

7.0 OE PLANNING AND OPERATIONS

7.0.1 Definitions

A complete list of definitions applicable to UXO/OE investigations is presented in the General Site Wide Work Plan.

7.0.2 Field Equipment

Foster Wheeler Environmental UXO personnel will conduct a visual surface sweep of all support zones, staging areas, and access roads as required to support site mobilization, land and geophysical surveys. A Schonstedt GA-52CX magnetometer will be used as an aid in locating and avoiding hazardous surface items. During intrusive activities, the UXO team will also use the Schonstedt GA-52CX magnetometer, Vallon VMX2, EM-61 (Hand-held mode) or White's XLT Spectrum detectors to ensure any excavated sites are clear of additional anomalies for safety purposes. Neither instrument will be used for UXO characterization; however, they may be used as part of standard UXO Health and Safety procedures during surface sweeps or excavation.

7.0.3 Safety Procedures

The specific site safety procedures found in the following documents will be followed throughout this project: Safety Concepts and Basic Considerations for Unexploded Ordnance (see Section 6 and Attachment 6-10 of the General Site-Wide Work Plan, and SSHP (Chapter 8.0 of this Plan). Known CWM areas are excluded from the EE/CA investigation. However, if the presence of CWM or chemical agents is suspected at any time, all work will stop and personnel will immediately evacuate a minimum of 100 feet in an upwind direction and will notify the CEHNC Safety Representative and Transition Force Operations, (TFO). The CEHNC Representative and TFO will request Explosive Ordnance Disposal (EOD) assistance, if required. Foster Wheeler Environmental UXO personnel will secure the area until relieved by government personnel.

7.1 OPERATIONS IN UXO/OE AREAS

7.1.1 Site Preparation

The UXO team will conduct a visual surface sweep of all support zones, work areas and access roads as required to support the land and geophysical survey. All site activities, including non-intrusive activities such as geophysical surveys, archeological assessments, and environmental resource inventories will require an UXO Technician II escort. Further non-intrusive activities in areas previously inspected by UXO Technician IIs will not require an UXO escort.

7.1.1.1 Any suspected or known UXO/OE encountered will be clearly marked and its position annotated on the appropriate map. The SUXOS shall evaluate all encountered

UXO and determine if the work planned for the area can safely continue or what actions must occur prior to commencing work in that area. If the ordnance item is considered to be hazardous, work in the area will cease and personnel will be evacuated to a safe distance. UXO personnel will rope off the area with tape or flags and the area will be declared an exclusion zone. Only essential UXO personnel will be allowed into the zone until the hazard has been removed.

7.1.1.2 Items identified as metallic OE-related scrap will be removed from the area to prevent interference with survey instruments. Items identified as inert OE-related scrap will be removed from the area and disposed of in accordance with Section 2.9 of the General Site Wide Work Plan. All UXO items will be disposed of in the area they were located in. Any UXO identified as fuzed and armed or fired are too hazardous to move and will be blown in place (BIP) by FOSTER WHEELER ENVIRONMENTAL UXO personnel. Foster Wheeler Environmental will notify the CEHNC Representative and TFO and the individuals/agencies listed on Table 7.1 of any unsafe to move items. Jet perforators will be used for venting and Pentolite Boosters or other approved demolition explosives will be used as initiating charges. Sand bags, trenching, and/or blast mats will be utilized as deemed necessary to contain fragmentation and prevent shock damage.

7.0.1.3 Tree Pruning

Trees will be pruned on a case-by-case basis and only as required to accomplish the tasks outlined in this Work Plan. If tree pruning is required, the tree will be pruned using gas-powered hand tools (e.g., chain saws). Tree branches will be disposed of on-site by running the branches through a chipper.

7.0.1.4 Brush and Grass Trimming

The primary method for brush trimming will be gas-powered hand tools such as chain saws, weed eaters, or hedge trimmers. A visual sweep of the designated area for surface UXO will be made prior to the start of brush trimming operation. An UXO Technician III will oversee brush clearing and will be responsible for sweeping newly cleared areas for UXO/OE potentially uncovered by brush clearing operations. Disposal of vegetation will be conducted onsite. Note- Mechanical brush clearing equipment may be used in some areas after a UXO surface clearance has been completed.

Table 7.1
Explosive Operations Notification List

In the event of any explosive operations, Foster Wheeler Environmental on-site UXO Supervisor will notify the SUXOS and CEHNC Safety Specialist. The SUXOS will notify:

Transition Force Operations	256-848-5178
Foster Wheeler Project Manager	256-820-7904
CEHNC Project Manager	256-895-1567
Anniston Police Department	256-238-1800
Anniston Fire Department	256-237-3541
Stringfellow Memorial Hospital	256-235-8900
Fort McClellan Forester	256-848-7452

Notes: Foster Wheeler Environmental will be responsible for securing the area to include barricading roads if necessary, and ensuring the area is clear during the conduct of the explosive operations.

7.0.1.3 Location Surveys Support Methodology

During all field activities, a UXO Technician II shall accompany the land survey crew. In all areas suspected of having possible Presence of OE, the UXO Technician II will visually inspect the areas where personnel may transit. At all points where wooden stakes or posts are to be driven into the soil or where survey corners are to be located, a magnetometer check of that point will be accomplished prior to their emplacement. If at any time the magnetometer indicates a positive reading, another location free of anomalies shall be selected for placement of the marker. Survey and boundary stake installation are the only intrusive activities (subsurface) authorized during surveying activities.

7.1.2 Intrusive Sampling

Intrusive sampling of selected anomalies will be performed to identify and remove UXO from the subsurface to a maximum depth of four (4) feet. This sampling will characterize homogeneous areas of the site and provide statistical data (e.g., density and UXO type) that will be used to perform a risk analysis. The Senior UXO Supervisor will receive a Dig Package from the on-site Data Manager containing information regarding subsurface anomalies selected for investigation for each sampling plot. The Dig Package will include a color-coded geophysical map and a tabulated prioritized dig list of anomalies for investigation including anomaly identification number, anomaly coordinates in relative sample area coordinates and/or Alabama State Plane Coordinates for each anomaly. This information will be provided to each UXO team member prior to intrusive activities.

7.1.2.1 The following procedures describe the specific activities required for intrusive sampling of selected sample areas and anomalies, including daily sample area briefing/verification, exclusion zone establishment, anomaly acquisition, excavation, UXO/OE disposal, sample area demobilization and data collection and recording.

7.1.2.1.1 Daily Sample Area Briefing/Verification

The Senior UXO Supervisor will receive a Dig Package for each sample area and will provide a daily briefing to the intrusive team that includes the following:

- Review emergency procedures;
- Discuss previously located UXO/OE; and
- Describe any known utilities.

7.1.2.1.2 The Senior UXO Supervisor will complete the Daily Health and Safety Equipment, Equipment Utilization Log and Intrusive Activities Checklists for each sample area. These documents are located in the Final General Site-Wide Work Plan for Fort McClellan.

7.1.2.2 Exclusion Zone Establishment

An exclusion zone (EZ) will be established around each sample area perimeter using caution tape, cones, barricades, and/or security guard prior to conducting intrusive activities to prevent entry of unauthorized personnel into the work area during these activities. The exclusion zone may vary because of terrain and cultural features around each sample area. The exclusion zone distances will be based on the Minimum Separation Distance (MSD) as calculated by CHENC or the largest fragmentation distance using the default distances from DoD 6055.9 Standard, Table C5.T1. Whenever ordnance is found that is not listed in Table 3.1 of this Work Plan, a request for review of the MPM and exclusion zone will be submitted to CHENC, Huntsville. Engineering controls to prevent unauthorized entry into the exclusion zone will include barricades, warning signs, and caution tape.

7.1.2.2.1 Where the exclusion zone intersects roads, building structures, or other public areas, a security guard (along with barricades, warning tape, etc.) will be posted to maintain traffic control, if required. In a situation where this is required, no activity will occur without prior coordination with TFO. A walk-through of the area will also be conducted to determine if any members of the public are near or within the proposed exclusion zone. Should any individuals refuse to leave the exclusion zone area, TFO will be notified. Intrusive work will not be conducted until the area is considered secure.

7.1.2.3 Anomaly Acquisition

Suspected subsurface UXO locations (geophysical anomalies) will be presented as coordinate locations in the intrusive Dig Packages provided to the Senior UXO Supervisor. DGPS (where applicable), USRADS, robotic total station, measuring tapes or appropriate surveying techniques will be used to locate the X, Y coordinates of each anomaly. Each anomaly will be flagged with a numbered pin flag corresponding to the anomaly ID located at that position.

7.1.2.3.1 As necessary, hand-held geophysical instruments will be utilized to aid in the precise location of geophysical anomalies. Since an electromagnetic method will be utilized for the geophysical investigation, a Vallon VMX2 Metal Detector or Geonics EM-61 (Hand held mode) unit will be utilized for anomaly re-acquisition. UXO Technician IIs will be authorized to excavate any anomalies re-acquired within, but not to exceed a 3.5-foot radius of the flagged location of an anomaly.

7.1.2.3.2 If an anomaly is not found within the 3.5-foot radius of the flagged location or if the anomaly is a non-UXO item, it will be reevaluated by the geophysicist. The Scope of Work allows for a false-positive ratio of 15%, however, the anomaly interpretation will be analyzed by the geophysicist. If the false-positive ratio exceeds 15%, then actions will be taken to determine and eliminate the cause.

7.1.2.4 Intrusive Activities

Anomalies selected in the geophysical survey will be relocated for intrusive investigation. The coordinates of each selected anomaly will be provided to the Senior UXO Supervisor (SUXOS) for accurate relocation. The Standard Operating Procedure (SOP) for intrusive sampling activities is included as Appendix E. All excavation activities will comply with the provisions of 29 Code of Federal Regulations (CFR) 1926, Subpart P.

7.1.2.5 Sample Area Demobilization

Following intrusive sampling in each sample area, all signs and barricades will be removed. The excavated area will be backfilled and all disturbed areas will be re-vegetated, if necessary. Backfill material will consist of native soil from the excavation.

7.1.2.6 Data Collection and Recording

The UXO Technician will record all data on the Intrusive Investigation Data Form (included in Appendix E). All anomalies will have their characteristics recorded in the GIS database.

7.1.3 Quality Control

Quality control is performed to ensure that the targeted anomaly is recovered or determined to exist below the limit of the excavation. Because non-targeted anomalies may exist near the dig site, limited lateral excavation is authorized. The SUXOS will determine the area of excavation and search.

7.1.3.1 The SSHO/QC representative will ensure that the following procedures are being followed:

- Perform follow-up QC on dig procedures;
- Ensure proper exclusion zone controls;
- Ensure proper procedures are used while excavating with earth moving equipment;
- Ensure that hand tools are used properly;
- Ensure the proper use of probes to locate anomaly depth;
- Complete data entry on the Intrusive Investigation Data Form;
- Ensure that the Project Archeologist has been consulted when UXO items that may be culturally significant are exposed and that record keeping has been completed; and
- Escort designated QA representatives to perform QA checks prior to backfill operations, if required.

7.1.3.2 In addition to the process outlined above, the SUXOS and QC Representative will obtain the UXO dig results and compare them to the geophysical depth and size estimates for 100% of the targeted anomalies. The QA/QC Plan is described in Chapter 11.

7.1.4 Public Affairs

Foster Wheeler Environmental's UXO personnel shall be available in an advisory capacity in dealing with the commentary on technical matters as they relate to UXO work methodology, UXO transportation and disposal issues. Unless requested by the Fort McClellan BRAC Environmental Coordinator (FMC BEC) or CEHNC, Foster Wheeler Environmental UXO personnel will not respond to direct queries from the media. All media queries will be directed to the CEHNC Project Manager or the Public Affairs Officer at the Fort McClellan. In addition, any media personnel who arrive on-site unescorted will be directed to contact the FMC BEC.

7.2 OE Accountability and Records Management

The Senior UXO Supervisor will maintain a daily journal of operations that will include the following:

- A listing of all personnel involved with site activities;
- A detailed description of all deliveries and/or shipments to or from the site;
- Summary of major communications with Foster Wheeler Environmental Project Manager, on-site CEHNC representatives, FMC BEC, or task leads;
- The identification of each sampling plot investigated as to location, the time required to mark and excavate each sampling plot, the identification, location, and depth of each UXO/OE and/or UXO/OE-related item located;
- The weight, length of long axis, diameter, and orientation as discovered of each UXO/OE or UXO/OE-related item located. (These characteristics are determined using calibrated scales, calipers, rulers, and measuring tapes. Items that are too hazardous to move (i.e., fused or armed), will not be weighed);
- Handling, transport, or storage of UXO/OE discovered;
- The total number and weight of non-UXO related items discovered;
- The time required to clear each sampling plot, the vegetation and terrain encountered;
- Daily temperature ranges and climatic conditions;
- Other pertinent data as required by CEHNC; and
- Any problems encountered.

7.2.1 The UXO Team Leader/SUXOS will take photographs of all UXO/OE and UXO/OE-related materials encountered by his team, and these photographs will become enclosures to the logbook. A photograph log will be maintained, and will include (at a minimum) the following information for each photograph: film roll/disk number, photograph number, date and time of photograph, photographer name, and specific subject of photograph.

7.2.2 An exact accounting of all UXO/OE items and UXO/OE-related items encountered will be maintained. This accounting will include the amounts of UXO/OE, the specific location of each UXO/OE found, their identification and condition, depth located, and disposition. For each UXO/OE item located, a thorough description of the

item, potential explosive filler, and fuzing will be made prior to detonation or storage. Upon explosive disposal of UXO/OE items, the SUXOS will determine whether each item did or did not contain explosive filler and identify the explosive filler (i.e., high explosives (HE), black powder). This determination will be clearly and thoroughly documented in the Field Activity Logbook and will provide invaluable information for the subsequent site risk assessment. At a minimum, the following reference manuals and procedures will be used to identify ordnance items recovered during the field investigation:

- Safe Precautions (60A-1-1-22);
- EOD Procedures for the Protection of Personnel and Property (60A-1-1-4);
- EOD Disposal Procedures (60A-1-1-31);
- Ordnance Identification Guide (ORD DATA);
- Ammunition General (TM9-1300-200);
- Military Explosives (TM9-1300-214);
- Artillery Ammunition (TM9-1901);
- EOD Disposal (EODB 1385-1);
- Bombs and Bomb Components (TM9-1330-200);
- Grenades, Hand and Rifle (TM9-1325-200);
- Land Mines (TM9-1345-200);
- Aircraft Bombs (OP-1664); and
- Military Pyrotechnics (OP-2213).

7.2.3 The accounting system will also document demolition materials utilized to detonate UXO/OE on-site and the recovered non-OE related metallic debris in weight per sample area. The accounting will become part of the EE/CA report.

7.2.4 The UXO Field Activity Logbook, to be maintained by the SUXOS, will provide a daily journal of the activities associated with the project site. It shall be opened upon first arrival for field operations and closed after demobilization at the project site. The UXO Field Activity Logbook is an official record of activities being performed and will contain, as a minimum, the following data:

- Date;
- Daily weather conditions;
- Safety Meetings;
- Start and stop times;
- Personnel assigned and job classification;
- Work stoppages;
- Equipment used and number of hours in use;
- Injuries to personnel;
- Damage to equipment;
- Official communication, written or verbal;
- Quantity and type of UXO/OE and UXO/OE-related items encountered and their precise location (Grid and anomaly identification number), depth, weight, length of

long axis, diameter, orientation as discovered, fuzing, potential explosive content, and disposition;

- Transportation activities;
- Demolition materials utilized for on-site disposal and their quantities;
- Weight of non-OE related metallic debris; and
- Signature of the SUXOS indicating that the recorded information and data are true and correct.

7.3 UXO/OE Identification

The UXO team will perform Explosive Ordnance Reconnaissance (EOR) procedures and assessment of all suspect UXO/OE to determine conditions and potential hazards. If UXO/OE is encountered, it will be detonated in place, if possible. The SUXOS will notify the CEHNC Safety Representative, and personnel listed on Table 7.1 prior to conducting disposal operations.

7.3.1 The potential UXO/OE areas to be intrusively investigated under this Delivery Order at Fort McClellan are not suspected of containing CWM. If suspected CWM is encountered during UXO/OE operations, all work will immediately halt and personnel will withdraw from the area by evacuating in an upwind direction. The SUXOS will notify and request guidance from the CEHNC Safety Technician II on-site or at the Huntsville, Alabama office and the TFO. The CEHNC Safety representative and TFO will notify the appropriate authorities (e.g., local EOD Units) to arrange for response from the Technical Escort Unit (TEU). Foster Wheeler Environmental personnel will stand-by for follow-up instructions from CEHNC and secure the area until relieved by Government personnel.

7.3.2 Items that are non-OE related metallic debris recovered from each sampling area will be weighed and reported in pounds per sample area. Metallic debris will be disposed of IAW the Site Wide Work Plan Section 2.9.

7.4 UXO/OE Removal

All aspects of UXO/OE removal operations are provided in the Intrusive Operations Standard Operating Procedures, Appendix E.

7.4.1 Prior to the commencement of the intrusive investigation, Foster Wheeler Environmental will meet with the CEHNC safety Representative, TFO and FMC BEC to identify the specific local transportation requirements (e.g., transporting route, speed limit, convoy cars, and time of the day for transporting) and the traffic control assistance required from local law-enforcement agencies. Foster Wheeler Environmental will comply with the local requirements and will fully cooperate with local authorities.

7.5 OE Transportation

Procedures for OE transportation are discussed in Section 3.4 of the General Site Wide Work Plan.

7.6 OE STORAGE

Procedures for OE storage are discussed in Section 3.3 of the General Site Wide Work Plan.

7.7 UXO/OE Disposal

All UXO/OE will be disposed of pursuant to Attachment 2-1 (UXO DEMOLITION PROCEDURES), of the Foster Wheeler Environmental General Site Wide Work Plan.

- UXO/OE – all UXO will be disposed of in the area/grid where the item was located. UXO items that are considered safe to move may be moved within the area to consolidate shots with approval of the CEHNC Safety Representative.
- Non-OE Metal Debris - If visual inspection determines the item does not contain OE-related scrap residue, then OE-related scrap is non-hazardous scrap metal and will be disposed of in accordance with the General Site Wide Work Plan, Section 2.9.
- OE Metal Debris - If visual inspection determines the item was not in contact with energetic materials, then the OE-related scrap is non-hazardous scrap metal; and will be collected and stored for recycling in accordance with the General Site Wide Work Plan, Section 2.9.
- OE OE-related scrap - If visual inspection determines the material was in direct contact with energetic materials (explosives/pyrotechnics) it will be vented in the area found and then treated in accordance with the General Site Wide Work Plan, Section 2.9.

7.7.1 All UXO/OE will be disposed of by open detonation pursuant to Attachment 2-1 of the General Site Wide Work Plan.

7.8 OE Disposal Range

A dedicated OE disposal range does not exist for this site. Disposal procedures will be conducted pursuant to the guidelines of Attachment 2-1 of the Foster Wheeler Environmental General Site Wide Work Plan.

7.9 UXO Personnel and Qualifications

All individuals executing UXO procedures or UXO-related procedures will be qualified UXO personnel and meet or exceed the DID OE 025 Standards. These personnel will be US citizens who have graduated from the US Army Bomb Disposal School, Aberdeen, Maryland, or the US Naval Explosive Ordnance Disposal (EOD) School, Indian Head, Maryland or other approved UXO training facility. Resumes for UXO personnel and appropriate training certificates will be provided to CEHNC for approval prior to field mobilization.

7.9.1 Personnel Responsibilities

The procedures outlined within this Work Plan shall be followed at all times by the Foster Wheeler Environmental field team. The UXO team will consist of qualified UXO Technician IIIs and UXO Technician IIs under the supervision of a Senior UXO Supervisor. Qualification certificates are maintained on file at the corporate office and will also be maintained on-site in the office trailer. The roles of the key personnel are described in the following paragraphs. Prior to field mobilization, the UXO Team will be identified for CEHNC approval.

- 7.9.1.1 Project Manager. The Project Manager is responsible for communications with and execution of all instructions received from CEHNC for each task; managing all aspects of the project; coordinating all contract work; and overseeing all task identification and resolutions. The Project Manager is also responsible for achieving the contractual cost and schedule targets negotiated between CEHNC and Foster Wheeler Environmental. The Project Manager will coordinate the preparation of detailed work order specifications and schedules; identify the technical and site personnel to accomplish the work scope; implement project quality and safety and health (S&H) procedures, and direct delivery order personnel to achieve successful and timely completion of the work scope. The Project Manager will interface directly with the CEHNC Project Manager to keep him/her advised of progress and to promptly implement CEHNC Final and authorized changes to ongoing work orders as necessary.
- 7.9.1.2 Delivery Order Manager. The Delivery Order Manager coordinates with the Foster Wheeler Project Manager in developing project scope and costs, detailed work order specifications and schedules, and in identifying project personnel to be utilized in accomplishing the Scope of Work. Procurement and management of subcontractors is also the responsibility of the DO Manager. The DO Manager is responsible for the completion of all major deliverables, from the initial draft of the Site Specific EE/CA Work Plan to the final draft of the Action Memorandum. The DO Manager will also approve charges by field and office personnel, compare ongoing project cost and schedule performance to the baseline cost/schedule, and bring any significant variance to the attention of the Foster Wheeler PM, who will communicate impacts to the CEHNC PM as necessary. The DO Manager will identify if a change in scope is necessary to meet technical requirements, and will discuss potential changes in scope with the Foster Wheeler PM, and with the CEHNC PM as necessary.
- 7.9.1.3 Senior UXO Supervisor. This individual shall be a graduate of the U.S. Naval School EOD, Indian Head, Maryland. The Senior UXO Supervisor assists in the development of site-specific work plans, identifies personnel and equipment requirements, and directly supervises all daily activities of the field team. The Senior UXO Supervisor is responsible for the successful performance of the UXO-qualified field team, the early detection and identification of potential problem areas, and for instituting corrective measures. The Senior UXO Supervisor is also

responsible for execution of instructions received from the Foster Wheeler Environmental Project Manager and CEHNC, documentation of site conditions, videotaping of removal actions preparation of all project reports, and identification of any effort required to accomplish the Scope of Work. On small projects involving limited intrusive investigations, the Senior UXO Supervisor may perform the duties as UXO Team Leader when only the Senior UXO Supervisor and two UXO Technician IIs are on-site. A UXO qualified SSHO/QC must be on-site.

- 7.9.1.4 UXO Safety Officer. The UXO Safety Officer (UXOS) shall be a graduate of the U.S. Naval School EOD, Indian Head, Maryland. The UXOS is UXO qualified and is responsible for the implementation of the Site Safety and Health Plan (SSHP). The UXOS has Stop Work authority for safety conditions. The UXOS is responsible for the evaluation and analysis of any potential safety problems, implementation of safety-related corrective actions, and maintenance of a daily safety log.
- 7.9.1.5 UXO Quality Control Specialist. The UXO Quality Control Specialist (UXOQCS) shall be a graduate of the U.S. Naval School EOD, Indian Head, Maryland. The UXOQCS is UXO qualified and is responsible for the implementation of the Quality Control (QC) Plan. The UXOQCS has Stop Work authority for safety conditions or QC issues. The UXOQCS Representative is an independent body responsible for maintaining control of quality of all contract elements and ensuring the quality of its performance and that of its subcontractors.
- 7.9.1.6 UXO Supervisor/Team Leader (UXO III). This individual shall be a graduate of the U.S. Naval School EOD, Indian Head, Maryland with a minimum of 10 years combined active military EOD and Contractor UXO experience. The UXO Supervisor/Team Leader shall supervise all UXO Technician IIs assigned to perform duties such as UXO sweeps, intrusive investigations, demolition team leader, data recording and other duties as assigned by the Senior UXO Supervisor. The UXO Supervisor/Team Leader reports to the Senior UXO Supervisor.
- 7.9.1.6 UXO Technician II. This individual shall be a graduate of the U.S. Naval School EOD, Indian Head, Maryland. The UXO Technician II performs on-site duties including locating UXO, equipment operation, UXO safety, and escort duties as required. The UXO Technician II reports to the assigned team leader/Senior UXO Supervisor.
- 7.9.1.7 Geophysical Survey Personnel. Two on-site geophysicists will perform oversight of the data acquisition process. They are skilled in correlating the acquired data and interpreting the results. They will report to the Lead Geophysicist (GTM) and work in close coordination with the Senior UXO Supervisor.
- 7.9.1.8 Heavy Equipment Operators. The heavy equipment operator is trained in the use of heavy equipment, clearing and grubbing techniques. This individual reports to the assigned Senior UXO Supervisor.

- 7.9.1.9 Sweep Personnel. Sweep personnel will receive training in UXO safety precautions and basic ordnance recognition features. Sweep personnel will be allowed to use magnetometers, as well as visual means, to locate OE items on the surface, but must refer any OE items located to trained UXO personnel supervising the Sweep Team. Sweep personnel are not permitted to excavate or handle suspected or known UXO/OE.

7.9.1.10 Note: The Project Manager, Delivery Order Manager, Geophysical survey personnel, sweep personnel, and heavy equipment operators are not required to be UXO trained. Each will have received training on UXO safety precautions and basic ordnance recognition features but are NOT permitted to excavate or handle suspected or known UXO/OE.

7.10 DISPOSAL ALTERNATIVES

Does not apply. OE will be disposed of in accordance with Chapter 7.7 of this Work Plan.

7.11 MANAGEMENT AND STORAGE OF DEMOLITION EXPLOSIVES

The Explosives Siting Plan is discussed in Section 3.0 of the General Site Wide Work Plan.

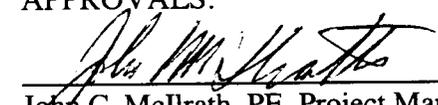
8.0 SITE-SPECIFIC SAFETY AND HEALTH PLAN

Safety and health guidelines are discussed in Section 6.0 of the General Site Wide Work Plan. This plan contains information that is specific to the Bravo Area and supplements the General Site Wide Plan referenced above.

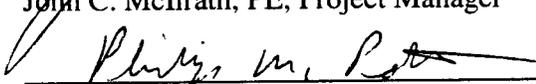
8.1 INTRODUCTION

This Site-Specific Safety and Health Plan (SSHP) has been prepared to address the hazards associated with characterization activities within the Bravo Area at Fort McClellan in Anniston, Alabama. This SSHP will be used in combination with the Site-Wide SSHP, and both plans will be available to workers during activities in the Bravo Area. By their signatures, the undersigned certify that this SSHP will be utilized for the protection of the health and safety of workers during site characterization activities at the Bravo Area.

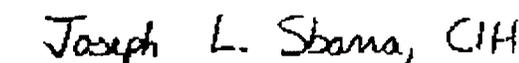
APPROVALS:



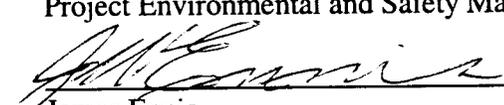
John C. McIlrath, PE, Project Manager
Date 4/5/01



Phillip M. Potter, PG., Delivery Order Manager
Date 4/5/01



Joseph L. Sbarra, CIH
Project Environmental and Safety Manager
Date 4/5/01



James Ennis
Senior UXO Site Safety and Health Officer
Date 4/5/01

8.1.1 SCOPE AND APPLICABILITY

This SSHP has been prepared in conformance with the Foster Wheeler Environmental, Health and Safety programs, policies and procedures; the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1; and the U.S. Army Corps of Engineers Safety and Occupational Health Document Requirements for Hazardous, Toxic and Radioactive Waste (HTRW) and Ordnance and Explosive Waste (OEW) Activities, ER 385-1-92. This SSHP, along with referenced safety and health sections of the General Site-Wide Work Plan, contains the requirements for protection of site personnel and the general public during clearance activities at the Bravo Area of Fort McClellan and will be implemented by the UXO Site Safety and Health Officer (UXOSO) or his

designee during site work. The content of this SSHP may change or undergo revision based upon additional information made available to safety and health personnel, monitoring results, or changes in the technical scope of work. Any changes proposed must be reviewed by the Foster Wheeler Environmental UXOSO and are subject to the approval of the Foster Wheeler Environmental Project Environmental and Safety Manager (PESM). Changes are also subject to the approval of the U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville (CEHNC). The Field Change Request Form, provided in Attachment 6-1 of the General Site Wide Work Plan, will be used to initiate such changes.

8.1.1.1 The protection of site workers and environmental safety and health are major concerns during site operations. The purpose of this plan is to ensure safe and healthful working conditions at the Bravo Area. The safety and health organization and procedures contained in this SSHP have been established based upon an analysis of the potential hazards, and personnel protection measures have been chosen based on these risks.

8.1.1.2 Compliance with this SSHP is required for all Foster Wheeler Environmental employees and their contractors, subcontractors, and visitors who may participate in activities at the Bravo Area at Fort McClellan. Refusal or failure to comply with the SSHP or violation of any safety procedures by field personnel and/or subcontractors may result in their immediate removal from the site following consultation with the Foster Wheeler Environmental PESH and the Project Manager (PM).

8.1.1.3 This SSHP has been developed to address health and safety concerns during the UXO characterization activities at the Bravo Area.

8.1.1.4 This SSHP addresses the following activities:

- Mobilization/demobilization;
- OE surface survey;
- Brush clearance;
- Survey study areas, establish corners and boundaries;
- Establish geophysical test lines and grids;
- Conduct geophysical surveys;
- Manually excavate anomalies.

8.2 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

The responsibilities of the health and safety staff are described in the following chapters.

8.2.1 PROJECT MANAGER (PM)

The Project Manager is John C. McIlrath. It is the responsibility of the Project Manager to:

- Ensure that full corporate resources are made available to the program, as needed;
- Serves, as necessary, as an intermediary between the CEHNC contract officer (CO) and Foster Wheeler's corporate management; and
- Assist the Delivery Order Manager in problem resolution/corrective action implementation.

8.2.2 DELIVERY ORDER MANAGER

The Delivery Order Manager is Phillip M. Potter, PG.; it is the responsibility of the Delivery Order Manager to:

- Provide the major point of control to ensure that the program's technical, financial and scheduling objectives are achieved;
- Ensure implementation of this program through coordination with the responsible Project Environmental Safety Manager (PESM);
- Conduct periodic inspections;
- Participate in incident investigations;
- Ensure the SSHP has all of the required approvals before any site work is conducted;
- Ensure that the PESH or UXO Site Safety and Health Officer (UXOSO) is informed of project changes which require modifications of the site safety plan; and
- Assume overall project responsibility for Project Health and Safety.

8.2.3 PROJECT ENVIRONMENTAL AND SAFETY MANAGER (PESM)

The Project Environmental and Safety Manager (PESM) is Joseph L. Sbarra, CIH. The responsibilities of the PESH are outlined and described in Section 6.2.2 of the General Site-Wide Work Plan.

8.2.4 SENIOR UXO SUPERVISOR (SUXOS)

The Senior UXO Supervisor (SUXOS) is James Ennis. The responsibilities of the SUXOS are outlined and described in Section 6.2.3 of the General Site-Wide Work Plan.

8.2.5 UXO SITE SAFETY AND HEALTH OFFICER (UXOSO)

The UXO Site Safety and Health Officer (UXOSO) is Pat Saveall. The responsibilities of the UXOSO are outlined and described in Section 6.2.4 of the General Site-Wide Work Plan.

8.2.6 FIELD CREW PERSONNEL

Field crew personnel include all other persons entering the site for the purpose of assisting in the completion of the project. This includes, but is not limited to geophysicists, client representatives, subcontractors, regulatory personnel, and site workers. The responsibility of all field crew personnel are outlined and described in Section 6.2.5 of the General Site-Wide Work Plan.

8.3 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

The former Fort McClellan Main Post is bounded to the south and west by the City of Anniston and to the northwest by the City of Weaver and consists of 18,929 acres. Adjoining the former Main Post to the east is the Redevelopment Area. The Redevelopment Area has been subdivided into two study areas for the purposes of site characterization activities: 1) The Alpha Area, consisting of all or portions of Parcels M5 and M6, and 2) the Bravo Area, consisting of all or portions of Parcels M3 and M4. To the east of the Redevelopment Area lies the Charlie Area, consisting of the Choccolocco Mountains and the Choccolocco Corridor. The Bravo Area is the subject of the upcoming site characterization effort, which is addressed by this Plan.

8.3.1 SITE DESCRIPTION

The Bravo Area consists of approximately 3806 acres containing all or portions of Parcels M3 and M4. The Archives Search Report (ASR) identifies areas within these parcels, which are potentially contaminated with OE. The potential OE that is suspected to be in the Bravo Area, or in the vicinity thereof, are identified in Table 3.1 of Chapter 3 of the Bravo Work Plan, along with the explosive/incendiary hazard associated with each ordnance type. Additional hazards associated with clearance activities at the Bravo Area include:

- Working on sloped terrain;
- Temperature extremes;
- Hazards associated with hand and power tools;
- Slips, Trips and Falls; and
- Environmental Hazards (i.e., poison ivy & oak, insects, animals).

8.3.2 PREVIOUS SITE INVESTIGATIONS

Previous Investigations are discussed in Chapter 2.4 of this Work Plan.

8.3.3 SOURCE AND NATURE OF CONTAMINATION

The data presented were obtained during previous archival research, response investigations, and remedial designs. The suspected types of OE associated with the Bravo Area are presented in Table 3.1. The previous investigations conducted in and around the Bravo Area indicate that it was used primarily as a training area. The types of OE used at this site are training items with expected penetration of less than 6 inches. Through erosion and accumulation of organic material over the site, all OE is anticipated to be encountered at depths of less than one foot unless disposed of in a burial pit. Burial pits are generally created to dispose of multiple items making them easily detectable.

8.4 HAZARD ANALYSIS AND RISK ASSESSMENT

This chapter presents an assessment of the potential hazards associated with the site activities including chemical hazards (Chemical Warfare Materials (CWM) and OE), physical hazards, and biological hazards.

8.4.1 CHEMICAL HAZARDS

It is not anticipated that CWM will be encountered at the Bravo Area. It is possible that lead could be encountered since there has been small arms and ammunition use at the base. However, lead contamination is not likely to present any significant occupational exposure as a result of any planned activities. Foster Wheeler will investigate the areas it intends to perform work in to discover if there is any history of potential chemical contamination. Appropriate training and PPE will be employed if chemical contamination is encountered. However, in the event of CWM material discovery all personnel will evacuate the area immediately in an upwind direction. The SUXOS will notify Foster Wheeler Environmental Command Center and the CEHNC Safety Representative. Foster Wheeler Environmental UXO personnel will standby the area until response elements arrive on scene or until directed by the CEHNC safety representative. The Foster Wheeler Environmental Command Center will notify the Ft. McClellan Transition Force Operations and other personnel listed on Table 8.1 as required.

Table 8.1
Emergency Telephone Numbers

Contact	Firm or Agency	Telephone Number
Emergencies	Calhoun County Emergency Services	911
Police	Anniston Police Dept.	(256) 238-1800
Fire	Anniston Fire Dept.	(256) 231-7644
Ambulance	Anniston EMS	(256) 237-8572
Hospital	Stringfellow Memorial	(256) 235-8900
HAZMAT Response	Anniston Police Dept.	(256) 237-3541
BRAC Environmental Coordinator, Mr. Ronald Levy	Fort McClellan	(256) 848-6853
Project Manager, Mr. John C. McIlrath	Foster Wheeler Environmental Corporation	(256) 830-4100
DO Manager, Mr. Phillip M. Potter, PG.	Foster Wheeler Environmental Corporation	(256) 820-7904
PESM, Mr. Joseph L. Sbarra, CIH	Foster Wheeler Environmental Corporation	(973) 630-8101
Project Manager, Mr. Daniel Copeland	CEHNC	(256) 895-1468
Poison Control Center		(800) 462-0800
Chemtrec		(800) 424-9300
National Response Center		(800) 424-8802
Fort McClellan Transition Force Operations		(256) 848-5178

8.4.2 PHYSICAL HAZARDS

The principal safety hazards, including physical hazards, are discussed in the Activity Hazard Analysis (AHA) in Appendix F for the different phases of the project. In addition to the AHAs, standing work rules and other safety procedures are described in Section 6.15 of the General Site-Wide Work Plan.

8.4.2.1 Heat Stress

Potential hazards posed by heat stress and the recommended and/or required measures to control these hazards are described in Section 6.4.2.1 of the General Site-Wide Work Plan.

8.4.2.2 UXO/Explosives

The Bravo Area may contain Ordnance and Explosives (OE) and Ordnance and Explosives Waste (OEW). Only UXO trained personnel are authorized to handle OE and OEW material. The recommended and/or required measures to control these hazards are described in Section 6.4.2.2 of the General Site Wide Work Plan

8.4.2.3 Cold Stress

Potential hazards posed by cold stress and the recommended and/or required measures to control these hazards are described in Section 6.4.2.3 of the General Site Wide Work Plan.

8.4.2.4 Equipment Safety

Potential hazards posed by heavy equipment operations and the recommended and/or required measures to control these hazards are described in Section 6.4.2.4 of the General Site-Wide Work Plan.

8.4.2.5 Hand and Power Tools

Potential hazards posed by the use of hand and portable power tools and the recommended and/or required measures to control these hazards are described in Section 6.4.2.5 of the General Site-Wide Work Plan. Safety measures for the use of these tools used for clearing and grubbing are as follows:

8.4.2.6 Power Saws

- The engine shall be started and operated only when all co-workers are clear of the saw.
- The operator will shut off the saw when carrying it over slippery surfaces, through heavy brush, and when adjacent to personnel; the saw may be carried running (idle speed) for short distances (less than 50 feet) as long as it is carried to prevent contact with the chain or muffler.
- The engine shall be stopped for all cleaning, refueling, adjustments and repairs to the saw or motor, except where manufacturer's procedures require otherwise.
- All chain saws shall have an automatic chain brake or kick back device.
- The idle speed shall be adjusted so that the chain does not move when the engine is idling.
- The operator will hold the saw with both hands during all cutting operations.
- Face shields, safety glasses, long-sleeved shirts, and chaps will be worn by operators during use.
- A chain saw must never be used to cut above the shoulder height.

8.4.2.7 Chopping Tools

- Chopping tools that have loose or cracked heads or splintered handles shall not be used.
- Chopping tools shall be swung away from the feet, legs, and body, using the minimum power practical for control.
- Chopping tools shall not be driven as wedges or used to drive metal wedges.

8.4.2.8 Brush Clearing and Grubbing Operations

Clearing and grubbing operations pose many potential hazards. These hazards include, but are not limited to being struck by falling debris, damaging equipment, tools, personnel and supplies as a result of improper tree felling and brush clearing activities. All clearing and grubbing activities shall be conducted in accordance EM 385-1-1, Section 31, Tree Maintenance and Removal and ANSI Z133.1-1994, Pruning, Trimming, Repairing, Maintaining, and Removing Trees, and Cutting Brush – Safety Requirements. These requirements include, but are not limited to, the following:

8.4.2.9 Tree Felling

- Ensure footing before starting to cut, clear away brush and other materials that might interfere with cutting operation.
- A notch and back cut shall be used in felling trees over 5 in diameter, no tree shall be felled by “slicing” or “ripping “ cuts.
- The employee shall work from the up hill side when ever possible.
- The work area shall be cleared to permit safe working conditions.
- Just before the tree or limb is ready to fall an audible warning shall be given to all those in the area: all persons shall be safely out of range when the tree or limb falls.
- Persons shall be kept back from the butt of a tree that is starting to fall.

8.4.2.10 Brush Removal and Chipping

- Rotary drum and disk-type tree or brush chippers not equipped with a mechanical in-feed system shall be equipped with an in-feed hopper not less than 85 in. (the sum of the horizontal distance from the chipper blade out along the center of the chute to the end of the chute and the vertical distance from the chute down to the ground) and shall have sufficient height on its side members to prevent personnel from contacting the blades or knives of the machine during normal operations.
- Rotary drum and disk-type tree or brush chippers not equipped with a mechanical in-feed system shall have a flexible antikickback device installed in the in-feed hopper for the purpose of protecting the operator and other persons in the machine area from the hazards of flying chips and debris.
- Disk-type tree or brush chippers equipped with a mechanical in-feed system shall have a quick stop and reversing device on the in-feed: the activating mechanism for the quickstop and reversing device shall be located across from the top, along each side of, and as close as possible to the feed end of the in-feed hopper and within easy reach of the operator.
- The feed chute or feed table of a chipper shall have sufficient height on its side members to prevent operator contact with the blades or knives during normal operation. Brush chippers shall be equipped with an exhaust chute of sufficient length or design to prevent contact with the blade.

- All workers feeding brush into chippers shall wear eye protection. Workers feeding the chipper shall not wear loose hair or clothing, gauntlet-type gloves, rings and watches.
- Employees shall never place hands, arms, feet, legs or any other part of the body on the feed table when the chipper is in operation or the rotor is turning; push sticks – of material which can be consumed by the chipper – shall be used.
- Brush chippers should be fed from the side of the feed table centerline, and the operator shall immediately turn away from the feed table when the brush is taken into the rotor or feed rollers.

8.4.2.11 Mountain Operations

Work in the mountain areas presents a unique set of operational and safety issues, further compounded when UXO is encountered. Development and Implementation of rope safety, rigging, maintenance and rescue training & procedures to allow UXO/ Geophysical personnel & equipment to operate on sloping terrain greater than 10 degrees using established UXO/Geophysical techniques has been accomplished. Specialized rope rescue and Red Cross first aid training for mountain operations was conducted for FWENC site personnel during the week of March 5 through March 9, 2001. New procedures and guidelines, developed from recent mountain operations training are:

- UXO and Geophysical work will be limited to 40 degrees or less slope. This will not apply to work involving rope rescue procedures.
- Personnel can move over obstacles greater than 40 degrees, if they are not tied into the equipment, i.e., EM-61.
- Lines will not be used to work on slopes. Lines are safety devices and will be used only for rope rescue or to move equipment around obstacles.
- Path clearance crews will document obstacles.
- PPE for rope rescue is addressed in the new AHA, Appendix F.
- Whenever possible slopes will be worked either along the slope contour or uphill.
- Due to the possibility of kicking UXO onto an uncleared area, work will not be conducted when walking downhill. Personnel may walk downhill when repositioning around an obstacle, grid or transect line.
- Periodic basic, instructor and annual re-certification/refresher training will be conducted quarterly, at a minimum, over the duration of the contract.
- An SOP that addresses in detail, rope rescue procedures, equipment maintenance and training is being developed.

8.4.3 BIOLOGICAL HAZARDS

The principal safety hazards, including biological hazards, are discussed in the Activity Hazard Analysis (AHA) in Appendix F for the different phases of the project. In addition to the AHAs, standing work rules and other safety procedures associated with biological hazards are described in Section 6.4.3 of the General Site-Wide Work Plan.

8.5 TRAINING

This information is reviewed in the Final General Site-Wide Plan, Section 6.5.

8.6 PERSONAL PROTECTIVE EQUIPMENT

This information is reviewed in the Final General Site-Wide Plan, Section 6.6.

8.7 MEDICAL SURVEILLANCE

This information is reviewed in the Final General Site-Wide Plan, Section 6.7.

8.8 ENVIRONMENTAL AND PERSONAL MONITORING

It is not anticipated that field activities will encounter situations that would require air-monitoring. If air-monitoring is required, the work will be conducted in accordance with 29 CFR 1910.146, the Final General Site-Wide Plan, Section 6.8, and the Foster Wheeler EHS References. Site/ task specific procedures will be included in the SSHP Addendum.

8.9 SITE CONTROL

This information is reviewed in the Final General Site-Wide Plan, Section 6.9.

8.10 PERSONNEL AND EQUIPMENT DECONTAMINATION

This information is reviewed in the Final General Site-Wide Plan, Section 6.10.

8.11 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES (ON-SITE AND OFF-SITE)

This information is reviewed in the Final General Site-Wide Plan, Section 6.12.

8.12 CONFINED SPACE ENTRY

It is not anticipated that field activities will encounter situations that would require confined space entry. If confined space entry is required, the work will be conducted in accordance with 29 CFR 1910.146 and the Foster Wheeler EHS References. Site/ task specific procedures will be included in the SSHP Addendum.

8.13 SPILL CONTAINMENT

If spill containment is required, the work will be conducted in accordance with 29 CFR 1910.146, Final General Site-Wide Plan Sections 6.12.14 and 6.12.15, and the Foster Wheeler EHS References.

8.14 HEAT/ COLD STRESS MONITORING

This information is reviewed in the Final General Site-Wide Plan, Section 6.14.

8.15 STANDING OPERATING PROCEDURES, ENGINEERING CONTROLS AND WORK PRACTICES

Information and equipment specific to this project are discussed in the AHAs. Further information is also available in the Final General Site-Wide Plan, Section 6.15.

8.16 LOGS, REPORTS, AND RECORD KEEPING

This information is reviewed in the Final General Site-Wide Plan, Section 6.16.

8.17 RADIOLOGICAL AND CHEMICAL WARFARE MATERIAL (CWM)

It is not anticipated that field activities will encounter radiological and chemical warfare material. If radiological and chemical warfare material is encountered, the work will be conducted in accordance with 29 CFR 1910.146 and the Foster Wheeler EHS References. Site/ task specific procedures will be included in the SSHP Addendum.

9.0 ENVIRONMENTAL PROTECTION PLAN

This Environmental Protection Plan (EPP) has been developed to minimize any potential adverse effects to the environment occurring as a result of OE investigations at Fort McClellan. Specifically, this EPP will describe sensitive natural resources within Fort McClellan and will set forth methods to protect and conserve those resources during OE sampling activities. The investigation sample areas will be field verified by a Foster Wheeler Environmental biologist and a site biologist from Fort McClellan in order to minimize the project's potential disturbance to natural resources. Location of sampling areas will meet the following objectives where feasible:

- Minimizing the use of heavy machinery;
- Minimizing off-road intrusion (i.e., trucks and cars can be parked on roads, side roads, lots, etc.);
- Utilization of areas that require minimal trimming and cutting of brush, and elimination of cutting brush to ground level; and
- Avoidance of areas known to have threatened or endangered flora and/or fauna.

9.0.1 Where impacts to sensitive biological resources cannot be avoided, this EPP outlines potential measures that can be implemented to mitigate such impacts. These mitigation measures were developed based upon a site-specific analysis that addressed unique concerns at Fort McClellan and incorporate more general best management procedures and guidelines that have been implemented for intensive UXO remediation undertakings at other former military training sites.

9.0.2 The U.S. Fish & Wildlife Service (USFWS) considers Fort McClellan a critical natural area because it contains one of the last remaining pristine, old-growth stands of mountain longleaf pine in the United States. Fort McClellan is also believed to have the finest remaining mountain longleaf pine forest ecosystem (Varner, Kush, and Meldahl 2000). This keystone species dictates the best management guidelines set forth by the USFWS to protect this unique community at Fort McClellan.

9.0.3 Twenty-seven plant and animal species associated with longleaf forests have been listed as federally endangered or threatened by the USFWS, with an additional 99 candidate species. Of these listed species, three have been recorded on Fort McClellan; the red-cockaded woodpecker, Mohr's barbara buttons, and Tennessee yellow-eyed grass. Five candidate species for potential listing have also been identified. Management of these species and their associated communities is of special concern and is facilitated through Fort McClellan's Endangered Species Management Plan. Descriptions of these species and special interest natural areas defined by the USFWS are described in the General Site-Wide Work Plan.

9.0.4 After review of the Bravo Area sampling sectors by a USFWS representative, it was determined that significant habitat for any federally listed endangered/threatened

species or state listed candidate species did not exist inside project boundaries (B. William Garland, USFWS, personal communication). The gray bat (*Myotis grisescens*) inhabits the Main Post, an area adjacent to these sampling sectors, but does not pose a concern. The red-cockaded woodpecker (*Picoides borealis*) has historically occupied longleaf forest on the Main Post as well, however it has not been sighted on Fort McClellan since 1968 (DOE, 1996).

9.0.5 Since the dominant vegetation of the sampling sectors is mountain longleaf pine, the USFWS does consider these sectors to contain a special interest natural area. However, since disturbance will be limited to clearing of the under brush, little or no impacts to longleaf pine will occur. In addition, three small, isolated wetlands exist in the Bravo Area sampling sectors. Impacts to these sensitive areas are expected to be minimal due to their limited extents within the Bravo Area. All possible actions to avoid impacts to wetlands will be taken.

9.0.6 Once sampling grid locations have been finalized, a Fort McClellan USFWS representative will be notified and given the opportunity to express possible concerns and conduct a field review of the areas. In addition, field personnel will report any wildlife concerns or discoveries to the Service as work is carried out. If any biologically sensitive areas should be identified, coordination with the USFWS will determine appropriate field methods to avoid impacts to these resources.

10.0 DATA MANAGEMENT PLAN

10.1 TARGET DATA COLLECTION AND RECORDING

All observations and measurements collected during the intrusive investigation will be recorded digitally in the field or on the Intrusive Investigation Data Form. When digitally recorded in the field, intrusive investigation observations and measurements will be recorded into an electronic form on a portable PC/handheld device by the UXO Team Supervisor. At the end of each day, the UXO Team Supervisor will download the digital data to the on-site computer network. The Data Manager will then incorporate the data into the project database.

10.1.1 All intrusive investigation data, whether recorded digitally or on Intrusive Investigation Data Forms, will be given to the SUXOSS and Site QC Technician within one working day of collection. The SUXOSS and Site QC Technician will review the data for accuracy by confirming that all mandatory information is recorded in the correct place and the designated data type is used to record the data (e.g., diameter is recorded in inches to the nearest 1 inch). The SUXOSS will also confirm that one sheet exists for each target that was investigated.

10.1.2 The SUXOSS will provide forms and logbook training to the crews and will coordinate with the Data Manager and Site CQC Representative to rectify any potential problem areas. This is a crucial step, as electronic data are only as accurate and complete as the hard-copy forms on which they are based. The SUXOSS will ensure the forms are completed correctly within 3 working days. Incomplete forms will be submitted to the SUXOSS for correction/completion. The checked and corrected forms will be delivered to the Data Manager for inclusion in the project database.

10.2 PHOTOGRAPHS

Digital photographs will be taken of all ordnance items found during surface clearance and intrusive investigation activities. The digital photos will be downloaded to the on-site computer network by the UXO Team Supervisor. The Data Manager will incorporate the photographs into the project database.

10.3 TARGET COORDINATE DATA

The actual (not offset) coordinates of the reacquired target location will be recorded by the UXO reacquisition teams. The UXO excavation teams will record the offset from the flagged coordinates (reacquired location) to the excavated target(s). The data will be uploaded to the on-site computer network each day after the data is collected by the UXO Team Supervisor. The Data Manager will incorporate the data into the project database.

10.4 INTRUSIVE INVESTIGATION DATABASE

All Intrusive Investigation observations and measurements will be entered into the Intrusive Investigation Data table of the project database. If field PCs are used, the electronic data will be imported daily into the database.

10.4.1 If Intrusive Investigation Data Forms are used, the data will be entered into the database. The person responsible for data entry will perform the initial QC inspection by reviewing their own work (i.e., before moving to the next record, confirm that the entered data looks correct). All manually entered data will be printed and checked against the original data sheets under the supervision of the Data Manager. Errors discovered during the data checking will be corrected in the database. When the errors are corrected in the database, the person responsible for the change will initial and date the check sheet.

10.4.2 Digital photographs will be collected daily (if necessary) and pictures of ordnance items will be incorporated into the project database. Reacquired target coordinate data will be uploaded to the project database on a daily basis.

10.5 TRANSFER OF FIELD DATA AND DATA TRACKING

Several files are generated by the geophysical and location acquisition systems for each site surveyed. This data is stored on the field computers during data acquisition activities. At the end of the day, the data collected by each field team will be downloaded to the on-site computer network. The following file types are generated for each survey:

- Geophysical data file with signal intensity and position measurements.
- Location acquisition files containing position data and site identification.

10.5.1 If DGPS or a robotic total station is used during target reacquisition, data files will also be downloaded each day to the on-site computer network.

10.5.2 All EM-61 and location data files will be electronically logged each day by the Data Manager. The following items will be recorded in the tracking database for each EM61 and location file collected:

- Grid/Area ID
- Grid or Ribbon Walk (G or RW)
- Geo Team (1, 2, 3, or 4)
- Date collected
- USRADS file name
- Location file start and stop times
- EM-61 start and stop times

10.5.3 EM and location data will be processed on site. The following items will be added to the tracking database:

- Date USRADS, DGPS (if used) or robotic total station data (if used) processed
- Initials of processor
- Date location and EM-61 data merged (if applicable)
- Initials of processor merging files
- Merged data file name (*.xyz)

10.5.4 After the data has been interpreted, the selected target anomaly locations and information will be added to the project database. The following items will also be added to the tracking database:

- Number of Anomalies
- Date anomaly data added to project database

11.0 UXOQC QUALITY CONTROL

Quality Control is conducted using a three-phase control process, preparatory, initial, and follow-up inspection/audits to ensure processes are in control and opportunities for improving processes are captured and implemented.

11.1 PREPARATORY PHASE

A preparatory phase inspection will be performed prior to beginning each definable feature of work. The purpose of this inspection will be to review applicable specifications and verify that the necessary resources, conditions, and controls are in place and compliant before the start of work activities. The personnel responsible for the work activity are responsible for ensuring that:

- Appropriate plans and procedures are developed and approved
- Personnel required for the activity are identified and positions filled
- Training requirements are identified and training complete
- Preliminary work and coordination has been completed
- Equipment required to perform the work has been identified and is available

11.1.1 The following QC actions are performed by the QC Staff for each preparatory phase inspection:

- Verify that appropriate plans and procedures are developed, approved and are available
- Verify personnel identified are available and meet the requirements/qualifications for the position
- Verify that the required training has been performed
- Verify identified equipment is available, functional, and appropriate for the job
- Verify that the preliminary work and coordination have been accomplished
- Verify that quality issues have been addressed and agreed upon

11.1.2 The specific QC activities performed during the preparatory phase, and results of those activities, will be documented on the QC Surveillance Report, which will be attached to the Daily Quality Control Report.

11.1.3 Discrepancies between existing conditions and approved plans/procedures will be resolved and corrective actions taken for unsatisfactory and nonconforming conditions identified during a preparatory phase inspection.

11.1.4 The UXOS will discuss job hazards with site personnel and verify that the necessary safety measures are in place and ready for use.

11.2 INITIAL PHASE INSPECTION

An initial phase inspection will be performed the first time a definable feature of work is performed. The purpose of the inspection will be to check the preliminary work for the

compliance with procedures and contract specifications. Also to establish the acceptable level of workmanship, and check safety compliance, review the preparatory phase inspection, and check for omissions and resolve differences of interpretation.

11.2.1 The following will be performed for each definable feature of work:

- Requirements of quality of workmanship will be established
- Completion of readiness review actions verified
- Conflicts resolved
- Work Plan applicable documents reviewed to ensure that the requirements are being met
- Performance of work will be observed and adequacy of work verified

11.2.2 Discrepancies between site practices and approved plans/procedures will be resolved. Corrective actions for unsatisfactory conditions or practices will be verified by the Site QC Manger or his designee, prior to granting approval to proceed.

11.2.3 The specific QC activities performed during the initial phase, and results of those activities, will be documented on a QC Surveillance Report and attached to the Daily Quality Control Report.

11.3 FOLLOW-UP PHASE INSPECTION (SURVEILLANCE)

The follow-up phase inspection is performed on both a scheduled and unscheduled basis. The purpose of the inspection is to ensure a level of continuous compliance and workmanship. The Site QC Manager is responsible for on-site monitoring of the practices and operations taking place and verification of continued compliance with the specifications and requirements of the scope of work and approved SOPs. The following will be performed for each definable feature of work:

- Inspections/surveillance to ensure that the work is in compliance with the scope of work and work plans;
- Inspections/surveillance to ensure the required level of workmanship is maintained;
- Inspections/surveillance to ensure each project log book is properly filled out and maintained;
- Inspections/surveillance to ensure data management system is properly tracked and backed up; and
- Inspections/surveillance to check the “false positive” anomalies using a statistically valid sampling plan (i.e. MIL-STD-1916) or 10%.

11.3.1 Follow-up results either negative or positive will be documented on a Surveillance Report and attached to the Daily Quality Control Report.

11.4 DEFICIENCIES AND NONCONFORMANCE

All deficiencies or nonconformance conditions discovered during inspection or other QC functions will be noted on either a Deficiency or Nonconformance Report as appropriate. These two forms are contained in Appendix H along with the Corrective Action Request Log for tracking these reports. All deficiencies and nonconformance conditions will be

resolved prior to completion of the project and in the most timely manner possible. The Daily QC Report will include a report on each Deficiency/NCR that was completed and closed out for the day.

11.4.1 It is the responsibility of all personnel on the project to identify deficiencies and nonconforming conditions to their supervisor or manager as soon as they think the condition exists. Identifying a deficiency or nonconforming condition should not always be considered as negative. Deficiencies and nonconforming conditions should be considered opportunities to improve the process.

11.5 ROOT CAUSE ANALYSIS

Both the deficiency and nonconformance report forms contain an area for the entry of information regarding the cause of the problem and proposed resolution. The determination of the root cause of a deficiency or nonconformance is an integral part of the QC process. Root cause analysis is the responsibility of the functional manager or his/her designee with the assistance of Quality Control Representatives. Criteria considered in the analysis will include:

- Staff qualifications and training
- Adequacy of procedures
- Adequacy of equipment
- Adequacy of QC measures

11.5.1 Input will be obtained as necessary from field personnel and technical advisors in order to identify the factors, which led to the problem.

11.5.2 The root cause is always “upstream” from where the problem was detected. Two strategies that will be employed for determining the root cause of a deficiency or Non-Conformance Report (NCR) for this project are: 1) tracing the problem back to the source, and 2) evaluation of the cause using basic questions such as who, what, when, where, why, and how. Why is probably the most beneficial question when attempting to arrive at a root cause. This question may need to be asked multiple times before the cause is identified. For example “Why did A happen?” Answer: “Because of B,” “Why did B happen?” Answer: “Because of C.” This process is carried on until the real cause is identified.

11.6 CORRECTIVE ACTION

Following the root cause analysis, the Site QC Manager will perform analysis of potential solutions (corrective actions) to determine which remedy is most effective in correcting the problem. The process will include all appropriate personnel and will be documented via meeting notes and information listed in the proper sections on the deficiency notice or NCR report. Potential remedies considered may include:

- Supplemental personnel training
- Changes of equipment or modification of equipment currently in use

- Acquisition of supplemental equipment
- Implementation of new procedures or modification of existing procedures
- Changes in QC procedures

11.6.1 The decision for appropriate corrective action to implement is the responsibility of the Delivery Order Manager, however, all parties involved prior to implementation should agree upon this decision.

11.6.2 Successful implementation of corrective action will be documented on the deficiency or nonconformance report. The project QC representative will verify through a follow-up phase surveillance that the corrective action implemented has corrected the deficiency or nonconforming condition and is sufficient to prevent recurrence.

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