Final
Site Specific Final Report
Eastern Bypass "Y" Area Junction
Fort McClellan, Alabama

Prepared for:

Contracting Agency:
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Prepared by:

Foster Wheeler Environmental Corporation
Huntsville, Alabama

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CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Arthur B. Holcomb P.E.
Vice President

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ACRONYMS AND ABBREVIATIONS

AEDA	Ammunition, Explosives, and Dangerous Articles
ALDOT	Alabama Department of Transportation
AOC	Area of Concern
APC – T	Armor Piercing Capped – Tracer
AP – T	Armor Piercing - Tracer
ASR	Archives Search Report
CLPS	Constellation Laser Positioning System
CWM	Chemical Warfare Munitions
DDESB	Department of Defense Explosive Safety Board
EA	Environmental Assessment
EBP	Eastern Bypass
EE/CA	Engineering Evaluation/Cost Analysis
EPA	Environmental Protection Agency
ESS	Explosives Safety Submission
FWENC	Foster Wheeler Environmental Corporation
GPO	Geophysical Prove Out
HE	High Explosive
IAW	in accordance with
ILLUM	Illumination
mm	millimeter
msl	mean sea level
NAD	North American Datum
OA	Ordnance Area
OE	Ordnance and Explosives
OES	Ordnance & Explosive Site
ORNL	Oak Ridge National Laboratory
PCMCIA	Personal Computer Memory Card International Association
PDA	Personal Data Assistant
QA	Quality Assurance
QC	Quality Control
RFP	Request for Proposal
RTS	Robotic Total Station
SOW	Scope of Work
SSWP	Site Specific Work Plan
SWWP	Site Wide Work Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TDEM	Time Domain Electromagnetic
TP – T	Target Practice - Tracer
USATCES	United States Army Technical Center for Explosives Safety
USAESCH	U. S. Army Engineering and Support Center, Huntsville
UXO	Unexploded Ordnance
UXOQC	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Site Safety and Health Officer
WP	White Phosphorous

1.0 INTRODUCTION

1.0.1 This document will discuss the objectives, procedures and results o fhte munitions response performed by Foster Wheeler Environmental Corporation (FWENC) at Fort McClellan, Alabama between April 2003 and November 2003. During this period, the objective of conducting a removal action was successfully accomplished. The Eastern Bypass (EBP) "Y" Area Junction is approximately 60 acres. This document will discuss the operational procedures and results for this area.

1.1 OBJECTIVE AND SCOPE

1.1.1 The objective of this task order was to perform a Clearance to Depth within the area contiguous to the northern boundary of the EBP and Summerall Gate Road, known as the EBP "Y" Area Junction. The potential Ordnance and Explosives (OE) that were expected are listed in Table 1-1, which was published in the EBP Environmental Evaluation/Cost Analysis (EE/CA). Figure 4-1 shows the location of EBP "Y" Area Junction within the former Fort McClellan.

TABLE 1-1
POTENTIAL OE WITHIN THE EASTERN BYPASS

ITEM	SIZE	TYPE	MODEL	Diameter (mm)	Required Detection Depth (inches)
Rocket, 2.36", Heat	2.36"	HEAT	M6	60	26.1
Rocket, 2.36", Practice	2.36"	PRACTICE	M7	60	26.1
Rocket, 2.36", WP	2.36"	WP	M10	60	26.1
Rocket, 2.36", Motor	2.36"	EXPENDED	N/A	60	26.1
Rocket 2.36", HEAT, Warhead	2.36"	HEAT	N/A	60	26.1
Rocket 2.36", Practice, Warhead	2.36"	PRACTICE	N/A	60	26.1
Mortar, 3" Stokes	3"	PRACTICE	MK1	76.2	33.1
Mortar, 60mm, HE	60mm	HE	M49/A2	60	26.1
Mortar, 60mm, Training	60mm	TRAINING	M69	60	26.1
Mortar, 60mm, Practice	60mm	PRACTICE	M50A2	60	26.1
Mortar, 60mm, Illuminating	60mm	ILLUM	M83/A1	60	26.1
Mortar, 60mm, Smoke,WP	60mm	SMOKE WP	M30,M57,M302	60	26.1
Mortar, 81mm, HE	81mm	HE	M43,M56	81	35.2
Mortar, 81mm, Smoke, WP	81mm	SMOKE WP	M57	81	35.2
Mortar, 81mm, Smoke, FS	81mm	SMOKE FS	M57	81	35.2
Mortar, 81mm, Illuminating	81mm	ILLUM	M301	81	35.2
Mortar, 81mm, Practice	81mm	PRACTICE	M43,M56	81	35.2
Mortar, 81mm, Training	81mm	TRAINING	M68	81	35.2
Mortar, 4.2", HE	4.2"	HE	M329	106.68	46.4
Mortar, 4.2", Illuminating	4.2"	ILLUM	M335	106.68	46.4
Mortar, 4.2", Smoke, WP	4.2"	SMOKE	M328	106.68	46.4
Projectile, 37mm, HE	37mm	HE	MKII	37	16.1
Projectile, 37mm, HE-T	37mm	HE	M54	37	16.1
Projectile, 37mm, LE	37mm	LE	MKI	37	16.1
Projectile, 37mm, TP-T	37mm	PRACTICE	M51A2	37	16.1
Projectile, 37mm, AP-T	37mm	AP	M80	37	16.1
Projectile, 37mm, APC-T	37mm	AP	M51	37	16.1
Grenade, Hand, Fragmentation	2.25"	HE	MKII	57.15	24.8
Grenade, Hand, Fragmentation	2.25"	HE	M26,M26A1	57.15	24.8

TABLE 1-1
POTENTIAL OE WITHIN THE EASTERN BYPASS

ITEM	SIZE	TYPE	MODEL	Diameter (mm)	Required Detection Depth (inches)
Grenade, Hand, Practice	2.25"	PRACTICE	M30,M62	57.15	24.8
Grenade, Hand, Training	2.25"	TRAINING	MK1A1	57.15	24.8
Grenade, Hand, Smoke	2.5"	SMOKE	M18	63.5	27.6
Grenade, Hand, WP	2.38"	SMOKE WP	M34	60.45	26.2
Grenade, Rifle, Heat	2.25"	HEAT	M9A1	57.15	24.8
Grenade, Rifle, WP	2"	SMOKE WP	M19A1	50.8	22.1
Grenade, Rifle, Smoke	1.8"	SCREENING	M22	45.72	19.8
Grenade, Rifle, Smoke	1.8	STREAMER	M23	45.72	19.8
Grenade, Rifle, Practice	2"	PRACTICE	M11A3	50.8	22.1
Mine, AT	334mm	PRACTICE	M12	334	145.5
Mine, AP	64mm	PRACTICE	M8/A1	64	27.8
Signal, Illumination	1.67"	Ground	Note 1	42.42	18.4
Firing Device	N/A	Boobytrap	M5	N/A	N/A
Signal, Illumination	1.67"	Ground		42.42	18.4
Flare, Trip Expended	2"	Illumination		50.8	22.1

1.1.2 The Scope of Work associated with this Task Order included:

Task 1 – Not Used

Task 2 – Not Used

Task 3 –Geophysical Prove Out

Task 4 – Prepare Revision to the work plan

Task 5 –Perform Location Surveys and Mapping

Task 6 – Establish and Management of GIS

Task 7 – Perform Surface Clearance, Brush Clearance, and Vegetation Removal

Task 8 – Geophysical Investigation and Evaluation

Task 9 – Anomaly Reacquisition and Marking

Task 10 – Perform UXO/OE Clearance

Task 11 – Inspection and Final Disposition of AEDA/Range Residue

Task 12 – Not Used

Task 13 – Prepare Site-Specific Interim Removal Report

Task 14 –Meetings

Task 15 – Provide Support for Government Quality Assurance

1.2 SUBMITTALS, APPROVALS, AND AUTHORIZATION

1.2.1 The US Army Corps of Engineers, St. Louis District, compiled an Archives Search Report (ASR) in 1996. The ASR was prepared by reviewing available records and reports documenting the history of Fort McClellan. Historical information pertaining to site operations, including a listing of site investigations conducted before 1996, is contained within the ASR. In 1998, the U.S. Army Corps of Engineers, St. Louis District, revised the ASR to include suspect Chemical Warfare Munitions (CWM) areas. The ASR was revised in July 1999 and further revised to its current form in September 2001.

1.2.2 The Final ASR presented the findings of the site inspection and evaluation of potential OE occurrence at the former Fort McClellan. Numerous areas suspected of being used for conventional, chemical/biological warfare training or chemical/biological warfare material storage were inspected. Six conventional ranges were found to intersect with EBP including Ordnance Area (OA-53) 60mm Mortar Range, (OA-54) Washington Tank Range, (OA-01) Rocket Range (2.36"), (OA-02) Machine Gun Range and (OA-52) Combat Range #2 (2.36" Rockets, Machine Gun and Rifle Grenade Ranges). One suspected biological training area, Area of Concern (AOC-4) T-4 Biological Warfare Area intersects with EBP.

1.2.3 Barge, Waggoner, Sumner and Cannon, Inc. conducted an Environmental Assessment (EA) for the Alabama Department of Transportation (ALDOT) in August 1998. This document identified the economic and environmental impacts of the proposed eastern bypass and evaluated right-of-way alternatives for the bypass. A Finding of No Significant Impact was finalized in December 1999. Threatened and endangered species were not anticipated within the Eastern Bypass "Y" Area Junction. There were no wetlands or endangered species within the EBP "Y" Area Junction.

1.2.4 Oak Ridge National Laboratory (ORNL) prepared a Historical Aerial Photography Investigation of the Bypass Study Area (1998) for the US Army Corps of Engineers, Engineering and Support Center, Huntsville (USAESCH). It provided an analysis of land usage over a span of more than 50 years and potential areas of OE occurrence.

1.2.5 Environmental Science and Engineering completed an Environmental Baseline Survey of Fort McClellan for the U.S. Army Environmental Center, Aberdeen, Maryland, in 1998. The document summarized the current environmental condition of Fort McClellan property.

1.2.6 Zapata Engineering conducted a non-intrusive ground reconnaissance for the EBP EE/CA in August 1998. The final trip report is located in Appendix B of the EBP EE/CA (April 2000). The purpose of the ground reconnaissance was to; A.) resolve anomalies identified during the historical aerial photography investigation (ORNL, 1998) and B.) visually identify areas of possible OE occurrence, which may not have been previously characterized within or adjacent to the proposed EBP right-of-way. Several areas revealed evidence of possible training activities to include OE training items and foxholes and were identified as potential sample locations.

1.2.7 In March of 1999, Zapata Engineering conducted a geophysical survey of six areas encompassing 8.56 acres in and adjacent to the EBP. Several subsurface anomalies were identified as potential OE. The complete geophysical report is located in Appendix B of the EBP EE/CA (April 2000).

1.2.8 In May of 1999, Zapata Engineering conducted OE intrusive sampling. However, not all of the 8.56 acres previously surveyed were sampled. Sampling was conducted in grids spanning an area of approximately 2.41 acres, however, several of the grids were not completely sampled. Sampling in a grid was terminated when one or more OE or OE scrap items were found. Intrusive investigations revealed material potentially presenting an explosive hazard (MPPEH). The items discovered during this investigation included 60mm practice mortars, 2.36-inch practice rockets and expended smoke grenades. One pyrotechnic item classified as OE, a mine activator, was recovered and detonated on-site. Evidence of small arms training, expended .30 caliber cartridge cases, were also discovered (Zapata Engineering, April 2000).

1.2.9 EOD Technologies, Inc. performed a one-foot clearance over OES1 and a majority of OES2 of the EBP to support the follow on removal action.

1.2.10 In December 2002, FWENC received a Request for Proposal (RFP) and a Scope of Work (SOW) for the initial EBP "Y" Area Junction OE Removal. A proposal was submitted and negotiations were conducted in February 2003. A Notice to Proceed with Tasks 4, 6 and 7 was issued on March 4, 2003

1.2.11 The Notice to Proceed with fieldwork was received on March 27, 2003

1.2.12 The Draft Conventional Explosives Safety Submission (ESS) was submitted and reviewed by the USAESCH and the Fort McClellan Transition Force. After initial review and revision, the Draft-Final Conventional Explosives Safety Submission was submitted and reviewed by the United States Army Technical Center for Explosives Safety (USATCES). The Final version was then reviewed by the Department of Defense Explosives Safety Board (DDESB). A memorandum was issued by DDESB approving the ESS on February 28, 2003.

1.3 SITE LOCATION

1.3.1 Fort McClellan is located northeast of the City of Anniston in Calhoun County, Alabama. The areas known as Weaver and Blue Mountain are to the West, with the City of Jacksonville to the North and the Talladega Forest to the East of the post. Figure 4-1 shows the location of the EBP "Y" Area Junction Site. The EBP "Y" Area Junction projects northeast of State Highway 21 and south of Summerall Gate Road on the western side of Fort McClellan. The topographic gradient within the munitions response area (MRA) generally remains unchanged throughout the site. Local relief on Fort McClellan is in excess of 1,320 feet. The lower elevations (700 feet above mean sea level [msl]) occur along Cane Creek, near Baltzell Gate Road, while the maximum elevations (2,063 feet above msl) occur on Choccolocco Mountain, which traverses the area in a north/south direction, with the steep easterly slopes grading abruptly into Choccolocco Valley. The western slopes are more continuous, with the southern extension maintaining elevations up to 900 feet above msl near the western reservation

boundary. The northern extension decreases in elevation in the vicinity of Reilly Airfield. The central portion of Fort McClellan is characterized by flat to gently sloping land.

1.3.2 The EBP "Y" Area Junction is located in the western portion of Fort McClellan and traverses gentle rolling hills in an east-west direction. Elevation is approximately 700 above msl.

2.0 DISCUSSION

2.0.1 The EBP "Y" Area Junction covers approximately 60 acres and was divided into 218 full (100 foot x 100 foot) grids and 104 partial grids for a total of 322 grids. Partial grids ranged in size from very small (less than 100 square feet) to almost full size. Three grids (317, 318 and 319) were cleared during the Mechanical Removal Action performed as part of the EBP Removal Action and the data from these three grids is not included within this document. This document will address on 319 grids.

2.1 SITE PREPARATION ACTIVITIES

2.1.1 Location Surveys

2.1.1.1 Boundary and Grid Setout. Boundary and Grid Setout were conducted by a sub-contracted Registered Professional Land Surveyor (Skipper Engineering Inc., Rainbow City, Alabama, License Number 20141). The grid system consisted of 322 full and partial grids. Each grid corner was marked with an orange painted wooden stake marked with the grid designation on the southwest corner stake. The scope of work specified that each corner of each grid be located in State Plane coordinates. The site location is shown on Figure 4-1, while individual grids can be seen on Figures 4-2 through 4-4.

2.1.1.2 All work was carried out in accordance with the requirements of the "Minimum Technical Standards for the Practice of Land Surveying in the State of Alabama". The boundary was set out as detailed in the figures in the Final Site Specific Work Plan (SSWP). All coordinates were based on the State Plane Grid System to the North American Datum of 1983 (NAD83). FWENC UXO Technicians provided anomaly avoidance for each survey crew in order to ensure that each survey location was clear of sub-surface anomalies prior to survey markers and grid corner stakes being placed in the ground.

2.1.2 Brush Clearance

2.1.2.1 Envirogrind, LLC was sub-contracted by FWENC to carry out brush clearance in the EBP "Y" Area Junction. Their scope of work specified that all vegetation from 4 inches above the ground to a height of approximately 7 feet would be cleared and no trees larger than 4 inches in diameter were to be removed. Brush clearance was necessary to prepare the site for subsequent phases of work including the geophysical survey, reacquisition, and intrusive OE removal activities. The work was carried out between April and June 2003 while working up to five days per week. The contractor used several effective means to remove and reduce the vegetation including chainsaws and a Franklin 3650 with Fecon Mower. The Franklin 3650 reduced the vegetation to mulch as it mowed.

2.1.3 Geophysical Mapping

2.1.3.1 FWENC performed the geophysical mapping of 319 grids within the EBP "Y" Area Junction. All data acquisition included the processing and interpretation of that data by a qualified geophysicist. Geophysical data was collected utilizing a Time Domain Electromagnetic (TDEM) method. The EM61, manufactured by Geonics LTD, was used in conjunction with the Constellation Laser Positioning System (CLPS). Any areas that could not be geophysically mapped due to terrain were instead cleared using a mag a dig protocol utilizing a handheld geophysical instrument (Vallon VMX2).

2.1.3.2 The CLPS was used to provide location data for the EM-61 within the grids. The CLPS consists of four laser transmitters and a receiver connected to a Personal Data Assistant (PDA). The four transmitters are set upon surveyor's tripods within or just outside each grid and consist of eye safe lasers within a housing spinning at approximately 3200 revolutions per minute. Two receivers are located above the EM-61 coil that enables the PDA software to calculate the position of the center of the coil relative to the grid corners. The system must be set up on each individual grid due to the inherent range constraints of the lasers and cannot accommodate extreme changes in elevation within grids. The system was selected because of its ability to provide accurate position data in wooded areas.

2.1.3.3 Two FWENC teams trained in geophysical mapping, consisting of three personnel each, carried out the geophysical mapping operation within the EBP "Y" Area Junction.

2.1.3.4 Prior to starting geophysical mapping in the EBP "Y" Area Junction, a Geophysical Prove Out (GPO) was performed. This GPO was used as a tool to validate the collection of data from both equipment and personnel involved. Anytime personnel or major equipment changed, the team involved repeated the GPO process. Complete details of the GPO process and outcome are available in the GPO report which was completed in August 2003 and is included in Appendix B. Information on team or equipment changes is available in Appendix B as well.

2.1.3.5 The geophysical survey of the 319 EBP "Y" Area Junction grids was carried out by three man teams utilizing the CLPS along with the EM61 one-meter coil. All data was collected on personal computer memory card international association (PCMCIA) cards and submitted to the on-site geophysicist.

2.1.3.6 All data was processed and analyzed in accordance with (IAW) the general processing/analysis sequence portrayed in the General Site Wide Work Plan. Target selection criteria were based on the smallest OE objective of the site, which was the 37mm projectile. The selection of a target was based on the relationships between the signal intensities of Channel 1, and 2, data acquisition path geometry, surrounding background characteristics, and the area shape of the potential target. In general, signal intensity peaks separated by more than a 1-meter distance were selected as individual targets unless the characteristics of the target (shape, signal intensity, and horizontal gradient) indicated a singular target.

2.1.3.7 Overall, the final discrimination criteria used were conservative in the beginning and refined based on intrusive results as the project progressed. For this specific interpretation the definition of conservative can be summarized as follows:

If there was uncertainty in the application of the discrimination criteria (reviewed below) due to one or more of the data characteristics (e.g., signal intensity, acquisition path geometry, anomaly shape, influence of surrounding anomalies) being inconclusive, the target was selected for excavation.

2.1.3.8 While it is not possible in all cases to exactly quantify the discrimination criteria due to the complex interrelationships between the data characteristics (signal intensity, acquisition path geometry, anomaly shape, influence of surrounding anomalies and the influence of the site characteristics (topography, vegetation, cultural features), the following general guidelines were implemented during the discrimination process to select targets for excavation:

- In general Channel 2 signal intensity > 3 m V above the local background
- Anomaly apparent on minimum of two adjacent data acquisition lines (the determination of "apparent" is a signal intensity at anomaly edges exceeding ~ 2mV above the local background average). If apparent on more than two data acquisition lines then Channel 2 signal intensity criteria is ~ 5 mV. If apparent on more than three data acquisition lines then Channel 2 intensity is ~ 3 mV.
- Ration between minor and major axis of anomaly from ~ 0.5-1.5; edges of anomaly exhibit defined trend(s) and lack of a symmetrical shape.
- Minimum interference from adjacent anomalies. Where interference from other anomalies is present (e.g., debris area), Channel 2 signal intensity decreased.
- At the time the grid was discriminated, previous excavation information from areas and anomalies exhibiting similar data characteristics was used to assist in the discrimination process.

2.1.3.9 When comparing anomaly characteristics and excavation results, the signal intensity data should be viewed with the acquisition line path as a color-coded an/or contoured image at an appropriate color/contour interval (not greater than 2 mV). The signal intensity values for Channels 1 and 2 in some cases represent filtered values, and caution should be used when performing analysis (e.g., comparison with excavation information) with these filtered data values.

2.1.3.10 Processed EM61 data was generated on color-coded maps to show the strength and locations of anomalies selected for reacquisition. The anomaly maps are included in Appendix D.

2.1.4 Planned Performance Feedback Procedures

2.1.4.1 A quality control process focus using planned performance feedback techniques was built into the Geophysical Investigation within the EBP "Y" Area Junction as a precursor to the Acceptance Sampling. This process quality technique was designed to ensure that the quality level of the work executed in each grid was of a sufficiently high standard to provide the best possible chance of passing the rigorous Acceptance Sampling procedures once the Intrusive Investigation was completed. The process quality technique used to achieve this was a "false negative" feedback procedure. A false negative occurs when a geophysical anomaly is detected but, based on its characteristics, is designated as a "no dig" (i.e., it is not thought to be an ordnance item) even though it is actually an ordnance item. As implied, a false negative can only be identified by digging the anomaly as part of a QC process. The technique involved a minimum of 10 percent of the no dig anomalies in each grid being randomly re-designated as "dig" anomalies. These performance feedback dig anomalies are investigated to determine an estimate of how many of the unexcavated anomalies, if any, are actually ordnance items. The number of false negatives was constantly monitored during the course of the project and that information was relayed to the interpreting geophysicists. A total of 585 "No Digs" were changed to "Dig" anomalies. Of these 585anomalies, only 16 would have caused a QC/Quality Assurance (QA) failure. This is a 2.7% False Negative rate. A complete list of the anomalies originally selected as "No Dig" that were randomly selected as QC "digs" is located in Appendix B and are discussed in more detail in section 2.4.

2.1.4.2 When a "no dig" was found to contain a item larger than the projects failure criteria limits, an investigation was performed on the selection process. The anomaly was re-evaluated based on size, shape and magnitude. If it was determined that the parameters differed from the ones established by the interpreting geophysicist (defining the "dig" threshold limit) then adjustments were made to this selection process. It should be noted that adjustments to the selection process also occurred when items of smaller size (bullets, small pieces of metal, etc.) were found under "dig" anomalies.

2.1.4.3 A second method, which was used to validate the quality of the data, was to run the geophysical equipment through a known test plot to perform a validation test. This was conducted by FWENC as a GPO to ensure the EM-61, positioning system and personnel were working as expected. This validation was performed prior to beginning the geophysical survey and anytime personnel or major equipment changes occurred. GPO information is available in Appendix B.

2.2 ANOMALY REACQUISITION

2.2.1 A two-man FWENC team used a Vulcan Spatial Measurement System to carry out anomaly location reacquisition throughout the EBP "Y" Area Junction. The procedure for reacquiring the location of the anomalies was to obtain the State Plane coordinates of the anomalies in question from the geophysically interpreted dig sheets and place yellow flags in the ground at the designated locations. The yellow surveyor's flags had the grid and anomaly number marked on them with indelible pen. An anomaly

was defined as a location on the ground with a 50-centimeter radius that was likely to contain an item or items of interest (OE) rather than a single target. In the heavily contaminated areas there were multiple anomalies of different sizes and depths ranging from the surface to several feet at each flag location. For this reason, although there were 5481 individual anomaly locations marked, there were a much higher number of individual items excavated. The numbers of individual OE and OE look-a-like (Inert) items were accurately recorded. Anomalies that contained multiple OE scrap or Non OE Scrap items were counted as one anomaly regardless of the number of items recovered from that location and weighed. The amount of OE Scrap and Non-OE Scrap recovered by grid is located in Appendix C.

2.2.2 Vulcan Spatial Measurement System. The Vulcan Spatial Measurement System was used to reacquire anomaly locations within the grids. The Vulcan Spatial Measurement System consists of two transmitters and a receiver staff connected to a PDA. The two transmitters are set up on surveyor's tripods within or just outside each grid and consist of eye safe lasers within a housing spinning at approximately 3200 rpm. There are two receivers at the top of the staff that enables the PDA software to calculate the position of the bottom tip of the staff relative to the grid corners. The co-ordinates of the anomalies are entered electronically into the PDA and the direction and distance to the correct location is displayed on the screen. This system is most effective on relatively flat topography with large anomaly densities. The system must be set up on each individual grid due to the inherent range constraints of the lasers and cannot accommodate extreme changes in elevation within grids.

2.3 OE INTRUSIVE OPERATIONS

2.3.1 Intrusive operations within the original EBP "Y" Area Junction commenced on June 13, 2003 and were completed over a eighteen-week period, ending on October 21, 2003. A total of 5,481 anomaly locations were excavated during the investigation. It was evident from the amount of metallic debris recovered that the EBP "Y" Area Junction had a significant historical use as a small arms range, training area and trash disposal area. UXO unearthed by field teams were disposed of by detonation and were removed throughout the area. Field teams also located items in the three other categories: Inert, OE Scrap and Non OE Scrap. These were recovered and removed throughout the area. Figures 4-2 through 4-4 show the location of OE, OE Scrap and Non-OE Scrap located within the grids of the EBP "Y" Area Junction. Items categorized as Inert are represented as OE Scrap on Figure 4-3.

2.3.2 The objective of the intrusive operations was to investigate and remove all OE items. The geophysical mapping indicated the location of the target anomaly, although it was not possible to ascertain whether there were individual or multiple targets in many cases. Removal of all metallic items in a 2 foot radius around each flagged anomaly was necessary as a small shallow target produces a similar handheld instrument response to a deeper, larger target. The only way to assure that the target anomaly location was fully exploited was to clear the radius of all metallic anomalies. In a majority of cases, the anomaly location contained several metallic items at varying depths and, due to technological limitations, it was not possible to ascertain with any certainty whether the first target excavated was the item of interest an required the team to remove all metallic

items from the excavation. Intrusive operations were performed by a combination of FWENC intrusive teams and personnel provided by UXO subcontractor USA Environmental, Inc.

2.3.3 The Senior UXO Supervisor (SUXOS), UXO Site Safety and Health Officer (UXOSO), and Database Manager consulted each day to plan the locations of each intrusive team taking into account availability of dig sheets, equipment, required exclusion zones for team separation distances and planned demolition activities. After the morning safety brief each day, the SUXOS assigned individual grids and documentation to intrusive team leaders for their days work.

2.3.4 During the course of the Removal Action, each team was responsible for conducting daily hand-held instrument tests on the test grid before mobilizing to their daily work location. These daily checks are detailed in the Individual Team Leaders' logbooks in Appendix C.

2.3.5 After they had received their briefings and conducted their daily vehicle and equipment checks in the compound, the intrusive teams mobilized to the work-site and commenced preparation of their equipment. Concurrent to this preparation, personnel assigned by the SUXOS conducted an area search in and around the EBP "Y" Area Junction to ensure that unauthorized personnel were not present within the exclusion zones. After the check was conducted, the SUXOS proceeded to give the intrusive trams authorization to commence intrusive operations for the day.

2.3.6 Within each grid, the intrusive team leader assigned anomalies, which were designated by pin flags, to team members for excavation. The White's Spectrum XLT was used by each team member to assist with the pinpointing of the location of anomalies at each flag location. The White's Spectrum XLT is much easier to use for the pinpointing of anomalies but lacks the ability to locate anomalies more than 12" deep. For this reason, The White's Spectrum XLT was only used to assist in the pinpointing of anomalies. A typical excavation in the more densely contaminated areas had multiple metallic anomalies at varying depths, which had to be investigated and cleared before addressing anomalies at lower levels. A Vallon VMX2 instrument, which is capable of detecting targets to a greater depth, was used to clear each excavation. The team leader was responsible for ensuring that each excavation hole was cleared of metallic anomalies before moving to the next anomaly.

2.3.7 As each anomaly was excavated, the team leader recorded the items found at each anomaly flag on a form located on a Cassiopeia PDA for nightly transfer to the project database. A geophysical map and hardcopy dig sheet were continuously reviewed to ensure that the correct number of anomalies were excavated. In the instance where an anomaly flag had been displaced or was missing, the SUXOS was contacted and an anomaly reacquisition team was sent to replaced the anomaly flag. In the instance where a flag was missing the team leader documented the occurrence in the team log which is located in Appendix C. Each team leader maintained an electronic logbook, which was downloaded to the project database nightly.

2.3.8 Items excavated from the anomaly locations were described as UXO, OE, Inert, OE Scrap, Non OE Scrap or No Find by the field teams. On this task order all OE items were further categorized as UXO. All UXO items were disposed of by demolition procedures IAW the SSWP. Inert was defined as an ordnance item that appeared identical to an OE item, except that it did not contain any energetic material. Some of these items were classified as UXO by the field teams, but after demolition was performed it was discovered the items contained no energetic material. At that time the anomalies were reclassified as Inert. OE Scrap was defined as components of ordnance items that could not be described as UXO or OE, examples of this category are fragments or pieces of ordnance items. Non OE Scrap was defined as miscellaneous scrap and debris that was non-ordnance related. Examples of this category include reinforced concrete, wire, rebar, trash and pipes.

2.3.9 In the instance where nothing was found at the anomaly location, the anomaly was annotated as a "No Find". Instances where this occurred were investigated to confirm this categorization and the item was reacquired and re-dug if it was deemed necessary. Reason for the No Find were attributed to several factors including the anomaly being removed during the excavation of adjacent targets, data aberrations due to collection in challenging terrain. Throughout the entire area (EBP "Y" Area Junction) there were 463 No Finds in 5,481 digs.

2.4 FEEDBACK OF REMOVAL PERFORMANCE

2.4.1 In accordance with the process quality techniques planned for this Removal Action, the false negative rate was constantly monitored during the investigation in order to determine the ongoing quality level of the geophysical interpretation process. The initial plan was to set the geophysical interpretation parameters at the lowest level that was estimated to be required to remove all target anomalies with a width of 37mm or larger, to a depth of 11 times the items diameter.

2.4.2 During the initial geophysical interpretation process of the EBP "Y" Area Junction, a total of 5,901 geophysical anomaly locations were identified (total including dig and no dig). Of these anomalies, 4,896 were designated as dig anomalies by the geophysicist. A minimum of 10 percent of the anomaly locations were re-designated from no dig to dig anomaly locations on a random basis to provide data for the false negative rate. In total, 585 or 10% of the total anomalies were re-designated from no dig to dig to support the analysis. These re-designated anomalies were selected randomly by the database manager without subjective input from either the geophysicist or the intrusive team members. The results of the intrusive investigation were monitored constantly by the interpreting geophysicists so that the interpretation criteria and process could be modified as necessary.

2.4.3 Table 2-1 summarizes the results of the investigation at anomaly locations re-designated from no dig to dig as part of performance feedback process. The False Negative Rate was 2.7 percent, which is a 97.3 percent conformance.

Table 2-1.

Results of Investigation of No Dig Anomalies

Items Recovered	Number of Items	Percentage of Total Items
UXO	1	0.1%
Inert	15	2.7%
OE Scrap	118	20.3%
Non-OE Scrap	325	55.4%
No Find	126	21.5%

2.5 RESULTS OF THE OE REMOVAL

2.5.1 Throughout the EBP "Y" Area Junction Removal the CLPS was used to collect position data. A geophysicist made selections and qualified UXO technicians investigated the anomalies. The discussion that follows covers the results of these investigations.

2.5.2 Every investigated anomaly had many characteristics which were important to track for this report. These included such things as: what exactly the item was; if UXO, the type of UXO; depth, and so on. A complete listing of items recovered can be found in Appendix C.

2.5.3 UXO. Several types of UXO were found throughout the EBP "Y" Area Junction. These were disposed of by demolition and include:

- Rocket, 2.36", HEAT, M6
- Rocket, 2.36", Fuze, M400
- Rocket, 2.36", Warhead
- Grenade, Rifle, HEAT, M9
- Mortar, 3", Stokes, Mk I, Fuzed
- Grenade, Hand, Fuze, M228
- Grenade, Hand, Practice, Mk II
- Flare, Illumination, Trip, M49A1
- Grenade, Hand, Practice, Mk I

2.5.4 OE Scrap. OE Scrap was found throughout the EBP "Y" Area Junction and required only a visual inspection to certify it free from energetic material. While it was not possible to ascertain the origin of the OE Scrap in all cases, the following is an indication of the nature of what was found:

- Mortar, 3", Stokes, PRACTICE, Tail Booms, Expended Fuzes
- Grenade, Hand, FRAG, Spoons, Frag, Expended Fuzes

- 2.36", Rocket, HEAT/PRACTICE, Motor Expended, Frag
- Concrete Bombs
- Grenade, Rifle, ILLUMINATION
- Grenade, Rifle, PRACTICE
- Grenade, Rifle, Tailfins
- Mortar, 60mm, HE, Fuze, Expended, Frag, Tailfins
- Trip Flare, Expended, Fuze, Expended
- Ground Signal (slap flare), Expended

2.5.5 Non OE Scrap. A great deal of Non OE Scrap was discovered within the EBP "Y" Area Junction. The following is an indication of what was found:

- 12-18" surveyors rebar, grounding rods;
- Reinforced concrete debris;
- Bolts, nails, nuts, washers, stakes, various;
- Wire, telephone, fencing, barbed, cable;
- Pipes, steel, cast iron, fence posts, horseshoes;
- Miscellaneous metallic trash, strapping, tools;
- Cans, ration, soda, beer, ammunition, etc;
- Batteries, vehicle, radio, etc;
- Rifle, magazine, clips, arrows (modern);
- Building material;
- Engine parts, filters, blocks, plugs, tank/APC tracks;
- Drums, buckets, 5 gal, 55 gal etc

2.5.6 A complete list of each anomaly investigated is supplied in Appendix C. Figures 4-2 through 4-4 show where UXO, OE Scrap, and Non-OE Scrap were located.

2.6 TRACKING AND DISPOSITION OF INERT ORDNANCE/ORDNANCE SCRAP FOUND

2.6.1 All anomalies investigated that were identified as possible OE/UXO were vented using approved demolition procedures IAW the SSWP. All items that required demolition to be performed were carefully inspected after the procedure to determine if the item actually contained energetic material prior to performing demolition. If an item was determined to have not contained energetic material prior to the demolition operation, then this item was reclassified as an Inert by the field teams, rather than OE/UXO, to more accurately reflect the actual items found during the removal.

2.6.2 For the removal area covered under this document (EBP "Y" Area Junction) all scrap was turned into the FWENC scrap-processing yard and will be demilitarized and disposed of under a separate Task Order.

3.0 TESTS

3.1 QUALITY CONTROL (QC)/QUALITY ASSURANCE (QA)

3.1.1 Quality Control tasks were carried out by FWENC, while Quality Assurance tasks were carried out by USAESCH. The EBP "Y" Area Junction was subjected to a random 10% QC sampling that included geophysically surveying 10% of the areas as a major step of the QC process

3.1.2 *Quality Control*. The QC function on this entire removal action included the three phases of QC inspection (Preparatory, Initial, and Follow-up) of the process. The EBP "Y" Area Junction had random 10% QC checks performed on the final product as well.

3.1.3 *Quality Assurance*. The QA function consisted of planned and systematic actions designed to verify that the quality met requirements in the plan. QA is an independent function designed to assess and report on whether the project quality function, as well as the project itself, achieve quality and project objectives. The governments QA process was used to ensure our entire process worked and to allow successful turnover of the area. The remainder of this section describes QC and QA processes used.

3.2 QUALITY CONTROL.

3.2.0 Project QC was split into two areas; process quality control and product quality control-acceptance sampling.

3.2.1 Process Quality Control

3.2.1.0 Process QC is concerned with improving the efficiency and effectiveness of the processes. This can be considered a prevention approach to QC because it aims to detect problems early and improve processes before the final product is produced. Process QC consisted of Preparatory, Initial, and Follow-Up Inspections on teams conducting key processes, as well as the False Negative Process QC Check (performance feedback) as described in section 2.4.

3.2.1.1 Preparatory Phase Inspections

3.2.1.1.0 Preparatory Phase Inspections were performed before starting each key process identified in the Quality Planning Phase. The purpose of these inspections was to review applicable specifications and verify that the necessary resources, conditions, and controls were in place and compliant before the start of work activities. The specific QC checklist items assessed during the Preparatory Phase, and the results of those activities were documented on QC Surveillance Reports contained in Appendix B.

3.2.1.2 Initial Phase Inspections

3.2.1.2.0 Initial Phase Inspections were performed the first time a type of work was performed under key processes. The inspections were conducted to check preliminary

work for compliance with procedures and contract specifications. Other objectives include establishing and agreeing to the acceptable level of workmanship, checking safety compliance, reviewing the Preparatory Phase Inspection, checking for omissions, and resolving differences of interpretation. The Initial Phase Inspections conducted were documented on QC Surveillance Reports contained in Appendix B.

3.2.1.3 Follow-Up Phase Inspections

3.2.1.3.0 Follow-Up Phase Inspections were performed on a scheduled and unscheduled basis. The purpose of these inspections was to ensure a continuous level of compliance and workmanship based on the quality levels established during the Preparatory and Initial Phase Inspections. The Unexploded Ordnance Quality Control (UXOQC) Specialist and his designees were responsible for on-site monitoring of practices and operations taking place and for verification of continued compliance with the specifications and requirements. Details of the Follow-Up Phase Inspections are contained in Appendix B.

3.2.1.4 Intrusive Process Verification Inspections

3.2.1.4.0 As each grid was completed by the intrusive team, QC personnel conducted Intrusive Process Verification Inspections before accepting these grids. The inspection consisted of ensuring that the individual grid dig sheets and the intrusive results matched (i.e., no "dig" anomalies were left unexcavated), and geophysically surveying 10 % in each grid. Details of these inspections are contained in Appendix B.

3.2.1.5 Geophysical Instrument Tests

3.2.1.5.0 The GPO grid was used to document and validate that each specific team's personnel and equipment met site geophysical requirements. Every occurrence of a team's personnel or major equipment change was followed by a visit to the test grid to re-validate the team or equipment. The validation information is documented in the team log books in Appendix C. The data from each visit was examined by the project geophysicist to ensure that the systems were functioning correctly and then the teams proceeded to the work area. This test was a QC process used by FWENC to continually ensure that the geophysical instruments and teams were working as designed.

3.2.1.6 Internal and External Process Quality Check of Geophysical Interpretation

3.2.1.6.0 Quality checks of the Geophysical Interpretation Process were conducted by senior FWENC geophysicists and also separately by USAESCH. In addition, the complementary False Negative Rate and comparison of predicted to actual results ascertained whether the items selected were correctly designated as dig or no dig.

3.2.2 Product Quality Control –Acceptance Sampling

3.2.2.1 Product QC is concerned with conducting an acceptance inspection on the final product after all the change or value-added processes have been completed, and that the final product is ready for delivery. It should be noted that extensive Process QC procedures are required to ensure that the quality of the product sampled is high enough to consistently pass the sampling.

3.2.2.2 A sampling plan is used to identify the number of samples from a lot or population of material to be sampled. On this project, the work area was broken up into 100-foot-by-100-foot grids, each containing 50 survey lanes corresponding to the area covered by a single pass of the EM61. This one grid, of 50 lanes, was considered one lot. Within each lot (grid), 10%, or five lanes, were re-sampled as part of the product QC check. The lanes were selected in groups of two and three lanes. This method allowed collection of five lanes of data per grid in a way that permitted the geophysicist to make competent QC selections. The beginning lane of each group was randomly selected using a random number table. Grids that were smaller than a 100-foot-by-100-foot had fewer than five survey lanes. All QC mapping information is contained in Appendix B.

3.2.2.3 With this plan, a random number table was used to select numbers, which correlated to lanes. These in turn were geophysically surveyed. The lanes were numbered, in feet, from east to west. The lanes were marked by the QC survey team using 100-foot tape measures laid out across the ends of each grid. The QC geophysical survey team collected the data using the EM61 in conjunction with the CLPS. The data was interpreted by a qualified geophysicist and returned to the project database manager. If anomalies were selected as "dig" anomalies by the geophysicist, then the item was reacquired and dug as part of the QC process.

3.2.3 QC Acceptance Criteria

3.2.3.1 The acceptance criteria used for this task order was the same as used by the government for failure criteria. The failure criteria located in the SOW stated: "No ferrous objects with a "width" (diameter) between a 37 mm projectile and a 81mm mortar, at a depth of less than 11 diameters of the object." The results from each lot are compared with the following criterion:

- Accept Criterion: No items were located that met the failure criteria.
- Reject Criterion: Any items were located that met the failure criteria.

In the case of acceptance, the grid was ready for turnover to the government for QA; in case of rejection, the grid was returned to the SUXOS from the UXOQC with the reason for rejection.

3.2.4 Geophysical Field QC Procedures

3.2.4.1 The geophysicist used a series of QC steps in the daily process of collecting, processing and interpreting the data. An explanation of these steps is provided below.

- Synchronize clocks +- 1 s (computer and Allegro)
- Static test for minimum of 30 seconds prior to and at the end of each file
- A Static response test at first and last grid of day, then perform test for 3 minutes each time
- Walk over a piece of rebar or a Schonstedt 3 times, in straight lines (side-middle-side), at the start and end of every data acquisition file
- Walk diagonal across grid at end of survey OR repeat first acquisition line, whichever is more time effective
- Use intelligible and repeatable file naming convention (date, team, grid, easily differentiate multiple files within same grid)

3.2.7.2 The geophysical processing QC procedures included:

- Turn Oasis log file on and save as same name as *.xyz file for each sampling grid.
- Use Oasis scripts for consistency of product.
- Scripts should create maps for c1, c2, and c4 with the appropriate color scale for objects of interest (scale should be Sector for a few mill volts above the local background, as well as be able to be easily used in areas where background fluctuates).
- Use Oasis master database to keep track of processed individual *.xyz files, and use this database to generate *.xyz file for each sampling grid. Each sampling grid should be in a separate folder with all interpreted files in this folder (i.e., run scripts from this folder). This data should be available over the network for each sampling grid. For master database, GDB header can be edited and changed for each *.xyz file to track progress of the survey, as well as to generate a master map of percent complete.
- All data (*.txt, * g61, *.xyz, *.dat, and excavation results when available) should be delivered to the client representative on a weekly basis via CDROM. Delivery confirmation for these data should also be recorded in the project database.
- Excavation results will be checked for all of the grids

3.2.5 Results of Quality Control

3.2.5.1 Within the original EBP "Y" Area Junction, 319 grids had QC performed. In total there were only 6 grids that were rejected by QC on the first attempt, and all were accepted on the second attempt. This is a 98.1% acceptance rate on initial quality.

Complete QC documentation on all grids is located in Appendix C. The Table 3-1 provides a brief explanation of grids that were rejected by QC, why they were rejected and corrective action taken.

Table 3-1
QC Rejections

Grid	Cause of Rejection	Corrective Action
008	8"X 2" Exhaust Pipe	Geophysicist reanalyzed the data, re-checked all anomaly results to ensure all locations were consistent.
056	Hand Grenade Fragmentation	Geophysicist reanalyzed the data, re-checked all anomaly results to ensure all locations were consistent.
094	Hand Grenade, Mk I	Geophysicist reanalyzed the data, re-checked all anomaly results to ensure all locations were consistent.
095	8" Piece of Rifle Grenade	Geophysicist reanalyzed the data, re-checked all anomaly results to ensure all locations were consistent.
296	2.36" Rocket, Motors (20 ea)	Grid was completely reworked. Geophysical mapping, reacquire and intrusive investigations were redone
297	Seed Item #C, 3" Stokes and #D, 2.36" Rocket	Grid was completely reworked. Geophysical mapping, reacquire and intrusive investigations were redone

3.2.5.2 When a item was found that caused a QC failure an investigation was performed on the selection process. The anomaly was re-evaluated based on size, shape and magnitude. If it was determined that the parameters differed from the ones established by the interpreting geophysicist (defining the threshold limit) then adjustments were made to this selection process. This change in threshold limit was then applied to all grids and data, not just the data within the grid which failed QC.

3.3 QUALITY ASSURANCE

3.3.1 The government performed two types of product QA within the EBP "Y" Area. The first was the standard 10% check of the area using a handheld geophysical instrument. The second was performed by the USAESCH Geophysical group and consisted of seeding, or planting, 15 items within the area. These items consisted of inert UXO items planted throughout the area.

3.3.2 The on-site USAESCH Safety Representative performed QA of each grid in the entire area. This consisted of surveying a portion (i.e., approximately 10%) of each grid with a hand held geophysical instrument. In areas that had a high concentration of ferrous contacts the on-site Safety Representative investigated all anomalies encountered to ensure that no ordnance items were missed. There were no OE or UXO items found during government QA checks. Anomalies investigated during the QA were identified as OE Scrap, nails, several can lids, metallic rocks and small pieces of non-OE metal. 5 grids failed the onsite government QA, Table 3-2 provides an explanation of the grid failure and corrective action taken. All of the grids, which failed initial government QA passed the QA survey on the second attempt. Completed and signed USAESCH Form

948's certifying QA passing of each grid are provided in Appendix B.

Table 3-2
QC Rejections

Grid	Cause of Failure	Corrective Action
036	4' Anchor stake	Geophysicist reanalyzed the data, re-checked all anomaly results to ensure all locations were consistent
045	Grenade Projection Adapter	Geophysicist reanalyzed the data, re-checked all anomaly results to ensure all locations were consistent
049	3" X 6" Scrap Metal	Anomaly was originally a large corrugated steel pipe which was severely rusted and falling apart. The hole contained large amounts of flaked and broken pieces of the pipe. The location was further excavated until cleared of scrap metal
162	C-Ration Can, small	The item was below the threshold set by the geophysicist. The geophysicist reanalyzed the data and made no further selections.
214	Metal Buckle	The item was below the threshold set by the geophysicist. The geophysicist reanalyzed the data and made no further selections.

3.3.3 The USACE Geophysical group seeded 15 items throughout the EBP "Y" Area prior to FWENC starting the geophysical data collection. Once all work was completed and all grids had passed FWENC QC, the geophysical group provided information that 2 of the 15 items had not been located. Direction was given to the onsite Safety Representative and they were able tot locate on of the two items. The one that they located was found in grid 123 and was a 3" Stokes Mortar. This item was placed approximately 4 feet from a monitoring well installed by another contractor on site. The second item was not able to be located by the safety representatives using hand held geophysical instruments. They requested help from FWENC to determine if in fact the item had been located and just not returned to the Safety Representative by the dig team. A thorough search was performed and it was determined the item had not been excavated. The two Safety Representatives and the FWENC UXOQC returned to the location and were able to locate the item after approximately 1 hour of searching. This item was a 60mm Mortar. A corrective action request was sent to WSACE and is available in Appendix B with full details of the corrective action taken for these two items.

4.0 DOCUMENTATION

4.1 MAPS

4.1.1 There is one site map provided (Figure 4-1) and three maps indicating the location of UXO, OE Scrap and Non OE Scrap (Figures 4-2 through 4-4).

4.2 REACQUISITION SHEETS (DIG SHEETS)

4.2.1 Anomalies selected for reacquisition are listed in the intrusive investigation results that are tabulated by grid in Appendix C.

4.3 GRID MAPS

4.3.1 To facilitate the reacquisition process, color-coded anomaly maps were prepared for each grid. These maps were prepared using Oasis Montaj software and provide locations for each anomaly. The maps are included by grid in Appendix D.

4.4 SITE QC DOCUMENTATION

4.4.1 Site QC documentation, including the CEHNC Form 948s are included in Appendix B.

4.5 SITE SAFETY DOCUMENTATION

4.5.1 Site safety records including incident reports on two subcontractor personnel are included in Appendix B.

4.6 DAILY SITE ACTIVITY REPORTS

4.6.1 Daily activities reports are included in Appendix B.

4.7 PHOTOGRAPHS

4.7.1 Selective site photographs of a representative types of anomalies encountered are included in Appendix B.

4.8 FINANCIAL BREAKDOWN

4.8.1 Costs to accomplish the time and material tasks are presented in Appendix A.

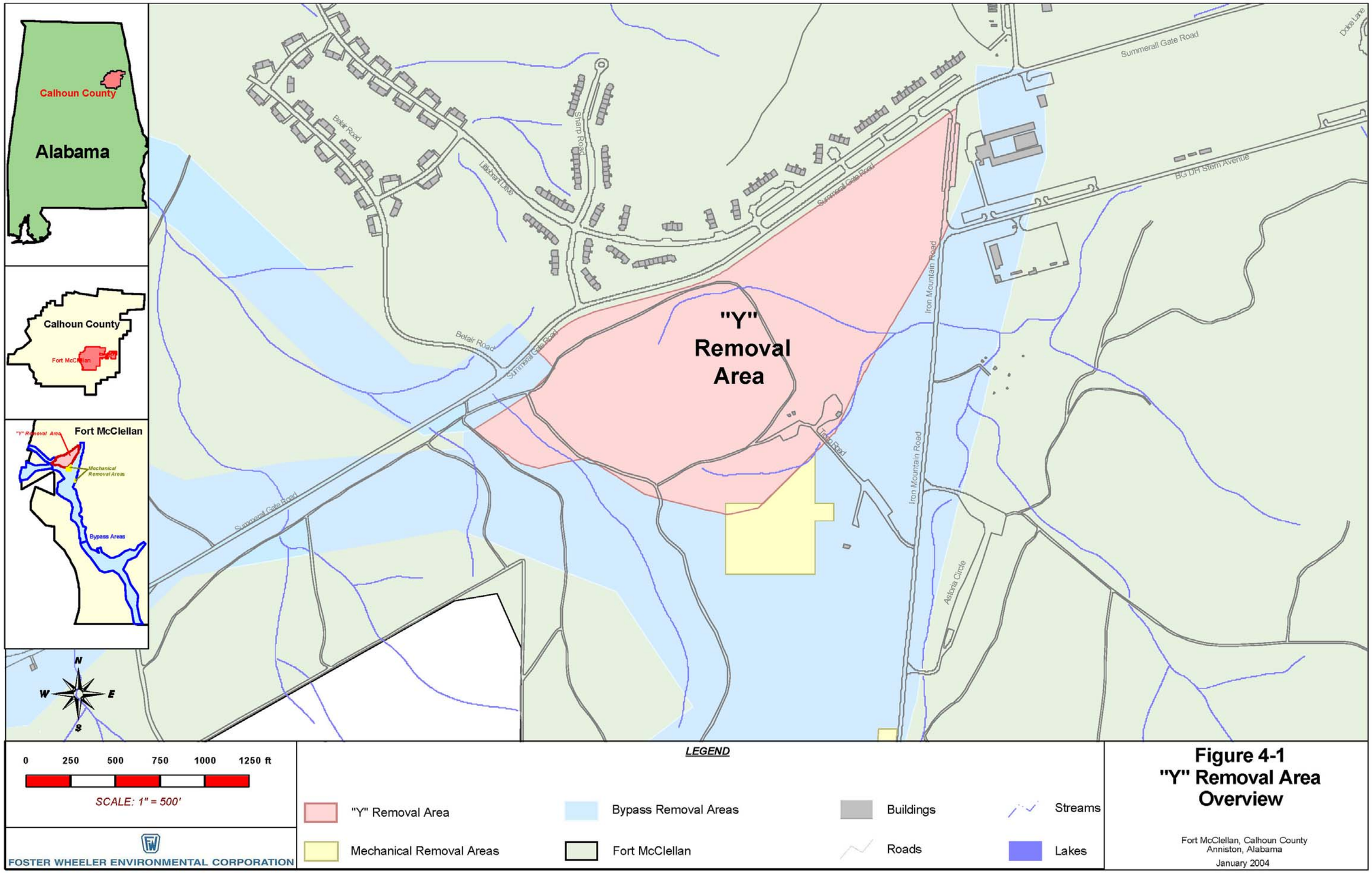
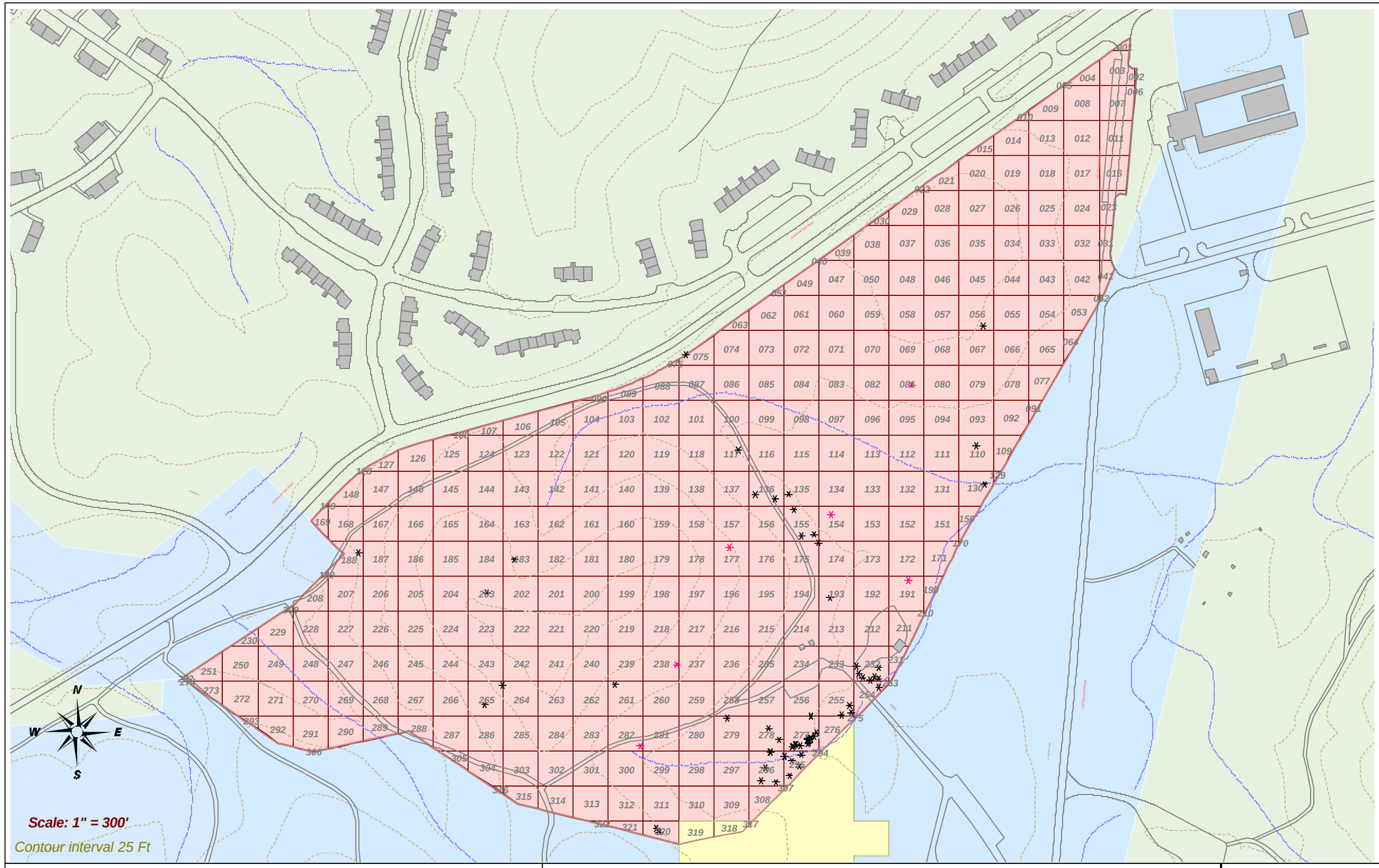
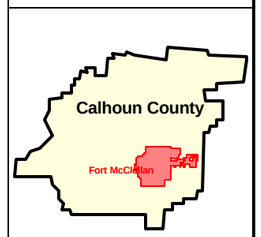
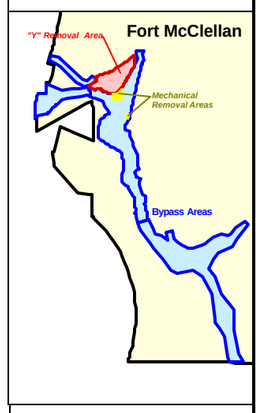


Figure 4-1
"Y" Removal Area
Overview

Fort McClellan, Calhoun County
Anniston, Alabama
January 2004







EBP "Y" Area

0 100 200 300 400 500 600 700 800 900 1000 ft

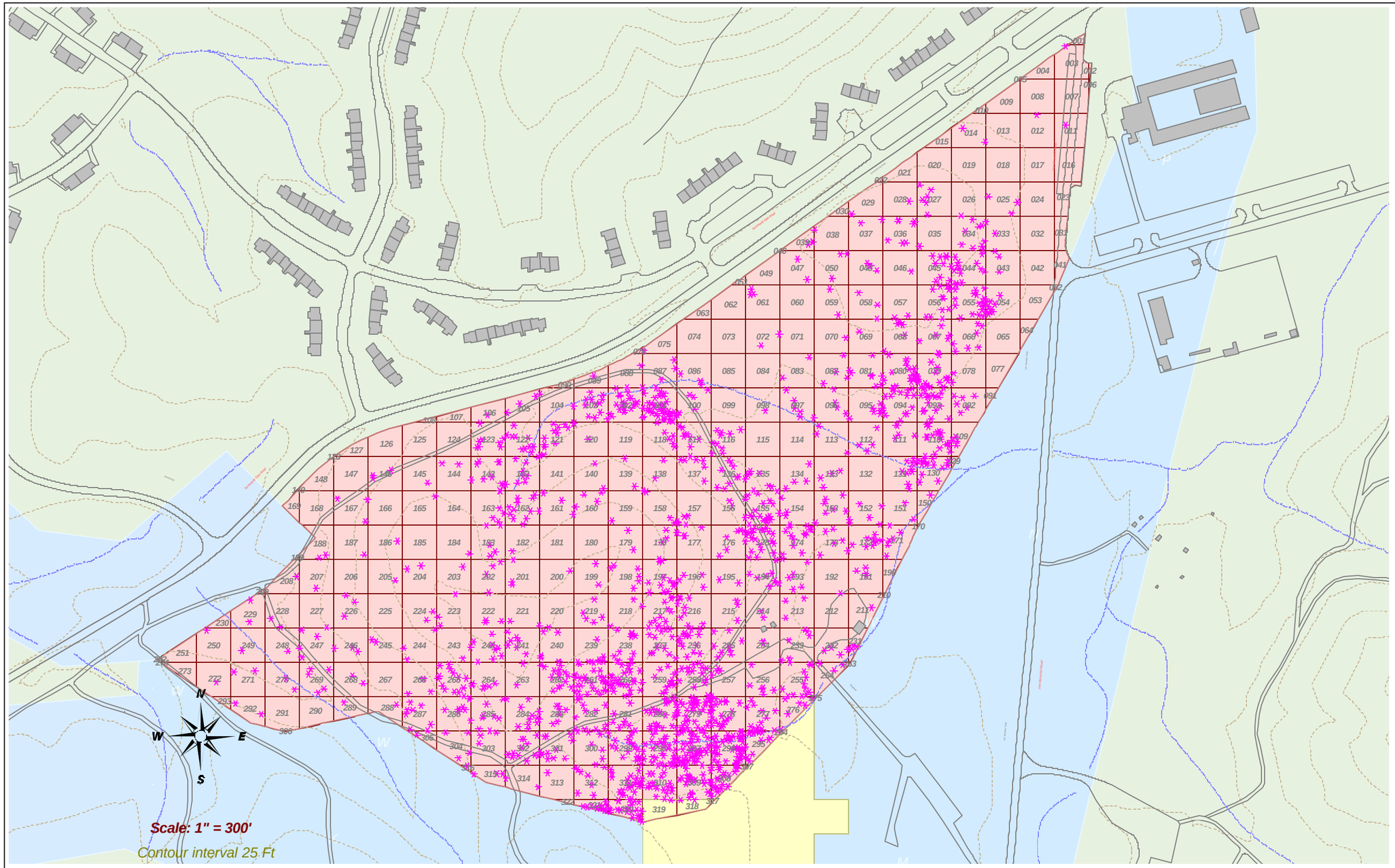
FOSTER WHEELER ENVIRONMENTAL CORPORATION

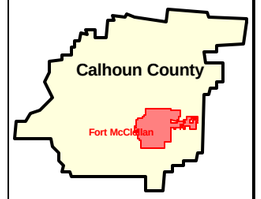
LEGEND

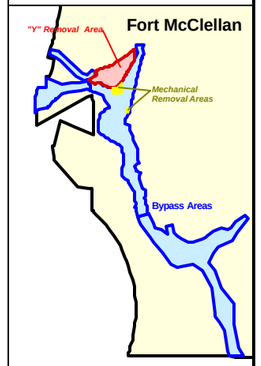
- UXO Finds
- Surface UXO Finds
- Grids
- "Y" Removal Area
- Mechanical Removal Area
- Bypass Removal Areas
- Buildings
- Roads
- Lakes
- Streams
- 25' Contours
- Fort McClellan

Figure 4-2
OE Finds

Fort McClellan, Calhoun County
Anniston, Alabama
January 2004







EBP "Y" Area

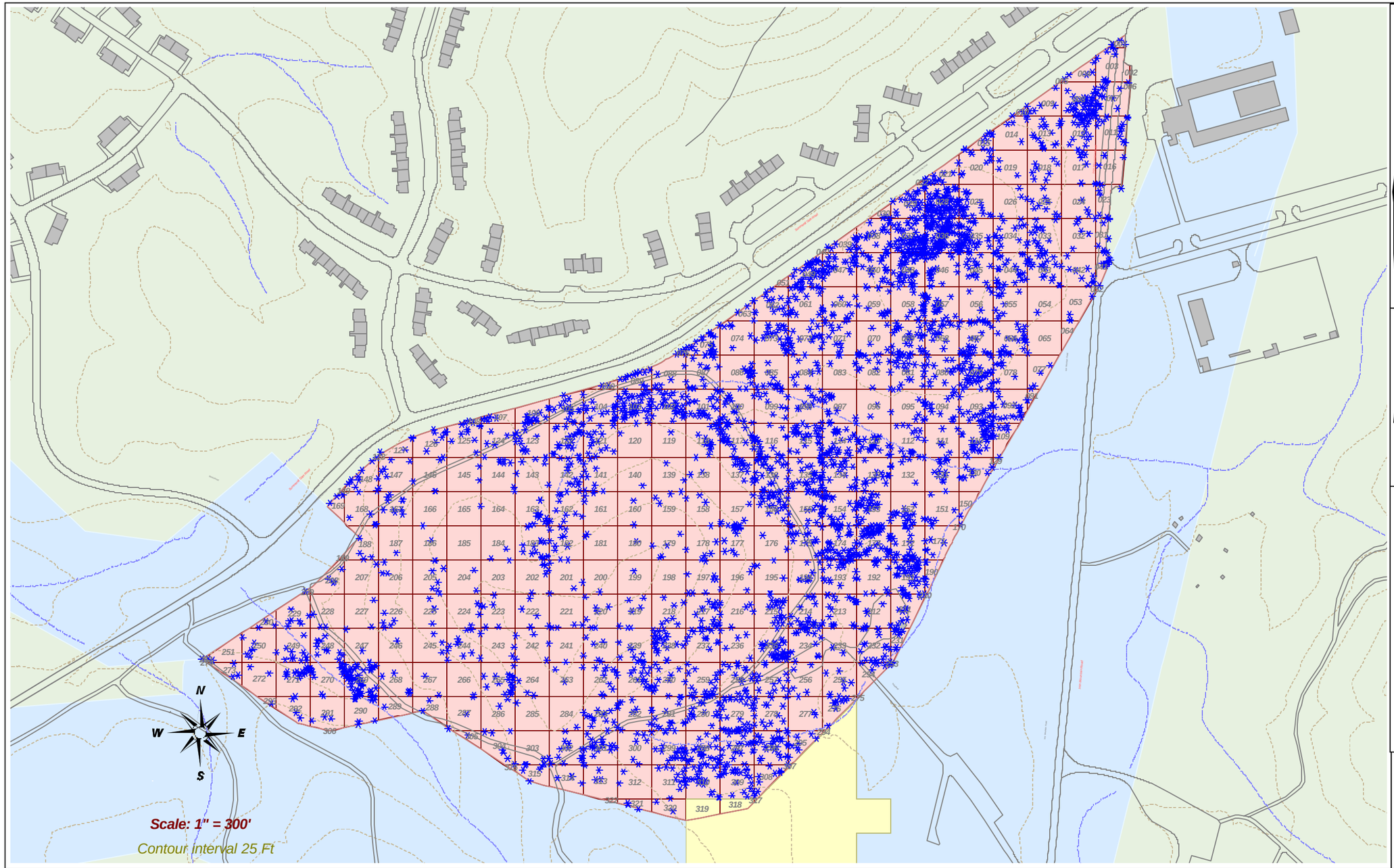
FOSTER WHEELER ENVIRONMENTAL CORPORATION

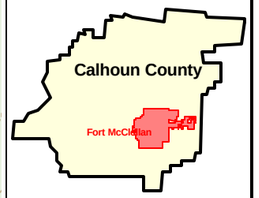
LEGEND

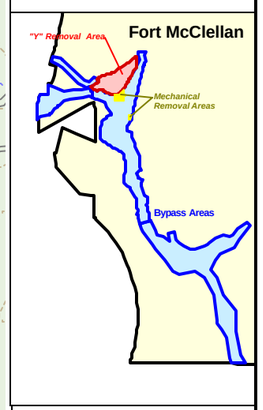
- OE Scrap Finds
- Grids
- "Y" Removal Area
- Mechanical Removal Area
- Bypass Removal Areas
- Buildings
- Roads
- Lakes
- Streams
- 25' Contours
- Fort McClellan

Figure 4-3
OE Scrap Finds

Fort McClellan, Calhoun County
Anniston, Alabama
January 2004







EBP "Y" Area

0 100 200 300 400 500 600 700 800 900 1000 ft

FOSTER WHEELER ENVIRONMENTAL CORPORATION

LEGEND

- Non OE Scrap Finds
- Grids
- "Y" Removal Area
- Mechanical Removal Area
- Bypass Removal Areas
- Buildings
- Roads
- Lakes
- Streams
- 25' Contours
- Fort McClellan

Figure 4-4
Non OE Scrap Finds

Fort McClellan, Calhoun County
Anniston, Alabama
January 2004

5.0 SUMMARY

5.0.1 A munitions response action was performed on the EBP "Y" Area Junction at Fort McClellan. The removal action was performed prior to the pending transfer of the property. The fieldwork began April 2003 and was completed in October 2003. The work was performed by FWENC and approved subcontractors in accordance with approved work plans. The action completed the removal action alternative of *Clearance to Depth*, as an interim removal action.

5.0.2 The work was completed in sequential states of site preparation: brush clearing, geophysical survey and intrusive operations. Intrusive investigation of anomalies resulted in the excavation of 60 UXO items, 2,460 pounds of OE Scrap, and 8,430 pounds of Non OE Scrap. A complete list of UXO items discovered is included in Appendix C.

5.0.3 The EBP "Y" Area Junction has been cleared to depth. It is impossible to guarantee complete and total removal of all OE items. Therefore, some limited residual risk may still remain within the boundaries of the EBP "Y" Area Junction property.

5.0.4 No further clearance is recommended; however, for any subsequent construction activities in the EBP "Y" Area Junction the Army is providing construction support throughout the area as required by ADEM and as negotiated with the JPA.

6.0 REFERENCES

Barge, Waggoner, Sumner, and Cannon Inc. 1998. *Environmental Assessment Anniston East Bypass*. Prepared for the Alabama Department of Transportation and the U.S. Department of Transportation.

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