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Shaw® Shaw Environmental, Inc.

October 25, 2007

SHAW-MC-CK11-0403
Project No. 800486

Mr. Lee Coker
U.S. Army Corps of Engineers, Mobile District
Attn: EN-GE/Lee Coker
109 St. Joseph Street
Mobile, Alabama 36602

Contract: **DACA21-96-D-0018, Task Order CK11**
Fort McClellan, Alabama

Subject: **Letter Work Plan for Monitoring Well Installation and Groundwater Sampling at the Skeet Range, Parcel 69Q and Bains Gap Road (BGR) Ranges**

Dear Mr. Coker:

As discussed and agreed upon during the Alabama Department of Environmental Management (ADEM) comment resolution meeting on October 11 and 12, 2007, Shaw will perform the following additional investigative activities in accordance with ADEM guidelines and the Installation-Wide Sampling and Analysis Plan (SAP). Shaw plans to mobilize personnel and equipment for this effort on Monday, October 29, 2007.

- Install 3 shallow residuum monitoring wells in potential lead-in-soil source areas: 1 well at the Skeet Range, Parcel 69Q and 2 wells at the Bains Gap Road Ranges (1 well at Range 22, Parcel 78Q and 1 well at Range 24 Upper, Parcel 80Q).

- Sample a total of 9 monitoring wells (5 existing wells at the BGR Ranges, 1 well at the Skeet Range, and the 3 newly installed wells).

- Collect 1 composite subsurface soil sample at Range 20, Parcel 76Q-X for white phosphorus analysis.

Figure 1 shows the location of the proposed well and the wells to be re-sampled at the Skeet Range, Parcel 69Q. Figure 2 shows the locations of the two proposed wells and the existing wells to be sampled at the Bains Gap Road Ranges, Range 24 Upper, Parcel 80Q, Range 21, Parcel 77Q, Range 22, Parcel 78Q and Range 27, Parcel 85Q. Figure 3 shows the location of the proposed subsurface soil sample at Range 20, Parcel 76Q-X.

1.0 Site Descriptions and History

1.1 Skeet Range, Parcel 69Q

The Skeet Range, Parcel 69Q is one of four ranges that comprise the Iron Mountain Road (IMR) Ranges. The Skeet Range was constructed in 1988 and was in operation until October 1998. The Skeet Range (13 acres) was built over the land formerly used as a rifle grenade range (Parcel 222Q-X). The area of the former rifle grenade range (1.7 acres) is completely encompassed by the Skeet Range parcel boundary (Figure 1). The Skeet Range was used for clay skeet and trap shooting competition. Historically, weapons fired at the range consisted of various gauge shotguns. The western slope of Sunset Hill (approximately 150 feet high relative to the range floor) serves as the main impact zone for the range. The Skeet Range was investigated along with these ranges as part of a remedial investigation (RI) from March 2000 to May 2003. The RI confirmed the presence of metals-contaminated soil (predominantly lead) as well as some low-level detections of explosives in groundwater.

1.2 Bains Gap Road Ranges

The ranges and parcels that comprise the BGR Ranges are:

- Range 24 Upper (Defensive Techniques), Parcel 80Q
- Range 21 (Field Fire Range), Parcel 77Q
- Range 22 (Zero Range), Parcel 78Q, and the Former Mortar Range (Firing Line), Parcel 109Q
- Range 27 (Special Operations Range), Parcel 85Q.

The BGR Ranges were mostly used for small-caliber weapons training and skeet shooting and were recently active prior to base closure. Bullets and bullet fragments are present in great quantity on the surface of many of the BGR Range impact zones. RI field activities were performed in several stages from July 2000 to May 2003. The RI report concluded that metals (predominantly lead in soil at all four ranges) and explosive compounds in groundwater (at Range 21 and Range 27) were chemicals of potential concern at these ranges.

1.3 Range 20, Parcel 76Q-X

Range 20 is one of several ranges that comprise the Baby Bains Gap Road (BBGR) Ranges located in the central section of the FTMC Main Post. Weapons fired at the range included M-60 (.308 caliber) machine gun with tracer rounds. Personnel used the area between the M-60 impact zone and the firing point area for "infiltration maneuver training." This area is moderately to densely wooded. Abandoned vehicles, concrete pillboxes, and a mock cemetery that were used for maneuver training are found in this area. According to former FTMC range control personnel, no live ammunition was fired in the infiltration maneuver training area, only blanks. Range 20 was investigated as part of an RI for the BBGR Ranges in 2001 and 2002.

2.0 Field Activities

The proposed field activities at the BGR Ranges, Skeet Range and Range 20 are discussed in the following sections. All work conducted during this field effort will be performed in accordance with the FTMC Installation-Wide Safety and Health Plan and the Site-Specific Safety and Health Plan (SSHP) included as Appendix A of this work plan. The presence of unexploded ordnance (UXO) is possible at these ranges; therefore, Shaw will conduct UXO avoidance procedures as outlined in the site-specific munitions and explosives of concern (MEC) safety plan (Appendix B of this work plan) and Appendix E of the SAP. Additionally, the form "Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities" is also included as Attachment 1 of the SSHP.

2.1 Monitoring Well Installation

Shaw will install three residuum monitoring wells as part of this effort: one well (HR-69Q-MW03) at the Skeet Range, Parcel 69Q and two wells (HR-78Q-MW04 and HR-80Q-MW07) at the BGR Ranges, as shown on Figures 1 and 2. The three wells will be installed in areas with the highest lead contamination in soil. It is anticipated that the wells will be installed using hollow-stem augers to a maximum depth of approximately 40-50 feet bgs. The wells will be installed within the first water-bearing zone encountered and constructed of 2-inch inside diameter PVC pipe with a 10 to 20-foot screen. The surface completions will consist of above grade protective steel casings with flush-mount concrete pads. Four protective steel posts will be constructed around each concrete pad. Shaw will subcontract an Alabama-licensed driller to perform the well installations. The new wells will be installed and developed following procedures in the SAP. The rationale for each well location is presented in Table 1.

2.2 Groundwater Sampling

Shaw will collect groundwater samples from 6 existing wells (5 wells at the BGR Ranges and 1 well at the Skeet Range) and from the 3 newly installed wells. All samples will be analyzed for nitroaromatic explosive compounds using EPA SW-846 analytical methods. Samples from the newly installed wells will also be analyzed for TAL metals. Groundwater sampling activities will follow the procedures outlined in Section 6.1.1.5 and Attachment 5 of the SAP. The procedures described in the SAP address the supplies and equipment to be used and establish protocol for field personnel to use. Table 1 provides the groundwater sampling rationale. Table 2 summarizes pertinent information about the existing site wells, including well diameter, total depth, and screened interval depths. Table 3 lists the wells to be sampled, the groundwater sample designations, the associated QA/QC samples, and analytical parameters. Table 4 summarizes the analytical sampling scope for the groundwater sampling.

2.3 Soil Sampling

Shaw will collect one composite soil sample within the Machine Gun Impact area at Range 20. The subsurface soil sample will be collected using a stainless steel hand auger from 1-foot to 2-foot bgs, which is regarded as the upper or first subsurface soil sample interval. The soil sample will be analyzed for white phosphorous using EPA SW-846 method 7580. Soil sampling activities, including sample documentation, preservation, packaging, and shipping, will follow the procedures outlined in the SAP.

2.4 Surveying

The new well locations and the Range 20 soil sample location will be surveyed by an Alabama-registered surveyor using global positioning survey or conventional civil survey technologies, as described in the SAP. Horizontal coordinates will be referenced to the U.S. State Plane Coordinate System, Alabama East Zone.

2.5 Investigation-Derived Waste (IDW) Management

Solid IDW generated from drilling and well installation activities will be placed in a 20 or 30-cubic yard roll-off container prior to characterization and final disposal. Solid IDW will be characterized using toxicity characteristic leaching procedure analysis. It is anticipated that the soil will be disposed as non-hazardous waste.

Liquid IDW generated from the development and purging of the wells will be staged onsite in poly tanks pending waste characterization. It is assumed that one IDW characterization sample will be collected and analyzed for target analyte list metals, VOCs, and semivolatile organic compounds using standard EPA analytical methods. The analytical results will be reported directly to the Shaw Site Supervisor to ensure the IDW can be disposed in a timely manner. It is assumed that the IDW will be discharged to the sanitary sewer system as nonhazardous waste.

At your request, I have distributed copies of this work plan as indicated below. If you have questions, or need further information, please contact me at (865) 694-7361.

Sincerely,

J. Troy Winton for

Stephen G. Moran, P.G.
Project Manager

Attachments

Distribution: Lisa Holstein, U.S. Army TF (4 copies, 2 CDs)
Brandi Little, ADEM (2 copies, 1 CD)
Doyle Brittain, EPA (1 copy; 1 CD)
Pete Tuttle, USFWS (1 copy)
Rich Henry (1 copy)

TABLES

Table 1

Sampling Locations and Rationale
Skeet Range, Parcel 69Q; Bains Gap Road Ranges, Parcels 77Q, 78Q, 80Q and 85Q; and Range 20, Parcel 76Q-X
Fort McClellan Alabama

Site	Sample Location	Sample Media	Sample Location Rationale
Bains Gap Road Ranges	HR-77Q-MW01	Groundwater	One groundwater sample to be collected from the existing residuum monitoring well shown on Figure 2 to verify the presence or absence of explosives in groundwater.
	HR-77Q-MW02	Groundwater	One groundwater sample to be collected from the existing deep residuum monitoring well shown on Figure 2 to verify the presence or absence of explosives in groundwater.
	HR-77Q-MW04	Groundwater	One groundwater sample to be collected from the existing residuum monitoring well shown on Figure 2 to verify the presence or absence of explosives in groundwater.
	*HR-78Q-MW04	Groundwater	Residuum monitoring well to be installed within the area of lead contaminated soil near existing soil sample SAR-78-SS28 and approximately 180 feet southeast of existing well cluster HR-78Q-MW01 and HR-78Q-MW02 as shown on Figure 2. The well will be installed into the first water-bearing zone encountered. A groundwater sample will be collected from the residuum well and analyzed for explosives and TAL metals.
	HR-80Q-MW06	Groundwater	One groundwater sample to be collected from the existing residuum monitoring well shown on Figure 2 to verify the presence or absence of explosives in groundwater.
	*HR-80Q-MW07	Groundwater	Residuum monitoring well to be installed within the area of lead contaminated soil near existing soil sample HR-80Q-GP05, approximately 425 feet east\northeast of existing monitoring well HR-80Q-MW04 as shown on Figure 2. The well will be installed into the first water-bearing zone encountered. A groundwater sample will be collected from the residuum well and analyzed for explosives and TAL metals.
	HR-85Q-MW01	Groundwater	One groundwater sample to be collected from the existing residuum monitoring well shown on Figure 2 to verify the presence or absence of explosives in groundwater.
Skeet Range	HR-69Q-MW01	Groundwater	One groundwater sample to be collected from the existing residuum monitoring well shown on Figure 1 to verify the presence or absence of explosives in groundwater.
	*HR-69Q-MW03	Groundwater	Residuum monitoring well to be installed within the area of lead contaminated soil near existing soil sample SAR-69-SS11 and approximately 500 feet south\southwest of existing well cluster HR-69Q-MW01 and HR-69Q-MW02 as shown on Figure 1. The well will be installed within the first water-bearing zone encountered. A groundwater sample will be collected from the residuum well and analyzed for explosives and TAL metals.
Range 20	HR-76Q-GP21	Subsurface Soil	One composite subsurface soil sample to be collected within the machine gun impact area shown on Figure 3. The subsurface soil sample will be collected from 1- to 2 feet below ground surface. The soil sample will be analyzed for white phosphorus to determine if this compound is a potential contaminant of concern at FTMC.

Note: * Proposed residuum monitoring well to be installed in the first water-bearing zone encountered during drilling operations.

Table 2

Monitoring Well Construction Summary
Skeet Range, Parcel 69Q; Bains Gap Road Ranges, Parcels 77Q, 78Q, 80Q, and 85Q
Fort McClellan, Calhoun County, Alabama

Well Location	Northing	Easting	Ground Elevation (ft amsl)	TOC Elevation (ft amsl)	Well Depth (ft bgs)	Screen Length (ft)	Screen Interval (ft bgs)	Well Material
*HR-69Q-MW01	1165779.18	665455.28	797.73	799.58	47	20	27 - 47	2" ID Sch. 40 PVC
HR-69-MW02	1165769.61	665468.55	797.73	799.58	102	10	92 - 102	2" ID Sch. 40 PVC
*HR-77Q-MW01	1168961.11	680694.32	948.73	950.71	53.3	20	33.3 - 53.3	2" ID Sch. 40 PVC
*HR-77Q-MW02	1168937.58	680701.72	951.07	953.31	98	20	78 - 98	4" ID Sch. 40 PVC
HR-77Q-MW03	1169459.76	680544.44	932.55	934.67	25	15	10 - 25	2" ID Sch. 40 PVC
*HR-77Q-MW04	1168917.00	680049.53	941.66	943.72	27	15	12 - 27	2" ID Sch. 40 PVC
HR-78Q-MW01	1169324.11	679799.25	927.79	929.52	37.8	15	22.8 - 37.8	2" ID Sch. 40 PVC
HR-78Q-MW02	1169311.09	679793.63	926.21	928.38	95	20	75 - 95	4" ID Sch. 40 PVC
HR-78Q-MW03	1169377.82	679374.17	905.61	907.71	14	10	4 - 14	2" ID Sch. 40 PVC
HR-80Q-MW01	1169171.10	681924.19	1004.29	1006.28	6.9	5	1.9 - 6.9	2" ID Sch. 40 PVC
HR-80Q-MW02	1168987.93	681902.43	995.96	998.03	18	10	8 - 18	2" ID Sch. 40 PVC
HR-80Q-MW03	1168961.59	681793.72	990.20	992.29	18	10	8 - 18	2" ID Sch. 40 PVC
HR-80Q-MW04	1168715.50	681686.53	990.13	992.19	25	10	15 - 25	2" ID Sch. 40 PVC
HR-80Q-MW05	1168913.66	681521.41	978.81	980.52	14	10	4 - 14	2" ID Sch. 40 PVC
*HR-80Q-MW06	1168560.44	681683.18	1008.33	1010.50	30	10	20 - 30	2" ID Sch. 40 PVC
*HR-85Q-MW01	1168968.43	678235.30	878.67	880.69	55	20	35 - 55	2" ID Sch. 40 PVC
HR-85Q-MW02	1168972.89	678244.91	879.20	881.32	100	20	80 - 100	4" ID Sch. 40 PVC
HR-85Q-MW03	1169153.40	678902.80	892.95	895.16	15	10	5 - 15	2" ID Sch. 40 PVC
HR-85Q-MW05	1169116.13	678657.45	887.20	889.12	13	10	3 - 13	2" ID Sch. 40 PVC

Note * Well to be sampled for explosives.

Permanent wells installed using hollow-stem auger and/or air-rotary drilling.

Horizontal coordinates referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum of 1983 (NAD83).

Elevations referenced to the North American Vertical Datum of 1988 (NAVD88).

2" ID Sch. 40 PVC - 2-inch inside diameter, Schedule 40, polyvinyl chloride.

amsl - Above mean sea level.

bgs - Below ground surface.

ft - Feet.

TOC - Top of casing.

Table 3

Groundwater and Soil Sample Designations and Analytical Parameters
Skeet Range, Parcel 69Q; Bains Gap Road Ranges, Parcels 77Q, 78Q, 80Q and 85Q; and Range 20, Parcel 76Q-X
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	QA/QC Samples		Analytical Parameters*
		Field Duplicates	MS/MSD	
HR-69Q-MW01	HR-69Q-MW01-GW-BGR3000-REG			Explosives
HR-69Q-MW03	HR-69Q-MW03-GW-BGR3001-REG			Explosives, TAL Metals
HR-77Q-MW01	HR-77Q-MW01-GW-BGR3002-REG	HR-77Q-MW01-GW-BGR3003-FD	HR-77Q-MW01-GW-BGR3002-MS HR-77Q-MW01-GW-BGR3002-MSD	Explosives
HR-77Q-MW02	HR-77Q-MW02-GW-BGR3004-REG			Explosives
HR-77Q-MW04	HR-77Q-MW04-GW-BGR3005-REG			Explosives
HR-78Q-MW04	HR-78Q-MW04-GW-BGR3006-REG			Explosives, TAL Metals
HR-80Q-MW06	HR-80Q-MW06-GW-BGR3007-REG			Explosives
HR-80Q-MW07	HR-80Q-MW07-GW-BGR3008-REG			Explosives, TAL Metals
HR-85Q-MW01	HR-85Q-MW01-GW-BGR3009-REG			Explosives
HR-76Q-GP21	HR-76Q-GP21-DS-BGR0001-REG			White Phosphourus

*Explosive compounds by EPA Method 8330. TAL Metals by EPA Method 6010\7470. White phosphorus by EPA Method 7580.
DS - Deep Soil
FD - Field duplicate.
GW - Groundwater.
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Regular field sample.

Table 4

Sampling Scope Summary
Skeet Range, Parcel 69Q; Bains Gap Road Ranges, Parcels 77Q, 78Q, 80Q and 85Q; and Range 20, Parcel 76Q-X
Fort McClellan, Calhoun County, Alabama

Parameters	SW-846 Analytical Method	Sample Matrix	TAT Needed	Field Samples: No. of Samples	Field Samples: No. of Events	Field Samples: Total No. of Samples	QA/QC Samples [1]: Field Dups (10%)	QA/QC Samples [1]: Splits w/ QA Lab	QA/QC Samples [1]: MS/MSD (5%)	QA/QC Samples [1]: Trip Blank (1/ship)	QA/QC Samples [1]: Eq. Rinse (1/wk/matrix)	EMAX Total No. Analysis	QA Lab Total No. Analysis
GW and Soil Sampling at Bains Gap Road, Skeet Range, and Range 20: 3 samples for TAL Metals, 9 samples for explosives, and 1 sample for white phosphorus													
TAL Metals	6010/7470	water	21-day	3	1	3							
Explosives	8330	water	21-day	9	1	9	1	NA	1	NA	2	18	NA
White Phosphorus	7580	soil	21-day	1	1	1							
					Total	13	1	0	1	0	2	18	0
IDW Sampling from Well Installation Activities - 1 composite soil sample of drill cuttings & 1 liquid sample of well development/purge water													
TCL VOCs	8260	liquid	21-day	1	1	1						1	0
TCL SVOCs	8270	liquid	21-day	1	1	1						1	0
TAL Metals	6010/7470	liquid	21-day	1	1	1						1	0
TCL VOCs	1311/8260	soil	21-day	1	1	1						1	0
TCL SVOCs	1311/8270	soil	21-day	1	1	1						1	0
TAL Metals	1311 6010/7470	soil	21-day	1	1	1						1	0
					Total	6	0	0	0	0	0	6	0

[1] Field duplicate and MS/MSD samples were calculated as a percentage of the field samples and were rounded up to the nearest whole number. MS/MSD counts as two samples for analysis. Trip blank samples applicable to water matrix samples for VOC analysis only. Assumed 2 field samples per day to estimate trip blanks. Equipment blanks will be collected once per week whenever sampling equipment is field decontaminated and re-used. No QA/QC samples assigned for IDW samples.

FIGURES

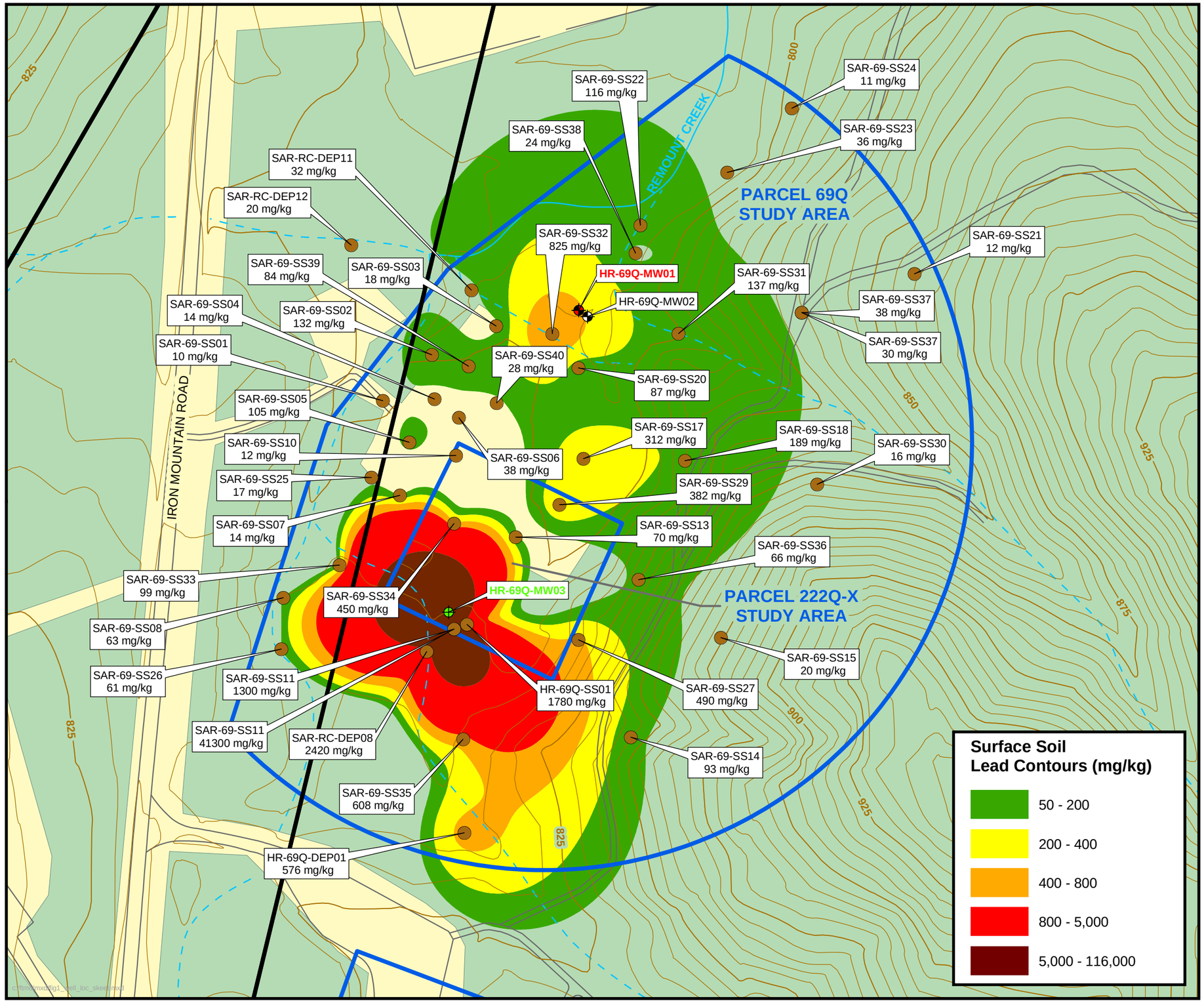


Figure 1

Surface Soil and Monitoring Well Location Map

Skeet Range, Parcel 69Q and
Former Rifle Grenade Range,
Parcel 222Q-X
Fort McClellan, Alabama

Legend

- Proposed Residuum Well Location
- Existing Residuum Monitoring Well to be Re-sampled
- Existing Surface Soil Sample Location
- Existing Monitoring Well (No Soil Sample Collected)
- Study Area
- Wooded
- Not Wooded
- Roads
- Surface Drainage Feature (Dashed where Intermittent)
- Topographic Contour (5-foot interval)
- Bypass Corridor

150 0 150 Feet

NAD83 State Plane Coordinates

N

Shaw Environmental, Inc.

U.S. Army Corps of Engineers
Mobile District

Contract No. DACA21-96-D-0018

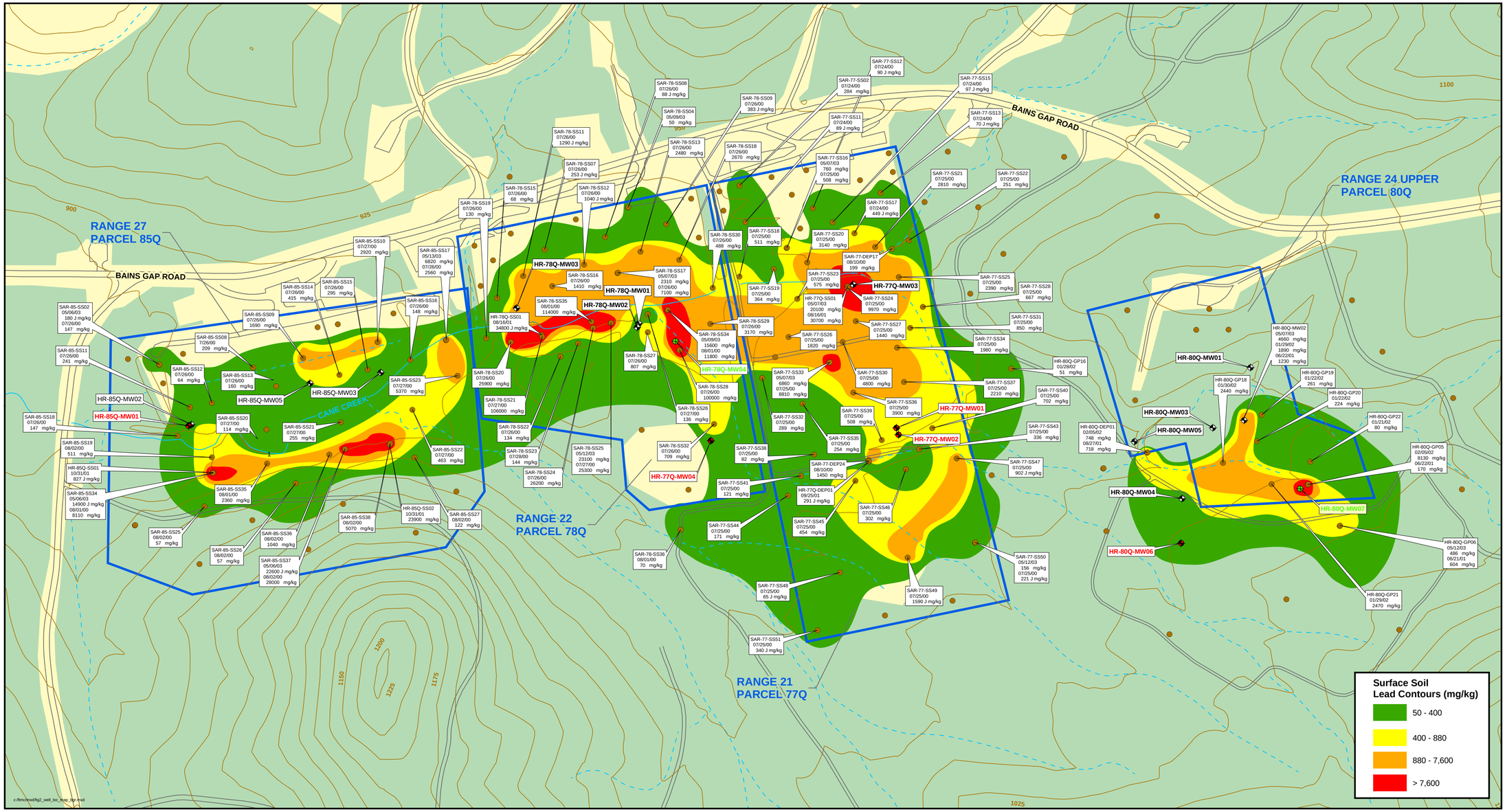


Figure 2

Surface Soil and Monitoring Well Location Map

Bains Gap Road Ranges
Fort McClellan, Alabama

Legend

- Proposed Residuum Well Location
- Existing Residuum Monitoring Well to be Re-sampled
- Existing Surface/Depositional Soil Sample Location
- Existing Monitoring Well
- Study Area
- Wooded
- Not Wooded
- Roads
- Surface Drainage Feature (Dashed where Intermittent)
- Topographic Contour (25-foot interval)
- J Compound was positively identified; reported value is an estimated concentration.

200 0 200 Feet

NAD83 State Plane Coordinates

N

Shaw Environmental, Inc.

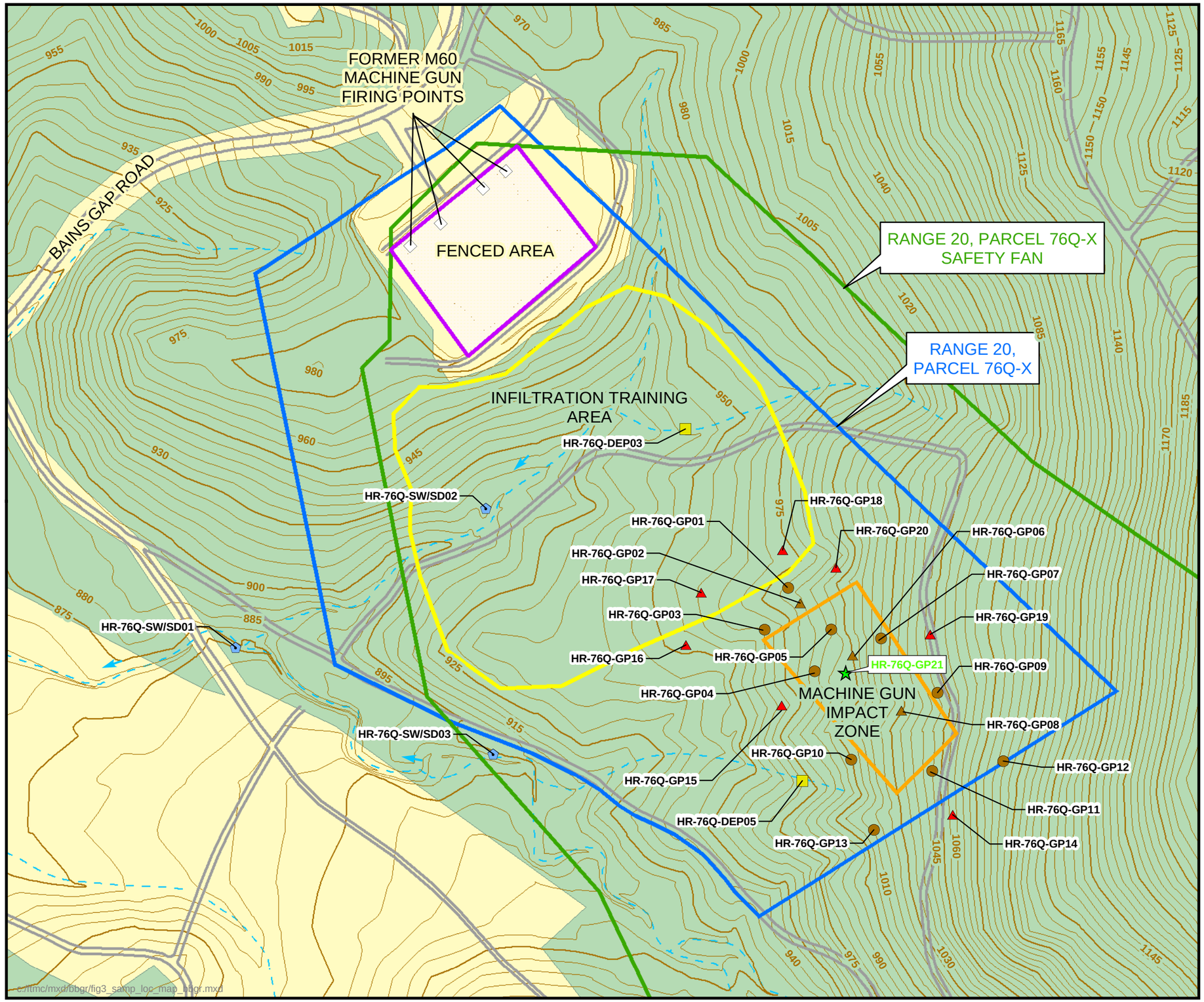
U.S. Army Corps of Engineers Mobile District

Contract No. DACA21-96-D-0018

Figure 3

Range 20, Parcel 76Q-X, Sample Location Map

Baby Bains Gap Road Ranges
Fort McClellan, Alabama



Legend

- Proposed Composite Subsurface Soil Sample Location
- Existing Depositional Soil Sample Location
- Existing Surface Soil Sample Location
- Existing Surface and Subsurface Soil Sample Location
- Existing Surface Water/Sediment Sample Location
- Existing XRF Sample Location
- Study Area
- Safety Fan
- Infiltration Training Area
- M60 Machine Gun Impact Zone
- Range 20 Fenced Area
- Wooded / Not Wooded
- Roads
- Surface Drainage Feature (Dashed where Intermittent)
- Topographic Contour (5-foot interval)
- Surface Water Flow Direction

200 0 200 Feet

NAD83 State Plane Coordinates

N

Shaw Environmental, Inc.

U.S. Army Corps of Engineers Mobile District

Contract No. DACA21-96-D-0018

APPENDIX A

SITE-SPECIFIC SAFETY AND HEALTH PLAN

Appendix A

Site Specific Safety and Health Plan
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan
Calhoun County, Alabama
EPA ID No. AL7 210 020 562

Prepared for:

U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, Alabama 36602

Prepared by:

Shaw Environmental Inc.
312 Directors Drive
Knoxville, Tennessee 37923

Delivery Order CK11
Contract No. DACA21-96-D-0018
Shaw Project No. 800486

October 2007

Revision 0

This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan, Fort McClellan, Alabama.

Site Specific Safety and Health Plan Attachment Approval
Fort McClellan, Calhoun County, Alabama

I have read and approve this site-specific safety and health plan attachment for the supplemental remedial investigation for Bains Gap Road Ranges, Skeet Range and Range 20 at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and Shaw procedures.

J. Troy Winton for — 10/25/07

Stephen G. Moran PG — Date
Project Manager

D. Russell — 10/25/07

Doug Russell — Date
Health & Safety Manager

Jeff Tarr — 10/24/07

Jeff Tarr — Date
Site Coordinator

Acknowledgements

The final approved version of this site-specific safety and health plan (SSHP) attachment for the supplemental remedial investigation for Bains Gap Road Ranges, Skeet Range and Range 20 at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.

J. Troy Winton for — 10/25/07

Project Manager — Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and/or the health and safety manager.

Jeffrey J. Tam — 10/24/07

Site Coordinator — Date

Safety and Health Plan
Acknowledgement Form

I have been informed of, and will abide by the procedures set forth in this site-specific safety and health plan pertaining to supplemental remedial investigations for Bains Gap Road Ranges, Skeet Range and Range 20 at the Former Decontamination Complex at Fort McClellan, Calhoun County, Alabama.

Printed Name	***Signature***	***Representing***	***Date***

Fort McClellan Gate Hours

Baltzell Gate	Baltzell Road. Open 24 hours daily, 7 days a week.
Galloway Gate	Galloway Road. Open 6 am to 6 pm Monday trough Friday (subject to change)

Fort McClellan Project Emergency Contacts

Range Control Office (Main Post) ..... (256) 848-6772
Fire Department (off post) 911
Ambulance (off post) 911
Northeast Regional Medical Center ..... (256) 235-5121
Anniston Police Department ..... (256) 238-1800
National Response Center & Terrorist Hotline ..... (800) 424-8802
Poison Control Center ..... (800) 222-1222
EPA Region IV ..... (404) 562-8725
Lisa Holstein, FTMC Transition Force ..... (256) 848-7455
Lee Coker, U.S. Army Corps of Engineers, Mobile District ..... (251) 690-3099
Doyle Brittain, EPA Region IV ..... (404) 562-8259
Steve Moran, Shaw Project Manager ..... (865) 690-3211
Jeff Tarr, Shaw Site Manager ..... Office (256) 848-3482, and Cellular (865)705-7412
Doug Russell, Shaw H&S Manager ..... Direct dial (865) 692-3584, and Cellular (865)414-9545
UXO Reporting (Lisa Holstein) ..... (256) 848-7455

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Attachments

1 Evaluating OE/UXO/CWM in Support of HTRW Activities

2 Incident Reporting Management Procedure-Federal

List of Acronyms

ADEM	Alabama Department of Environmental Management
BCT	Base Closure Team
BZ	breathing zone
FTMC	Fort McClellan
MEC	munitions of explosive concern
PPE	personal protective equipment
mg/L	milligrams per liter
ppm	parts per million
Shaw	Shaw Environmental, Inc.
SHP	installation-wide safety and health plan
SSHO	site safety and health officer
SSHP	site specific safety and health plan
UXO	unexploded ordnance

1.0 Site Work Plan Summary

Project Objective. In accordance with Alabama Department of Environmental Management (ADEM) guidelines and the Installation-Wide Work Plan, Shaw under contract to the U.S. Army Corps of Engineers (USACE)-Mobile District will implement a supplemental remedial investigation at Fort McClellan as agreed upon during the Base Closure Team (BCT) meeting October 11 and 12, 2007. The supplemental investigation will occur at the former Bains Gap Road Ranges, Skeet Range, and Range 20. All work conducted during this field effort will be performed in accordance with the Installation-Wide Safety and Health Plan and the Site-Specific Safety and Health Plan. Shaw will perform the following field activities:

Project Tasks

- Install 3 shallow residuum monitoring wells; 1 well at the Skeet Range, Parcel 69Q and 2 wells at the Bains Gap Road Ranges (1 well at Range 22, Parcel 78Q and 1 well at Range 24 Upper, Parcel 80Q).
- Sample a total of 9 monitoring wells (5 existing wells at the BGR Ranges, 1 well at the Skeet Range and the 3 newly installed wells).
- Collect 1 composite subsurface soil sample at Range 20, Parcel 76Q-X.

Personnel Requirements. Up to 6 employees are anticipated onsite to complete this scope of work.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan (SHP) for site investigations at FTMC, and be familiar with the requirements of this site specific SHP (SSHP). This SSHP must be used in conjunction with the SHP, FTMC, Alabama.

2.0 Site Characterization and Analysis

2.1 Anticipated Hazards

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the

respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE).

Ordnance and Explosives/Unexploded Ordnance/Chemical Warfare Material. Attachment 1, *Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities*, confirms that the historical records available for these sites have been reviewed and that unexploded ordnance (UXO) support is required for site activities. Additionally, based on all available information, it has been determined that the potential presence for chemical warfare material (CWM) is not anticipated.

The presence of unexploded ordnance (UXO) is possible at these historical small-arms ranges. Therefore, Shaw will conduct UXO avoidance procedures as outlined in the site-specific MEC safety plan and Appendix E of the Installation-Wide Sampling and Analysis Plan.

Table 2-1 contains the toxicological and physiological properties of chemicals identified from previous investigations or anticipated to be used in performance of this supplemental RI.

2.2 General Site Information

Bains Gap Road Ranges. Shaw has conducted extensive work at all these ranges including UXO surface sweeps and downhole monitoring during the remedial investigations. The Bains Gap Road (BGR) Ranges are comprised of four ranges that are nearly adjacent to each other and lie directly south of Bains Gap Road in the eastern-central area of FTMC. The BGR Ranges were mostly used for small-caliber weapons training and skeet shooting and were recently active prior to base closure in 1999. Several of the ranges were constructed on land that was previously used for other types of training. Bullets and bullet fragments are present in great quantity on the surface of many of the BGR Range impact zones. Shaw performed extensive remedial investigation activities in several stages from July 2000 to May 2003. A total of 191 surface and depositional soil samples, 71 subsurface soil samples, 16 groundwater samples, 46 surface water samples, 46 sediment samples and one seep water sample were collected for analysis. In addition, 17 groundwater monitoring wells were installed to facilitate groundwater sample collection. The RI report concluded that metals (predominantly lead in soil at all four ranges) and explosive compounds in groundwater (at Range 21 and Range 27) are the primary contaminants of concern.

Table 2-1

Toxicological Properties of Chemicals
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Arsenic [7440-38-2]	NA	NA	Inh Ing Con	Cough, diarrhea, shortness of breath, vomiting, grey skin. Redness	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.01 mg/m^3 0.01 mg/m^3	(Ca) 0.002 mg/m^3	PEL TLV REL	5 mg/m^3
Antimony [7440-36-0]	NA	NA	Inh Ing Con	Coughing, abdominal pain, burning sensation, vomiting, diarrhea,	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow : Immediate medical attention	0.5 mg/m^3 0.5 mg/m^3 0.5 mg/m^3		PEL TLV REL	50 mg/m^3
Barium [7440-39-3]	NA	NA	Inh Ing Con	Cough, sore throat Redness	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m^3 0.5 mg/m^3 0.5 mg/m^3		PEL TLV REL	NA
Dinitrotoluene DNT [25321-14-6]	NA	NA	Inh Ing Con	Drowsiness, nausea, weakness. Headache, labored breathing. Blue lips or fingernails	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	1.5 mg/m^3 0.2 mg/m^3 1.5 mg/m^3 skin	NA	PEL TLV REL	Ca 50 mg/m^3

Table 2-1

Toxicological Properties of Chemicals
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Fuel oil (diesel oil, medium)	?	?	Ing Inh Con	Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, substernal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention			PEL TLV REL	
Gasoline [8006-61-9]	?	0.3	Inh Ing Con	Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	300 ppm 300 ppm Ca, lowest feasible conc. (LOQ 15 ppm)	500 ppm 500 ppm	PEL TLV REL	1400 ppm (10% LEL)
Lead {7439-92-1}	N/A	N/A	Inh Ing Con	Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.050 mg/m^3 0.050 mg/m^3 0.100 mg/m^3		PEL TLV REL	100 mg/m^3
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43□200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	400 ppm 400 ppm 400 ppm	500 ppm 500 ppm 500 ppm	PEL TLV REL	2,000 ppm
Motor Oil [NA]	?	?	Inh Ing	Irritated eyes, skin, respiratory system; usually only a problem if misted or ingested.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediate medical attention			PEL TLV REL	

Table 2-1

Toxicological Properties of Chemicals
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Nitric acid [7697-37-2]	11.95	0.3□1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	4 ppm 4 ppm 4 ppm	PEL TLV REL	25ppm
Nitroglycerin [55-63-0]	NA	NA	Inh Ing Con	Abdominal ramps, blue lips and fingernails, dizziness, headache, labored breathing	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	skin 2 mg/m^3 0.46 mg/m^3 skin	0.1 mg/m^3 skin	PEL TLV REL	75 mg/m^3
Portland cement [65997-15-1]	NA	NA	Inh	Fine gray powder that can be irritating if inhaled or in eyes.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	5 mg/m^3 respirable fraction 15 mg/m^3 total dust 10 mg/m^3 10 mg/m^3/ total dust		PEL TLV REL	5000 mg/m^3
Sodium hydroxide [1310-73-2]	NA	NA	Inh Ing Con	Irritated nose; pneumonitis; burns eyes, and skin; temporary loss of hair.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	2 mg/m^3 C 2 mg/m^3 C 2 mg/m^3		PEL TLV REL	10 mg/m^3

NOTE: Additional chemical safety information for arsenic, lead, antimony, barium and nitroglycerin follows Table 2-1.

[a]IP = Ionization potential (electron volts).
[b]Route = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.
[c]TWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.
[d]STEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.

Table 2-1

Toxicological Properties of Chemicals
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

[e]PEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).
AEL = Airborne Exposure Limit.
TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value□TWA.
REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.
[f]IDLH (NIOSH)□Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. 1998).
C = Ceiling limit value which should not be exceeded at any time.
Ca = Carcinogen.
NA = Not applicable.
? = Unknown.
LEL = Lower explosive limits.
LC_{50} = Lethal concentration for 50 percent of population tested.
LD_{50} = Lethal dose for 50 percent of population tested.
NIC = Notice of intended change (ACGIH).

References:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 1998, compiled by the American Conference of Governmental Industrial Hygienists.
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Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.
Verschuseren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.
Warning Properties of Industrial Chemicals□Occupational Health Resource Center, Oregon Lung Association.
Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

Skeet Range. The Skeet Range is one of four ranges that comprise the Iron Mountain Road Ranges. Shaw has conducted extensive work at all four ranges including UXO surface sweeps and downhole monitoring. Shaw has collected numerous surface and depositional soil samples, surface water samples, sediment samples and groundwater samples. Two groundwater monitoring wells were installed. Historically, weapons fired at the Skeet Range consisted of .410-gauge, .12-gauge, .20-gauge and .28-gauge shotguns. The Archive Search Report indicates that the Skeet Range is located within two UXO ranges; a rifle grenade range and former Combat Range #2. Because of prior use and proximity to these historical ranges, UXO items (2.36-inch rockets and WWII-era rifle grenades) have been found in and around the Skeet Range area, particularly in the northern half of the range. The RI report concluded that metals contamination in surface soil (primarily lead) was prevalent at all four ranges.

Range 20. Range 20 is one of several ranges that comprise the Baby Bains Gap Road (BBGR) Ranges. Shaw has done extensive work at this range as well including soil, groundwater, surface water and sediment sampling with UXO avoidance. Weapons fired at this range included M-60 (.308-caliber) machine guns with tracer rounds. Additionally, dynamite, TNT and C-4 were used in explosive pits for artillery impact simulations. As noted in the work plan, soil was removed from this area in 1999. Shaw collected numerous soil samples from the stockpiled soil which was ultimately disposed as nonhazardous waste at various Calhoun County disposal sites.

Duration of Planned Employee Activity. Employee activity duration is anticipated to be less than one month.

Pathways for Hazardous Substance Dispersion. Possible pathways for hazardous substances in the area are primarily limited to inhalation of respirable dust from surface soil that contains metals.

3.0 Personal Protective Equipment

The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, and Level C PPE is provided.

Task	Initial Level of PPE
Equipment staging	Level D
Utility clearance	Level D
Site clearing for access and UXO	Level D

Task	Initial Level of PPE
avoidance	
Subsurface soil sampling	Modified Level D*
Groundwater sampling	Level D
Monitoring well installation	Modified Level D*
Equipment decontamination (pressure washer)	Modified Level D
Surveying	Level D

*Initial level will be raised to Level C or higher if air monitoring results in the worker's breathing zone (BZ) are greater than action levels.

Level D. The minimal level of protection that will be required of personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Modified Level D. The following equipment will be used for Level D-Modified protection:

- Permeable Tyvek, Kleenguard, or its equivalent
- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to modified Level D PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for protection to the legs and feet and a full face shield shall be worn over approved safety glasses.

Level C. Level C protection will not be used unless air-monitoring data indicate the need for upgrade; however, the equipment shall be readily available on site. The following equipment will be used for Level C protection:

- National Institute of Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, air-purifying respirators equipped with organic

vapor/acid gas cartridge in combination with high-efficiency particulate air filter

- Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the legs and feet.

4.0 Site Monitoring

The environmental contaminants of concern resulting from former site use are low levels of nitro aeromatics and metals, primarily lead based on previous site investigations.

Table 4-1 contains action levels for site real-time air monitoring at the Former Decontamination Complex.

Air monitoring will be performed by the site safety and health officer (SSHO) or qualified task geologist during the performance of ground intrusive activities. A calibrated photo ionization detector organic vapor analyzer with a minimal 10.2 electron volt lamp will be utilized to monitor the well installation location and BZs to determine if any organic material may be present that would necessitate upgrading of protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the well installation location and BZs for potential combustible/flammable gas and oxygen levels that would necessitate evacuation of the work area. Table 4-2 contains the required air monitoring frequency and location for the supplemental remedial investigation.

5.0 Activity Hazard Analysis

The attached activity hazard analysis (Table 5-1) is provided for the following activities:

Table 4-1

Action Levels
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

When in Level C PPE

Analyte	Action Level [a]	Required Action[b]
VOCs	≥ 175 ppm above background in breathing zone (BZ)	Stop work, evacuate work area, contact health and safety manager.
Oxygen	≥ 20%, <23% < 20%, >23%	Normal operations. Stop work, evacuate work area.
Flammable vapors	≥ 10% LEL < 10% LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.

When in Level D Modified/D PPE

Analyte	Action Level [a]	Required Action[b]
VOCs	≥ 50 ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then contact health and safety manager.
Oxygen	≥ 20%, <23% < 20%, >23%	Normal operations. Stop work, evacuate work area.
Flammable vapors	≥ 10% LEL < 10% LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.

Table 4-1

Action Levels
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

When in Support Zone

Analyte	Action Level [a]	Required Action
VOCs	≥ 5 ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.

[a] Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.
[b] Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls.

No one is permitted to downgrade levels of PPE without authorization from the H&S manager.

- Setup of equipment and general field activities
- Utility clearances, UXO avoidance sweeps and surveying
- Clearing vegetation for site acsess
- Surface and subsurface soil and groundwater sampling
- Monitoring well installation
- Moving and shipping collected samples
- Material storage
- Disposal of investigative derived waste
- High pressure water jetting (pressure washing)

All injuries and illnesses must be immediately reported to the site manager or the SSHO, who will then notify off-site personnel and organizations as necessary in accordance with Shaw health and safety policy HS020, and the Incident Reporting Management Procedure-Federal. A copy of the incident reporting management procedure-Federal has been provided in Attachment 2.

If emergency hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. For non life threatening injuries which may require medical treatment beyond onsite first aid the injured shall be transported by a site manager to the nearest Health resources occupational health facility. The nearest occupational clinic is Southern Family Practice and Occupational Medicine.

Directions to the hospital and occupational clinic are provided in Figure 5-1.

Table 4-2

Air Monitoring Frequency and Location
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Work Activity	Instrument	Frequency	Location
Staging equipment and general site setup	OV Monitor	Initially for area	Breathing zone (BZ) of employees
Monitoring well installation	OV Monitor LEL/O_2 Monitor	Continuously Continuously	BZ of employees Support zone
Subsurface soil sampling	OV Monitor LEL/O_2 Monitor	Continuously Continuously	BZ of employees Support zone

OV = Organic vapor.
LEL/O_2 = Lower explosive level/oxygen.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Staging of equipment and general field activities	Unexploded ordnance (UXO)	• UXO specialists will perform UXO surface avoidance. See site-specific safety and health plans (SSHP) to determine if required.
	Slip, trip, and fall hazards	• Determine best access route before transporting equipment. • Practice good housekeeping; keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards. • Look before you step; ensure safe and secure footing.
	Heavy lifting	• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.
	Falling objects	• Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	• Wear safety glasses/goggles; ensure that eye wash is in proper working condition.
	Pinch points	• Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cuts/bruises	• Use cotton or leather work gloves for material handling.
	Bees, spiders, and snakes	• Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Ticks	• Wear light colored clothing (can see ticks better). • Mow vegetated and small brush areas. • Wear insect repellant. • Wear long sleeves and long pants. • Visually check oneself promptly and frequently after exiting the work area.
	Fire	• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Staging of equipment and general field activities (continued)	Hazard communication	• Label all containers as to contents and dispose of properly. • Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site. • Employees will receive site-specific training to the SHP and SSHP and UXO safety plan.
	Noise	• Sound levels above 85 decibels (dBA) mandates hearing protection.
	Lighting	• Adequate lighting will be provided to ensure a safe working environment.
	Cold stress	• Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F). • Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. • Remove wet clothing promptly. • Take breaks in warm areas. • Reduce work periods as necessary. • Layer work clothing.
	Poison ivy/oak/sumac	• Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing separately that has contacted poisonous plants from non contaminated clothing. • Wash affected areas immediately with soap designed for poisonous resin removal and water.
	Heat rash	• Keep the skin clean and dry. • Change perspiration-soaked clothing, as necessary. • Bathe at end of work shift or day. • Apply powder to affected area.
	Heat cramps	• Drink plenty of cool fluids even when not thirsty. • Provide cool fluid for work crews. • Move victim to shaded, cool area.
	Heat exhaustion	• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). • Set up work/rest periods. • Use the buddy system. • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Staging of equipment and general field activities (continued)	Heat stroke	• Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices.
	Contact with moving equipment/vehicles	• Work area will be barricaded/demarcated. • Equipment will be laid out in an area free of traffic flow. • Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic. • Barriers shall be used to protect workers from vehicular traffic. • Barriers shall be used to guard excavations adjacent to streets or roadways. • Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided. • Heavy equipment shall have backup alarms.
	Forklift operations	• Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Portable electric tools	• Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service. • Portable electric tools and all cord and plug connected equipment shall be protected by a ground fault circuit interrupter (GFCI) device. • Electrical tools shall be inspected daily prior to use.
	Extension cords	• Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service. • Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic. • Cords shall be suspended with a nonconductive support (rope, plastic ties, etc,). • Cords shall be designed for hard duty. • Cords shall be inspected daily.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Staging of equipment and general field activities (continued)	Lightning strikes	• Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • Remain 6 feet away from tree trunk if seeking shelter beneath tree(s). • If in a group, keep 6 feet of distance between people.
	Thunderstorms, tornadoes	• Listen to radio or TV announcements for pending weather information. • Cease field activities during thunderstorm or tornado warnings. • Seek shelter. Do not try to outrun a tornado.
Utility clearance, UXO avoidance sweeps and surveying	Slip, trip, fall	• Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field. • Provide adequate lighting in all work areas. • Whenever possible, avoid routing cords and hoses across walking pathways. • Flag or cover inconspicuous holes to protect against falls. • Work areas will be kept clean and orderly. • Garbage and trash will be disposed of daily in approved refuse containers. • Tools and accessories will be properly maintained and stored. • Work areas and floors will be kept free of dirt, grease, and slippery materials.
	UXO	• UXO specialists will perform UXO surface and shallow subsurface avoidance and anomaly location identification.
	Traffic accidents	• Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians. • If working adjacent to roadways, have workers wear fluorescent orange vests. • Use warning signs or lights to alert oncoming traffic. • Assign flag person(s) if necessary to direct local traffic. • Set up temporary parking locations outside the immediate work area. • Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits. • Pedestrians have the right-of-way.Wear seat belts when vehicles are in motion. • Employees shall have received defensive driving training when operating company owned, leased or rented vehicles.
	Wildlife hazards	• Workers should be cautious when driving through the site in order to avoid encounters with passing animals. • Do not attempt to feed or capture any wildlife encountered on project sites.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Utility clearance, UXO avoidance sweeps and surveying (continued)	Biological hazards	• Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).
	Ticks and mosquitoes	• Wear light colored clothing (can see ticks better). • Mow vegetated and small brush areas. • Wear insect repellant. • Wear long sleeves and long pants.Visually check oneself promptly and frequently after exiting the work area. • Drain open containers of rainwater and standing water accumulated on drums staged for excess periods of time.
	Poison ivy/oak/sumac	• Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing separately that has contacted poisonous plants from non contaminated clothing. • Wash affected areas immediately with soap designed for poisonous resin removal and water.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Clearing vegetation for site access	Dropping trees onto personnel	• Only qualified personnel will drop trees. • The work area shall be cleared to permit safe working conditions and an escape route planned before any cutting is started. • Just before the tree or limb is ready to fall, an audible warning shall be given to those in the area. All personnel in the vicinity shall be safely out of range. • Personnel shall work from the uphill side whenever possible. • Prior to falling operations, the surrounding area, the shape of the tree, the lean of the tree, wind force and direction, and the location of other personnel will be reviewed.
	UXO and CWM	• UXO specialist will perform UXO avoidance operations prior to site entry. • Do not handle or disturb suspect items. • Practice avoidance of anomalies at all times. • If suspect CWM is observed immediately leave the area in an upwind direction, secure the site, and notify PM and H&S.
	Chainsaw operations	• The chainsaw will not be fueled while running, when hot, or near open flame. The saw will not be started within 10 feet of a fuel container. • The operator will hold the saw with both hands during all cutting operations. • Operators must wear eye, ear, hand, foot, and leg protections (i.e., chainsaw chaps). • The chainsaw must never be used to cut above the operator's shoulder height. • The idle speed will be adjusted so that the chain does not move when the engine is idling. • The operator will shut off the saw when carrying it over slippery surfaces, through heavy brush, and when adjacent personnel. • All chainsaws on site shall have an automatic chain brake or kickback device.
	Contact with moving equipment	• Site workers shall establish hand signals when verbal communication becomes difficult. • Seals should be provided for each occupant of the equipment. • Equipment operated on the highway shall be equipped with headlights, taillights, brake lights, back-up lights, and turn signals visible form the front and rear. • Never walk or work directly in back of or to the side of heavy equipment without the operator's knowledge. • Assign flag person(s) if necessary to direct traffic. • Install backup alarms on heavy equipment.
Surface and subsurface soil and groundwater sampling	Inexperienced operator	• Machinery and mechanized equipment shall be operated only be designated personnel. • Heavy equipment operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.
	Wildlife hazards	• Workers should be cautious when driving through the site in order to avoid encounters with passing animals.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Subsurface soil and groundwater sampling (continued)	Snake bites (rattlesnakes, moccasins, copperheads)	• Wear snake chaps when walking through overgrown grass areas. • Do not intentionally approach snake, if encountered, leave the area immediately.
	Ticks	• Wear light colored clothing (can see ticks better). • Mow vegetated and small brush areas. • Wear insect repellant. • Wear long sleeves and long pants. • Visually check oneself promptly and frequently after exiting the work area.
	Poison ivy/oak/sumac	• Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing that has contacted poisonous plants. • Wash affected areas immediately with soap and water.
	Lighting	• Work activities will be conducted during daylight hours only.
	Lightning strikes	• Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • If in a group, keep 6 feet of distance between people.
	Noise	• Sound levels above 85 dBA mandates hearing protection by nearby site personnel.
	Pinch points	• Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Activation during repairs	• All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Fire	• Mechanized equipment shall be shut down prior to and during fueling operations. • Have fire extinguishers inspected and readily available.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Subsurface soil and groundwater sampling (continued)	Falling objects	• Hard hats are required by site personnel. • Stay alert and clear of material suspended overhead.
	Flying debris	• Impact-resistant safety glasses with side shields are required.
	Stored energy	• Piles of vegetation or tree limbs can e under sprung tension, be alert to stored energy • Manipulate piled debris with heavy equipment at a safe distance prior to placing employees in the environment.
	Laceration	• Wear leather work gloves for material handling • Wear leather gloves, long sleeve shirt, faceshield, and chainsaw chaps when operating a chainsaw.
	Heat exhaustion	• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). • Set up work/rest periods. • Use the buddy system. • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.
	Heat stroke	• Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices.
	Lightning strikes	• Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • If in a group, keep 6 feet of distance between people.
	Thunderstorms, tornadoes	• Listen to radio or TV announcements for pending weather information. • Cease field activities during thunderstorms or tornado warnings. • Seek shelter. Do not try to outrun a tornado.
	UXO	• UXO specialist will perform UXO surface avoidance and/or UXO downhole avoidance.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Installation of Monitoring Wells	Overhead hazards	• Make sure no obstacles are within radius of boom. Always stay a safe distance from power lines. • Keep clear of suspended drill rod and augers. Use tag lines if needed to prevent employees from working under suspended loads.
	Faulty or damaged equipment being utilized to perform work	• All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. • Equipment will be inspected before being put to use and at the beginning of each shift. • Faulty/unsafe equipment will be tagged and if possible locked out. • Drill rigs and geoprobes shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.
	Heat rash	• Keep the skin clean and dry. • Change perspiration-soaked clothing, as necessary. • Comply with Shaw Procedure HS 400 • Bathe at end of work shift or day. • Apply powder to affected area.
	Heat cramps	• Drink plenty of cool fluids even when not thirsty. • Provide cool fluid for work crews. • Comply with Shaw Procedure HS 400 • Move victim to shaded, cool area.
	Heat exhaustion	• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). • Set up work/rest periods. • Use the "buddy system." • Comply with Shaw Procedure HS 400 • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.
	Heat stroke	• Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices. • Comply with Shaw Procedure HS 400
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	• Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. • All mobile equipment and areas in which they are operated shall be adequately illuminated. • Aboveground and belowground utilities will be located prior to staging equipment. • Whenever the equipment is parked, the parking brake shall be properly set. • Equipment parked on inclines will have the wheels chocked. • Inspect brakes and tire pressure on drill rig and support equipment before staging for work.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Installation of Monitoring Wells (continued)	Inexperienced operator	• Machinery and mechanized equipment shall be operated only by designated qualified personnel. • Operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.
	Jacks/outriggers	• Ensure proper footing and cribbing.
	Falling objects	• Remove unsecured tools and materials before raising or lowering the derrick. • Stay alert and clear of materials suspended overhead.
	Pinch points	• Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert at all times!
	Fire	• Mechanized equipment shall be shut down prior to and during fueling operations. • Have fire extinguishers inspected and readily available. • Obtain a Hot Work Permit, per Shaw Procedure HS 314 for any operation which could act as an ignition source.
	Fall hazards	• Personnel are not allowed to work off of machinery or use them as ladders. • Use fall protection when working above 6 feet.
	Noise	• Hearing protection is mandatory above 85 dBA.
	Contact with rotating or reciprocating machine parts	• Use machine guards; use long-handled shovels to remove auger cuttings, rotating augers shall be guarded per EM-385 1-1 16.09.L • Utilize safe lockout procedures for maintenance work.
	Heavy lifting	• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	• Practice good housekeeping, keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards.
	Contact with potentially contaminated materials	• Real time air monitoring will take place. Proper personal protective clothing and equipment will be utilized. • Stop immediately at any sign of obstruction. • Do not breathe air surrounding boring any more than necessary. • Upgrade to respirator if necessary. • Avoid skin contact with soil cuttings. Wear gloves. • Stay clear of moving parts of drill rig and geoprobe. • If suspect CWM is encountered, don emergency escape supplied air respiratory protection. Move upwind and proceed to the CRZ. Follow established personnel CWM decontamination procedures. Secure the site and make CWM notifications.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Installation of Monitoring Wells (continued)	Drum handling	• Be careful not to breathe air from around open drum any more than necessary. Monitor with photoionization detector/flame ionization detector (PID/FID) equipment and upgrade to respirator if necessary. • When filling a drum (with either soil or water), be careful not to make contact with the contained waste. Wear appropriate gloves. Make sure lid or bung of drum is secure. • If moving a drum unassisted, be sure to leverage properly, use proper lifting techniques, and wear safety glasses and steel-toed boots. • When using a drum dolly, make sure straps and lid catch are securely attached. Leverage properly when tilting drum. Be sure toes stay away from drum.
	UXO	• UXO specialist will perform UXO surface avoidance and shallow subsurface avoidance sweeps.
Moving and shipping collected samples	Heavy lifting	• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.
	Pinch points	• Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cut hazards	• Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	• Label all containers as to contents and associated hazards.
	Heavy lifting	• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.
Material storage	Flammable and combustible liquids	• Store in NO SMOKING AREA. • Fire extinguisher readily available. • Transfer only when properly grounded and bonded.
Disposal of investigation-derived waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	• Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Disposal of investigation-derived waste (IDW) (Forklift Operation)	Cross-contamination and contact with potentially contaminated materials	• All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
High-pressure water jetting operations	Cut hazards	• Use care when handling glassware. • Wear adequate hand protection.
	Heavy lifting	• Use proper lifting techniques. • Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.
	Slip, trip, and fall hazards	• Good housekeeping shall be implemented. • The work area shall be kept clean as feasible. • Inspect the work area for slip, trip, and fall hazards.
	Fueling	• Only approved safety cans shall be used to store fuel. • Do not refuel equipment while it is operating. • Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Faulty or damaged equipment	• Equipment shall be inspected before being placed into service and at the beginning of each shift. • Preventive maintenance procedures recommended by the manufacturer shall be followed. • A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
	High-pressure water	• Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate). • One standby person shall be available within the vicinity of the pump during jetting operation. • The work area shall be isolated and adequate barriers will be used to warn other site personnel.
	Unqualified operators	• Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.

Table 5-1

Activity Hazard Analysis
Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
High-pressure water jetting operations (continued)	Out of control equipment	• No machinery or equipment is permitted to run unattended. • Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Noise	• Sound levels above 85 dBA mandates hearing protection by nearby site personnel.
	Activation during repairs	• All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	• Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert and clear of materials suspended
	Falling objects	• Hard hats are required by site personnel. • Stay alert and clear of material suspended overhead.
	Flying debris	• Impact-resistant safety glasses with side shields are required.
	Contact with potentially contaminated materials	• All site personnel will wear the appropriate PPE as specified in Section 3 of the SSHP.

FIGURE 5-1 Hospital Map

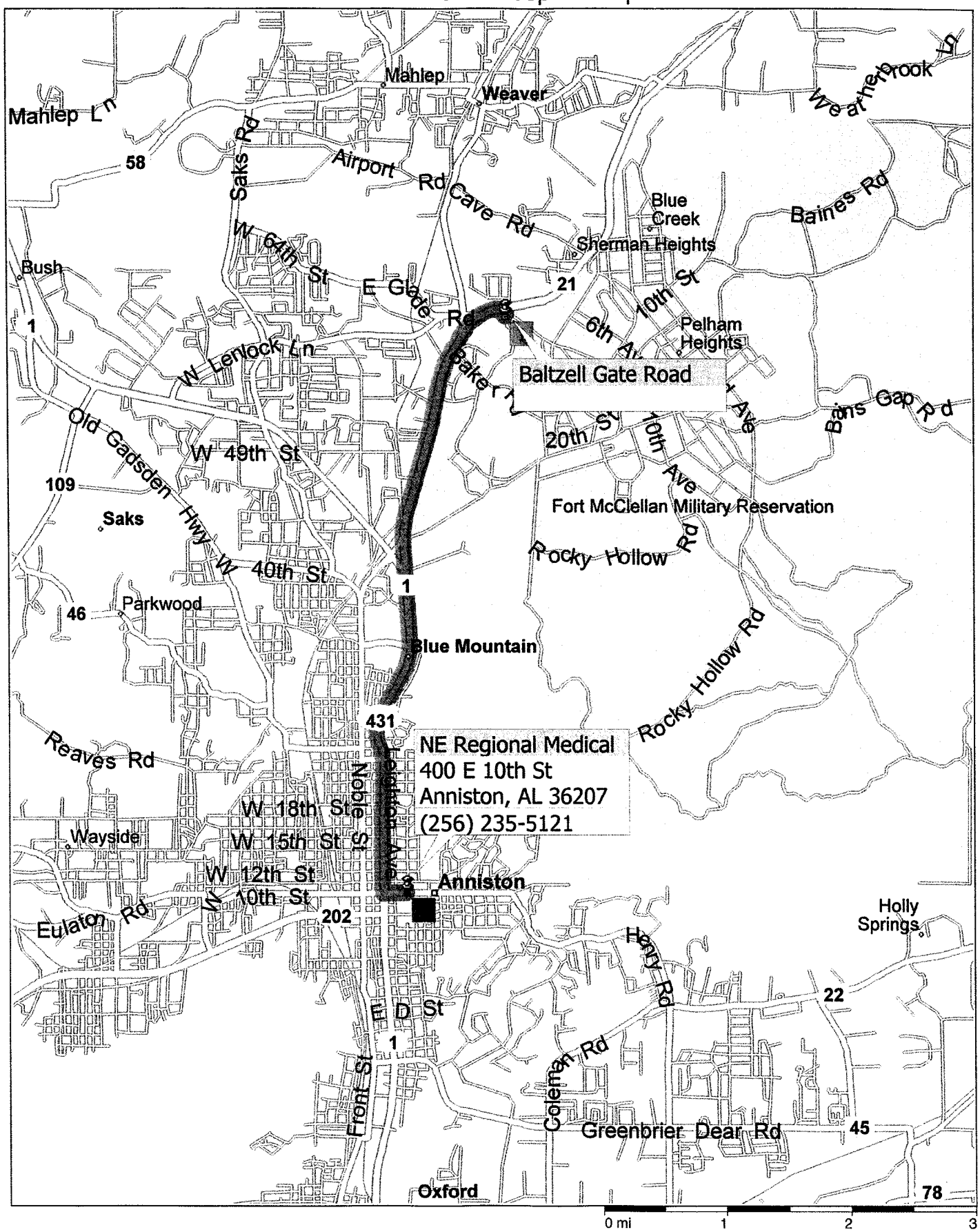

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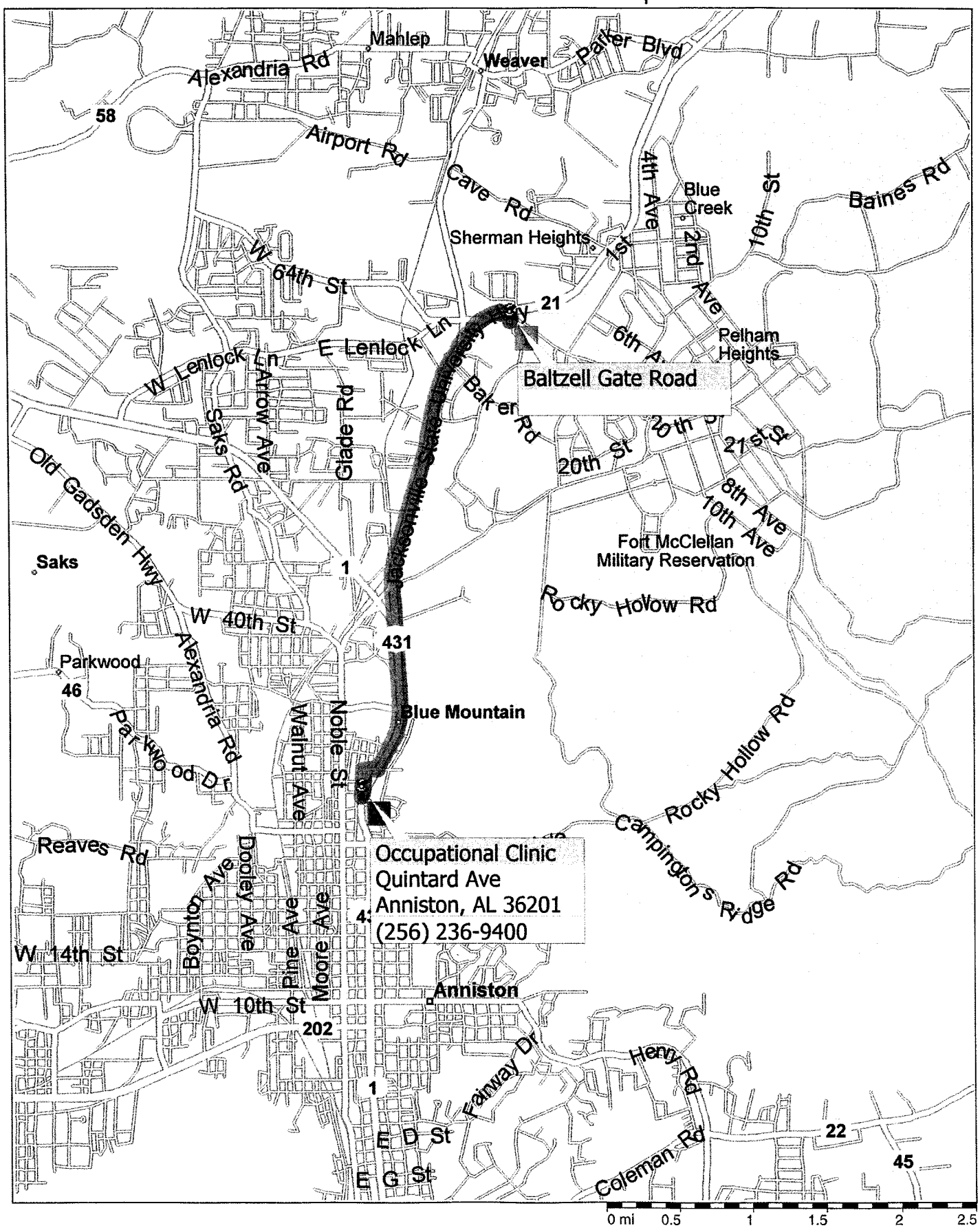
FIGURE 5-1 Clinic Route Map



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ATTACHMENT 1

EVALUATION OE/UXO/CWM HAZARDS IN SUPPORT OF HTRW ACTIVITIES

Site Name: Bains Gap Road Ranges, Skeet Range & Range 20

Job Number: 800486 **Date: October 17, 2007**

Name of person completing form: Jeffrey Tarr **Title: Geologist**

Signature: Jeffrey J. Tarr 10/17/07

	Yes	No
1a. Have the historical records available for this HTRW site been reviewed?	☒	☐

If the answer to **1a.** is yes, proceed to **1b.**
If the answer to **1a.** is no, review site information prior to completing this form.

	Yes	No
1b. Is there recent information (site walk, worker interviews, etc.) that indicates a potential OE/CWM hazard at this site?	☒	☐

Proceed to **2.**

2. According to the records review, is this site known or suspected to have been used for:

	Yes	No
2a. Manufacturing, production, or shipping of conventional or chemical warfare materiel (CWM) OE:	☐	☒
Live fire testing of any ordnance:	☒	☐
Conventional or CWM OE training:	☒	☐
Storage of conventional or CWM OE:	☐	☒
Disposal or demilitarization of conventional or CWM OE:	☐	☒
Other (specify):		

	Yes	No
2b. Manufacturing, production, or shipping of chemical agent:	☐	☒
Research or testing of chemical agent:	☐	☒
Chemical agent related training:	☐	☒
Storage of chemical agent:	☐	☒
Disposal or demilitarization of chemical agent:	☐	☒
Other (specify): Former CWM Areas only.		

Any **2a** question answered "YES" indicates UXO support is required for all site activities. If all **2a** questions are answered "NO", UXO support may not be required. Refer to Installation-Wide Safety and Health Plan (SHP) for additional information concerning UXO support. Proceed to question **2b**.

Any **2b** question answered "YES" requires the remainder of this form to be completed. If all **2b** questions are answered "NO", real-time monitoring for chemical agent will not be required and completing the remainder of this form is not required. Refer to SHP for additional information concerning agent monitoring.

Additional space for notes and explanations on page 4.

Continue to page 2 of 4 –

3. For sites where the manufacturing, testing, storage, or disposal of CWM is suspected:	**Yes**	**No**
Is there evidence that the CWM is/was containerized in potentially unexploded ordnance:	☐	☒
Is there evidence that the CWM is/was containerized in nonexplosive containers:	☐	☒
Is there evidence that the CWM is open to the environment (i.e., in an open container or free liquid/solid in the soil/water):	☐	☒
Is there evidence that the CWM hazard has been removed from the site or that the site has been decontaminated:	☐	☒
Has the site been previously monitored or sampled for chemical agent or agent breakdown products:	☐	☒
For any "YES" above, was the agent or breakdown product identified?	☐	☐

For any "Yes", list types of agent (mustard, lewisite, etc.) and the form (in ordnance, in drum, etc.) the CWM is expected to be found (or state "unknown"):

All areas are small arm training ranges.

List agent breakdown products identified:

N/A

4. Defining the Potential for the Presence of CWM:	**Agent Monitoring Requirements for Site Activities:**
4a. High Presence Potential – Definition: CWM is known or highly suspected to be present at the site in a condition (within ordnance and/or nonexplosive container, or in an uncontainerized form in sufficient volume that weathering of the product has not rendered it harmless) that will cause potential harm to personnel if it is encountered.	Mandatory personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).
4b. Moderate Presence Potential - Definition: CWM is suspected to have been present at the site, but has been previously removed and/or decontaminated, or has been open to the environment such that it is expected to have degraded and been rendered harmless.	The need for personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples will be reviewed on a site-by-site basis. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).
4c. Low Presence Potential – Definition: No indications that CWM will be present in quantity or reactivity (in munitions, projectiles, drums, etc.).	No specific personal or area monitoring for chemical agents required beyond what is specified in the SHP.

Continue to page 3 of 4 -

Site Name: Bains Gap Road Ranges, Skeet Range & Range 20

Job Number: 800486 **Date: 10-17-07**

Based on the information available for this site, including information gathered during completion of this form, the potential for CWM to be present at this site, as defined above, is expected to be: *LOW*

Exceptions/Explanations: Extensive work has been completed for all these ranges.. (additional space for notes and explanations on page 4)

5. Based on the information provided in questions 1 through 5, above, the following guidelines will be used for establishing PPE requirements for activities to be performed at this site; Specific details are provided in the SSHP:	
5a. High Exposure Potential - High exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).	Subject to review by the Shaw health and safety manager, PPE for all personnel in the exclusion zone at a site identified as having a "High Exposure Potential" will be Level B (supplied air) or Level C (full-face respirator with HEPA/Acid Gas/OV cartridges w/ emergency egress hood) and chemically resistant coveralls. Specific PPE requirements are in the SSHP for this site.
5b. Moderate Exposure Potential - Moderate exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).	Subject to review by the Shaw health and safety manager, PPE for all personnel in the exclusion zone at a site identified as having a "Moderate Exposure Potential" will be Modified Level D (disposable coveralls and emergency egress hood) carried by all personnel. Specific PPE requirements are in the SSHP for this site.
5c. Low Exposure Potential - Low exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).	Subject to review by the Shaw health and safety manager, no additional PPE requirements above those stated in the SSHP are needed for sites identified as having "Low Exposure Potential." Specific PPE requirements are in the SSHP for this site.

Based on all available information, the exposure potential at this site is considered to be: *LOW*
Exceptions/Explanations: **(see page 4)**

Review Signatures:
Shaw UXO Technical Manager _____ Date: 23OCT07 Shaw H&S Specialist _____ Date: 10-23-07

Site Name: Bains Gap Road Ranges, Skeet Range & Range 20

Job Number: 800486 **Date: Oct 17-2007**

Additional Notes and Explanations:

In accordance with Alabama Department of Environmental Management (ADEM) guidelines and the Installation-Wide Work Plan, Shaw under contract to the U.S. Army Corps of Engineers (USACE)-Mobile District will install three residuum monitoring wells. Two wells will be installed at the Bains Gap Road Ranges and one well at the Skeet Range. Additionally, Shaw will collect groundwater samples from six existing wells (five existing wells at the Bains Gap Road Ranges and one existing well at the Skeet Range) and collect one subsurface soil sample at Range 20. The proposed wells requiring installation and proposed sampling activities are identified in the Letter Work Plan. All work conducted during this field effort will be performed in accordance with the Installation-Wide Safety and Health Plan and the Site-Specific Safety and Health Plan. The presence of unexploded ordnance (UXO) is possible at these historical small-arms ranges. Therefore, Shaw will conduct UXO avoidance procedures as outlined in the site-specific MEC safety plan and Appendix E of the Installation-Wide Sampling and Analysis Plan.

Shaw has conducted extensive work at all these ranges including UXO surface sweeps and downhole monitoring during the remedial investigations. The Bains Gap Road (BGR) Ranges are comprised of four ranges that are nearly adjacent to each other and lie directly south of Bains Gap Road in the eastern-central area of FTMC. The BGR Ranges were mostly used for small-caliber weapons training and skeet shooting and were recently active prior to base closure in 1999. Several of the ranges were constructed on land that was previously used for other types of training. Bullets and bullet fragments are present in great quantity on the surface of many of the BGR Range impact zones. Shaw performed extensive remedial investigation activities in several stages from July 2000 to May 2003. A total of 191 surface and depositional soil samples, 71 subsurface soil samples, 16 groundwater samples, 46 surface water samples, 46 sediment samples and one seep water sample were collected for analysis. In addition, 17 groundwater monitoring wells were installed to facilitate groundwater sample collection.

The Skeet Range is one of four ranges that comprise the Iron Mountain Road Ranges. Shaw has conducted extensive work at all four ranges including UXO surface sweeps and downhole monitoring. Shaw has collected numerous surface and depositional soil samples, surface water samples, sediment samples and groundwater samples. Two groundwater monitoring wells were installed. Historically, weapons fired at the Skeet Range consisted of .410-gauge, .12-gauge, .20-gauge and .28-gauge shotguns. The Archive Search Report indicates that the Skeet Range is located within two UXO ranges; a rifle grenade range and former Combat Range #2. Because of prior use and proximity to these historical ranges, UXO items (2.36-inch rockets and WWII-era rifle grenades) have been found in and around the Skeet Range area, particularly in the northern half of the range.

Range 20 is one of several ranges that comprise the Baby Bains Gap Road (BBGR) Ranges. Shaw has done extensive work at this range as well including soil, groundwater, surface water and sediment sampling with UXO avoidance. Weapons fired at this range included M-60 (.308-caliber) machine guns with tracer rounds. Additionally, dynamite, TNT and C-4 were used in explosive pits for artillery impact simulations. As noted in the work plan, soil was removed from this area in 1999. Shaw collected numerous soil samples from the stockpiled soil.

ATTACHMENT 2

INCIDENT REPORTING MANAGEMENT PROCEDURE-FEDERAL

Shaw™
Shaw E & I, Inc.

Incident Reporting and Management Procedure - Federal

Action	Who? *When?*	Under what circumstances?	How?	Notes:
1. Notify Supervisor for all incidents **(no matter how minor)**	Injured person, first person recognizing incident, driver/passenger, or employee causing damage *Immediately*	**All incidents no matter how minor**	In person or by telephone	
2. For ***life-threatening injuries/illnesses*** - contact local emergency personnel	Site Supervisor *Immediately (concurrently with next step if injury or illness)*	In case of serious injury or illness requiring off-site medical care	Via ambulance	Site Supervisor or Site Safety Officer must immediately go to emergency care facility.
For ***non life-threatening injuries/illnesses*** - transport injured person to doctor at an occupational medical facility	Site Supervisor *Immediately (concurrently with next step if injury or illness)*		Via vehicle	Site Supervisor or Site Safety Officer must transport and stay with injured person until released from care
For ***vehicle accidents*** – make scene safe, notify police, aid injured parties	Driver/passenger *Immediately*			
For ***equipment/property damage*** - make scene safe, prevent further damage or injuries	Employee causing damage *Immediately*			
3. Notify Health Resources **(for injuries/illnesses to Shaw employees only)**	Site Supervisor *Immediately, prior to transporting the injured employee, unless injuries are life threatening*	◆ Serious injury requiring off-site medical care ◆ If employee states that he/she has been exposed to any chemical or biological substance	**800-350-4511** **Note: Outside Continental US call** **781-935-8581**	◆ Not required for temporary agency and contract labor ◆ Provide name of injured employee, name and phone # of treating medical facility, description of the incident ◆ Health Resources will help with medical facility coordination and follow-up care
4. Notify Regional/Program H&S Manager	Site Supervisor *Immediately (concurrently with providing transportation to occupational medical facility or EMS transport to hospital)*	All incidents	See Federal Incident Notification and Communication Contact List (attached)	◆ Contact should be made prior to sending the individual for medical care ◆ Regional/Program H&S Manager will notify Mike Zustra as appropriate

Incident Reporting and Management Procedure – Federal (continued)

Action	Who? *When?*	Under what circumstances?	How?	Notes:
5. Notify Shaw Notification Hotline/Help Desk	Site Supervisor *As soon as possible. Prior to sending an individual for medical treatment*	◆ Illness and/or injury (doctors cases and above) ◆ Property damage (damage > $2,500.00) ◆ Vehicle accidents (All) ◆ Criminal activity (i.e. bomb threat, theft) ◆ Natural disaster (all) ◆ Explosion and/or fires (damage > $2,500.00 or result in injury) ◆ Environmental spills/releases (incidents that requires regulatory notification or have an offsite impact) ◆ Regulatory agency visit ◆ Fatalities	Shaw Notification Hotline/Help Desk Phone Number **866-299-3445** **Note: Outside the Continental US call** **225-215-5056**	
6. Complete forms: ***Injuries and illnesses*** ◆ Authorization for Release of Protected Medical Information ◆ Authorization for Treatment of Occupational Injury/Illness ◆ Return-To-Work Examination Form ***and*** fax to Health Resources ***and*** fax to Loss Prevention Manager (Casey Parker)	Injured employee and medical facility personnel (Site Supervisor is responsible for verifying forms are completed) *Prior to leaving medical facility*	◆ Serious injury requiring off-site medical care ◆ If employee states that he/she has been exposed to any chemical or biological substance	Fax to Health Resources at 800-853-2641 Fax to Loss Prevention Manager (Casey Parker at 225-987-3080)	Site Supervisor or Site Safety Officer must take these forms with him/her to occupational medical facility or hospital (Contained in HS 020)
7. Call Project Manager and notify of incident	Site Supervisor *As soon as reasonably possible*			Project Manager will report incident to upper levels of Operations/Business Line Management

Incident Reporting and Management Procedure – Federal (continued)

Action	Who? *When?*	Under what circumstances?	How?	Notes:
8. Call back Regional/Program H&S Manager to report on status of ***injured/ill employee***	Site Supervisor *Prior to employee leaving medical facility*	All injuries and illnesses requiring off-site medical care	See Federal Incident Notification and Communication Contact List (attached)	
9. Complete forms: ***OSHA Recordable Cases*** Supervisor's Employee Injury/Illness Report Form Injured Employee Statement Witness Statement Form(s) ***First Aid Cases*** Supervisor's Employee Injury/Illness Report Injured Employee Statement Witness Statement Form(s) **Fax completed forms** to Shaw Corporate Claims and Regional/Program H&S Manager and Health Resources.	♦ Site Supervisor ♦ Witnesses *As soon as possible – no later than 24 hours*	All injuries, illnesses, and first aide cases	Shaw Corporate Claims Department Fax (225-932-2636) Health Resources Fax 800-853-2641 See Federal Incident Notification and Communication Contact List (attached)	Site Supervisor should have these forms with him/her at all times (Contained in HS 020)
10. Complete forms: ***Chargeable Vehicle Accidents*** Vehicle Accident Report Witness Statement Form(s) Driving Record Certification (Procedure HS800) ***Non-Chargeable Vehicle Accidents*** Vehicle Accident Report Witness Statement Form(s) ***Equipment, Property Damage and General Liability Incidents*** Equipment, Property Damage and General Liability Loss Report Witness Statement Form(s) **Fax completed forms** to Shaw Corporate Claims and Regional/Program H&S Manager.	♦ Site Lead / Supervisor ♦ Witnesses *As soon as possible – no later than 24 hours*	All vehicle accidents and /or all property damage	Shaw Corporate Claims Department (225-932-2636) See Federal Incident Notification and Communication Contact List (attached)	Supervisor should have these forms with him/her at all times (Contained in HS 020)

Incident Reporting and Management Procedure – Federal (continued)

Action	Who? *When?*	Under what circumstances?	How?	Notes:
11. Complete forms: ***OSHA Recordable Cases*** Incident Investigation Report ***First Aid Cases*** Incident Investigation Report ***Chargeable Vehicle Accidents*** Incident Investigation Report ***Non-Chargeable Vehicle Accidents*** Incident Investigation Report ***Equipment, Property Damage and General Liability Incidents*** Incident Investigation Report ***Near Miss*** Incident Investigation Report Fax completed forms to Regional/Program H&S Manager	Site Supervisor *As soon as possible – no later than 72 hours of incident*		Shaw Corporate Claims Department (225-932-2636) See Federal Incident Notification and Communication Contact List (attached)	Supervisor should have these forms with him/her at all times (Contained in HS 020)
12. Perform "Accident Review Board" (ARB) and fax to Regional/Program H&S Manager.	Site Supervisor/Project Manager *Within 10 days of incident*	OSHA Recordable Cases Chargeable Vehicle Accidents		ARB must include: Regional Manager, Project Manager, Employee's Direct Supervisor, Regional/Program H&S Manager, and Employee(s) involved in the incident. Lost time injuries will require Bill Winkler and Mike Zustra.

FEDERAL INCIDENT NOTIFICATION AND COMMUNICATION CONTACT LIST

Project Number:800486 Project: Fort McClellan Office: Fort McClellan Field Office Facility Location: Anniston AL

Name	Phone Number(s)	Fax Number	E-mail
Shaw Notification Hotline / Helpdesk	866-299-3445 225-215-5056 (Outside Continental US)	N/A	N/A
Health Resources	800-350-4511	800-853-2641	
Shaw Corporate Claims Department		225-932-2636	
Program/Project H&S Manager – Doug Russell	865-692-3584 (office) / 865-414-9545 (cell)	865-690-3626	winston.russell@shawgrp.com
East Region Army H&S Manager - Doug Russell	865-692-3584	865-690-3626	winston.russell@shawgrp.com
West Region Army H&S Manager - Fred Mlakar	949-660-5413	949-474-8309	fred.mlakar@shawgrp.com
Air Force H&S Manager - Jim Joice	419-424-4960/ 888-415-6920 (pager)	419-425-6039	james.joice@shawgrp.com
Infrastructure H&S Manager - Andrew Johnson	513-782-4972	513-782-4807	andrew.johnson@shawgrp.com
Federal H&S Director – Mike Zustra	614-834-4819 (office) / 740-215-3431 (cell)	614-834-4819	mike.zustra@shawgrp.com
ERC Division H&S Manager-Dave Mummert	419-425-6129 (office) / 419-348-1544 (cell)	419-425-6039	david.mummert@shawgrp.com
Project Manager – Steve Moran	865-694-7361 (office) / 865-607-9148	865-690-3626	steve.g.moran@shawgrp.com
Program Manager/ROM – Bob Culbertson	865-694-4702 (office) / 865-717-3293 (cell)	865-690-3626	bob.culbertson@shawgrp.com
Corporate H&S Coordinator (Scott Reily)	225-987-7228 (office) / 225-229-4390 (cell)	225-987-3413	scott.reily@shawgrp.com
Loss Prevention Manager (Casey Parker)	225-932-2763 (office) / 225-405-1246 (cell)	225-987-3080	casey.parker@shawgrp.com
Shaw E&I Health & Safety Director (Troy Allen)	225-932-2579 (office) / 225-229-1759 (cell)	225-987-3454	troy.allen@shawgrp.com

Note: Notifications to operations chain will be verbal and as soon as reasonably possible, but no later than 24-hours following the incident.

APPENDIX B

SITE-SPECIFIC MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) SAFETY PLAN

Site-Specific Munitions and Explosives of Concern (MEC) Safety Plan
Supplemental Remedial Investigation
Bains Gap Road Ranges, Skeet Range & Range 20

Fort McClellan
Calhoun County, Alabama

Prepared for:

U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, Alabama 36602

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

Task Order CK11
Contract No. DACA21-96-D-0018
Project No. 800486

October 2007

Revision 0

Munitions and Explosives of Concern (MEC) Safety Plan Supplemental Remedial Investigation at the Bains Gap Road Ranges, Skeet Range and Range 20

I have read and approve this site-specific MEC safety plan for the supplemental remedial investigation at the Bains Gap Road Ranges, Skeet Range and Range 20 at Fort McClellan in Anniston, Alabama, with respect to project hazards, regulatory requirements, and Shaw unexploded ordnance (UXO) procedures.

Robert W. Hickman, Jr.
UXO Technical Manager

23 Oct 07
Date

Winston D. Russell
Health & Safety Manager

10-23-07
Date

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Attachment 1 - FTMC UXO Supplementary Procedures

List of Acronyms

FTMC	Fort McClellan
IT	IT Corporation
MEC	Munitions and Explosives of Concern
OE	ordnance and explosives
SAP	Installation-Wide Sampling and Analysis Plan
Shaw	Shaw Environmental, Inc.
USACE	U.S. Army Corps of Engineers
UXO	unexploded ordnance

1.0 Introduction

This document defines anomaly avoidance procedures for activities to be performed by Shaw Environmental, Inc. (Shaw) unexploded ordnance (UXO) personnel in conjunction with the monitoring well installation and sampling activities at the Bains Gap Road Ranges, Skeet Range, and Range 20 located at Fort McClellan in Anniston, Alabama. This document is not a stand-alone document and must be used in conjunction with the FTMC Installation-Wide Sampling and Analysis Plan (SAP), which includes an Ordnance and Explosives (OE) Management Plan, and the *FTMC UXO Supplementary Procedures*, included as Attachment 1.

Shaw UXO personnel will perform visual surveys, using hand-held magnetometers and metal detectors, to support road maintenance/repair, clearing trees, grubbing and well installation field activities. The purpose is to avoid munitions and explosives of concern (MEC) (formerly referred to as OE) during the fieldwork. Intrusive anomaly investigation is not authorized for this site work.

The sites requiring MEC avoidance are all located within the Main Post of FTMC. A brief description of each site is included with the letter work plan. All sites were previously investigated under the Base Realignment and Closure Environmental Restoration program.

2.0 UXO Personnel

UXO personnel requirements will be in accordance with Engineer Pamphlet 75-1-2 *Munitions and Explosives of Concern (MEC) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities* (U.S. Army Corps of Engineers, 2004) and the SAP (IT, 2000; IT, 2002b) for FTMC. Two UXO safety specialists will be on site during road maintenance / repair work or for any intrusive activities. In addition, one UXO safety specialist will be onsite during all well installation and sampling activities. Site personnel will not access any area or perform field activities without the presence of a UXO safety specialist.

3.0 Responsibilities

The onsite UXO specialists will provide MEC avoidance, explosive ordnance recognition, location, and safety functions for Shaw employees and any subcontractors during field activities. Field activities at the sites include road maintenance / repair, clearing trees and vegetation for

access to monitoring well locations, and the actual well installation activities. The UXO specialist will provide escort services for subcontractors during all well installation activities including the installation of concrete pads and steel bumper \ safety posts.

4.0 Authority

Shaw UXO personnel are authorized to perform MEC avoidance activities only. UXO personnel are not permitted to initiate MEC investigative or disposal activities.

5.0 UXO Avoidance Procedures to Support HTRW Activities at FTMC

The scope of work for well installation and sampling activities at the Bains Gap Road Ranges, Skeet Range and Range 20 sites includes the following UXO tasks:

- Provide surveys for all intrusive field activities (e.g., road maintenance / repair).
- Provide MEC avoidance support during the installation of each monitoring well including concrete pads and steel bumper \ safety posts surrounding the concrete pad.
- Provide MEC avoidance support during mechanical excavation of soil for road maintenance / repair, tree removal, and clearing \ grubbing field activities.
- Provide MEC avoidance support during the well development, soil sampling and groundwater sampling activities.

Since these areas may contain MEC contamination, the UXO team must conduct a surface access survey for MEC before any type of activities commence. This includes foot and vehicular traffic. UXO avoidance activities will include:

a) Access Corridors and Well Locations

(1) The UXO team will conduct access surveys of the footpaths and vehicular lanes approaching and leaving the site. Access surveys will begin in a known clear area and proceed by the most direct route to the site. The boundaries of the access route and site will be marked with white tape or white pin flags.

(2) If a MEC item is found during the survey, the location will be conspicuously marked with a red pin flag and avoided by altering the

route. Additionally, UXO personnel will complete the Shaw "Unexploded Ordnance Report Form." Subsurface anomalies will be marked with a yellow flag.

(3) The boundaries of the access route will be recorded in the Shaw "UXO Sketch Log" by the UXO technician. Additionally, anomaly locations will be recorded on this form.

(4) Instrumentation used at this site may include the Schonstedt GA72, the CST Corporation Magna-Trak 102, or the Whites Spectrum XLT Metal Detector. All equipment will be operated as specified in the appropriate operator's manual. All equipment will be function tested prior to use following the procedure in paragraph 3.2, *FTMC UXO Supplementary Procedures* and the manufacturer's instructions.

(5) Footpath lanes will be a minimum of three feet wide. As necessary, the access route will be twice as wide as the widest vehicle that will use the route.

(6) If surface MEC or subsurface anomalies are encountered that cannot be avoided, the access route will be diverted to avoid contact. No personnel will be allowed outside of the surveyed areas without a UXO escort. No unescorted access will be permitted inside the corridor area until a survey has been completed and the boundaries established.

(7) The UXO specialists will survey the proposed monitoring well locations (e.g., concrete pad, bollards, etc.) before, during, and after field activities for any indication of MEC.

(8) Vehicles whose movement would disturb the soil are authorized for use only in areas that have been surveyed and in which no anomalies have been detected.

(9) If grading or soil movement is required to support access corridor development to a monitoring well location, the UXO specialists will perform a survey. After an area has been surveyed and no anomalies have been detected, soil can be removed at a rate of no more than one foot per cut. If additional grading is required, another survey will be performed after each one foot of soil has been removed.

(10) Erosion and weathering will typically cause some MEC items to leach to the surface or otherwise be uncovered. In cases where access corridors or sampling locations have not been surveyed or traversed for a period of time, additional surveys may be required. The decision to perform follow-on surveys will be made by the UXO specialists in consultation with the

Site Supervisor. The decision will be based on factors such as the amount of time since the last survey was performed, the weather during this period, the terrain in the area of concern, the former use of the area, and the type of quantity of MEC found during initial surveys.

b) Vegetation Removal

In cases where removal of large trees or other vegetation is required to support access or monitoring well installation operations, the procedures in paragraph 4.2, *FTMC UXO Supplementary Procedures* will be followed.

c) Magnetometer/Metal Detector Checkout and Field Procedures

The procedures in paragraph 3.0, *FTMC UXO Supplementary Procedures* will be followed.

d) UXO Logbooks and Documentation

All UXO personnel identified in paragraph 5.0, *FTMC UXO Supplementary Procedures* will maintain a logbook in accordance with that procedure.

6.0 Safety

In addition to the requirements of the site-specific safety and health plan prepared for this site, the UXO personnel will ensure the following:

- The onsite UXO specialists will monitor all road improvement, well installation, and sampling activities to ensure compliance with applicable safety requirements.
- The onsite UXO specialists are responsible for any site-specific UXO training.
- The onsite UXO specialists will advise project personnel regarding all evacuation and/or exclusion zones as appropriate. The UXO specialists will ensure that only required personnel are present on site.

7.0 Quality

The onsite UXO specialists will follow quality control instructions and procedures listed in Section 9.0 of the Installation-wide OE Management Plan (contained in Volume IV of the SAP) and the *FTMC UXO Supplementary Procedures,* as appropriate to this task. The onsite UXO specialists will also use the "UXO Avoidance Quality Control Report" to document their

activities. Copies of this form will be provided to the Shaw quality assurance representative upon request.

8.0 References

Environmental Science and Engineering, Inc. (ESE), 1998, ***Final Environmental Baseline Survey, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

IT Corporation (IT), 2002b, ***Draft Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, Revision 3, February.

IT Corporation (IT), 2000, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, March.

Shaw Environmental, Inc. (Shaw), 2002, ***FTMC UXO Supplementary Procedures***, October.

U. S. Army Corps of Engineers (USACE), 2004, ***Munitions and Explosives of Concern (MEC) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities,*** Engineer Pamphlet (EP) 75-1-2, 1 August.

ATTACHMENT 1

FTMC UXO SUPPLEMENTARY PROCEDURES

FTMC UXO SUPPLEMENTARY PROCEDURES

Subject: Ordnance and Explosives

1.0 INTRODUCTION

Shaw Environmental, Inc. (Shaw), formerly IT Corporation, has been retained by the U.S. Army Corps of Engineers-Mobile District, under Contract Number DACA21-96-D-0018, to provide environmental services related to Base Realignment and Closure (BRAC) of Fort McClellan, Alabama. The Installation-Wide Ordnance and Explosives (OE) Management Plan for Fort McClellan (FTMC) was prepared by Shaw and submitted as a final document in March 2000. The Installation-Wide OE Management Plan was prepared to provide general guidance for conducting unexploded ordnance (UXO) work associated with hazardous, toxic, and radiological waste (HTRW) investigations and remedial activities currently in progress at FTMC. Shaw prepares site-specific field sampling, health and safety, and UXO safety plans for sites where fieldwork will occur that may potentially contain OE. A UXO Safety Plan is not prepared for sites that are not reported to be in areas containing OE.

1.1 Purpose

This document is intended to provide procedures to the field staff that outline UXO operations and clarify activities currently permitted under "anomaly avoidance." The document is not intended to replace any of the project documents currently approved; rather, it is intended to complement those documents with additional information that allows successful completion of the job.

2.0 FTMC EMPLOYEE ORIENTATION/TRAINING AND CERTIFICATION

The Shaw FTMC orientation program is designed to:

- Indoctrinate new employees to FTMC-unique procedures
- Verify compliance with regulatory certification requirements
- Provide continuing instruction and updating in UXO fundamentals to sustain readiness to safely perform UXO tasks

2.1 Responsibilities

The Shaw OE Service Center Operations Manager will oversee the training programs and maintain a master record of UXO employee training and certification status.

The UXO person designated as the senior Shaw UXO individual at FTMC will schedule the orientation listed below.

The FTMC UXO Safety Officer will:

- Conduct all UXO-specific orientation and training at FTMC
- Certify that each new UXO employee is capable of performing UXO work activities at FTMC
- Maintain FTMC training files and records on each UXO technician on site reflecting his or her current training status.

2.2 UXO Employee Orientation

Every UXO employee assigned to FTMC will receive a site-specific UXO orientation in addition to training required by the Occupational Health and Safety Administration (OSHA). This orientation will include, as a minimum, the following topics:

- Local emergency response drills and procedures
- Personal protective equipment (PPE) and personnel decontamination procedures
- Ordnance recognition/UXO expected to be encountered at FTMC
- Equipment safety
- FTMC site orientation
- Chemical warfare material (CWM) awareness and procedures
- Communications procedures
- FTMC Logbook/data recording procedures
- Shaw administrative policies and procedures
- Magnetometer checkout procedures
- Accident reporting procedures.

Upon completion of the UXO employee orientation, the FTMC UXO Safety Officer will monitor the performance of the new hire for at least three workdays while conducting typical UXO activities. The FTMC UXO Safety Officer will then certify that the individual is capable of performing UXO activities at FTMC based upon satisfactory performance of the three-day period. A copy of this certification will be maintained in the individual's site FTMC training file (see example at Attachment 1).

2.3 UXO Sustainment Training

All UXO technicians have had the OSHA 40-hour hazardous waste operations and emergency response (HAZWOPER) course in order to be initially certified at FTMC. They are also required to maintain the certification with an 8-hour OSHA refresher course on an annual basis. Additionally, all Shaw FTMC UXO personnel will have 8 hours of site-specific annual UXO sustainment training. This training can be performed incrementally (2 hours every quarter) at the discretion of the site superintendent in coordination with the FTMC Shaw UXO Safety Officer. Topics will include, but are not limited to, the following subjects:

- Site-specific environmental hazards
- Site-specific UXO hazards, ordnance fuzing, functioning and precautions
- Topics which the Shaw UXO Team Leader or Shaw Safety UXO Officer determines necessary to support FTMC UXO activities

Sustainment training will be conducted for a period of no less than 8 hours. Daily safety briefings, tailgate safety meetings, and other required site-specific training are not a substitute for this training. The purpose of this training is to provide each UXO employee with site-specific UXO training over and above OSHA requirements. The site-specific UXO training will be recorded in the project file and the UXO employee's personnel file.

3.0 FTMC MAGNETOMETER/METAL DETECTOR FUNCTION TEST AND FIELD PROCEDURES

This section provides FTMC magnetometer/metal detector function tests and operating procedures to be employed at all work sites that have been identified as requiring avoidance support.

3.1 Geophysical Test Plot

The purpose of a test plot is to provide a consistent environment where the equipment can be evaluated. This plot will be established as follows

- The test plot will be located in a clear area at the west entrance to the FTMC Transition Force Compound.

- The test plot will contain inert ordnance items at depths and attitudes characteristic of previous ordnance encounters at FTMC. Examples of test items include: a 37mm APT buried at a depth of eight inches and in a 45-degree, nose-down attitude; an aluminum alloy snap flare buried four inches in a horizontal attitude; a 60mm mortar twelve inches deep and in a 60-degree, nose-down attitude; a 2.36-inch rocket at a depth of twelve inches and in a 60-degree, nose-down attitude; and a 75mm canister projectile buried eight inches deep in a horizontal attitude. Each burial location will be marked with a wooden stake located to the east of the object. Each stake will be tagged or marked to denote the depth, type of item, and orientation of the item. The site will utilize native soils; no fill material will be brought in from another area. Sand may be used to cover the area to mitigate the effects of wet weather.

- For downhole magnetometer testing, a length of 2-inch PVC pipe will be buried to a depth of 48 inches. The location of the test item, similar in size and mass to a 2.36 inch rocket, will be marked with a wooden stake tagged to denote the depth, type of item, orientation, and reference number assigned. This item will be buried at a depth of twelve inches.

3.2 Magnetometer/Metal Detector Check-Out Procedures

- Prior to field use, all magnetometers and metal detectors will be set up following the guidelines in the manufacturer's operating manual for the specific instrument used. Instrumentation used at this site will include the Schonstedt GA 72, the CST Corporation Magna-Trak 102, or White's Spectrum XLT Metal Detector. Additionally, the Schonstedt MG-220 or MG-230 will be set up for downhole monitoring. All equipment will be operated in a manner consistent with instructions contained in the appropriate operator's manual. All equipment will be function-tested prior to use. The White's Metal Detector will be used in conjunction with hand-held magnetometers in areas of high concentrations of rocks with a

magnetic signature, to assist in eliminating anomalies created by "hot rocks." The operating manual for each of the instruments used at FTMC will be available for use with the equipment.

- Once the instrument has been determined to be working according to the manufacturer's operating manual, the operator will perform a function test on the FTMC geophysical test plot using the detection methods described in the manual. A function test will consist of using the instrument over a minimum of three test sources. The same sources will be used during each function test to ensure consistency. The instrument detection indicator, as described in the operator's manual, will be noted in the instrument logbook. For site checks, a 6-inch length of 1/2-inch steel reinforcing rod will be available to each operator at the work site.

- Instruments that fail to reproduce a detection indication consistent with previous tests will be checked to ensure that the power supply or batteries are sufficient. If the power supply is determined to be sufficient and the operator cannot find a fault in accordance with the operator's manual, the instrument will be tagged and removed from service.

- Function tests will be performed each morning before the equipment is put into service.

- If an instrument is determined to be working improperly, the FTMC UXO Team Leader and the site superintendent will be immediately notified. Any activities performed using that instrument since its last positive test procedure will be considered invalid and will require reevaluation.

- Upon completion of the function test, the function test will be secured in the operator's Daily Field Log Book.

- After an instrument has been function-tested at the beginning of each day, the instrument will be checked at least once during every hour of use or each time the instrument is turned on after having been turned off. This check will consist of dropping the 6-inch length of 1/2-inch reinforcing rod in a clear area and passing the detector over the rod in a manner consistent with the operator's instructions. The instrument indication will be compared to the indication produced during the morning function test.

Instruments that fail to produce a consistent indication will be checked and removed from service as required.

3.3 Equipment Documentation

Each piece of equipment will be assigned a logbook noting the make, model, manufacturer, and serial number of the equipment. The following information will be recorded:

- Factory (off-site) maintenance
- On-site repair activities
- Other actions which could alter the performance of the instrument

The Shaw FTMC Quality Control (QC) Officer will perform random audits of equipment function tests and will record the fact that the test was performed in accordance with these procedures.

3.4 Magnetometer/Metal Detector Field Procedures

All intrusive field actives in potential OE areas (e.g., digging, fence post driving, grading, well installation or excavation) will be preceded by a UXO sweep. Each hole made in areas where OE may potentially be found will have a check immediately over the spot of the intrusion. Magnetometer operations at FTMC will assume a detection depth of one foot when surveying an area for excavation.

All magnetometers and metal detectors will be operated in accordance with the manufacturers specifications and procedures.

When surveying a potential area for a sampling well, an area of sufficient size will be surveyed to allow for installation of required pads and bollards. After the well is installed, the location of bollards will be adjusted as required if an anomaly is detected during the bollard installation process.

The White's Metal Detector will be used to augment the magnetometers on sites where "hot rocks" are suspected. The purpose of using the metal detector in addition to the magnetometers is to eliminate the probability of "hot rocks."

4.0 FTMC ACCESS CLEARANCES, VEGETATION REMOVAL, AND ROAD MAINTENANCE

This section is designed to provide specific procedures regarding activities associated with the building of access corridors, vegetation removal, and road maintenance in support of FTMC operations.

4.1 Access Corridors

The purpose of access corridors is to enable Shaw personnel access to well and/or other types of sampling sites within FTMC. Access corridors will be created by marking the route, both length and width, in which a UXO survey has been performed. The marking method will be defined in each site-specific UXO safety plan. No unescorted access is permitted until a corridor has been established. If an anomaly is detected during the survey or during a subsequent excavation, it must be avoided, since investigation is not authorized. The route will be altered to avoid the anomaly for FTMC activities. A magnetometer is considered to reliably detect anomalies to a depth of one foot.

The size of each area to be surveyed is dependent on the type and quantity of equipment expected to be used on that site. The UXO survey crew will follow the procedures outlined in the site-specific UXO safety plan to determine the dimensions of the area to be surveyed. Normally, the width of the access route will be at least twice as wide as the widest vehicle that will use the route; footpaths will be a minimum of 3 feet wide.

Tracked or other vehicles that disturb the soil are authorized for use only in areas that have been surveyed and no anomalies have been detected.

Erosion and weathering will typically cause some UXO items to leach to the surface or otherwise be uncovered. In cases where access corridors or sampling sites have not been surveyed or traversed for a period of time, additional UXO surveys may be required. The decision regarding the performance of additional surveys will be made by the FTMC UXO team leader and the Shaw FTMC UXO Safety Officer. The site superintendent will be notified of this decision. This decision will be based on, but not limited to, such factors as: the amount of time since the last survey was performed; the weather during this period; the terrain in the area of concern; and the type and quantity of UXO found during initial surveys.

4.2 Vegetation Removal

In cases where removal of large trees or other types of vegetation is required, the following procedures will be followed:

- The UXO technician will survey around the base of the tree or vegetation, and, if no anomaly is detected, direct the bulldozer or other equipment to proceed. If an anomaly is detected, the location will be recorded and marked and another route will be selected. The size of the area to be surveyed will depend on the size of the suspected root system of the tree to be removed.

- Once the tree has been pushed over, the UXO technician will survey around the root ball and the area in and around the hole. If an anomaly is detected, the anomaly will be recorded and marked and an alternate route will be selected. If no anomaly is detected, the UXO technician will direct the equipment operator to proceed with the excavation.

4.3 Road Maintenance

Remote range roads and trails frequently require a certain amount of repair to remain passable. This section describes authorized actions regarding the maintenance of dirt or gravel range roads by Shaw UXO personnel.

- Bulldozers or grader-type equipment is authorized to repair roads and trails as long as a UXO survey has been performed and no anomalies have been detected.

- The UXO technician will observe the blade of the equipment as the earth is moved. If a potential UXO is uncovered, the UXO technician will signal the equipment operator to immediately stop the equipment. The UXO technician will then attempt to visually identify the object. If the object cannot be positively identified as a non-hazardous item, the equipment will be moved, the location of the object marked and recorded on the Shaw FTMC Unexploded Ordnance Report Form (Attachment 2), and the route changed to avoid the object. If no suspicious objects are detected, the equipment will continue to move earth at a rate of no more than one foot of depth at a time. If, more grading is required after the first past is complete the UXO technician will perform another survey. If no anomalies are detected, the equipment can repeat the grading process. If an anomaly is detected, the operation will be halted and the route changed.

- After an area has been surveyed and no anomalies have been detected, soil can be removed at a rate of no more than one foot per lift. If additional grading is required, a survey will be performed after each one-foot increment the soil has been removed.

- Earth may not, at any time, be moved at a rate of more than one foot in each lift.

5.0 FTMC UXO LOG BOOKS

All UXO team leaders or UXO technicians supporting HTRW operations will maintain a logbook. The purpose of the logbook is to record UXO actions and activities taken at each work site.

5.1 Responsibilities

UXO personnel will maintain an individual daily logbook of work activities.

The logbooks will be routinely inspected weekly by the UXO QC Officer and will be made available to the FTMC site superintendent upon request. Copies will be made daily and filed in the Shaw Field Project office.

Logbooks will contain bound and numbered pages. Entries will be on successive pages as work is performed. The individual using the logbook will sign the page after the last entry for that page has been made. Logbooks are part of the project legal file and will be filed with the project files upon completion of each investigation.

5.2 Data Requirements

As a minimum, individual logbooks will contain the following information:

- Date, time and location of UXO activities

- Personnel involved in the activities

- UXO activities performed, including UXO/anomalies found

- A description of areas swept

- A record of the magnetometer or other equipment used, including instrument serial number

- Weather conditions.

Shaw UXO personnel will utilize the Shaw FTMC Unexploded Ordnance Report Form (Attachment 2) to document the discovery of UXO/OE items.

The Shaw FTMC QC Officer will utilize the Shaw FTMC UXO Avoidance Quality Control Report (Attachment 3) to document checks of field activities.

Additionally, UXO personnel will complete Shaw FTMC Form UXO Sketch Log (Attachment 4) and Shaw FTMC Unexploded Ordnance Report Form. The UXO Sketch Log will contain a description of activities, including the dimensions of the area surveyed. A description of the length and width will be recorded, as well as the manner in which the survey was performed. These forms will be completed as required and presented to the site superintendent.

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ATTACHMENT 1

FTMC Employee Certification (Example)

I certify that (name of individual) has fulfilled all UXO orientation requirements and has been observed by me for a period of 3 work days and is therefore eligible to perform UXO activities at FTMC.

_____

Robert Hickman
FTMC UXO Safety Officer

ATTACHMENT 2

Unexploded Ordnance Report Form

Report Tracking Number:

Discovery and Reporting Time

Time of Discovery	
Date	Time

Time Reported to Base Transition Force	
Date	Time

Employee Name:_____

Reported to FTMC Transitional Force Personnel

Name:_____

Location of Ordnance

Location, Description, and Parcel Number:

Coordinates of Ordnance:	State Plane Coordinates	
	Northing	Easting

Picture Taken of Ordnance			
Yes	No	Date	Time

Written Description and/or Sketch of Ordnance:

Corrective Action Taken by Fort McClellan Transition Force

Date	

ATTACHMENT 3

UXO Quality Control Report

Project Location: _____ **Date:** _____

Work Site Location: _____ **Day:** _____

1. **Personnel Involved:**

_____
_____
_____
_____
_____

2. **Description of Work Being Performed:**

_____
_____
_____
_____
_____

3. **Equipment Utilized:**

_____
_____
_____
_____
_____

4. **Comments:**

_____
_____
_____
_____
_____

Completed By	**Printed Name & Title**
Signature	**Date**

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ATTACHMENT 4

UXO Sketch Location Log

District:_____ **Hole Number:**_____ **Date:**_____

Company Name: Shaw Environmental, Inc. **Subcontractor:**_____

Parcel Location:_____ Well Location:_____ Date Started:_____ Date Completed:_____

Type of UXO Work Being Performed:

Most Probable Munition:	
Down-Hole Depth Achieved for UXO Avoidance:	
Total Number of Surface UXO Marked:	
Total Number of Anomalies Marked:	

Location Sketch/Comments:	**Not to Scale**
Signature of UXO Technician:	Date:

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