

**Final
Site-Specific Safety and Health Plan Attachment
Site Investigation at the Former Washrack,
Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan
Calhoun County, Alabama
EPA ID No. AL7 210 020 562**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
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**Delivery Order CK010
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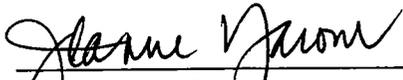
October 2001

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.

Final
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 Former Washrack, Building 1740, Soldier's Chapel at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.



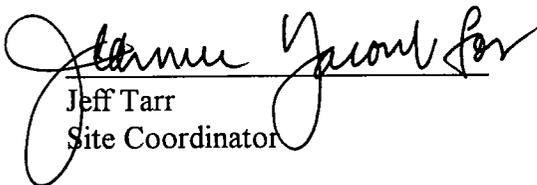
Jeanne Yacoub, PE
Project Manager

10/24/01
Date



Bill Hetrick, CIH
Health & Safety Manager

10/11/01
Date

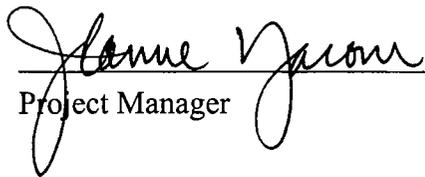


Jeff Tarr
Site Coordinator

10/24/01
Date

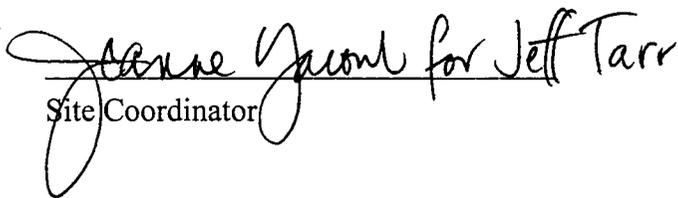
Acknowledgements

The approved version of this site-specific safety and health plan (SSHP) attachment for the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7), Fort McClellan, Calhoun County, 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.


Project Manager

10/24/01
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 the health and safety manager.


Site Coordinator

10/24/01
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 through Friday

Fort McClellan Project Emergency Contacts

In case of any emergency, the SSHO or Site Manager will coordinate site access and response.

Range Control Office (Main Post).....	(257) 848-6772
Fire Department (off post)	911
Ambulance (off post)	911
Military Police (SSG Bush)	(256) 848-5680, 848-4824
Anniston Police	(256) 238-1800 or 911
Regional Medical Center	(256) 235-5121
DOD Guard Force (Mr. Bolton)	(256) 848-5680, 848-4732
Chemical Agent Emergencies (SSG Bush).....	(256) 848-5680, 848-4824
UXO Emergencies (SSG Raper).....	(256) 848-4824
UXO Non-emergencies/Reporting Only (Ronald Levy)	(256) 848-6853
Baltzell Gate Guard Shack	(256) 848-5693, 848-3821
National Response Center and Terrorist Hotline	(800) 424-8802
Poison Control Center.....	(800) 462-0800
EPA Region IV	(404) 562-8725
Ronald Levy, BRAC Environmental Coordinator, FTMC Transition Force	(256) 848-6853
Lisa Kingsbury, FTMC Transition Force	(256) 848-7455
Ellis Pope, U.S. Army Corps of Engineers, Mobile District	(251) 690-3077
Philip Stroud, Alabama Department of Environmental Management.....	(334) 270-5646
Ross McCollum, U.S. Army Corps of Engineers, Mobile District	(334) 690-3113
Mike Moore, Fort McClellan Safety Office	(256) 848-5433
Darryl Stabile, U.S. Army Corps of Engineers.....	(251) 690-2784
Jeanne Yacoub, IT Project Manager	(770) 663-1429
Bill Hetrick, IT H&S Manager	(865) 690-3211, pager (888) 655-9529
Dr. Jerry H. Beke, Health resources Occupational Physician.....	(800) 350-4511

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List of Acronyms

Please see Attachment 1, List of Abbreviations and Acronyms, of the Remedial Work Plan contained within this binder.

1.0 Site Work Plan Summary

Project Objective. IT will excavate and dispose of soils in two small areas at the Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7), which exceed the Human Health site-specific screening levels for lead, copper and mercury. The maximum concentrations detected in the soils are 1,640 milligrams per kilogram (mg/kg) of lead, 32.4 mg/kg of mercury and 312 mg/kg of copper. One excavation area is located under a concrete grease pit and washracks. These structures will be demolished with a hoe ram. The depth of the excavations will be approximately 2 to 3 feet. Samples will be collected for disposal purposes.

Project Tasks

- Clearing and grubbing.
- Demolition of the concrete grease rack and washracks.
- Construction of soil stockpile area.
- Soil Excavation and backfill.
- Soil sampling.
- Soil load-out and disposal.

Personnel Requirements. Up to ten employees.

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 and be familiar with the requirements of this site-specific safety and health plan. This site-specific safety and health plan must be used in conjunction with the installation-wide safety and health plan, Fort McClellan, Alabama.

2.0 Site Characterization and Analysis

2.1 Anticipated Hazards

The activity hazard analyses in Table 5-1 contain project-specific practices that will be utilized to reduce or eliminate anticipated site hazards. The activity hazard analyses indicate specific chemical and physical hazards that may be present and encountered during each task. 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).

Soldier's Chapel faces 8th Street, is surrounded by a grassy area, and has a paved driveway in front and on the south side and a parking lot further south along 8th Street. Immediately adjacent to the southeast corner of the Chapel is a large rectangular metal storm drain cover which is over an underground concrete sump that appears to connect the building to the sewage system. Six washracks and a grease pit are located to the rear and to the northeast of the Chapel. The washracks measure approximately 73.5 feet by 20.5 feet in total length and width, and each rack measures 12.5 feet by 20.5 feet. The grease pit appeared to be dry. The washracks and grease pit are located along the edge of a 5 to 6-foot incline that drops to a natural drainage behind these structures.

Table 2-1 contains the toxicological and physiological properties of site contaminants at the Former Washrack, Building 1740, Soldier's Chapel.

2.2 General Site Information

Location of Site. The Former Washrack, Building 1740, Soldier's Chapel is located on the southeastern portion of Main Post on 8th Street.

Duration of Planned Employee Activity. Employee activity duration is approximately 2 weeks.

Site Topography. The site elevation is approximately 820 feet, with ground sloping to the north-northwest.

Table 2-1

**Toxicological and Physical Properties of Chemicals
Activity-Specific Safety and Health Plan
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page1 of 2)

Substance [CAS]	Physical Description	Physical and Chemical Properties	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Copper [7440-50-B]	Red powder, turns green on exposure to moist air	BP: 2595°C Dens: 8.9	Inh Ing Abs Con	Irritated eyes, nose, pharynx and skin. Metallic taste.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention.	1 mg/m ³ 1 mg/m ³ 1 mg/m ³	NA	PEL TLV REL	100 mg/m ³
Lead	Bluish-white or silvery-grey solid	BP: 1740°C Dens: 11.34	Inh Ing Con	Weak, insomnia, facial pallor, constipated, abdominal pain, colic, anemia, irritated eyes, paralysis of wrists and ankles, encephalopathy.	Eye: Irrigate immediately. Skin: Soap wash promptly. Breath: Respiratory support. Swallow: Immediate medical attention..	0.05 mg/m ³ 0.05 mg/m ³ 0.1 mg/m ³	NA	PEL TLV REL	100 mg/m ³
Mercury [7439-97-6]	Odorless, heavy and mobile silvery liquid metal	BP: 357°C Dens: 13.5 VP: Pa at 20 °C: 0.26	Inh Ing Con	Inhalation of the vapours may cause pneumonitis. The substance may cause effects on the kidneys and central nervous system. Effects may be delayed.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	0.05mg/m ³ 0.025 mg/m ³	NA	PEL TLV REL	2 mg/m ³

FOOTNOTES:

^a Physical/Chemical Properties:

IP = Ionization potential
MW = Molecular weight
BP = Boiling point
FZP = Freezing point

FLP = Flash point
MLT = Melting point
Dens. = Density
VP = Vapor pressure

REL GAS DENS = Relative gas density (to air)
LEL = Lower explosive limit
UEL = Upper explosive limit
FLAMM = Flammability Class
INCOMP = Incompatibility/Reactivity

^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 workday (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.

Table 2-1

Toxicological and Physical Properties of Chemicals Activity-Specific Safety and Health Plan Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7) Fort McClellan

(Page 2 of 2)

^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.

ppm = parts per million mg/m³ = milligrams per cubic meter f/cc = fibers per cubic centimeter

^e Source

PEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).

TLV = American Conference of Governmental Industrial Hygiene (ACGIH) Threshold Limit Value-TWA. (Value in parentheses denotes a Notice of Intended Change.)

REL = National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit.

^f IDLH = 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.

ND = Not determined yet.

NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Latest Edition).

C = Ceiling limit value which should not be exceeded at any time.

Ca = Carcinogen.

LOQ = Limit of Quantification, the lowest level at which the concentration of a chemical in air can be reliably determined.

NA = Not applicable.

? = Unknown.

LC₅₀ = Lethal concentration for 50 percent of population tested.

NIC = Notice of intended change (ACGIH).

REFERENCES:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, Latest Edition, compiled by the ACGIH.

Amoore, J. E. Hautula, "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, 1983.

Clayton, George D., Clayton, F. E., Patty's Industrial Hygiene and Toxicology, 3rd ed., John Wiley & Sons, New York.

Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, Latest Edition.

Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.

National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Latest Edition, National Institute for Occupational Safety and Health.

Verschueren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.

Workplace Environmental Exposure Levels, American Industrial Hygiene Association, Latest Edition.

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
Staging equipment	Level D
Clearing and grubbing	Level D (Tyvek coveralls are recommended to prevent contact with insect bites/contact with poisonous plants.)
Demolition of concrete grease rack and wash rack	Level D*
Construction of soil stockpile area	Level D (providing that the concrete dust is controlled with a water mist)
Soil excavation	Modified Level D*
Backfilling	Level D
Collecting samples	Modified Level D*
Soil load-out and disposal	Modified Level D* (Loader Operator. Truck drivers must stay in their vehicles)

* Initial level will be raised to Level C or higher if air monitoring results in the worker's breathing zone are greater than action levels outlined in Table 4-1.

Level D. The minimal level of protection that will be required of IT Corporation 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 (clearing activities)
- Tyvek coveralls as needed to protect against insects and poisonous plants

- Full-face shield and goggles to protect against flying debris (clearing activities)
- Chain-saw chaps (clearing activities)

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

- Tyvek coveralls
- Latex boot covers
- Inner nitrile or latex sample gloves
- Outer nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

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 for Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, air-purifying respirators equipped with high-efficiency particulate air filters (P-100)
- Hooded, Tyvek, taped at gloves, boots, and respirator
- Inner nitrile or latex sample gloves
- Outer nitrile, heavy work, or latex gloves
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

4.0 Site Monitoring

The environmental contaminants of concern at the Former Washrack, Building 1740, Soldier's Chapel are lead, mercury and copper. Table 4-1 contains action levels for site monitoring at the Former Washrack, Building 1740.

Generally, the level of site contaminants poses a low health risk to personnel, as long as dust levels are controlled. A Negative Initial Determination for Lead, Appendix A, has been developed based on anticipated site activities and the maximum lead concentration in the soil. Additionally, the dust exposure calculation indicates that based on the maximum soil concentrations of lead, copper and mercury, controlling dust to less than 5 mg/m³ would give a safety factor of over 3x. (Appendix B)

Monitoring will be performed by the site safety and health officer (SSHO) during soil excavation, sampling and soil loadout. A calibrated particulate monitor (i.e., MIE personal DataRam PDR) will be utilized to monitor the breathing zones to determine the effectiveness and/or need for dust control methods and to trigger action levels as specified in Table 4-1. The frequency and location of air monitoring activities at the Former Washrack, Building 1740 can be found in Table 4-2.

Integrated air monitoring will be conducted during the excavation of soils with elevated levels of lead, demolition of the concrete structures and soil loadout. Samples will be collected and analyzed in accordance with National Institute for Occupational Safety and Health Analytical Method 7300.

Table 4-1

Action Levels
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan

When in Level C PPE

Analyte/Area	Action Level	Required Action
Particulate/BZ of workers during excavation, sampling and soil loadout.	$\geq 10 \text{ mg/m}^3$	Stop work/initiate dust suppression

When in Level D PPE

Analyte/Area	Action Level	Required Action
Particulate/BZ of workers during excavation, sampling and soil loadout.	$\geq 5.0 \text{ mg/m}^3$	Level C PPE/initiate dust suppression

When in Support Zone

Analyte/Area	Action Level	Required Action
Particulate/boundary of support zone.	$\geq 0.5 \text{ mg/m}^3$	Initiate dust suppression

- BZ - Breathing zone.
- mg/m^3 - Milligrams per cubic meter.
- PPE - Personal protective equipment.

Table 4-2

**Air Monitoring Frequency and Location
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

Work Activity	Instrument	Frequency	Location
Soil Excavation	Particulate meter (DataRam, PDR) and integrated sampling for lead	Continuous	BZ of employees
Sampling	Particulate meter (DataRam, PDR)	Continuous	BZ of employees
Soil Loadout	Particulate meter (DataRam, PDR) and integrated sampling for lead	Continuous	BZ of employees

BZ - Breathing zone.

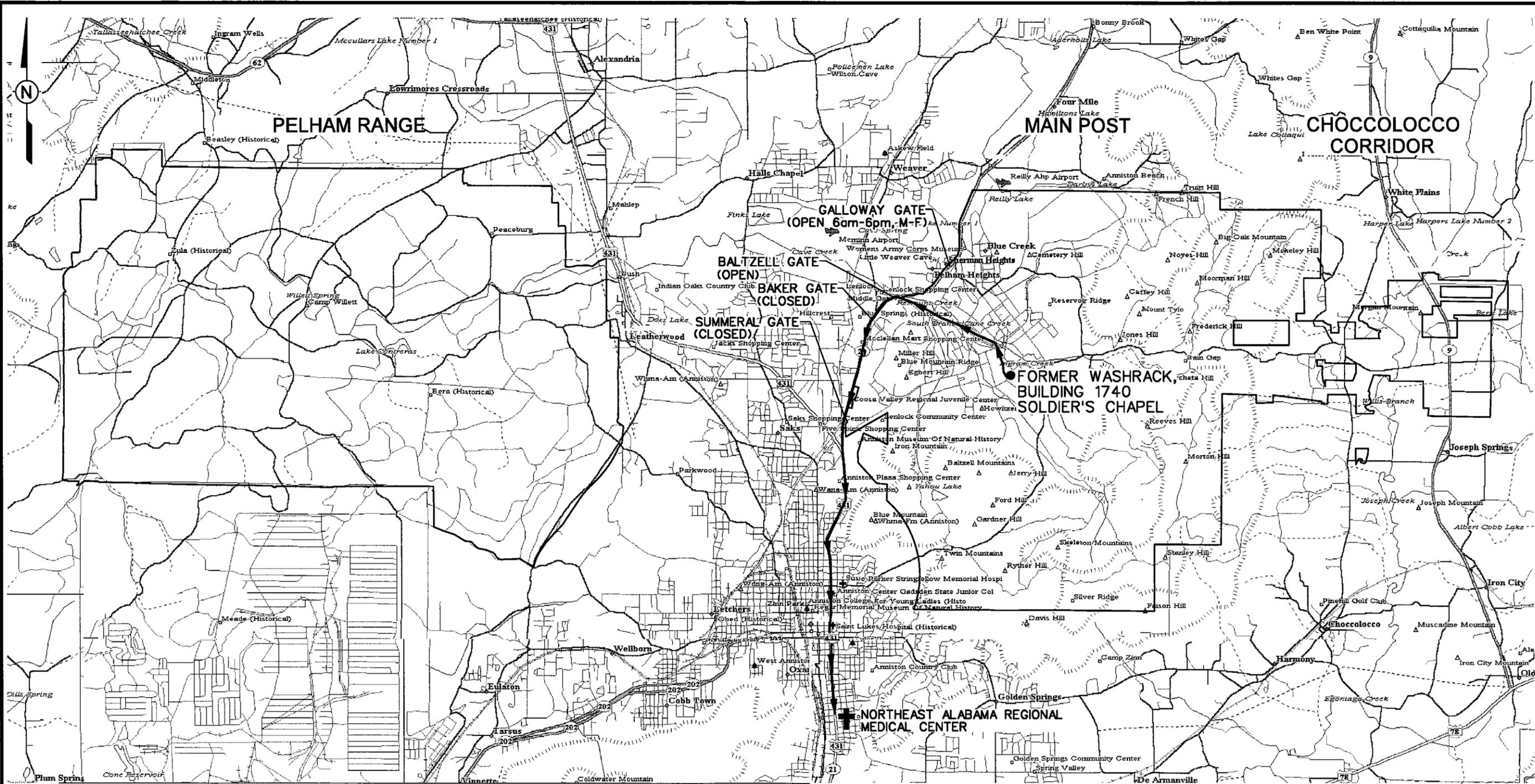
5.0 Activity Hazard Analysis

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

- Clearing and grubbing.
- Demolition of the concrete grease rack and washracks.
- Construction of soil stockpile area.
- Soil excavation and backfill
- Soil sampling.
- Soil load-out and disposal.

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

INITIATOR: J. RAGSDALE DWG. NO.: ...796887es.218
 PROJ. MGR.: J. YACOUB PROJ. NO.: 796887
 DRAFT. CHK. BY: ENGR. CHK. BY: S. MORAN
 DATE LAST REV.: DRAWN BY:
 10/24/01 STARTING DATE: 10/24/01 DRAWN BY: D. BOMAR
 08:20:00 AM



LEGEND:

- ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
- U.S. HIGHWAY
- HOSPITALS
- INVESTIGATION SITE

DRIVING DIRECTIONS FROM BALTZELL GATE ROAD TO THE NORTHEAST ALABAMA MEDICAL CENTER

- LEAVING FORT McCLELLAN ON BALTZELL GATE ROAD, TURN LEFT (SOUTH) ONTO AL HWY 21
- GO ~ 2.5 MILES WHERE AL HWY 21 MERGES WITH U.S. HWY 431 AND CONTINUE SOUTH
- CONTINUE SOUTH ON AL21/US431 FOR ~ 2.7 MILES
- TURN LEFT ONTO EAST 10th STREET
- GO ~ 0.2 MILE TO MEDICAL CENTER ON RIGHT
- NORTHEAST ALABAMA REGIONAL MEDICAL CENTER, 400 EAST 10th STREET
- PHONE NUMBER : (256) 235-5121

**FIGURE 5-1
 HOSPITAL EMERGENCY ROUTE**

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018

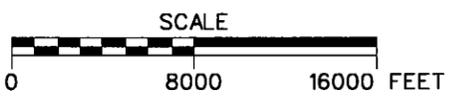


Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page 1 of 19)

ACTIVITY HAZARD ANALYSIS FOR CLEARING AND GRUBBING				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Clearing and Grubbing	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> Isolate equipment swing areas. Make eye contact with operators before approaching equipment. Understand and review hand signals. 	Hard hat, safety glasses, Steel toe work boots	
	Slips, Trips, Falls	<ul style="list-style-type: none"> Clear walkways, work areas of equipment, tools, vegetation, and debris. Clean mud and grease from your boots before mounting equipment. Watch for slippery/unstable ground when dismounting equipment. 		
	Handling Heavy Objects	<ul style="list-style-type: none"> Observe proper lifting techniques. Use Dozer or Track-hoe to move logs and brush. 		
	Eye Injuries	<ul style="list-style-type: none"> Wear face shield, goggles when operating powered clearing / grubbing equipment. 	Face shield, goggles	
	Sharp Objects	<ul style="list-style-type: none"> Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. Maintain all hand and power tools in a safe condition. Keep guards in place during use. Close doors, windows on heavy equipment to prevent injuries from tree branches and other vegetation. 	Wizard or similar cut resistant gloves	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page 2 of 19)

ACTIVITY HAZARD ANALYSIS FOR CLEARING AND GRUBBING				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Clearing and Grubbing (continued)	Insect/ Snake Bites	<ul style="list-style-type: none"> Review injury potential and types of snakes with workers. Avoid insect nests and likely habitats of snakes. Emphasize The Buddy System where such injury potential exists. Use insect repellent, wear PPE to protect against sting/bite injuries. 	Tyvek coveralls, duct tape bottom of coveralls to boots (recommended)	
	Contact Dermatitis	<ul style="list-style-type: none"> Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants. Identify and review poisonous plants with workers. Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. 	Tyvek coveralls, duct tape bottom of coveralls to boots (as necessary) and work gloves	
	Operations of power clearing tools (brush saws, weed whackers)	<ul style="list-style-type: none"> Wear eye, face, hand & hearing protection when operating power-clearing equipment. Shut-off / idle power tools walking between work areas. Store flammable liquids in well-ventilated areas, away from work areas. Shut off equipment during re-fueling. Prohibit smoking while operating clearing equipment. Provide ABC (or equivalent) fire extinguishers for all work. 	Face shield, goggles, leather gloves, ear plugs, Steel toe work boots	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page 3 of 19)

ACTIVITY HAZARD ANALYSIS FOR CLEARING AND GRUBBING				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Clearing and Grubbing (continued)	High Noise Levels	<ul style="list-style-type: none"> Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period). Assess noise level with sound level meter if possibility exists that level may exceed 85 dB A TWA. 	Ear plugs	
	High/Low Ambient Temperature	<ul style="list-style-type: none"> Monitor for Heat/Cold stress in accordance with IT Health and Safety Procedures # HS400, HS401. Provide fluids to prevent worker dehydration. 		Meteorological Equipment
	Adverse weather conditions:	<ul style="list-style-type: none"> Monitor weather forecast. Shut down operations in severe weather conditions. 		
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> Power clearing tools (brush saws, weed waxes) 		<ul style="list-style-type: none"> Daily equipment inspections as per manufacturers requirements Inspect all safety equipment (fire extinguishers, first aid kits and eye washes) 	<ul style="list-style-type: none"> Review AHA with all task personnel Review Installation-wide Health and Safety Plan Review operations/safety manuals for all equipment utilized Review potential hazardous plants and insects/animals 	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page 4 of 19)

ACTIVITY HAZARD ANALYSIS FOR CONCRETE DEMOLITION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Concrete Demolition	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Maintain all hand and power tools in a safe condition. • Keep guards in place during use. 	Leather gloves	
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, tools, vegetation, excavated material, and debris. • Mark, identify, or barricade other obstructions. 		
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques. • Obey sensible lifting limits (60-lb. maximum per person manual lifting). • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Flying debris	<ul style="list-style-type: none"> • Barricade work area to keep all personnel, except hoe-ram operator, out of the work area. • Operator will be inside an enclosed cab. 		

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page 5 of 19)

ACTIVITY HAZARD ANALYSIS FOR CONCRETE DEMOLITION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Concrete Demolition (continued)	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> Wear reflective warning vests when exposed to vehicular traffic. Isolate equipment swing areas. Make eye contact with operators before approaching equipment. Understand and review hand signals. Follow hand signals of ground workers for equipment manipulation when placing/loading equipment into bucket. 	Warning vests, Hard hat, Safety glasses, Steel toe work boots	
	Inhalation and Contact with Concrete Dust/silica	<ul style="list-style-type: none"> Work from the upwind position. Wet concrete to keep dust down. 	Leather gloves	
	High Noise Levels	<ul style="list-style-type: none"> Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period). Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA. 	Ear plugs	
	Adverse weather conditions:	<ul style="list-style-type: none"> Monitor weather forecast. Shut down operations in severe weather conditions. 		

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page 6 of 19)

ACTIVITY HAZARD ANALYSIS FOR CONCRETE DEMOLITION				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Concrete Demolition (continued)	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat/Cold stress in accordance with IT Health and Safety Procedures # HS400, HS401. • Provide fluids to prevent worker dehydration. 		Meteorological Equipment
EQUIPMENT REQUIREMENTS		INSPECTION REQUIREMENTS		INSPECTION REQUIREMENTS
<ul style="list-style-type: none"> • Hoe-ram • Particulate meter 		<ul style="list-style-type: none"> • Emergency Safety Equipment-Shower, Eyewashes, Fire Extinguishers, First aid supplies • Daily Equipment Inspection 		<ul style="list-style-type: none"> • Review AHA with all task personnel • Review Installation-wide Health and Safety Plan • Review operations/safety manuals for all equipment utilized

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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ACTIVITY HAZARD ANALYSIS FOR CONSTRUCTION OF STOCKPILE AREA				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Construction of Stockpile Area	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways work areas of equipment, tools, vegetation and debris. • Mark, identify, or barricade other obstructions. 		
	Spills	<ul style="list-style-type: none"> • Clean up spills before initiating maintenance. • Review maintenance procedures for safety practices. 		
	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic. • Isolate equipment swing areas. • Make eye contact with operators before approaching equipment. • Understand and review hand signals. • Follow hand signals of ground workers for equipment manipulation when placing/loading equipment into bucket. • Step away from equipment when bucket adjustments are made. 	Warning vests, Hard hat, Safety glasses, Steel toe work boots	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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ACTIVITY HAZARD ANALYSIS FOR CONSTRUCTION OF STOCKPILE AREA				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Construction of Stockpile Area (continued)	Pinch points	<ul style="list-style-type: none"> Review equipment adjustment procedures, identify pinch points. Isolate/block pinch points to limit motion when inserting pins, fasteners, closing tackles. 	Leather gloves	
	Equipment failure	<ul style="list-style-type: none"> Perform daily maintenance inspections on operating equipment. 		
	Handling Heavy Objects	<ul style="list-style-type: none"> Observe proper lifting techniques. Obey sensible lifting limits (60 lb. Maximum per person manual lifting). Use mechanical lifting equipment (handcarts, trucks) to move large, awkward loads. Avoid carrying heavy objects above shoulder level. 		
	Sharp Objects	<ul style="list-style-type: none"> Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects, such as knives. Maintain all hand and power tools in a safe condition. 	Wizard or similar cut resistant gloves	
	High Noise Levels	<ul style="list-style-type: none"> Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period). Assess noise level with sound level meter if possibility exists to exceed 85 dB A TWA. 	Ear plugs	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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ACTIVITY HAZARD ANALYSIS FOR CONSTRUCTION OF STOCKPILE AREA				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Construction of Stockpile Area (continued)	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat/Cold stress in accordance with IT Health and Safety Procedures # HS400, HS401. • Provide fluids to prevent worker dehydration. 		Meteorological Equipment
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Polyethylene sheeting • Heavy equipment to create berm 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review Installation-Wide Safety and Health Plan • Review operations/safety manuals for all equipment utilized 	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION AND BACKFILL				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Excavation and Backfill	Underground/ Overhead Utilities	<ul style="list-style-type: none"> • Identify all utilities at the site before work commences. • Cease work immediately if unknown utility markers are uncovered. • Use manual excavation within 3 feet of known utilities. • Utility clearance shall conform with 29 CFR 1926.955 (high voltage >700 kv) 15 feet phase to ground clearance; 31 feet phase to phase clearance. • Complete underground utility clearance permit in accordance with IT Health and Safety Procedure HS308. 		
	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic. • Isolate equipment swing areas. • Make eye contact with operators before approaching equipment. • Understand and review hand signals. • Step away from equipment when bucket adjustments are made. • Do not attempt verbal communication in high noise backgrounds. • Park equipment in areas where operator can see clearly to dismount equipment. 		

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION AND BACKFILL				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Excavation and Backfill (continued)	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Maintain all hand and power tools in a safe condition. • Keep guards in place during use. • Observe work area and location of other personnel before lifting/moving objects with sharp edges. 	Wizard or similar cut resistant gloves	
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear, walkways of equipment, vegetation, excavated material, tools and debris. • Mark, identify, or barricade other obstructions. • Exit equipment slowly and maintain three-point contact. • Clean boot soles before climbing on equipment. 		
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques. • Review proper lifting posture/techniques regularly at safety meetings. • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Use mechanical lifting equipment (handcarts, trucks) to move large, awkward loads. • Avoid carrying heavy objects above shoulder level. • Warm up muscles before engaging in manual lifting. 	Warning vests, hard hat, safety glasses, steel toe work boots	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION AND BACKFILL				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Excavation and Backfill (continued)	Inhalation and Contact with Hazardous Substances	<ul style="list-style-type: none"> • Provide workers proper skin and eye protection based on the exposure hazards present. • Review hazardous properties of site contaminants with workers before operations begin. • Monitor breathing zone air to determine levels of contaminants. • Dampen soil using light water spray to prevent fugitive dust emissions. 	Tyvek coveralls, inner sample gloves, outer nitrile gloves, latex boot covers.	Particulate meter and integrated sampling pumps
	Adverse weather conditions:	<ul style="list-style-type: none"> • Monitor weather forecast. • Shut down operations in severe weather conditions. 		
	High Ambient Temperature	<ul style="list-style-type: none"> • Provide fluids to prevent worker dehydration. • Monitor for Heat/Cold stress in accordance with IT Health and Safety Procedures # HS400, HS401. 	Insulated Clothing (subject to ambient temperature)	
Manual Excavation	Struck/Struck By	<ul style="list-style-type: none"> • Use the right tool for the task at hand. • Maintain personal balance when performing manual excavation. • Concentrate on the work task being performed. 		
	Overexertion	<ul style="list-style-type: none"> • Use the right tool for the task at hand. • Avoid actions/activities that produce overexertion. 		

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION AND BACKFILL				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Manual excavation (continued)	Horseplay	<ul style="list-style-type: none"> • Prohibit horseplay on all project sites. • Review rules about horseplay with subcontract supervisors and workers. • Remind workers not to respond/participate in horseplay started by others. 		
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Excavator • Shovels, probes • Particulate meter and integrated sampling pumps 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements • Excavation inspection/permit • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review Installation-wide Health and Safety Plan • Review operations/safety manuals for all equipment utilized • Review site specific chemical hazards 	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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ACTIVITY HAZARD ANALYSIS FOR SAMPLING				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Sampling	Handling Heavy Objects	<ul style="list-style-type: none"> Observe proper lifting techniques. Obey sensible lifting limits (60-lb. maximum per person manual lifting). Use mechanical lifting equipment (handcarts, trucks) to move large, awkward loads. 		
	Slips, Trips, Falls	<ul style="list-style-type: none"> Clear walkways, work areas of equipment, tools, vegetation, excavated material, and debris. Mark, identify, or barricade other obstructions. 		
	Spills	<ul style="list-style-type: none"> Ensure spill cleanup equipment/material on hand/ready for use (i.e.: Baking soda to neutralize and sample preservative spills). Cleanup spills immediately. 	Full face shield	
	Inhalation and Contact with Hazardous Substances	<ul style="list-style-type: none"> Provide workers proper skin and eye based on the exposure hazards present. Review hazardous properties of site contaminants with workers before operations begin. 	Tyvek coveralls, sample gloves and latex boot covers	
	High Ambient Temperature	<ul style="list-style-type: none"> Provide fluids to prevent worker dehydration. Monitor for Heat/Cold stress in accordance with IT Health and Safety Procedures # HS400, HS401. 	Insulated Clothing (subject to ambient temperature)	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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ACTIVITY HAZARD ANALYSIS FOR SAMPLING				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Sample containers • Coolers 		<ul style="list-style-type: none"> • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review Installation-wide Health and Safety Plan • Review site specific chemical hazards 	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

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JOB SAFETY ANALYSIS FOR SOIL LOADOUT AND DISPOSAL				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Loadout and Disposal	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic. • Obey posted speed limits. • Isolate equipment swing areas. • Make eye contact with operators before approaching equipment. • Understand and review hand signals. • Exit equipment slowly and maintain three-point contact. • Report minor incidents to site supervision. • Park equipment in areas where operator can see clearly to dismount equipment. • Step away from equipment when bucket adjustments are made. • Do not attempt verbal communication in high noise backgrounds. • Follow hand signals of ground workers for equipment manipulation when placing/loading equipment into loader bucket. • Truck drivers must stay inside their vehicles. 	Warning vests, Tyvek coveralls, Hard hat, Safety glasses, Steel toe work boots	

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page 17 of 19)

JOB SAFETY ANALYSIS FOR SOIL LOADOUT AND DISPOSAL				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Loadout and Disposal (continued)	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walk ways, work areas of equipment, tools and debris. • Mark, identify, or barricade other obstructions. • Clean mud from boots before climbing on equipment. 		
	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Maintain all hand and power tools in a safe condition. • Keep guards in place during use. 	Leather gloves	
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period). • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA. 	Ear plugs	
	Walking on machine tracks	<ul style="list-style-type: none"> • Avoid walking on machine tracks whenever possible; clean tracks for safe walking/working surfaces. • Observe track surfaces when walking, move cautiously on uneven, slippery surfaces. • Avoid sudden awkward motions (pulling/jerking fuel hoses). 		

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page 18 of 19)

JOB SAFETY ANALYSIS FOR SOIL LOADOUT AND DISPOSAL				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Loadout and Disposal (continued)	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques. • Obey sensible lifting limits (60 lb. Maximum per person manual lifting). • Use mechanical lifting equipment (handcarts, trucks) to move large, awkward loads. • Avid carrying heavy objects above shoulder level. • Avoid actions/activities that contribute to overexertion. • Warm up muscles before engaging in manual lifting activities. • Review lifting posture/techniques regularly at safety meetings. 		
	Defective Vehicles	<ul style="list-style-type: none"> • Inspect all trucks before loading. • Do not load soil or equipment into defective equipment. 		
	Roadways	<ul style="list-style-type: none"> • Ensure that the roadways on the route to the landfill or final destination are designed to handle the weight of the vehicles and allow HAZMAT materials. 		
	Horseplay	<ul style="list-style-type: none"> • Prohibit horseplay on all project sites. • Review rules about horseplay with subcontractor supervisors and workers. • Remind workers not to respond/participate in horseplay started by others. 		

Table 5-1

**Activity Hazard Analysis
Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)
Fort McClellan**

(Page 19 of 19)

JOB SAFETY ANALYSIS FOR SOIL LOADOUT AND DISPOSAL				
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Soil Loadout and Disposal (continued)	Inhalation and Contact with Hazardous Substances (Loader Operator)	<ul style="list-style-type: none"> • Provide workers proper skin and eye based on the exposure hazards present. • Review hazardous properties of site contaminants with workers before operations begin. • Truck driver should stay inside their vehicles. 	Tyvek coveralls, sample gloves and latex boot covers	Particulate meter and integrated sampling pumps
	High Ambient Temperature	<ul style="list-style-type: none"> • Provide fluids to prevent worker dehydration. • Monitor for Heat/Cold stress in accordance with IT Health and Safety Procedures # HS400, HS401. 	Insulated Clothing (subject to ambient temperature)	
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Loader • Trucks • Particulate meter and integrated sampling pumps. 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Review AHA with all task personnel • Review Installation-wide Health and Safety Plan • Review site specific chemical hazards 	

APPENDIX A

NEGATIVE INITIAL DETERMINATION FOR LEAD



11560 Great Oaks Way
Alpharetta, GA 30022

MEMO

TO: File

FROM: Alison Harwood, CSP

PC: Bob Brooks

DATE: October 10, 2001

SUBJECT: Lead-Negative Initial Determination

Soils containing a maximum concentration of 1,640 mg/kg of lead will be excavated at Building 1740 at the Fort McClellan MCB. Specific site work activities include:

- Clearing and grubbing
- Concrete pad removal
- Excavation
- Sampling
- Loadout and disposal.

Personal air sampling results from August of 2001, at the former NAS Barbers Point site will be used to justify that excavations activities at Fort McClellan will not expose personnel to greater than 30 ug/m³ of lead.

The soils at the former NAS Barbers Point site contained a mean concentration of 12,700 mg/kg of lead. Site activities included:

- Clearing and grubbing
- Excavation
- Screening
- Sampling
- Loadout and disposal.

The following summarizes the personal air monitoring results during activities at the former NAS Barbers Point site which are similar to the anticipated work activities at Fort McClellan.

Date	Personnel (SS#)	Activity	Personal Air Sample Results
8/6/2001	Jerome Kupukaa (575-04-4969)	Excavator Operator-Clearing and Grubbing	<5 ug/m ³
8/6/2001	Henry Mederos (013-54-4247)	Recovery Technician – Ground Crew – Clearing Grubbing	<5 ug/m ³
8/6/2001	Ron Petes (575-66-5215)	Loader Operator - Clearing and Grubbing	<5 ug/m ³
8/15/2001	David Kaahaaina (575-76-3848)	Excavator Operator and hauling soil During soil excavation.	<5 ug/m ³
8/15/2001	Sheldon Alvarado (576-78-6469)	Loader Operator during soil excavation.	<5 ug/m ³
8/16/2001	Sheldon Alvarado (576-78-6469)	Screening soils.	<5 ug/m ³
8/16/2001	Mike Ramos (576-78-6469)	Recovery Technician (ground person during Excavation activities)	<5 ug/m ³

Additionally, at 1,640 mg/m³ lead, a dust concentration of over 18 mg/ m³ would be required to exceed the action level for lead. Controlling dust to less than 5 mg/ m³ would provide a safety factor of over 3x.

APPENDIX B

DUST EXPOSURE CALCULATION WORKSHEET

APPENDIX B

DUST EXPOSURE CALCULATION WORKSHEET				
DustLevel		Safety Factor for this site = 3		
Chemical	Exposure Limit (mg/m3)	Maximum Soil Concentration (mg/kg)	Exposure Limit Based on Single Compound (EL Mix, mg/m3)	Dust Quotient for Each Compound (level/limit)
Aluminum	5	1.E-9	1.67E+15	2.00E-10
Antimony	0.5	1.E-9	1.67E+14	2.00E-09
Arsenic	0.01	1.E-9	3.33E+12	1.00E-07
Barium	0.5	1.E-9	1.67E+14	2.00E-09
Beryllium	0.002	1.E-9	6.67E+11	5.00E-07
Cadmium	0.005	1.E-9	1.67E+12	2.00E-07
Chlordane	0.5	1.E-9	1.67E+14	2.00E-09
Chromium	0.5	1.E-9	1.67E+14	2.00E-09
Chrome (hex)	0.01	1.E-9	3.33E+12	1.00E-07
Cobalt	0.02	1.E-9	6.67E+12	5.00E-08
Copper	1	33	1.01E+4	3.30E+01
Cyanides	5	1.E-9	1.67E+15	2.00E-10
Dioxins (tetra)	2.00E-07	1.E-9	6.67E+7	5.00E-03
Dioxins (hex)	0.001	1.E-9	3.33E+11	1.00E-06
Endosulfan	0.1	1.E-9	3.33E+13	1.00E-08
Fluorides	2.5	1.E-9	8.33E+14	4.00E-10
Lead	0.05	1,640	10.16	3.28E+04
Manganese	0.2	1.E-9	6.67E+13	5.00E-09
Mercury	0.025	312	26.71	1.25E+04
Nickel	1	1.E-9	3.33E+14	1.00E-09
Oil Mist	5	1.E-9	1.67E+15	2.00E-10
PCBs	0.5	1.E-9	1.67E+14	2.00E-09
PNAAs	0.2	1.E-9	6.67E+13	5.00E-09
Phthalates	5	1.E-9	1.67E+15	2.00E-10
RDX	0.5	1.E-9	1.67E+14	2.00E-09
Selenium	0.2	1.E-9	6.67E+13	5.00E-09
Silica	0.05	1.E-9	1.67E+13	2.00E-08
Silver	0.01	1.E-9	3.33E+12	1.00E-07
Thallium	0.1	1.E-9	3.33E+13	1.00E-08
Tin	2	1.E-9	6.67E+14	5.00E-10
Titanium	10	1.E-9	3.33E+15	1.00E-10
Trinitrotoluene	0.1	1.E-9	3.33E+13	1.00E-08
Vanadium	0.05	1.E-9	1.67E+13	2.00E-08
Zinc	5	1.E-9	1.67E+15	2.00E-10
Sum			7.356	4.53E+04
Dust Exposure Level at Mixture PEL =			7.356	

Chart1

