearance Actions
 M1.01 Parcel Removal Report

1 1.4.2 The US Army Corps of Engineers, St. Louis District, compiled an Archives Search
2 Report (ASR) of Fort McClellan in 1996. The ASR was prepared by reviewing available
3 records and reports documenting the history of Ft. McClellan. Historical information
4 pertaining to Ft. McClellan operations, including a listing of site investigations conducted
5 before 1996, is contained within the ASR. In 1998, the St. Louis District revised the ASR
6 to include suspect Chemical Warfare Materiel (CWM) areas. The ASR was finalized in
7 September 2001. The Final ASR presented the findings of the site inspection and
8 evaluation of potential ordnance and explosives occurrence at Fort McClellan. Numerous
9 areas suspected of being used for CWM training or storage were inspected. One area, the
10 Old Weapons Demonstration Area, is located within the M1.01 Parcel and M3
11 Miscellaneous Property study area. The site is located in the M3 Miscellaneous Property
12 segment, adjoining the southern edge of the Eastern Bypass right-of-way and the eastern
13 edge of the M2 Parcel (see Figure 1-2). The area included a toxic gas yard (also known as
14 South Gate Toxic Gas Yard), a radiological survey area, and a biological warfare (BW)
15 survey area. There is no documented evidence of toxic agents being used in this area.
16

17 1.4.2.1 Munitions demonstrated in the Old Weapons Demonstration Area included:

- 18 • Mechanical flame thrower
- 19 • Portable flame thrower
- 20 • Various smoke grenades
- 21 • Rifle smoke grenades
- 22 • Thermite grenades
- 23 • X-200 land mines (napalm-filled 5 gallon can)
- 24 • M5 and M4A2 (Navy floating) smoke pots
- 25 • M2 and M3 smoke generators
- 26 • Primacord
- 27 • M1 land mine filled with MR (innocuous simulant for distilled sulfur mustard)
- 28 • White phosphorus

29
30 1.4.3 The U.S. Army Corps of Engineers Huntsville Center and Parsons ES conducted an
31 EE/CA to evaluate and investigate CWM training areas on Ft. McClellan's Main Post.
32 The Old Weapons Demonstration Area, including the South Gate Toxic Gas Yard, was
33 evaluated in the CWM EE/CA. That evaluation found no documented historical evidence
34 or use of CWM at the site and determined that sufficient information was available,
35 without further investigation, to demonstrate the absence of chemical agents. The EE/CA
36 recommended No Further Action for the site.
37

38 1.4.4 An Engineering Evaluation/Cost Analysis for the proposed Eastern Bypass was
39 initiated in 1998. As part of the reconnaissance for the EE/CA, a historical aerial
40 photography investigation was prepared by Oak Ridge National Laboratory (ORNL) for
41 the US Army Engineering and Support Center, Huntsville (*Historical Aerial
42 Photography Investigation of the Fort McClellan East By-Pass Study Area, 1998*). It
43 provided an analysis of land usage over a span of more than 50 years and potential areas
44 of OE occurrence. Selected aerial photographs were scanned at 600 dots per inch and
45 converted to Erdas Imagine format. Second or third order transformations were applied to
46 rectify the photographs. Land use/cover features were digitized and attributed for each

1 successive year of historical aerial photographs. Anomalies were computed from the
2 digital databases by analyzing the changes in land use/cover over time relative to the
3 expected land use/cover progression. In order to determine specific temporal differences
4 in land use/ cover, changes were computed on a year-by-year basis. Anomalies for which
5 the cause could not be discerned, as well as anomalies that might be related to OE
6 activities, were identified on a map as anomalies of potential concern. Some of these
7 anomalies were recommended for further investigation.

8
9 1.4.5 Zapata Engineering conducted a non-intrusive ground reconnaissance for the
10 Eastern Bypass EE/CA in August 1998. The final trip report is located in Appendix B-1
11 of the Eastern Bypass EE/CA (April 2000). The purpose of the ground reconnaissance
12 was to resolve anomalies identified during the historical aerial photography investigation
13 (ORNL, 1998) and to visually identify areas of possible OE occurrence, which may not
14 have been previously characterized within or adjacent to the proposed Eastern Bypass
15 right-of-way. Several areas revealed evidence of possible training activities to include OE
16 training items and foxholes and were identified as potential sample locations. The most
17 notable locations were in the northern portion of the proposed Eastern Bypass right-of-
18 way, near Summerall Gate. In particular, possible training areas were located north and
19 south of Summerall Gate Road, approximately 200 to 300 yards inside the installation
20 boundary.

21
22 1.4.6 In February of 1999, as part of the Eastern Bypass EE/CA, Zapata Engineering
23 conducted a geophysical survey of six areas (encompassing 8.56 acres) selected during
24 the ground reconnaissance. The geophysical data was processed and mapped, using an
25 automatic target detection procedure. This system picked targets using a threshold
26 algorithm that works from the outer part of the amplitude distribution towards the noise
27 level. Peaks were localized at the given threshold and then picked. The geophysicist then
28 did a subjective analysis of the picks, accepting, rejecting or modifying each target. Each
29 target was then assigned a target identification number that associated it with the area and
30 grid in which it was identified. Several subsurface anomalies were identified as targets.
31 The complete geophysical report is located in Appendix B.1 of the Eastern Bypass
32 EE/CA (Zapata Engineering, April 2000).

33
34 1.4.7 In May of 1999, Zapata Engineering conducted OE intrusive sampling. However,
35 not all of the 8.56 acres previously surveyed were sampled. Sampling was conducted in
36 grids spanning an area of approximately 2.41 acres, however, several of the grids were
37 not completely sampled. Sampling in a grid was terminated when one or more OE and/or
38 OE Scrap was found. Therefore, the total area sampled was actually less than 2.41 acres.
39 Intrusive investigations revealed OE training items and OE Scrap. The OE/OE Scrap
40 items discovered during this investigation included 60mm practice mortars, 2.36-inch
41 practice rockets and expended smoke grenades. One pyrotechnic OE item classified as
42 UXO, a mine activator, was recovered and detonated on-site. Evidence of small arms,
43 expended .30 caliber shells, was also discovered (Zapata Engineering, April 2000).

1 1.4.8 In March 2001, EOD Technologies completed a one-foot clearance of OE over the
2 proposed footprint of the Eastern Bypass to support pre-construction activities. The
3 extent of their activities are identified in the Final Report for the Ordnance and
4 Explosives Surface Removal, Proposed Eastern Bypass, Fort McClellan, Alabama.
5 (EODT, June 2001). Items recovered in the portion of the Eastern Bypass right-of-way
6 that is located within the M1.01 EE/CA study area were primarily training and practice
7 items, including smoke and practice hand grenades, slap flares, training and practice
8 mortars (60mm and 81mm), expended rifle grenades, a practice anti-vehicle mine M-12,
9 and 2.36-inch practice rockets and motors. A 3-inch Stokes mortar and two expended
10 37mm armor-piercing tracer rounds were also found. No UXO were reported found.

11
12 1.4.9 In September 2000 FWENC completed an OE removal action at the adjacent M2
13 Parcel. The M2 Parcel is an approximately 22-acre site that adjoins at the west side of the
14 M3 Miscellaneous Property site. Items recovered during the removal action included one
15 UXO (white phosphorous hand grenade), one live flame-thrower cartridge, two practice
16 ordnance items (practice anti-tank land mine and practice training grenade), and OE
17 scrap. Small arms (mostly .30 caliber) and Non-OE scrap (cultural metal) were also
18 recovered. The UXO item and the two inert ordnance items were found on or within 6-
19 inches of the ground surface. The flame-thrower cartridge was found at a depth of 2
20 inches. Consistent with the type of training exercises thought to have occurred at the site,
21 all OE and OE scrap were found within six inches of the ground surface, except for one
22 expended rifle grenade which was found on the surface at the bottom of an open hole, 30
23 inches deep by 3-foot across. The M2 Parcel was subsequently transferred to the Joint
24 Powers Authority, sold and is currently under development.

25
26 1.4.10 A site-specific work plan (SSWP), M1.01 Parcel and M3 Miscellaneous Property
27 Ordnance and Explosives Removal Action Work Plan and a Explosives Safety
28 Submission (ESS), M1.01 Parcel and M3 Miscellaneous Property Ordnance and
29 Explosives Removal Action were developed for implementing the selected alternative at
30 the M1.01 Parcel and M3 Miscellaneous Property by FWENC Environmental. Following
31 approval of the site-specific work plan, onsite activities were initiated February 25, 2002.

32 **2.0 DISCUSSION**

33 2.0.1 Fieldwork began on February 25, 2002 with the start of survey and brush clearing
34 activities followed by intrusive activities. All fieldwork was completed the week of July
35 22, 2002. In all, three hundred two (302) grids of 100 ft x 100 ft and two hundred twenty
36 eight (228) partial grids were cleared of OE to a depth of 1 foot below grade, and all
37 metal larger than 3 inches on the surface was removed. The total area cleared was
38 approximately 97 acres. All field activities including site preparation (brush clearance
39 and location surveys), and intrusive operations are described in this section. Quality
40 Control (QC) and Quality Assurance (QA) are discussed in the section 3.0.

1 **2.1 SITE PREPARATION ACTIVITIES**

2 2.1.1 *Location Survey*

3 2.1.1.1 A location survey was started during the week of February 25, 2002. The purpose
4 of the survey was to locate the corners of the M1.01 Parcel and M3 Miscellaneous
5 Property boundaries and to locate contiguous 100 ft x 100 ft grids for subsequent
6 intrusive operations. The parcel boundary corners and the four corners of each grid were
7 located to the nearest 1.0 ft. The survey was performed by Skipper Engineering, Inc. of
8 Rainbow City, Alabama. Figure 1-1 shows the placement of the 100' x 100' grids within
9 the M1.01 Parcel and M3 Miscellaneous Property.

10
11 2.1.1.2 Grid naming nomenclature consisted of a three digit alphanumeric sequence
12 starting with A00, using the letters A through G and a two number sequence in order (i.e.
13 A00, A01, A02, etc.). The naming started at the northwest corner of the M1.01 Parcel
14 and M3 Miscellaneous Property boundary and progressed east to west across the row of
15 grids and then dropped one row to the south and continued throughout the area. Figure 2-
16 1 shows the numbered grids.

17 2.1.2 *Brush Clearance*

18 2.1.2.1 Brush clearance began on February 25, 2002 and was completed April 5, 2002.
19 Brush clearance was necessary to prepare the site for intrusive OE removal activities.
20 More specifically, the clearance was required to allow the UXO specialist to safely and
21 efficiently move through and across the site all the while allowing the detector instrument
22 to pass directly over the area being investigated. This required the removal of brush,
23 vines, and small trees (3 inches and less) to within 4 inches of the ground (to prevent risk
24 of tripping) and the removal of hanging limbs and vines to provide a minimum 8-foot
25 overhead clearance. During this phase of the operation, a gravesite was located by the
26 UXO Technician, marked with yellow hazard tape, and reported to FMC TF. The grave
27 site was left as found and was not disturbed. The location of the grave is shown on
28 Figure 2-2. Photographs are included in Appendix C.

29
30 2.1.2.2 A UXO Technician provided oversight during the brush clearing operation. The
31 technician proceeded ahead of the brush team, checking the surface visually looking for
32 any safety hazards and inspected the finished product prior to acceptance. Several Inert
33 Ordnance items were found during the brush clearing operation in 2 separate locations.
34 The first item was a practice land mine with no energetic material while the second
35 location had a group of seven 2.36in, Rocket, Practice, M7 stacked on the surface that
36 required demolition procedures because of the possibility of live fuzing. These were
37 located in Grids G74 and D21 respectively. See Figure 2-1.

38
39 2.1.2.3 Brush clearance was performed by a subcontractor, Brothers Land Clearing, using
40 a combination of mechanized equipment (Hydro Ax, wood chippers) and power hand
41 tools. The operation took 42 days and was completed over a period of six calendar weeks.

1 **2.2 OE INTRUSIVE OPERATIONS**

2 2.2.1 OE intrusive operations started on Monday, April 8, 2002 and were completed over
3 a sixteen-week period, ending on Wednesday, July 24, 2002. The purpose of the intrusive
4 operations was to remove all OE items to a depth of 1 foot below grade and all metal
5 larger than 3 inches from the surface. Intrusive operations were performed by the UXO
6 subcontractor USA Environmental, Inc. (USA), under FWENC supervision. USA
7 operated between 2 and 6 UXO teams. During the work USA intrusive teams used
8 Whites Metal Detectors and MK-26 Forrester Ordnance Locators for this investigation.
9 USA provided their own SUXOS and UXOQC for this task order. FW provided the
10 UXO Safety Officer (UXOSO) and a UXO Quality Control Specialist (UXOQCS) to
11 coordinate grid turnover to the USACE Safety Specialist for government QA. This
12 procedure is discussed in more detail in Section 3.0.

13
14 2.2.2 An evaluation of the first two weeks of intrusive operations indicated that
15 productivity, as measured by the number of grids completed per day, was not high
16 enough to permit completion within schedule. This was thought to primarily be due to
17 thick vegetation and the large amount of cultural metal. To increase the productivity rate
18 more personnel were mobilized to complete intrusive operations and a second round of
19 brush cutting was completed in the heavy growth areas.

20
21 2.2.3 Because of public safety concerns, it was necessary to limit intrusive operations
22 within 60 ft of the public to avoid causing excess inconvenience to the public. Operations
23 in grids located along the western boundary of the site adjacent to Highway 21 and along
24 the boundary with Coosa Valley Detention Center were affected. There were three areas
25 of concern involving exclusion zones in the M1.01 Parcel and M3 Miscellaneous
26 Property that had an effect on property other than that controlled by the Ft. McClellan
27 Transition Force (TF). These included the western edge of the area that bordered
28 Highway 21, the western edge that bordered the Coosa Valley Detention Center, and
29 several grids that bordered the detention center and were in close proximity to propane
30 storage cylinders located on the detention center property. These areas are displayed on
31 Figure 2-2.

32
33 2.2.3.1 Intrusive operations within the grids (A01, A03, A07, A10, A22, A32, A87, C01,
34 C02, and C03) located along the western boundary of the M1.01 Parcel Property,
35 adjacent to Highway 21, were only permitted with the use of a road guard to alert the
36 intrusive teams of any vehicle or foot traffic that was inside the exclusion zone. The
37 exclusion zone in this instance was 60 feet from the outside edge of the grids as shown in
38 Figure 2-2. This 60-foot distance extended to the shoulder of Highway 21. Traffic on the
39 road was not affected, and we had no one (car or pedestrian) violate the exclusion zone
40 during our intrusive operations. This allowed the operation to progress without need to
41 close or otherwise cause any blockage of Highway 21.

42
43 2.2.3.2 Operations along the boundary with Coosa Valley Detention Center were
44 conducted without the use of engineering controls. This was accomplished by working
45 with both the USAESCH and the Ft. McClellan Transition Force to devise a plan which

1 allowed us to work, without slowing the production rate or causing undue problems for
2 the detention center. Arrangements were made to ensure all personnel within the one
3 inhabited building at the Coosa Valley Detention Center were outside the minimum 60ft
4 exclusion zone, which extended from the post perimeter fence into their property (Figure
5 2-2). This was accomplished by arranging for the various buildings at the center to be
6 vacated while we accomplished our intrusive investigation in grids C29, C37, C46, C56,
7 C57, C68, and C69. With Transition Force approval, FWENC was able to liaise with the
8 detention center on these arrangements. These grids were investigated and no exclusion
9 zone violations were reported.

10
11 2.2.3.3 Intrusive operations were also conducted along the Coosa Valley Detention
12 Center perimeter, which were in very close proximity with propane storage cylinders,
13 which are shown in Figure 2-2. A portion of grids C07, C12 and C46 required USA
14 Environmental, Inc. to use engineering controls while performing the intrusive
15 investigation. With safety as the number one issue throughout this evolution, and with
16 coordination between USAESCH, Ft. McClellan TF, Coosa Valley Detention Center and
17 FWENC, these grids were cleared with no exclusion zone violations.

18
19 2.2.4 Items recovered during the intrusive operations were classified as follows:

- 20
21 ■ **OE** – OE consists of ammunition, ammunition components, chemical or biological
22 warfare materiel or explosives that have been abandoned, expelled from demolition pits
23 or burning pads, lost, discarded, buried, or fired. Such ammunition, ammunition
24 components and explosives are no longer under accountable control of any DOD
25 organization or activity. (Headquarters, Department of the Army Policy Memorandum
26 "Explosives Safety Policy for Real Property Containing Conventional OE").
27 ■ **UXO** – Military munitions that have been primed, fused, armed, or otherwise
28 prepared for action, and have been fired, dropped, launched, projected, or placed in such
29 a manner as to constitute a hazard to operations, installation, personnel, or material and
30 remained unexploded either by malfunction, design, or any other cause.
31 ■ **Inert Ordnance** – Inert ordnance is an item which has functioned as designed
32 leaving an inert carrier, an item manufactured inert to serve a specific training purpose, or
33 fragments from ordnance which has functioned as designed.
34 ■ **OE Scrap** – Any parts of previous OE or OE related items that functioned as
35 designed that are not Inert Ordnance as described above, or that could not be positively
36 identified (i.e. miscellaneous fragments).
37 ■ **Non OE Scrap** – Any metal not OE related.

38
39 2.2.4.1 Items classified as OE, UXO and Inert Ordnance were recorded and documented
40 for reporting purposes. OE Scrap and Non OE Scrap were only recorded in pounds
41 recovered per grid. The distribution of items is discussed in the following sections.

42
43 2.2.4.2 The distribution of recovered items is presented below in Table 2-1. For each
44 classification, the number of investigated anomalies that resulted in recovery of the listed
45 item is shown. A review of the data shows that OE/UXO was recovered at less than 1-
46 percent of the anomalies investigated and that Non OE related materials were collected at

over 99-percent of the anomalies investigated. Figure 2-1 shows the M1.01 Parcel and M3 Miscellaneous Property and the locations at which OE, UXO and Inert Ordnance items were located. Following is a complete list, by classification and grid, of all OE/UXO (Table 2-2) and Inert Ordnance (Table 2-3) discovered in the M1.01 Parcel and M3 Miscellaneous Property. A complete list of OE Scrap and Non OE Scrap per pound/per grid is included as Appendix B.

Table 2-1
Distribution of recovered items

Items Recovered	Number of Anomalies	Percentage of Total Items
OE	41	0.04%
UXO	8	0.01%
Inert Ordnance	406	0.25%
OE Scrap	351	0.20%
Non-OE Scrap	160,571	99.50%

2.2.4.3 OE and UXO. All items characterized as OE or UXO contained energetic material at the time they were discovered and required demolition operations in order to safely dispose of them. As per the SSWP all OE and UXO items found were destroyed and their previous location was cleared to ensure no items remained at their previous location deeper than one foot. Table 2-2 shows the items found, their nomenclature and where they were located. A full list with all information required by DID OE-030 is provided in Appendix B. Figure 2-1 visually shows the location of all OE and UXO discovered during the removal effort. There were a total of 49 items (OE or UXO) found in 11 separate locations in the M1.01 Parcel and Miscellaneous Property. In G76 the intrusive investigation revealed 39 detonators in one location. Photographs of all OE and UXO listed in Table 2-2 are provided in Appendix C.

**Table 2-2
OE and UXO Recovered**

Grid	Mk or Mod	Ordnance Type	Specific Item	Depth in Inches	Type
B44	M201	FUZE	SMOKE	1	UXO
C74	M6	BLASTING CAP	NON-ELECTRIC	1	OE
C75	M6	BLASTING CAP	NON-ELECTRIC	1	OE
D20	M49A2	MORTAR	60MM HE	1	UXO
E50	M201	GRENADE	FUZE	1	UXO
F58	UNK	PYROTECHNIC	IGNITER	2	UXO
G76	M5	DETONATORS, BASE COUPLER (39 Each)	NON-ELECTRIC	1	OE
G76	M15	GRENADE	BURSTER	1	UXO
G80	M15	GRENADE	WP	3	UXO
G80	UNK	PYROTECHNIC	SMOKE	6	UXO
G80	AN-M14	GRENADE	INCENDIARY	3	UXO

1
2 2.2.4.4 Inert Ordnance. Inert Ordnance items were classified by the definition in section
3 2.2.4 above. Inert Ordnance can be manufactured inert or it can be the outcome of
4 properly functioned ordnance. These items have the outward appearance of ordnance in
5 every respect, only internally no energetic and/or pyrotechnic mixtures are present. Table
6 2-3 lists by grid, the items characterized as inert ordnance by nomenclature and depth. All
7 depths are in inches below ground surface (bgs). Figure 2-1 visually shows the location
8 of all Inert Ordnance recovered. Photos of several items listed in Table 2-3 are provided
9 in Appendix C to serve as an example of these items. Within the M1.01 Parcel and M3
10 Miscellaneous Property fragmentation was discovered in 2 primary locations. The first
11 was in the western area of the M3 Miscellaneous Property. No fragmentation was
12 discovered that was out of the ordinary for this area or that is not represented in the list of
13 Inert Ordnance.

**Table 2-3
Inert Ordnance Recovered**

Grid	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
A50	Inert Ordnance	Grenade, Training	GRENADE	1	MK1A1
A57	Inert Ordnance	Grenade, Smoke	GRENADE	1	M18
A64	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
A64	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
A64	Inert Ordnance	Expended, Signal Ground	SIGNAL	6	M17A1
A64	Inert Ordnance	Expended, Signal Ground	SIGNAL	6	M17A1
A65	Inert Ordnance	Expended, Signal Ground	SIGNAL	1	M17A1
A81	Inert Ordnance	Expended, Signal Ground	SIGNAL	1	M17A1
B15	Inert Ordnance	Expended, Signal Ground	SIGNAL	6	M17A1
B22	Inert Ordnance	Grenade, Training	GRENADE	6	MK1A1
B27	Inert Ordnance	Expended, Signal Ground	SIGNAL	8	M17A1
B33	Inert Ordnance	Grenade, Practice	GRENADE	1	MK62
B35	Inert Ordnance	Expended, Signal Ground	SIGNAL	1	M17A1
B44	Inert Ordnance	Cartridge, Blank, 75mm	PYROTECHNIC	2	UNK
C13	Inert Ordnance	Expended, Signal Ground	SIGNAL	2	M17A1
C13	Inert Ordnance	Expended, Signal Ground	SIGNAL	2	M17A1
C20	Inert Ordnance	Smoke Pot, HC	PYROTECHNIC	6	UNK
C20	Inert Ordnance	Smoke Pot, HC	PYROTECHNIC	6	UNK
C22	Inert Ordnance	Grenade, Training	GRENADE	0	MK1A1
C30	Inert Ordnance	2.36" Rocket, Practice	ROCKET	10	M7
C34	Inert Ordnance	Grenade, Training	GRENADE	1	MK1A1
C35	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	0	M17A1
C36	Inert Ordnance	Grenade, Training	GRENADE	0	MK1A1
C53	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	0	M17A1
C55	Inert Ordnance	Expended, Signal Ground 2 EA	SIGNAL	3	M17A1
C60	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
C71	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
C72	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7

**Table 2-3
Inert Ordnance Recovered**

Grid	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
C73	Inert Ordnance	2.36" Rocket, Practice	ROCKET	3	M7
C75	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
D04	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
D05	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	3	M11A3
D05	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	2	M11A3
D05	Inert Ordnance	2.36" Rocket, Practice	ROCKET	2	M7
D05	Inert Ordnance	2.36" Rocket, Practice	ROCKET	2	M7
D05	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
D05	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
D07	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
D07	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
D07	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
D18	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	0	M11A3
D21	Inert Ordnance	2.36" Rocket, Practice	ROCKET	0	M7
D22	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
D23	Inert Ordnance	2.36" Rocket, Practice	ROCKET	2	M7
D36	Inert Ordnance	Mortar, 60MM, Training	MORTAR	0	M69
D37	Inert Ordnance	Mortar, 60MM, Training	MORTAR	0	M69
D39	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
D40	Inert Ordnance	2.36" Rocket, Practice	ROCKET	3	M7
D40	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
D41	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
D41	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
D41	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
D41	Inert Ordnance	Grenade, Training	GRENADE	3	MK1A1
D42	Inert Ordnance	Mortar, 81MM, Training	MORTAR	4	M43
D46	Inert Ordnance	Expended, Signal Ground	SIGNAL	3	M17A1
D55	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	2	M11A3
D57	Inert Ordnance	2.36" Rocket, Practice	ROCKET	0	M7
D62	Inert Ordnance	2.36" Rocket, Practice	ROCKET	5	M7
D63	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
D63	Inert Ordnance	2.36" Rocket, Practice	ROCKET	8	M7
D65	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
D66	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E07	Inert Ordnance	Mortar, 60MM, Training	MORTAR	4	M69
E09	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
E09	Inert Ordnance	2.36" Rocket, Practice	ROCKET	2	M7
E10	Inert Ordnance	Mortar, 81MM, Training	MORTAR	10	M43
E10	Inert Ordnance	Mortar, 81MM, Training	MORTAR	10	M43
E13	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E13	Inert Ordnance	2.36" Rocket, Practice	ROCKET	2	M7
E14	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7

**Table 2-3
Inert Ordnance Recovered**

Grid	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
E14	Inert Ordnance	2.36" Rocket, Practice	ROCKET	2	M7
E14	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E14	Inert Ordnance	2.36" Rocket, Practice	ROCKET	3	M7
E14	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E15	Inert Ordnance	2.36" Rocket, Practice	ROCKET	3	M7
E25	Inert Ordnance	2.36" Rocket Motor	ROCKET	0	M7
E25	Inert Ordnance	2.36" Rocket, Practice	ROCKET	0	M7
E25	Inert Ordnance	2.36" Rocket, Practice	ROCKET	0	M7
E25	Inert Ordnance	2.36" Rocket, Practice	ROCKET	0	M7
E25	Inert Ordnance	2.36" Rocket, Practice	ROCKET	0	M7
E29	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
E29	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E29	Inert Ordnance	2.36" Rocket, Practice	ROCKET	2	M7
E29	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	2	M11A3
E29	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E29	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E29	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E30	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	6	M11A3
E30	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	6	M11A3
E30	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
E30	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
E31	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
E33	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
E44	Inert Ordnance	Expended, Signal Ground	SIGNAL	6	M17A1
E48	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	2	M11A3
E49	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	0	M17A1
E50	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	4	M11A3
E50	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E50	Inert Ordnance	2.36" Rocket, Practice	ROCKET	12	M7
E50	Inert Ordnance	2.36" Rocket, Practice	ROCKET	4	M7
E50	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	2	M11A3
E51	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	2	M11A3
E51	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
E51	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
E53	Inert Ordnance	2.36" Rocket, Practice	ROCKET	2	M7
E54	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	3	M11A3
E54	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
E59	Inert Ordnance	Slap Flare, Illumination	FLARE	8	M125
E67	Inert Ordnance	2.36" Rocket, Practice	ROCKET	8	M7
E69	Inert Ordnance	2.36" Rocket, Practice	ROCKET	5	M7
E69	Inert Ordnance	2.36" Rocket, Practice	ROCKET	1	M7
E69	Inert Ordnance	Mortar, 60MM, Training	MORTAR	5	M69

**Table 2-3
Inert Ordnance Recovered**

Grid	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
E70	Inert Ordnance	2.36" Rocket, Practice	ROCKET	0	M7
F26	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	1	UNK
F26	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	1	UNK
F27	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
F31	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
F39	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	8	M22/23
F39	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	3	M22/23
F39	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22/23
F42	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	4	M22
F42	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
F43	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
F44	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
F45	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	1	UNK
F45	Inert Ordnance	Expended, Signal Ground	SIGNAL	0	M17A1
F46	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	1	UNK
F46	Inert Ordnance	Mortar, 60MM, Training	MORTAR	3	M69
F49	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	0	M17A1
F52	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
F59	Inert Ordnance	Mortar, 60MM, Training	MORTAR	6	M69
F59	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	1	M22
F59	Inert Ordnance	Expended, Signal Ground	SIGNAL	1	M17A1
F59	Inert Ordnance	Expended, Signal Ground	SIGNAL	2	M17A1
F60	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
F60	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	2	M12
F60	Inert Ordnance	Mortar, 60MM, Training	MORTAR	8	M69
F60	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	4	M22/23
F60	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
F61	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
F61	Inert Ordnance	Grenade, Training	GRENADE	0	MK1A1
F61	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
F61	Inert Ordnance	Mortar, 60MM, Training	MORTAR	4	M69
F61	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	4	M22/23
F61	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
F61	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
F62	Inert Ordnance	Mortar, 60MM, Training	MORTAR	0	M69
F63	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	M22/23
F63	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	3	M22
F63	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	1	M22
F63	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	4	M22
F63	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22
F63	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
F64	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK

**Table 2-3
Inert Ordnance Recovered**

Grid	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
F64	Inert Ordnance	Rifle Grenade, Practice	RIFLE GRENADE	0	M11A3
F64	Inert Ordnance	Expended, Signal Ground	SIGNAL	2	M17A1
F64	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22
F66	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	1	UNK
F66	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
F66	Inert Ordnance	Expended, Signal Ground	SIGNAL	1	M17A1
F67	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
F69	Inert Ordnance	Expended, Signal Ground	SIGNAL	11	M17A1
F70	Inert Ordnance	Expended, Signal Ground	SIGNAL	11	M17A1
F71	Inert Ordnance	Fuze, 2.36" Rocket	ROCKET	1	M7
G01	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G01	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	2	M12
G01	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G01	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	2	M12
G01	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	2	M12
G02	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	2	M12
G03	Inert Ordnance	Mortar, 60MM, Training	MORTAR	4	M69
G03	Inert Ordnance	Mortar, 60MM, Training	MORTAR	5	M69
G03	Inert Ordnance	Mortar, 60MM, Training	MORTAR	5	M69
G03	Inert Ordnance	Mortar, 60MM, Training	MORTAR	6	M69
G03	Inert Ordnance	Mortar, 60MM, Training	MORTAR	5	M69
G03	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G03	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G03	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G03	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G03	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G03	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G03	Inert Ordnance	Mortar, 60MM, Training	MORTAR	5	M69
G03	Inert Ordnance	Mortar, 60MM, Training	MORTAR	5	M69
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	6	M69
G04	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G04	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G04	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G04	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	8	M69
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	6	M69
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	4	M69
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	4	M69
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	12	M69
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	12	M69
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	4	M69
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	3	M69

**Table 2-3
Inert Ordnance Recovered**

Grid	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	3	M69
G04	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	M22/23
G04	Inert Ordnance	Mortar, 60MM, Training	MORTAR	9	M69
G05	Inert Ordnance	Mortar, 60MM, Training	MORTAR	1	M69
G05	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22/23
G06	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G06	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G06	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G07	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	1	M22
G07	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
G08	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
G08	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22
G08	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22
G08	Inert Ordnance	Expended, Signal Ground	SIGNAL	2	M17A1
G09	Inert Ordnance	Grenade, Training	GRENADE	3	MK1A1
G11	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
G14	Inert Ordnance	Expended, Signal Ground	SIGNAL	8	M17A1
G14	Inert Ordnance	Expended, Signal Ground	SIGNAL	8	M17A1
G18	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G18	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	2	M12
G18	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G18	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G18	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	1	M12
G18	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	1	M12
G18	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	2	M12
G18	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22/23
G18	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	1	M22/23
G18	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	1	M22/23
G18	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22/23
G18	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	1	M22/23
G18	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	1	M22/23
G18	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G19	Inert Ordnance	Mortar, 60MM, Training	MORTAR	5	M69
G19	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	3	M22/23
G19	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	3	M22/23
G19	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G19	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G19	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G19	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G20	Inert Ordnance	Mortar, 60MM, Training	MORTAR	4	M69
G20	Inert Ordnance	Mortar, 60MM, Training	MORTAR	4	M69
G20	Inert Ordnance	Mortar, 60MM, Training	MORTAR	2	M69

**Table 2-3
Inert Ordnance Recovered**

	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
G20	Inert Ordnance	Mortar, 60MM, Training	MORTAR	3	M69
G20	Inert Ordnance	Mortar, 60MM, Training	MORTAR	5	M69
G20	Inert Ordnance	Mortar, 60MM, Training	MORTAR	2	M69
G20	Inert Ordnance	Mortar, 60MM, Training	MORTAR	6	M69
G20	Inert Ordnance	Mortar, 60MM, Training	MORTAR	6	M69
G21	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	M22/23
G21	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G21	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	6	M8
G21	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G21	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G21	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	0	M12
G21	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	M22/23
G21	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	6	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Grenade, WP	GRENADE	6	M15
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G22	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G22	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	6	M12
G22	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	4	M22/23
G23	Inert Ordnance	Firing Devices M5	FIRING DEVICE	0	M5
G23	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G24	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	10	M22
G24	Inert Ordnance	Grenade, Training	GRENADE	1	MK1A1
G24	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	5	M17A1
G24	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	5	M17A1
G24	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22/23
G24	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	3	M22
G24	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	8	M22
G24	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	9	M22
G26	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
G27	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	0	M17A1
G33	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G34	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	3	M12

**Table 2-3
Inert Ordnance Recovered**

	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
G34	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	3	M12
G36	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	MK22
G36	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	12	M12
G36	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	12	M12
G36	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	1	M17A1
G36	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	6	M8
G36	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G36	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G36	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	4	M12
G37	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G37	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G37	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G37	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G37	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	1	M12
G37	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	6	M12
G38	Inert Ordnance	Mortar, 60MM, Training	MORTAR	0	M69
G38	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G38	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G38	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	0	M12
G38	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G38	Inert Ordnance	Slap Flare, Illumination	SIGNAL	0	M125
G38	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G39	Inert Ordnance	Thermite Grenade	GRENADE	3	AN-M14
G39	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	3	M17A1
G39	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	8	M22
G41	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	5	M17A1
G42	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
G42	Inert Ordnance	Rifle Grenade, Flare	RIFLE GRENADE	0	M17A1
G43	Inert Ordnance	Expended, Signal Ground	SIGNAL	3	M17A1
G43	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	2	UNK
G48	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	M22
G49	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	8	M22
G49	Inert Ordnance	Fuze, Grenade, Practice	GRENADE	4	M10A3
G50	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G50	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G51	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G51	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G51	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	6	M8
G51	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	M22/23
G52	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G52	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G52	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8

**Table 2-3
Inert Ordnance Recovered**

	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
G52	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G52	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	0	M12
G52	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G52	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G52	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G53	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	10	M12
G54	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
G54	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	6	M8
G55	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
G55	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	3	M22
G60	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22
G60	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	3	M12
G60	Inert Ordnance	2.36" Rocket, Practice	ROCKET	0	M7
G60	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G60	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	2	M12
G61	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G62	Inert Ordnance	Grenade, Smoke	GRENADE	2	M18
G62	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G62	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G63	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G63	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G63	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	3	M12
G64	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	MK22
G64	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G64	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G64	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	4	M8
G64	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G64	Inert Ordnance	Mine Fuze	MINE, FUZE	0	M604
G65	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	0	UNK
G65	Inert Ordnance	Grenade, WP	GRENADE	3	M15
G65	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	1	M12
G65	Inert Ordnance	Igniter, WP, Practice	PYROTECHNIC	4	M23
G65	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22
G65	Inert Ordnance	2.36" Rocket, Practice	ROCKET	6	M7
G65	Inert Ordnance	Expended, Signal Ground	SIGNAL	1	M17A1
G65	Inert Ordnance	Expended, Signal Ground	SIGNAL	1	M17A1
G67	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	1	UNK
G67	Inert Ordnance	Grenade, Training	GRENADE	8	MK1A1
G67	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	4	M22
G67	Inert Ordnance	Grenade, Training	GRENADE	10	MK1A1
G67	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	8	M22
G67	Inert Ordnance	Expended, Signal Ground	SIGNAL	1	M17A1

**Table 2-3
Inert Ordnance Recovered**

	Description	Comments	Ordnance Type	Depth in Inches	Mk or Mod
G67	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	8	M22
G71	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G72	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G72	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	M22/23
G73	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G74	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G74	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G74	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	2	MK22
G75	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G75	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G75	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	0	M8
G75	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	5	M12
G75	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G75	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	0	M22/23
G75	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G76	Inert Ordnance	Expended, FS Aluminum Ball	BOMBLET	1	UNK
G76	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	M22
G76	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	4	M22
G76	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	1	M22
G80	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	M22
G80	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G80	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G80	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	5	M22
G80	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G80	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	1	M8
G81	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G81	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G81	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G81	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G81	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G81	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G81	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	2	M8
G81	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	2	M12
G81	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	3	M12
G81	Inert Ordnance	Mine, A/T, Practice	MINE, A/T	3	M12
G82	Inert Ordnance	Mine, A/P, Practice	MINE, A/P	3	M8
G85	Inert Ordnance	Rifle Grenade, Smoke	RIFLE GRENADE	6	M22
G85	Inert Ordnance	Rifle Grenade, Smoke 2 EA	RIFLE GRENADE	3	M22
G85	Inert Ordnance	Expended, Signal Ground	SIGNAL	7	M17A1
G86	Inert Ordnance	Expended, Signal Ground	SIGNAL	8	M17A1

1

2

1 2.2.4.5 OE Scrap. OE Scrap was collected throughout the M1.01 Parcel and M3
2 Miscellaneous Property. It was collected and weighed in a per grid method as required
3 by DID OE-030. The total amount of OE scrap recovered was 1998 pounds. A full list
4 of weights of OE Scrap by grid is provided in Appendix B. A large portion of the OE
5 Scrap recovered was mortar and rocket parts. Very little (less than 1 pound)
6 fragmentation from a HE type of item was found throughout the area. A photograph,
7 which shows a broad sample of OE Scrap located in the area, is included in Appendix C.
8

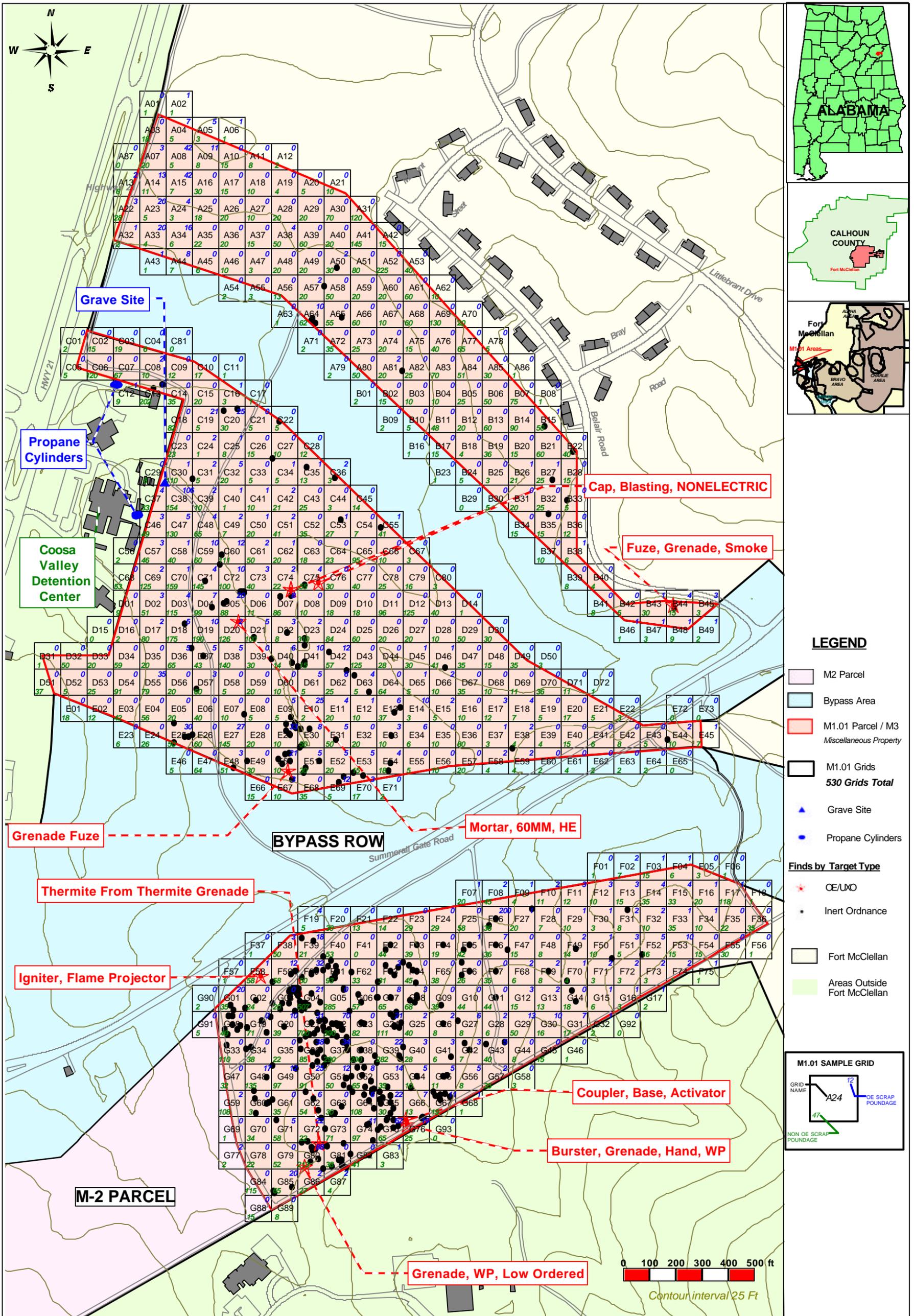
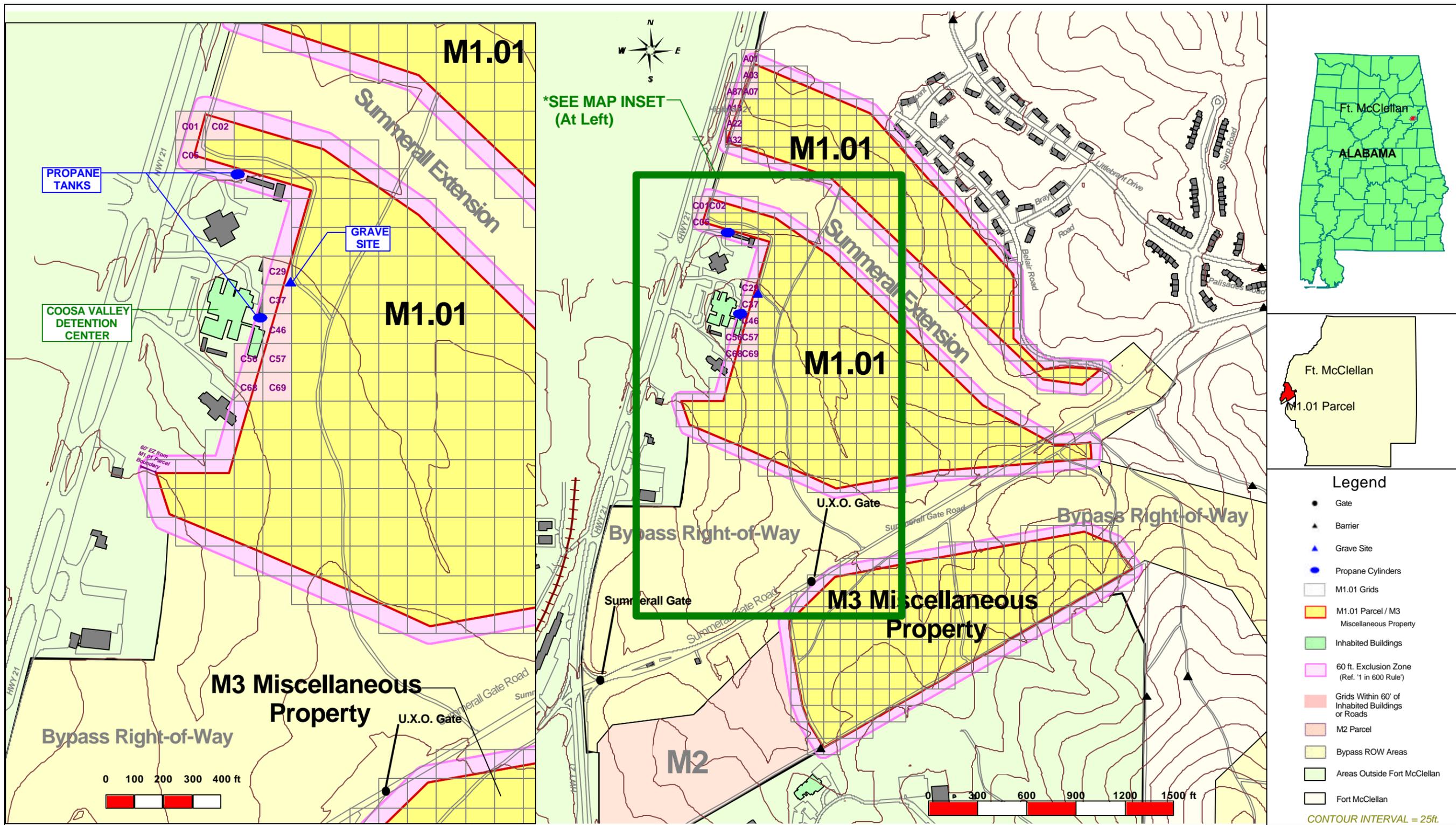


FIGURE 2-1
M1.01 Parcel Removal Report

Fort McClellan, Calhoun County
 Anniston, Alabama
 October 2002




FOSTER WHEELER ENVIRONMENTAL CORPORATION
 Fort McClellan, Alabama
 FM: WWM

U.S. Army Engineering and Support Center
 Huntsville, Alabama
 Contract DACA 87-99-D-0010
 Delivery Order 0015

FIGURE 2-2
Exclusion Zone and Inhabited Building Location
 M1.01 Parcel Removal Report

1 2.2.4.6 Non OE Scrap. The Non-OE scrap consisted of cultural metal debris including
2 multiple nails, horseshoes, wire, pipes, tools, sheet metal, cans, metal re-bar, and other
3 miscellaneous metal debris. In all, approximately 18,400 pounds of non-OE scrap were
4 recovered. A complete list by grid and pounds recovered of Non OE Scrap is included as
5 Appendix B, and a photograph showing a sample of Non OE Scrap is included in
6 Appendix C.

7
8 2.2.5 Table 2-4 shows the distribution of items by depth throughout the M1.01 Parcel and
9 M3 Miscellaneous Property. Eighty-One percent of the items recovered were within 6
10 inches of the ground surface, with the remaining 19 percent between 6 and 12 inches
11 below the surface.

12 **Table 2-4**
13 **Distribution by Depth of Recovered Items**
14

Items Recovered	Surface to 6 Inch Depth	6 to 12 Inch Depth
OE	100%	0%
UXO	87.5%	12.5%
Inert Ordnance	80%	20%

15
16 2.2.6. Demolition operations were conducted a total of 107 times in the M1.01 Parcel and
17 M3 Miscellaneous Property. A full listing of items by grid, which required demolition to
18 verify the presence or lack of energetic material, is provided in Appendix D.

19 **3.0 TESTS**

20 **3.1 QUALITY CONTROL**

21 3.1.1 In accordance with the M1.01 Parcel and M3 Miscellaneous Property work plan,
22 USA performed quality control (QC) on 100-percent of the grids that were intrusively
23 investigated. FWENC performed quality control on USA's QC Team. USA provided all
24 paperwork on grids, which passed their QC to FW, who in turn prepared the paperwork
25 for turn over to government QA. The process worked well with all grids eventually
26 passing government QA.

27
28 3.1.2 To provide assurance that USA's QC team was doing the QC checks to FWENC
29 and government standards, FWENC QC performed preparatory, initial and follow-up QC
30 surveillance on USA's QC teams. USA performed a judgmental 10% QC check on all
31 grids located within the M1.01 Parcel and M3 Miscellaneous Property. Judgmental
32 meaning the UXOQC based the chosen 10% sample area on their experience and
33 professional knowledge. USA QC used a Mk26 Ordnance Locator to perform their QC
34 check. Through this method USA's UXOQC teams returned 27 grids that had to be re-
35 investigated by the intrusive teams. Table 3-1 shows a list of grids, which failed USA
36 QC and what caused the failure. All grids were re-investigated and passed USA QC.
37

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**Table 3-1
Grids Which Failed USA QC**

QC Failures	Date	Pass Date	What was found after failure	Reason for Failure
A03	4/15/2002	4/22/2002	0 digs, no UXO or UXO Lookalike	Multiple anomalies not investigated
A30	6/3/2002	6/20/2002	0 digs, no UXO or UXO Lookalike	18" Wire and toy cap pistol on the surface
A35	5/13/2002	6/26/2002	0 digs, no UXO or UXO Lookalike	Multiple anomalies not investigated
B48	5/6/2002	5/13/2002	30 digs, no UXO or UXO Lookalike	Horseshoe found 2" deep
C13	4/22/2002	4/22/2002	0 digs, no UXO or UXO Lookalike	2 loaded M1 Garand clips, 8" deep, each with 5 .30 cal rounds
C62	7/9/2002	7/18/2002	2 digs, no UXO or UXO Lookalike	Multiple anomalies not investigated
D23	7/10/2002	7/18/2002	5 digs, no UXO or UXO Lookalike	Wire on the surface
D24	7/10/2002	7/18/2002	4 digs, no UXO or UXO Lookalike	Wire on the surface
D42	7/3/2002	7/18/2002	5 digs, no UXO or UXO Lookalike	Wire on the surface
D44	7/9/2002	7/18/2002	3 digs, no UXO or UXO Lookalike	Wire on the surface
D45	7/9/2002	7/10/2002	1 dig, no OE or OE Lookalike	Multiple anomalies not investigated
F26	6/3/2002	6/20/2002	50 digs, no UXO or UXO Lookalike	Horseshoe and 15" wire
F39	7/3/2002	7/8/2002	50 digs, 1 ea Smoke Rifle Grenade	Multiple anomalies not investigated
F59	4/29/02	5/28/02	1,212 digs, no UXO or UXO Lookalike	86 items found (mostly nails)
G06	6/17/2002	7/3/2002	100 digs, no UXO or UXO Lookalike	Multiple anomalies not investigated
G19	7/2/2002	7/8/2002	80 digs, no UXO or UXO Lookalike	Multiple anomalies not investigated
G20	7/2/2002	7/8/2002	60 digs, 2 ea 60mm Mortar, M69	Multiple anomalies not investigated
G23	7/3/2002	7/8/2002	115 digs, no UXO or UXO Lookalike	Multiple anomalies not investigated
G36	7/2/2002	7/8/2002	16 digs, 1 ea Smoke Rifle Grenade	Multiple anomalies not investigated
G38	6/17/2002	7/8/2002	305 digs, no UXO or UXO Lookalike	Multiple anomalies not investigated
G62	6/18/2002	7/8/2002	190 digs, 2 ea Prac AP Mine	Multiple anomalies not investigated
G64	6/20/2002	7/8/2002	340 digs, 1 ea Prac AP Mine and 1 ea Smoke Rifle Grenade	Multiple anomalies not investigated
G71	6/18/2002	7/8/2002	168 digs, 1 ea Prac AP Mine	Multiple anomalies not investigated
G72	6/18/2002	7/8/2002	263 digs, 1 ea Prac AP Mine and 1 ea Smoke Rifle Grenade	Multiple anomalies not investigated
G73	6/18/2002	7/9/2002	391 digs, no UXO or UXO Lookalike	Multiple anomalies not investigated
G74	6/24/2002	7/9/2002	359 digs, 1 ea Prac AP Mine and 1 ea Smoke Rifle Grenade	Multiple anomalies not investigated
G86	5/6/2002	5/28/2002	0 digs, no UXO or UXO Lookalike	2 ea 9" nails found 1" deep

1
2 3.1.3 Once USA QC teams performed QC and accepted a grid, the QC team filled out the
3 appropriate paperwork and forwarded it to FWENC QC for final disposition. At this
4 stage FWENC confirmed all data in the intrusive database, verified the paperwork was
5 correct from USA and prepared the package for delivery to government QA. Once QC
6 packages were complete, a QC surveillance was completed showing which grids were
7 ready for QA and the packages were given to the USAESCH Safety Specialist for
8 government QA. These surveillance data is provided in Appendix E.

9 **3.2 USAESCH QUALITY ASSURANCE**

10 3.2.1 The on-site USAESCH Safety Representative performed QA of each grid. This
11 consisted of surveying a portion of (i.e., approximately 10%) each grid with a Mk 26
12 Ordnance Locator. Each instrument received an equipment functional test prior to use
13 each day. The field test pit was located just outside of the FWENC Environmental/TF
14 compound. The standard USAESCH Quality Assurance Check is 10 percent of each grid
15 or 10 percent check of the overall project. In areas that had a high concentration of
16 ferrous contacts the on-site Safety Representative investigated all anomalies encountered
17 to ensure that no ordnance items were missed. During this entire process a total of 10
18 grids failed government QA. These grids were returned to FWENC for re-investigation.
19 At this point the grids were returned to USA Environmental and the entire process was
20 re-started for these grids until all grids passed government QA. There were no OE or
21 UXO items found during government QA checks. A complete list of grids and why they
22 did not pass QA acceptance is listed in Table 3-2. Anomalies investigated during the QA
23 were identified as OE Scrap, nails, several can lids, metallic rocks and small pieces of
24 non-OE metal. All of the grids, which failed initial government QA were re-surveyed by
25 the USAESCH on-site Safety Representative and passed the QA survey. Completed and
26 signed USAESCH Form 948's certifying QA acceptance of each grid are provided in
27 Appendix E.
28

**Table 3-2
USAESCH QA Failures**

QA Failures						
Sector	Grid	Submitted	Failed	Re-Submitted	Pass	Comments
F	F61	6/19/02	6/26/2002	7/11/2002	7/18/2002	Steel spike
E	E68	6/19/02	6/27/2002	7/11/2002	7/18/2002	OE Scrap (Rocket Motor)
G	G24	6/19/02	6/27/2002	7/9/2002	7/11/2002	24" Non OE Scrap
G	G25	6/19/02	6/27/2002	7/9/2002	7/11/2002	Large Metal Piece on surface
C	C70	7/3/02	7/8/2002	7/16/2002	7/18/2002	Non OE Scrap on surface
D	D19	7/3/02	7/8/2002	7/16/2002	7/18/2002	Non OE Scrap on surface
D	D36	6/26/02	7/8/2002	7/22/2002	7/22/2002	Non OE Scrap on surface
D	D38	7/3/02	7/8/2002	7/16/2002	7/18/2002	OE Scrap (Slap Flare)
C	C61	6/19/02	7/10/2002	7/16/2002	7/18/2002	Horseshoe on surface
G	G39	6/19/02	7/11/2002	7/22/2002	7/23/2002	OE Scrap (Grenade, Smoke)

1 **4.0 DOCUMENTATION**

2 **4.1 SITE QC DOCUMENTATION**

3 4.1.1 Site QC documentation, including the CEHNC Form 948 are included in Appendix
4 E.

5 **4.2 SITE SAFETY DOCUMENTATION**

6 4.2.1 Site safety records including incident reports, CEHNC Form 948's, and actions
7 taken are included in Appendix F.

8 **4.3 OE AND NON-OE SCRAP DISPOSAL**

9 4.3.1 Approximately 2000 pounds of OE Scrap and approximately 18,400 pounds of Non
10 OE scrap have been removed from the site. The OE Scrap was inspected and transported
11 to the FWENC scrap processing area where it will receive a final inspection to certify it
12 free of explosives prior to final disposal.

13 **4.4 DAILY SITE ACTIVITY REPORTS**

14 4.4.1 Daily activity reports are included in Appendix G.

15 **4.5 PHOTOGRAPHS**

16 4.5.1 Selective site photographs are included in Appendix C.

17 **4.6 FINANCIAL BREAKDOWN**

18 4.6.1 Costs to accomplish the M1.01 Parcel and M3 Miscellaneous Property removal
19 action was completed under a Firm Fixed Price (FFP) Task Order (TO) and do not
20 require a financial breakdown.

21 **5.0 SUMMARY**

22 5.1 An ordnance and explosives (OE) removal action was performed on the 97 acre
23 M1.01 Parcel and M3 Miscellaneous Property at Fort McClellan in preparation for
24 transfer of the property to the Anniston-Calhoun County Fort McClellan (FMC) Joint
25 Powers Authority (JPA) for commercial development. The fieldwork began February 25,
26 2002 and was completed on July 24, 2002. The work was performed by several small
27 businesses (Skipper Engineering, Brothers Land Clearing, JCC Environmental and USA
28 Environmental, Inc.) under FWENC supervision. All intrusive operations were carried
29 out by USA Environmental, Inc. in accordance with the approved work plan. The action
30 completed the removal action alternative of *Clearance to one-foot*, as approved in the
31 final Action Memorandum for the M1.01 Parcel.

32
33 5.2 The work was completed in sequential stages of site preparation (boundary survey,
34 grid layout, and brush clearing) and OE removal. Intrusive investigation of anomalies

1 resulted in the excavation of 49 OE/UXO items (Table 2-2), 406 Inert Ordnance items
2 (Table 2-3), OE Scrap, and Non-OE scrap (cultural metal). OE/OE-related materials (OE,
3 UXO, Inert Ordnance and OE Scrap) were recovered at less than 1-percent of the
4 anomalies investigated, while non-OE related materials (metallic scrap) were collected at
5 over 99-percent of the anomalies investigated.
6

7 5.3 The M1.01 Parcel EE/CA states that the best alternative for this site was *Clearance to*
8 *One Foot Depth*. Based on archival records and the results of the previous site
9 investigations, the evidence indicated that the area was primarily used for training
10 activities. Items found in the previous investigations were training items of minimal
11 penetration, generally found at or near the ground surface. The Removal Action findings
12 in the M 1.01 and M3 parcels include the following: a) 8 UXO items were discovered; b)
13 a high number of inert, practice rounds (60mm and 81mm mortar, 2.36-inch rocket) were
14 discovered in a relatively defined area indicating the presence of a target area for training
15 activities; and c) fragments from high explosive rounds (mortars and possibly some
16 rocket fragments) indicate a limited number of live rounds were fired into the practice
17 site. The most significant discovery was a single 60mm HE Mortar. The single 60mm
18 HE mortar was discovered at the extreme northern edge of the impact area (Grid D-20),
19 1-inch below ground surface, lying horizontally, facing east, and pointing into the base of
20 a tree. The field data indicates that the round had been fuzed and fired. This location and
21 position indicate a significantly high probability that the round was placed in this location
22 and not fired into this point. This OE item is classified as “Unique and Anomalous” with
23 respect to being fired into the site.
24

25 5.4 The M 1.01 Parcel and M3 Miscellaneous Properties have been cleared to the 1.0-foot
26 depth specified in the Action Memorandum. It is not possible to guarantee complete and
27 total removal of all OE items. Therefore, some limited residual risk may still remain
28 within the boundaries of the M1.01 Parcel and M3 Miscellaneous Property.

29 **6.0 CONCLUSIONS**

30 6.1 The selected alternative from the M1.01 EE/CA was “Clearance to One-Foot Depth”
31 based on evidence gathered during previous investigations/removal actions. That
32 evidence was as follows:
33

34 6.1.1 At the M2 Parcel all OE and OE Scrap, except for one item, were found at a depth
35 of 6 or less inches. One item was recorded as found at a depth of 30 inches, however, the
36 item (an expended rifle grenade) actually was found on the surface at the bottom of a 30-
37 inch deep, 3 foot diameter open hole. The only items found below 12 inches were non-
38 OE scrap (cultural metallic debris).
39

40 6.1.2 During the Eastern Bypass EE/CA sampling, all OE and OE Scrap found were at
41 depths of 12 or less inches. The only items below 12 inches were Non OE scrap (cultural
42 metallic debris); and
43

44 6.1.3 Although depth data was not recorded for the OE and OE Scrap found during the
45 removal action in the Summerall Gate Road area of the Eastern Bypass one-foot

1 clearance, the types of items recovered were consistent with findings in the M2 parcel
2 and in the EBP EE/CA sampling areas. Because the items were similar, it can be
3 reasonably assumed that the depths were similar as well. Specifically:

4
5 *6.1.3.1* Within the Eastern Bypass (EBP) Right-of-Way (ROW) for the access road
6 through Summerall Gate, 21 practice 60mm mortars (M-69) were found in the EBP right-
7 of-way adjoining the M1.01 and M3 areas.

8
9 *6.1.3.2* No OE/UXO was found in the Summerall Gate Road area of the EBP.

10
11 6.2 The findings of this removal action indicate that within the M1.01 Parcel and M3
12 Miscellaneous Property there exists an area that has the appearance of having been a
13 mortar practice range at one time. There is evidence of large amounts of practice
14 ordnance that indicates the area was a practice range. However, by the discovery of one
15 HE filled mortar and various types of fragmentation, it is evident that the area was used
16 for some firing of live munitions as well. Based on the small percentage of fragmentation
17 in the OE scrap and the discovery of only one HE filled mortar it is concluded that a
18 limited number of live rounds were fired. This area with the higher density of
19 anomalies/items, contained a large number of inert training mortars, practice rockets, and
20 fragmentation from high explosive ordnance (mostly mortar and rocket). The following
21 factors mitigate the potential presence of any additional OE/UXO being present below
22 one-foot of depth in the M1.01/M3 parcels.

23
24 6.2.1 The single 60mm HE mortar was placed and not fired into the location where
25 found. This round has been classified as “Unique and Anomalous” with respect to being
26 fired into the target.

27
28 6.2.2 No other mortar related, or other high explosive related, OE/UXO were found in the
29 M1.01/M3 parcels and the adjoining EBP, only OE scrap.

30
31 6.2.3 Within the M 1.01 Parcel and M3 Miscellaneous Properties adjoining the EBP
32 ROW in the practice range, 38 training (M-69) 60 mm and 3 training (TP-M-43) 81mm
33 rounds were found from 0 to 12 inches. This is similar to the data from the EBP section
34 stated above.

35
36 6.2.4 In comparison, the findings from the other mortar targets within the remainder of
37 the EBP OE removal project (280 acres clearance to depth) indicate a total of 339 mortars
38 removed (60mm - 312 each M69 training and 47 each M49 HE and one (1) 81mm
39 M43A1, HE). Of the 48 HE mortar rounds in these areas, 43 were found at less than 12-
40 inches depth. The remaining 5 were found between 13 and 18-inches in depth.

41
42 6.2.5 Based on the recovered mortar rounds, the frequency of occurrence for UXO/OE
43 (live) mortar rounds is about 12% across the mortar ranges (total of 404 finds versus 49
44 HE rounds). The frequency of occurrence at the M 1.01 Parcel and M3 Miscellaneous
45 Properties and adjoining EBP parcel is less than 2 % (total of 55 finds versus 1 HE round
46 [anomalous]).

1
2 6.2.6 The ASR shows a Compass Course (OA76) in the area of parcels M 1.01 and M3.
3 Activities associated with the compass course do not indicate a training/practice range,
4 however, the ASR stated that there was practice ordnance items (Mk2 practice grenades,
5 60mm practice mortar rounds, and 81mm practice mortar rounds) and illumination rifle
6 grenades found in the area, presumably from a different training use of the area prior to it
7 becoming a compass course. A recent review of historical photos (1937 through 1944)
8 indicates that the mortar practice area was an area of open fields during the late 1930's
9 and early WW II era. Summerall Gate Road was an unpaved trail until 1943-44. The
10 1944 aerial photos show significant construction on Summerall Gate Road and extensive
11 surface disturbance in the most prominent areas of the impact zone, as if the area was
12 being used for construction borrow material and/or disposal of excavation from road
13 construction. This would have required normal range clearance activities for range
14 closure in areas for construction and /or other future designated training activities. There
15 is a high probability this practice range was closed during mid-WW II (1943-44) when
16 Summerall Gate Road was paved and access to the installation was provided through this
17 area.

18
19 6.2.7 Two grids in the M1.01/M3 parcel area, C-38 and F-26, on the edges of the mortar
20 practice area, had unusual concentrations of OE scrap. C-38 contained 105 pounds and
21 F-26 had 200 pounds of OE scrap. These high concentrations do not fit any normal
22 pattern of fragment distribution expected on/around a target zone when compared to the
23 remainder of the OE scrap located across the site. It is noted that each of these
24 occurrences is near a road or trail. These concentrations appear to be the results of range
25 clearance collections and further supports the probability that the range was closed and
26 cleared because of changing land-use in WW II.

27 **7.0 RECOMMENDATIONS**

28 7.1 Based on the evidence resulting from this removal action, the Army concludes that
29 the objectives of the removal action have been met. No Further Action is required for
30 ordnance removal on these parcels. The inclusion of the standard deed notice for Fort
31 McClellan's transfer of the property is required.

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