

**Final  
Site-Specific Safety and Health Plan Attachment  
Remedial Investigation at  
Training Area T-38, Former Technical Escort Reaction Area,  
Parcel 186(6)**

**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  
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**Prepared by:**

**IT Corporation  
312 Directors Drive  
Knoxville, Tennessee 37923**

**Task Order CK10  
Contract No. DACA21-96-D-0018  
IT Project No. 796887**

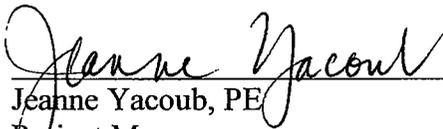
**August 2002**

**Revision 3**

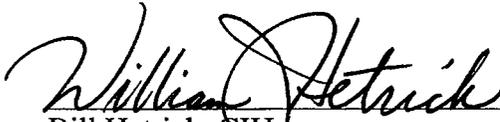
This site-specific safety and health plan (SSHP) must be used in conjunction with the installation-wide safety and health plan, Fort McClellan, Alabama. The following SSHP has been designed for the methods presently contemplated by the company for execution of the proposed work. Therefore, the SSHP may not be appropriate if the work is not performed by or using the methods presently contemplated by the company. In addition, as the work is performed, conditions different from those anticipated may be encountered and the SSHP may have to be modified. Therefore, the company only makes representations or warranties as to the adequacy of this SSHP for currently anticipated activities and conditions.

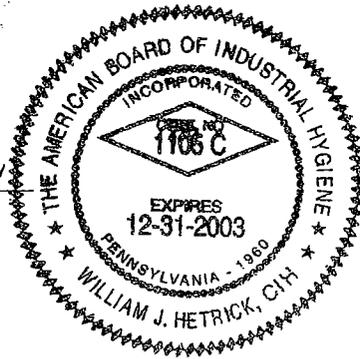
**Site-Specific Safety and Health Plan Attachment Approval  
Fort McClellan, Calhoun County, Alabama**

I have read and approve this site-specific safety and health plan attachment for the remedial investigation at Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

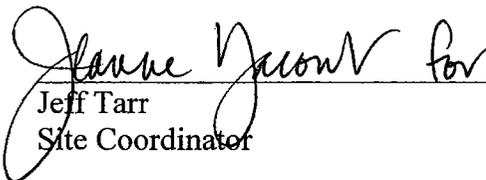
  
\_\_\_\_\_  
Jeanne Yacoub, PE  
Project Manager

8/26/02  
Date

  
\_\_\_\_\_  
Bill Hetrick, CIH  
Health & Safety Manager



8/21/02  
Date

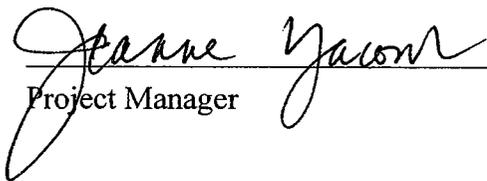
  
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Jeff Tarr  
Site Coordinator

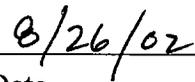
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## Acknowledgments

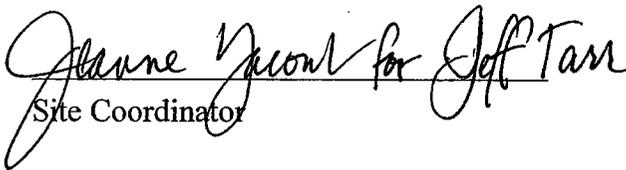
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The final approved version of this site-specific safety and health plan (SSHP) attachment for the remedial investigation at Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) at Fort McClellan, Alabama, has been provided to the 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 six months until project completion.

  
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 the health and safety manager.

  
Site Coordinator

  
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

Range Control Office (Main Post).....(256) 848-6772  
Fire Department (off post) .....911  
Ambulance (off post) .....911  
Regional Medical Center .....(256) 235-5121  
DOD Guard Force (Mr. Bolton) ..... (256) 848-5680, 848-4732  
Anniston Police Department.....(256) 238-1800  
Chemical Agent Emergencies.....(256) 895-1598  
    (Mike Smith, CEHNC) ..... cell phone (256) 759-3931  
UXO Emergencies .....(256) 895-1598  
    (Mike Smith, CEHNC) ..... cell phone (256) 759-3931  
UXO Nonemergencies/Reporting Only (Ronald Levy) .....(256) 848-6853  
National Response Center & Terrorist Hotline.....(800) 424-8802  
Poison Control Center.....(800) 222-1222  
EPA Region IV .....(404) 562-8725  
Ronald Levy, BRAC Environmental Coordinator, FTMC Transition Force .....(256) 848-6853  
Lisa Holstein, FTMC Transition Force.....(256) 848-7455  
Lee Coker, U.S. Army Corps of Engineers, Mobile District.....(251) 690-3099  
Philip Stroud, Alabama Department of Environmental Management .....(334) 270-5646  
Doyle Brittain, EPA Region IV .....(404) 562-8259  
Ross McCollum, U.S. Army Corps of Engineers, Mobile District.....(251) 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  
Jeff Tarr, IT Site Manager ..... (256) 848-3482, -3499  
Bill Hetrick, IT H&S Manager .....Direct dial (865) 692-3571, and pager (888) 655-9529  
Dr. Jerry H. Berke, Health Resources Occupational Physician.....(800) 350-4511

# Table of Contents

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	<i>Page</i>
List of Tables .....	ii
List of Figures .....	ii
List of Attachments .....	ii
List of Acronyms .....	iii
1.0 Site Work Plan Summary .....	1
2.0 Site Characterization and Analysis .....	2
2.1 Anticipated Hazards .....	2
2.2 General Site Information .....	3
3.0 Personal Protective Equipment .....	5
4.0 Site Monitoring .....	7
5.0 Activity Hazard Analysis .....	8

## **List of Tables**

---

<b>Number</b>	<b>Title</b>	<b>Follows Page</b>
2-1	Toxicological and Physical Properties of Chemicals	3
4-1	Action Levels	7
4-2	Air Monitoring Frequency and Location	7
5-1	Activity Hazard Analysis	8

## **List of Figures**

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<b>Number</b>	<b>Title</b>	<b>Follows Page</b>
1-1	Organization Chart	1
5-1	Hospital Emergency Route	8

## **List of Attachments**

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- Attachment 1 – Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities
- Attachment 2 – SUDAN IV Material Safety Data Sheet

## **List of Acronyms**

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See Attachment 1 of the Site-Specific Field Sampling Plan for the list of Abbreviations and Acronyms.

## **1.0 Site Work Plan Summary**

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**Project Objective.** The objective of this remedial investigation (RI) at Fort McClellan (FTMC), Calhoun County, Alabama, is to collect and analyze samples at Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6). Specifically, IT Corporation (IT) will conduct investigations at the six-acre fenced area at the crest of Reservoir Ridge. The sample media, locations, and analytical parameters are identified in the SFSP.

### **Project Tasks**

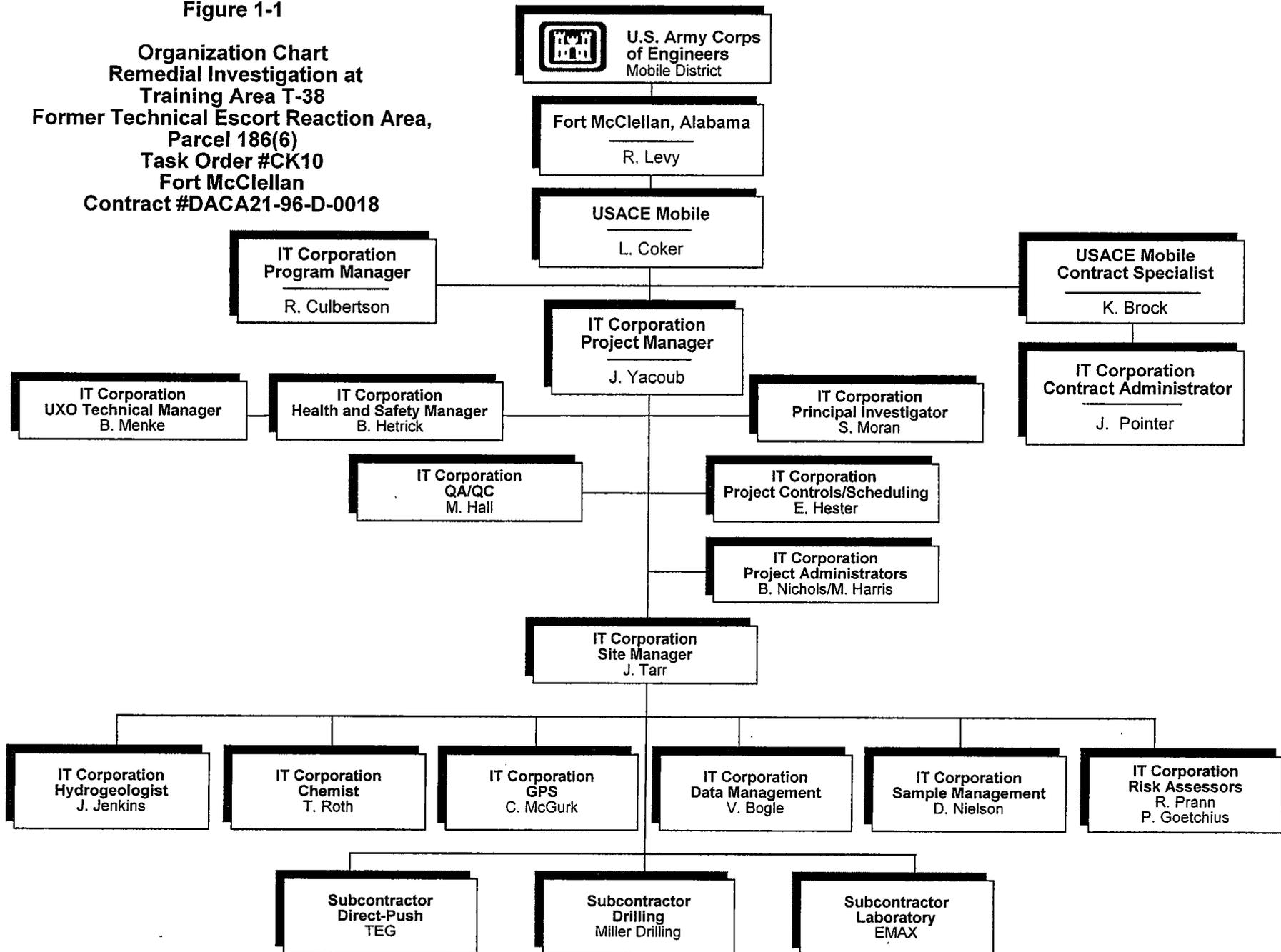
- Conduct a surface and near-surface unexploded ordnance (UXO) survey over all areas to be included in the sampling effort.
- Provide downhole UXO support for all intrusive drilling activity to determine the presence of potential downhole hazards.
- Install groundwater monitoring wells
- Collect surface soil samples, subsurface soil samples, and groundwater samples using direct push and hollow-stem auger drilling techniques.
- Conduct soil/water field tests for non-aqueous phase liquid with SUDAN IV solvent dye.
- Conduct contingency sampling of surface and subsurface soil (angle borings).

**Personnel Requirements.** Up to 15 employees. See Figure 1-1 for an organization chart.

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 shall be familiar with the requirements of this site-specific safety and health plan (SSHP). This SSHP must be used in conjunction with the SHP for FTMC, Alabama.

Figure 1-1

**Organization Chart  
Remedial Investigation at  
Training Area T-38  
Former Technical Escort Reaction Area,  
Parcel 186(6)  
Task Order #CK10  
Fort McClellan  
Contract #DACA21-96-D-0018**



## **2.0 Site Characterization and Analysis**

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### **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).

Previous investigations at Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) included a geophysical survey, soil sampling, and groundwater sampling. The geophysical survey was conducted inside of the fenced area at Training Area T-38 in 2001 by Parsons Engineering Science, Inc. as part of a chemical warfare material (CWM) Engineering Evaluation Cost Analysis (EE/CA). Numerous geophysical anomalies were observed and evaluated and investigative trenching was conducted at the location of a suspected disposal pit area. Eight CWM scrap items were encountered during the trenching activities. The CWM items did not contain chemical warfare agents nor were they explosively configured. Nine soil samples were also collected and analyzed during the trenching activities. There was no detection of GB, HD, 1,4-thioxane, or 1,4-dithiane above reporting limits in the collected samples.

During the CWM EE/CA field activities, four drums were observed in the proximity of the water tank, near the southern boundary of Parcel 186(6) (approximate 3-acre dump area). Soil samples were collected around the drums and from within one of the drums. There was no detection of GB, HD, VX, or CWM-breakdown products.

Previous site and remedial investigations conducted at Training Area T-38 by IT and SAIC included the collection of eleven surface and subsurface soil samples and the installation and sampling of 32 groundwater monitoring wells (27 by IT and 5 by SAIC). The groundwater analytical data from CWM-186-MW26 (located just east and downgradient of the fenced area, installed by IT) suggests that free phase decontaminants or dense non-aqueous phase liquid (DNAPL) may be present in the subsurface beneath the fenced area. Based on available data, an investigation inside of the fenced area is needed to further evaluate the soil and further delineate the potential sources for groundwater contamination from volatile organic compounds. An additional investigation is also needed at the dump area near the southern boundary of Parcel 186(6), to evaluate soil and groundwater in the area.

Table 2-1

**Toxicological and Physical Properties of Chemicals  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 5)

Substance [CAS]	IP <sup>a</sup> (eV)	Odor Threshold (ppm)	Route <sup>b</sup>	Symptoms of Exposure	Treatment	TWA <sup>c</sup>	STEL <sup>d</sup>	Source <sup>e</sup>	IDLH (NIOSH) <sup>f</sup>
Arsenic [7440-38-2]	NA	NA	Inh Ing Con Abs	Ulceration of nasal septum, dermatitis, GI disturbances, respiratory irritation, hyperpigmentation of skin.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.01 mg/m <sup>3</sup> 0.01 mg/m <sup>3</sup> --	-- -- C 0.002 mg/m <sup>3</sup>	PEL TLV REL	Ca (5 mg/m <sup>3</sup> )
Benzene [71-43-2]	9.24	34-119	Inh Ing Con Abs	Irritated eyes, skin, nose, respiratory system, giddiness, headache, nausea, dermatitis, bone marrow depression.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	1 ppm 0.5 ppm 0.1 ppm	5 ppm 2.5 ppm 1 ppm	PEL TLV REL	Ca (500 ppm)
Mustard gas	NA	0.0006 mg/m <sup>3</sup>	Abs Inh	Garlic-like odor. Eye and respiratory tract irritation; redness of skin and blisters develop 4 to 24 hours after exposure; hoarseness, sore throat, coughing, pulmonary edema	Treat like a thermal burn. Do not break blisters.  Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.	-	C0.003 mg/m <sup>3</sup>	AEL	Ca
Fuel oil (diesel oil, medium) [68476-30-2]	?	?	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; broncho-pneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention	-- 100 mg/m <sup>3</sup> --	-- -- --	PEL TLV REL	--

Table 2-1

**Toxicological and Physical Properties of Chemicals  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 5)

Substance [CAS]	IP <sup>a</sup> (eV)	Odor Threshold (ppm)	Route <sup>b</sup>	Symptoms of Exposure	Treatment	TWA <sup>c</sup>	STEL <sup>d</sup>	Source <sup>e</sup>	IDLH (NIOSH) <sup>f</sup>
Carbon tetrachloride [56-23-5]	11.47	?	Inh Abs Ing Con	Irritated eyes, skin; CNS depressant, nausea, vomiting, liver and kidney damage, dizziness incoordination.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention	10 ppm 5 ppm --	C 25 ppm 10 ppm 2 (60 min)	PEL TLV REL	Ca (200 ppm)
Gasoline [8006-61-9]	?	?	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 Ca, lowest feasible conc. (LOQ 15 ppm)	-- 500 ppm --	PEL TLV REL	Ca 1,400 ppm [10% LEL]
n-Hexane [110-54-3]	10.18	?	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	500 ppm 50 ppm 50 ppm	-- -- --	PEL TLV REL	1,100 ppm [10% LEL]
Isopropyl alcohol (isopropanol) [67-63-0]	10.10	?	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	PEL TLV REL	2,000 ppm [10% LEL]
Lead [7439-92-1]	NA	NA	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 0.05 mg/m <0.1 mg/m	-- -- --	PEL TLV REL	100 mg/m

Table 2-1

**Toxicological and Physical Properties of Chemicals  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 5)

Substance [CAS]	IP <sup>a</sup> (eV)	Odor Threshold (ppm)	Route <sup>b</sup>	Symptoms of Exposure	Treatment	TWA <sup>c</sup>	STEL <sup>d</sup>	Source <sup>e</sup>	IDLH (NIOSH) <sup>f</sup>
GB (Sarin)	NA	NA	Abs	Anticholinesterase agent producing cholinergic poisoning; tightness in chest, wheezing, increased bronchial secretion, cough, breathing difficulty, pulmonary edema, death; CNS depression, coma, convulsion; sweating; salivation, abdominal cramps, heartburn, belching, diarrhea, involuntary defecation.	Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.	None	C0.0001 mg/m <sup>3</sup>	AEL	0.2 mg/m <sup>3</sup>
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	-- -- --	500 ppm 500 ppm 500 ppm	PEL TLV REL	None
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	PEL TLV REL	25 ppm
Pentachlorophenol [87-86-5]	NA	?	Inh Ing Con Abs	Irritated eyes, nose, throat, sneezing, coughing, weakness, vomiting, headache, dizziness, dermatitis, chest pain, high fever, dyspnea.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m <sup>3</sup> (skin) 0.5 mg/m <sup>3</sup> (skin) 0.5 mg/m <sup>3</sup> (skin)	-- -- --	TLV PELREL	2.5 mg/m <sup>3</sup>
Phenol [108-95-2]	8.50	.06	Inh Ing Abs Con	Irritated eyes, nose, throat, anorexic, weakness, pain, dark urine, skin burns, dermatitis, tremors.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediate medical attention	5 ppm (skin) 5 ppm (skin) 5 ppm (skin)	-- -- C 15.6 ppm	TLV PELREL	250 ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 5)

Substance [CAS]	IP <sup>a</sup> (eV)	Odor Threshold (ppm)	Route <sup>b</sup>	Symptoms of Exposure	Treatment	TWA <sup>c</sup>	STEL <sup>d</sup>	Source <sup>e</sup>	IDLH (NIOSH) <sup>f</sup>
Portland cement	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	10 mg/m <sup>3</sup> 10 mg/m <sup>3</sup> / total dust 5 mg/m <sup>3</sup> respirable fraction 15 mg/m <sup>3</sup> total dust 5 mg/m <sup>3</sup> respirable	-- -- --	TLV REL  PEL	5,000 mg/m <sup>3</sup>
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 <sup>3</sup> -- --	-- C 2 mg/m <sup>3</sup> C 2 mg/m <sup>3</sup>	PEL TLV REL	10 mg/m <sup>3</sup>
Sulfuric acid [7664-93-9]	?	0.15	Inh Ing Con	Irritated eyes, nose, and throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatitis; dental erosion; tracheobronchitis; skin and eye burns; dermatitis.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	1 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> 1 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	PEL TLV REL	15 mg/m <sup>3</sup>
Toluene [108-88-3]	8.82	.02-69	Inh Ing Con Abs	Irritated eyes, nose, fainting, weakness, confusion, dizziness, headache, dilated pupils, dermatitis.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	200 ppm 50 ppm (skin) 100 ppm	C 300mg/m <sup>3</sup> -- 150 ppm	PEL TLV REL	500 ppm
Xylene (o-,m-,p-isomers) [95-47-6] [108-38-3] [106-42-3]	8.56	.08-40	Inh Ing Con Abs	Irritated eyes, skin, nose, throat, dizziness, excitement, drowsiness, incoherence, staggering, nausea, vomiting, dermatitis.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 100 ppm 100 ppm	150 ppm -- 150 ppm	TLV REL REL	900 ppm

## Table 2-1

### Toxicological and Physical Properties of Chemicals Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) Fort McClellan, Calhoun County, Alabama

(Page 5 of 5)

<sup>a</sup>IP = Ionization potential (electron volts).

<sup>b</sup>Route = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.

<sup>c</sup>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.

<sup>d</sup>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.

<sup>e</sup>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.

<sup>f</sup>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<sub>50</sub> = Lethal concentration for 50 percent of population tested.

LD<sub>50</sub> = 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.

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, 6th ed., 1998.

Fazzuluri, F. A., Compilation of Odor and Taste Threshold Values Data, American Society for Testing and Materials, 1978.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, CIVO, Netherlands, 1977.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, Supplement IV, CIVO, Netherlands, 1977.

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

Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.

National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. 1998, National Institute for Occupational Safety and Health.

Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.

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.

**Pathways for Hazardous Substance Dispersion.** Possible pathways for hazardous substances in the area are groundwater and soils. The primary exposure routes include inhalation, absorption, and ingestion.

**Site Topography.** The elevation at Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) ranges from approximately 900 feet to 1,000 feet above mean sea level and encompasses most of Reservoir Ridge.

### 3.0 Personal Protective Equipment

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

Task	Initial Level of PPE
Staging equipment	Level D
Collecting samples	Modified Level D*
Installing monitoring wells	Modified Level D*

\* Initial level will be raised to Level C or higher if air monitoring results for volatile organic compounds 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 (polycoated Tyvek for pressure washing)
- 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)
- Supplied air emergency escape/egress packs (required for all intrusive activities).

## 4.0 Site Monitoring

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The environmental contaminants of concern at the area may include distilled mustard, phosgene, Sarin, and nerve agent. Also, potential decontamination agents and solutions include supertropical bleach, decontamination solution number 2, chloroacetophenone in benzene, carbon tetrachloride, chloroacetophenone in chloropicrin, chloroform, and sulfur trioxide-chlorosulfonic solution. Table 4-1 contains action levels for site monitoring at the sites.

**Chemical.** Monitoring will be performed by the site safety and health officer or qualified task geologist during the performance of ground-intrusive operations. A calibrated photoionization detector (i.e., HNu DL 101 or equivalent) organic vapor analyzer with a 10.2 electron volt lamp will be utilized to monitor the sampling locations 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 work areas and BZs to determine if any combustible/flammable oxygen levels may be present that would necessitate evacuation of the work area. Benzene detector tubes will be utilized, as needed, to monitor benzene levels in the work areas and BZs. Table 4-2 contains the air monitoring frequency and location for site monitoring at the work sites.

**Unexploded Ordnance.** UXO safety will be achieved by employing UXO specialists to ensure that field personnel do not come into contact with UXO. In areas where UXO is suspected, the UXO specialists will perform the following UXO avoidance operations.

- **Area UXO Surveys Using Magnetometers.** During this operation, UXO on the surface will be detected and marked for avoidance during field operations. Metal objects just below the surface will also be marked to indicate the potential hazard.
- **Downhole UXO Surveys.** UXO specialists will perform downhole magnetometer surveys to detect metal objects in the path of the boring apparatus until undisturbed soils are reached. The boring location will be moved if subsurface metal objects are detected.

If UXO is encountered, personnel will contact the site manager and UXO specialist immediately. Personnel will evacuate the immediate area and secure it.

**Table 4-1**

**Action Levels  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

When in Level C PPE

Analyte	Action Level <sup>a</sup>	Required Action <sup>b</sup>
Volatile Organic Compounds (VOC)	≥ 10 ppm above background in breathing zone (BZ)	Stop work, evacuate work area, initiate benzene test. Upgrade to Level B PPE if CIH concurs
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.
Benzene	≥ 5 ppm in BZ	Stop work, evacuate work area.

Note: The Health and Safety Manager (CIH) must be immediately notified if action levels trigger Level B PPE upgrade.

When in Level D Modified/D PPE

Analyte	Action Level <sup>a</sup>	Required Action <sup>b</sup>
VOCs	≥ 5 ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE and initiate benzene test.
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.
Benzene	≥ 1 ppm in BZ	Upgrade to Level C PPE.

**Table 4-1**

**Action Levels  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

When in Support Zone

Analyte	Action Level <sup>a</sup>	Required Action
VOCs	$\geq 1$ ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.

<sup>a</sup> 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.

<sup>b</sup> 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.**

Table 4-2

**Air Monitoring Frequency and Location  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
Staging equipment	OV Monitor	Initially for area	BZ of employees
Land Survey	OV Monitor	Initially for area	BZ of employees
Sampling (surface/subsurface soil)	OV Monitor LEL/O <sub>2</sub> Monitor BDT	Continuously Periodically As needed	BZ of employees and/or work area
Installing monitoring wells	OV Monitor LEL/O <sub>2</sub> Monitor BDT	Continuously Continuously As needed	BZ of employees and/or work area
Groundwater sampling	OV Monitor	As needed	BZ of employees and well headspace

BZ = Breathing zone.

OV = Organic vapor.

LEL/O<sub>2</sub> = Lower explosive level/oxygen.

BDT = Benzene detector tube.

Miniram = Respirable Dust Monitor.

## **5.0 Activity Hazard Analysis**

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

- Staging equipment
- Land survey
- Surface/subsurface soil and groundwater sampling
- Installation of monitoring wells
- Disposal of IDW
- High pressure water jetting.

All injuries and illnesses must be immediately reported to the site manager or the site safety and health officer, who will then notify off-site personnel and organizations as necessary.

If hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center, 400 East 10th Street, Anniston, Alabama. The telephone number is (256) 235- 5121. Directions to the hospital are provided in Figure 5-1.

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 14)

Activity	Potential Hazards	Recommended Controls
Staging equipment	Unexploded ordnance (UXO)	<ul style="list-style-type: none"> <li>• UXO specialists will perform UXO surface avoidance and/or UXO downhole avoidance. See site-specific safety and health plans (SSHP) to determine if required.</li> </ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>• Determine best access route before transporting equipment.</li> <li>• Practice good housekeeping; keep work area picked up and clean as feasible.</li> <li>• Continually inspect the work area for slip, trip, and fall hazards.</li> <li>• Look before you step; ensure safe and secure footing.</li> </ul>
	Heavy lifting	<ul style="list-style-type: none"> <li>• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.</li> </ul>
	Falling objects	<ul style="list-style-type: none"> <li>• Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.</li> </ul>
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none"> <li>• Wear safety glasses/goggles; ensure that eye wash is in proper working condition.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>• Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li> <li>• Beware of contact points.</li> <li>• Stay alert at all times!</li> </ul>
	Cuts/bruises	<ul style="list-style-type: none"> <li>• Use cotton or leather work gloves for material handling.</li> </ul>
	Bees, spiders, and snakes	<ul style="list-style-type: none"> <li>• Inspect work area carefully and avoid placing hands and feet into concealed areas.</li> </ul>
	Ticks	<ul style="list-style-type: none"> <li>• Wear light colored clothing (can see ticks better).</li> <li>• Mow vegetated and small brush areas.</li> <li>• Wear insect repellent.</li> <li>• Wear long sleeves and long pants.</li> <li>• Visually check oneself promptly and frequently after exiting the work area.</li> </ul>
	Fire	<ul style="list-style-type: none"> <li>• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 14)

Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>• Work area will be barricaded/demarcated.</li> <li>• Equipment will be laid out in an area free of traffic flow.</li> </ul>
	Hazard communication	<ul style="list-style-type: none"> <li>• Label all containers as to contents and dispose of properly.</li> <li>• Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.</li> </ul>
	Noise	<ul style="list-style-type: none"> <li>• Sound levels above 85 decibels (dBA) mandates hearing protection.</li> </ul>
	Lighting	<ul style="list-style-type: none"> <li>• Adequate lighting will be provided to ensure a safe working environment.</li> </ul>
	Cold stress	<ul style="list-style-type: none"> <li>• Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F).</li> <li>• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.</li> <li>• Remove wet clothing promptly.</li> <li>• Take breaks in warm areas.</li> <li>• Reduce work periods as necessary.</li> <li>• Layer work clothing.</li> </ul>
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> <li>• Avoid plant areas if possible.</li> <li>• Wear long sleeves and long pants.</li> <li>• Promptly wash clothing that has contacted poisonous plants.</li> <li>• Wash affected areas immediately with soap and water.</li> </ul>
	Heat rash	<ul style="list-style-type: none"> <li>• Keep the skin clean and dry.</li> <li>• Change perspiration-soaked clothing, as necessary.</li> <li>• Bathe at end of work shift or day.</li> <li>• Apply powder to affected area.</li> </ul>
	Heat cramps	<ul style="list-style-type: none"> <li>• Drink plenty of cool fluids even when not thirsty.</li> <li>• Provide cool fluid for work crews.</li> <li>• Move victim to shaded, cool area.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 14)

Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Heat exhaustion	<ul style="list-style-type: none"> <li>• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li> <li>• Set up work/rest periods.</li> <li>• Use the buddy system.</li> <li>• Allow workers time to acclimate.</li> <li>• Have ice packs available for use.</li> <li>• Take frequent breaks.</li> </ul>
	Heat stroke	<ul style="list-style-type: none"> <li>• Evaluate possibility of night work.</li> <li>• Perform physiological monitoring on workers during breaks.</li> <li>• Wear body cooling devices.</li> </ul>
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>• Work area will be barricaded/demarcated.</li> <li>• Equipment will be laid out in an area free of traffic flow.</li> <li>• Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic.</li> <li>• Barriers shall be used to protect workers from vehicular traffic.</li> <li>• Barriers shall be used to guard excavations adjacent to streets or roadways.</li> <li>• Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided.</li> <li>• Heavy equipment shall have backup alarms.</li> </ul>
	Forklift operations	<ul style="list-style-type: none"> <li>• Use qualified and trained forklift operators.</li> <li>• The operator shall not exceed the load capacity rating for the forklift.</li> <li>• The load capacity shall be clearly visible on the forklift.</li> <li>• Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.</li> </ul>
	Portable electric tools	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Portable electric tools and all cord and plug connected equipment shall be protected by a ground fault circuit interrupter (GFCI) device.</li> <li>• Electrical tools shall be inspected daily prior to use.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 14)

Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Extension cords	<ul style="list-style-type: none"> <li>• Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service.</li> <li>• Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic.</li> <li>• Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.).</li> <li>• Cords shall be designed for hard duty.</li> <li>• Cords shall be inspected daily.</li> </ul>
	Lightning strikes	<ul style="list-style-type: none"> <li>• Whenever possible, halt activities and take cover.</li> <li>• If outdoors, stay low to the ground.</li> <li>• 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).</li> <li>• Seek shelter in a building if possible.</li> <li>• Stay away from windows.</li> <li>• If available, crouch under a group of trees instead of one single tree.</li> <li>• Remain 6 feet away from tree trunk if seeking shelter beneath tree(s).</li> <li>• If in a group, keep 6 feet of distance between people.</li> </ul>
	Thunderstorms, tornadoes	<ul style="list-style-type: none"> <li>• Listen to radio or TV announcements for pending weather information.</li> <li>• Cease field activities during thunderstorm or tornado warnings.</li> <li>• Seek shelter. Do not try to outrun a tornado.</li> </ul>
Surveying	Slip, trip, fall	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Provide adequate lighting in all work areas.</li> <li>• Whenever possible, avoid routing cords and hoses across walking pathways.</li> <li>• Flag or cover inconspicuous holes to protect against falls.</li> <li>• Work areas will be kept clean and orderly.</li> <li>• Garbage and trash will be disposed of daily in approved refuse containers.</li> <li>• Tools and accessories will be properly maintained and stored.</li> <li>• Work areas and floors will be kept free of dirt, grease, and slippery materials.</li> </ul>
	UXO	<ul style="list-style-type: none"> <li>• UXO specialists will perform UXO surface avoidance.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 14)

Activity	Potential Hazards	Recommended Controls
Surveying (continued)	Traffic accidents	<ul style="list-style-type: none"> <li>• Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians.</li> <li>• If working adjacent to roadways, have workers wear fluorescent orange vests.</li> <li>• Use warning signs or lights to alert oncoming traffic.</li> <li>• Assign flag person(s) if necessary to direct local traffic.</li> <li>• Set up temporary parking locations outside the immediate work area.</li> <li>• Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits.</li> <li>• Pedestrians have the right-of-way.</li> <li>• Wear seat belts when vehicles are in motion.</li> </ul>
	Wildlife hazards	<ul style="list-style-type: none"> <li>• Workers should be cautious when driving through the site in order to avoid encounters with passing animals.</li> </ul>
	Biological hazards	<ul style="list-style-type: none"> <li>• Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).</li> </ul>
	Ticks	<ul style="list-style-type: none"> <li>• Wear light colored clothing (can see ticks better).</li> <li>• Mow vegetated and small brush areas.</li> <li>• Wear insect repellent.</li> <li>• Wear long sleeves and long pants.</li> <li>• Visually check oneself promptly and frequently after exiting the work area.</li> </ul>
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> <li>• Avoid plant areas if possible.</li> <li>• Wear long sleeves and long pants.</li> <li>• Promptly wash clothing that has contacted poisonous plants.</li> <li>• Wash affected areas immediately with soap and water.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 6 of 14)

Activity	Potential Hazards	Recommended Controls
Surface/subsurface soil and groundwater sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>• Avoid skin contact with water.</li> <li>• Handle samples with care.</li> <li>• Only essential personnel will be in the work area.</li> <li>• Real-time air monitoring will take place before and during sampling activities.</li> <li>• All personnel will follow good hygiene practices.</li> <li>• Proper decontamination procedures will be followed.</li> <li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul>
	UXO	<ul style="list-style-type: none"> <li>• UXO specialists will perform UXO surface avoidance and/or UXO downhole avoidance.</li> </ul>
	Cut hazards	<ul style="list-style-type: none"> <li>• Use care when handling glassware.</li> <li>• Wear adequate hand protection.</li> </ul>
	Hazard communication	<ul style="list-style-type: none"> <li>• MSDSs shall be obtained for chemicals brought on site.</li> <li>• Label all containers as to contents.</li> </ul>
	Strains/sprains	<ul style="list-style-type: none"> <li>• Use the proper tool for the job being performed.</li> <li>• Get assistance if needed.</li> <li>• Avoid twisting/turning while pulling on tools, moving equipment, etc.</li> </ul>
	Unattended worker	<ul style="list-style-type: none"> <li>• Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 14)

Activity	Potential Hazards	Recommended Controls
Soil boring and surface/subsurface sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>• Avoid skin contact with soils.</li> <li>• Handle samples with care.</li> <li>• Only essential personnel will be in the work area.</li> <li>• All personnel will follow good hygiene practices..</li> <li>• Proper decontamination procedures will be followed.</li> <li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul>
	Cut hazards	<ul style="list-style-type: none"> <li>• Use care when handling glassware.</li> <li>• Wear adequate hand protection.</li> </ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>• Practice good housekeeping; keep work area picked up and clean as feasible.</li> <li>• Continually inspect the work area for slip, trip, and fall hazards.</li> </ul>
	UXO	<ul style="list-style-type: none"> <li>• UXO specialists will perform UXO surface avoidance and/or UXO downhole avoidance.</li> </ul>
	Bees, spiders, and snakes	<ul style="list-style-type: none"> <li>• Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas.</li> <li>• Evaluate need for sensitive workers to have prescribed antibiotic or medicine to combat onset of symptoms.</li> </ul>
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> <li>• Avoid plant areas if possible.</li> <li>• Wear long sleeves and long pants.</li> <li>• Promptly wash clothing that has contacted poisonous plants.</li> <li>• Wash affected areas immediately with soap and water.</li> </ul>
	Contingency angle boring	<ul style="list-style-type: none"> <li>• Drill crew shall be familiar with angle boring operations</li> <li>• Auger guards shall be in place to prevent contact with rotating augers.</li> <li>• Drill equipment shall be approved by the specific rig manufacturer.</li> <li>• Boom/mast on drill rig shall have a positive locking means to achieve drill angle.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 8 of 14)

Activity	Potential Hazards	Recommended Controls
Soil boring and surface/subsurface sampling (continued)	Cold stress	<ul style="list-style-type: none"> <li>• Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F).</li> <li>• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.</li> <li>• Remove wet clothing promptly.</li> <li>• Take breaks in warm areas.</li> <li>• Reduce work periods as necessary.</li> <li>• Layer work clothing.</li> </ul>
	Access/egress hazards	<ul style="list-style-type: none"> <li>• Use qualified and trained bushhog operator.</li> <li>• Keep employees out of the bushhog work area.</li> <li>• Utilize good housekeeping practices.</li> <li>• Keep aisleways, pathways, and work areas free of obstruction.</li> <li>• Clean ice or snow off of walkways or work stations.</li> <li>• Use appropriate footwear for the task assigned.</li> </ul>
	Heat rash	<ul style="list-style-type: none"> <li>• Keep the skin clean and dry.</li> <li>• Change perspiration-soaked clothing, as necessary.</li> <li>• Bathe at end of work shift or day.</li> <li>• Apply powder to affected area.</li> </ul>
	Heat cramps	<ul style="list-style-type: none"> <li>• Drink plenty of cool fluids even when not thirsty.</li> <li>• Provide cool fluid for work crews.</li> <li>• Move victim to shaded, cool area.</li> </ul>
	Heat exhaustion	<ul style="list-style-type: none"> <li>• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li> <li>• Set up work/rest periods.</li> <li>• Use the buddy system.</li> <li>• Allow workers time to acclimate.</li> <li>• Have ice packs available for use.</li> <li>• Take frequent breaks.</li> </ul>
	Heat stroke	<ul style="list-style-type: none"> <li>• Evaluate possibility of night work.</li> <li>• Perform physiological monitoring on workers during breaks.</li> <li>• Wear body cooling devices.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 9 of 14)

Activity	Potential Hazards	Recommended Controls
Soil boring and surface/subsurface sampling (continued)	Lightning strikes	<ul style="list-style-type: none"> <li>• Whenever possible, halt activities and take cover.</li> <li>• If outdoors, stay low to the ground.</li> <li>• 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).</li> <li>• Seek shelter in a building if possible.</li> <li>• Stay away from windows.</li> <li>• If available, crouch under a group of trees instead of one single tree.</li> <li>• If in a group, keep 6 feet of distance between people.</li> </ul>
	Thunderstorms, tornadoes	<ul style="list-style-type: none"> <li>• Listen to radio or TV announcements for pending weather information.</li> <li>• Cease field activities during thunderstorms or tornado warnings.</li> <li>• Seek shelter. Do not try to outrun a tornado.</li> </ul>
	UXO	<ul style="list-style-type: none"> <li>• UXO specialist will perform UXO surface avoidance and/or UXO downhole avoidance.</li> </ul>
Installation of Monitoring Wells	Overhead hazards	<ul style="list-style-type: none"> <li>• Make sure no obstacles are within radius of boom. Always stay a safe distance from power lines.</li> </ul>
	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> <li>• All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition.</li> <li>• Equipment will be inspected before being put to use and at the beginning of each shift.</li> <li>• Faulty/unsafe equipment will be tagged and if possible locked out.</li> <li>• 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.</li> </ul>
	Heat rash	<ul style="list-style-type: none"> <li>• Keep the skin clean and dry.</li> <li>• Change perspiration-soaked clothing, as necessary.</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> <li>• Bathe at end of work shift or day.</li> <li>• Apply powder to affected area.</li> </ul>
	Heat cramps	<ul style="list-style-type: none"> <li>• Drink plenty of cool fluids even when not thirsty.</li> <li>• Provide cool fluid for work crews.</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> <li>• Move victim to shaded, cool area.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 10 of 14)

Activity	Potential Hazards	Recommended Controls
Installation of Monitoring Wells (continued)	Heat exhaustion	<ul style="list-style-type: none"> <li>• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li> <li>• Set up work/rest periods.</li> <li>• Use the "buddy system."</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> <li>• Allow workers time to acclimate.</li> <li>• Have ice packs available for use.</li> <li>• Take frequent breaks.</li> </ul>
	Heat stroke	<ul style="list-style-type: none"> <li>• Evaluate possibility of night work.</li> <li>• Perform physiological monitoring on workers during breaks.</li> <li>• Wear body cooling devices.</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> </ul>
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> <li>• 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.</li> <li>• All mobile equipment and areas in which they are operated shall be adequately illuminated.</li> <li>• Aboveground and belowground utilities will be located prior to staging equipment.</li> <li>• Whenever the equipment is parked, the parking brake shall be set.</li> <li>• Equipment parked on inclines will have the wheels chocked.</li> <li>• Inspect brakes and tire pressure on drill rig before staging for work.</li> </ul>
	Inexperienced operator	<ul style="list-style-type: none"> <li>• Machinery and mechanized equipment shall be operated only by designated personnel.</li> <li>• Operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.</li> </ul>
	Jacks/outriggers	<ul style="list-style-type: none"> <li>• Ensure proper footing and cribbing.</li> </ul>
	Falling objects	<ul style="list-style-type: none"> <li>• Remove unsecured tools and materials before raising or lowering the derrick.</li> <li>• Stay alert and clear of materials suspended overhead.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>• Keep feet and hands clear of moving/suspended materials and equipment.</li> <li>• Stay alert at all times!</li> </ul>
	Fire	<ul style="list-style-type: none"> <li>• Mechanized equipment shall be shut down prior to and during fueling operations.</li> <li>• Have fire extinguishers inspected and readily available.</li> <li>• Obtain a Hot Work Permit, per IT Procedure HS 314 (May 19, 1999) for any operation which could act as an ignition source.</li> </ul>
	Fall hazards	<ul style="list-style-type: none"> <li>• Personnel are not allowed to work off of machinery or use them as ladders.</li> <li>• Use fall protection when working above 6 feet.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 11 of 14)

Activity	Potential Hazards	Recommended Controls
Installation of Monitoring Wells (continued)	Noise	<ul style="list-style-type: none"> <li>Hearing protection is mandatory above 85 dBA.</li> </ul>
	Contact with rotating or reciprocating machine parts	<ul style="list-style-type: none"> <li>Use machine guards; use long-handled shovels to remove auger cuttings.</li> <li>Safe lockout procedures for maintenance work.</li> </ul>
	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques. Lifts greater than 60pounds require assistance or mechanical equipment; size up the lift.</li> </ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>Practice good housekeeping, keep work area picked up and clean as feasible.</li> <li>Continually inspect the work area for slip, trip, and fall hazards.</li> </ul>
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>Real time air monitoring will take place. Proper personal protective clothing and equipment will be utilized.</li> <li>Stop immediately at any sign of obstruction.</li> <li>Do not breathe air surrounding boring any more than necessary.</li> <li>Upgrade to respirator if necessary.</li> <li>Avoid skin contact with soil cuttings. Wear gloves.</li> <li>Stay clear of moving parts of drill rig and geoprobe.</li> </ul>
	Drum handling	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>If moving a drum unassisted, be sure to leverage properly, use proper lifting techniques, and wear safety glasses and steel-toed boots.</li> <li>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.</li> </ul>
	UXO	<ul style="list-style-type: none"> <li>UXO specialist will perform UXO surface avoidance and/or UXO downhole avoidance.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 12 of 14)

Activity	Potential Hazards	Recommended Controls
Moving and shipping collected samples	Heavy lifting	<ul style="list-style-type: none"> <li>• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>• Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li> <li>• Beware of contact points.</li> <li>• Stay alert at all times!</li> </ul>
	Cut hazards	<ul style="list-style-type: none"> <li>• Wear adequate hand protection. Use care when handling glassware.</li> </ul>
	Hazard communication	<ul style="list-style-type: none"> <li>• Label all containers as to contents and associated hazards.</li> </ul>
	Heavy lifting	<ul style="list-style-type: none"> <li>• Use proper lifting techniques. Lifts greater than 60pounds require assistance or mechanical equipment; size-up the lift.</li> </ul>
Material storage	Flammable and combustible liquids	<ul style="list-style-type: none"> <li>• Store in NO SMOKING AREA.</li> <li>• Fire extinguisher readily available.</li> <li>• Transfer only when properly grounded and bonded.</li> </ul>
Disposal of investigation-derived waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	<ul style="list-style-type: none"> <li>• Use qualified and trained forklift operators.</li> <li>• The operator shall not exceed the load capacity rating for the forklift.</li> <li>• The load capacity shall be clearly visible on the forklift.</li> <li>• Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.</li> </ul>
	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>• Stop immediately at any sign of obstruction.</li> <li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>• Only essential personnel will be in the work area.</li> <li>• Real-time air monitoring will take place before and during sampling activities.</li> <li>• All personnel will follow good hygiene practices.</li> <li>• Proper decontamination procedures will be followed.</li> <li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
Fort McClellan, Calhoun County, Alabama**

(Page 13 of 14)

Activity	Potential Hazards	Recommended Controls
Disposal of investigation-derived waste (IDW) (Forklift Operation) (continued)	Cut hazards	<ul style="list-style-type: none"> <li>• Use care when handling glassware.</li> <li>• Wear adequate hand protection.</li> </ul>
High-pressure water jetting operations	Heavy lifting	<ul style="list-style-type: none"> <li>• Use proper lifting techniques.</li> <li>• Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.</li> </ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>• Good housekeeping shall be implemented.</li> <li>• The work area shall be kept clean as feasible.</li> <li>Inspect the work area for slip, trip, and fall hazards.</li> </ul>
	Fueling	<ul style="list-style-type: none"> <li>• Only approved safety cans shall be used to store fuel.</li> <li>• Do not refuel equipment while it is operating.</li> <li>• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>
	Faulty or damaged equipment	<ul style="list-style-type: none"> <li>• Equipment shall be inspected before being placed into service and at the beginning of each shift.</li> <li>• Preventive maintenance procedures recommended by the manufacturer shall be followed.</li> <li>• A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.</li> </ul>
	High-pressure water	<ul style="list-style-type: none"> <li>• 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).</li> <li>• One standby person shall be available within the vicinity of the pump during jetting operation.</li> <li>• The work area shall be isolated and adequate barriers will be used to warn other site personnel.</li> </ul>
	Unqualified operators	<ul style="list-style-type: none"> <li>• Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.</li> </ul>
	Out of control equipment	<ul style="list-style-type: none"> <li>• No machinery or equipment is permitted to run unattended.</li> <li>• 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.</li> </ul>

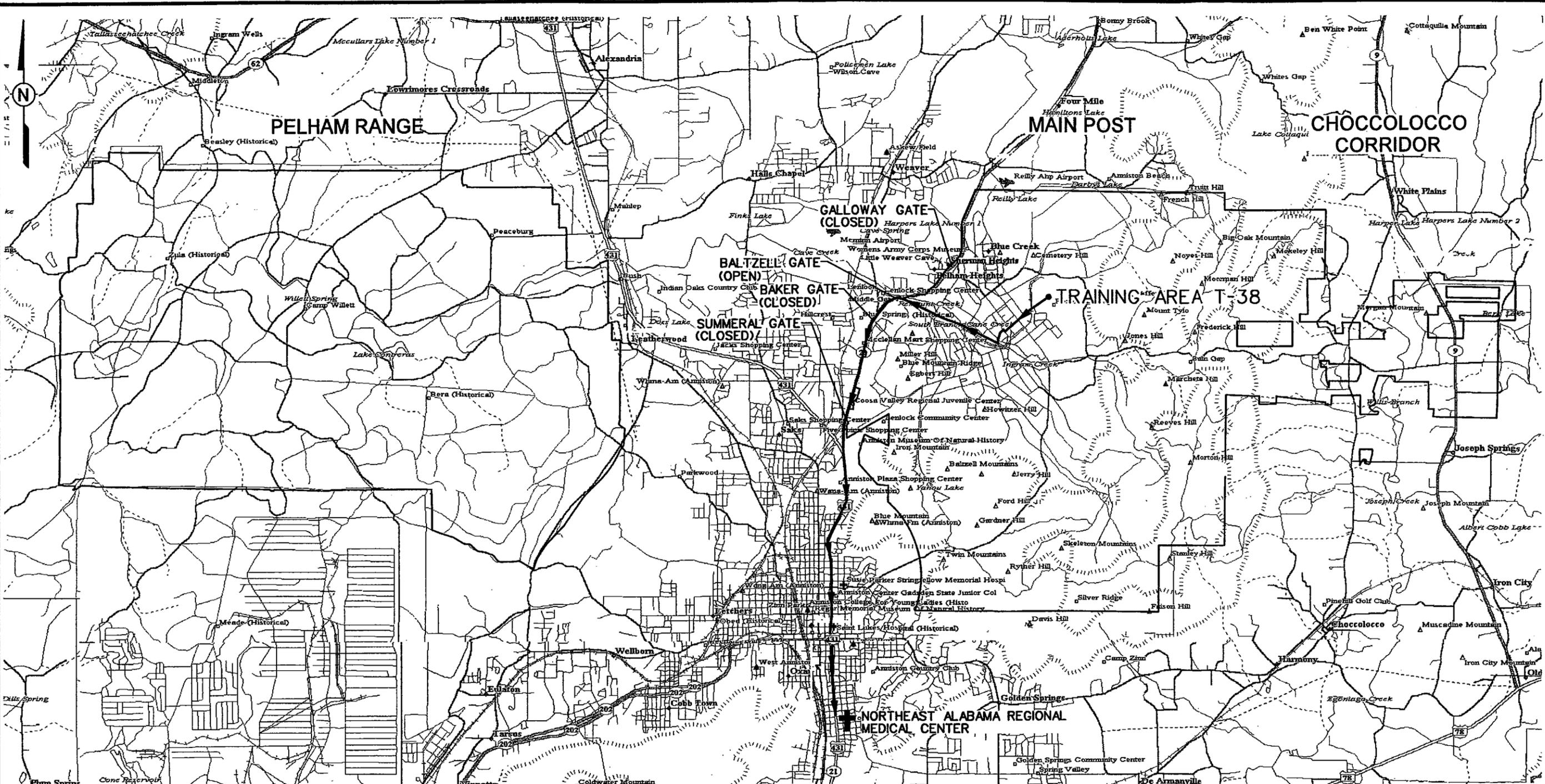
**Table 5-1**

**Activity Hazard Analysis  
 Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)  
 Fort McClellan, Calhoun County, Alabama**

(Page 14 of 14)

Activity	Potential Hazards	Recommended Controls
High-pressure water jetting operations (continued)	Noise	<ul style="list-style-type: none"> <li>• Sound levels above 85 dBA mandates hearing protection by nearby site personnel.</li> </ul>
	Activation during repairs	<ul style="list-style-type: none"> <li>• All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>• Keep feet and hands clear of moving/suspended materials and equipment.</li> <li>• Stay alert and clear of materials suspended</li> </ul>
	Falling objects	<ul style="list-style-type: none"> <li>• Hard hats are required by site personnel.</li> <li>• Stay alert and clear of material suspended overhead.</li> </ul>
	Flying debris	<ul style="list-style-type: none"> <li>• Impact-resistant safety glasses with side shields are required.</li> </ul>
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>• All site personnel will wear the appropriate PPE.</li> </ul>

DWG. NO.: ... 87es.123  
 PROJ. NO.: 796887  
 INITIATOR: J. JENKINS  
 PROJ. MGR.: J. YACOB  
 DRAFT. CHK. BY: J. JENKINS  
 ENGR. CHK. BY: J. JENKINS  
 STARTING DATE: 08/16/00 DATE LAST RE. DRAWN BY: D. BILLINGSLEY  
 04:09:08 PM  
 DBILLING  
 c:\cadd\design\796887es.123



**LEGEND:**

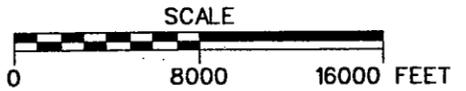
-  ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
-  U.S. HIGHWAY
-  HOSPITAL
-  INVESTIGATION SITES

**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
- 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



**ATTACHMENT 1**

**EVALUATING OE/UXO/CWM HAZARDS  
IN SUPPORT OF HTRW ACTIVITIES**

Site Name: Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)

Job Number: 796887

Date: 8/22/02

Name of person completing form: Nicole Badon

Title: Plan Writer

Signature: Nicole Badon

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

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.

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

Proceed to 2.

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

	Yes	No
<b>2a. Manufacturing, production, or shipping of conventional or chemical warfare materiel (CWM) OE:</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Live fire testing of any ordnance:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Conventional or CWM OE training:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Storage of conventional or CWM OE:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Disposal or demilitarization of conventional or CWM OE:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other (specify):		

	Yes	No
<b>2b. Manufacturing, production, or shipping of chemical agent:</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Research or testing of chemical agent:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Chemical agent related training:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Storage of chemical agent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Disposal or demilitarization of chemical agent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other (specify):		

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 -

Site Name: Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)

Job Number: 796887

Date: 8/22/02

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:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is there evidence that the CWM is/was containerized in nonexplosive containers:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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):	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is there evidence that the CWM hazard has been removed from the site or that the site has been decontaminated:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Has the site been previously monitored or sampled for chemical agent or agent breakdown products:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
For any "YES" above, was the agent or breakdown product identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**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"):**

Following are the types of chemical agents and decontaminants that were presumably used at Training Area T-38:

- HD
- Nerve Agent (VX)
- Supertropical bleach (STB)
- Decontamination agent (noncorrosive) (DANC)
- Decontamination Solution Number 2 (DS2)
- Chloroacetophenone, benzene, and carbon tetrachloride (CNB)
- Sulfur Tricoxide (FS)
- Sarin (GB)
- Phosgene

**List agent breakdown products identified:** none were detected in soil samples.

4. Defining the Potential for the Presence of CWM:	Agent Monitoring Requirements for Site Activities:
<p><b>4a. High Presence Potential – Definition:</b> 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.</p>	<p>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).</p>
<p><b>4b. Moderate Presence Potential - Definition:</b> 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.</p>	<p>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).</p>
<p><b>4c. Low Presence Potential – Definition:</b> No indications that CWM will be present in quantity or reactivity (in munitions, projectiles, drums, etc.).</p>	<p>No specific personal or area monitoring for chemical agents required beyond what is specified in the SHP.</p>

Site Name: Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)

Job Number: 796887

Date: 8/22/02

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: See attached letter from the Department of Army

(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 IT CIH, 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 IT CIH, 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 IT CIH, 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 attached letter from the Department of Army

Review Signatures:

*[Signature]*

IT UXO Technical Manager

Date: 8/21/02

IT H&S Specialist

*[Signature]*

Date: 8/21/02

Site Name: Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)

Job Number: 796887

Date: 8/22/02

*Additional Notes and Explanations:*

See Attached letters: Department of the Army, Mobile District, Corps of Engineers, dated September 7, 2001 and Department of Army, Huntsville Center, Corps of Engineers, date September 5, 2001.



**DEPARTMENT OF THE ARMY**  
**MOBILE DISTRICT, CORPS OF ENGINEERS**  
**P.O. BOX 2288**  
**MOBILE, ALABAMA 36628-0001**

REPLY TO  
ATTENTION OF:

September 7, 2001

Environmental and HTRW Section  
Engineering Division

IT Corporation  
Attention: Mr. Steve Moran  
312 Directors Drive  
Knoxville, Tennessee 37923-4799

Dear Mr. Moran:

Reference is made to your Contract DACA21-96-D-0018, Task Order CK10, WADs 1, 2, 9, and 10, at Fort McClellan, Alabama.

The Corps of Engineers Huntsville Center has completed its CWM EE/CA and has received all soil sample results. All of the samples were clear of Chemical Warfare Material and Chemical Warfare Material by-products. A copy of Huntsville's letter is enclosed for your files.

You are now authorized to begin the monitoring well installations within these areas as approved in your work plans.

Should you have any questions, please contact me at (334) 690-3077.

Sincerely,

Ellis C. Pope  
Authorized Representative of the  
Contracting Officer

Encl

Cf: Mr. Ron Levy  
BRAC Environmental Coordinator  
U.S. Army Garrison/Transition Force  
Environmental Office  
291 Jimmy Parks Boulevard  
Fort McClellan, AL 36205-5000



DEPARTMENT OF THE ARMY  
HUNTSVILLE CENTER, CORPS OF ENGINEERS  
P.O. BOX 1600  
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO  
ATTENTION OF:

CEHNC-OE-DC (200-1c)

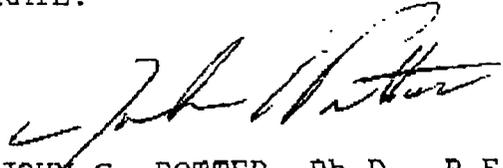
5 September 2001

MEMORANDUM FOR Commander, U.S. Army Engineer District, Mobile,  
ATTN: Ellis Pope (EN-GE), P.O. Box 2288, Mobile, AL 36628-0001

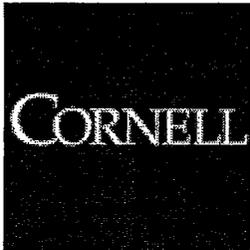
SUBJECT: Chemical Warfare Material (CWM) Engineering  
Evaluation/Cost Analysis (EE/CA) Completion and Release of  
Property for Hazardous, Toxic, and Radioactive Waste (HTRW)  
Investigations, Fort McClellan, AL

1. The CWM EE/CA for Fort McClellan has been completed and the results from all the soil samples have been received. All of the samples were clear of Chemical Warfare Material and Chemical Warfare Material by-products.
2. The HTRW investigations can be started on the Chemical Warfare Material Sites that were completed during this investigation using anomaly avoidance and withdrawal if suspect chemical weapons are found.
3. If you have any questions, please call Mr. Dan Copeland at 256-895-1567.

FOR THE DIRECTOR OF  
ORDNANCE AND EXPLOSIVES DIRECTORATE:

  
JOHN C. POTTER, Ph.D., P.E.  
Chief, Design Center  
for Ordnance and Explosives  
Directorate

**ATTACHMENT 2**  
**MSDS FOR SUDAN IV SOLVENT DYE**


 CORNELL


 Material Safety  
Data Sheets

Division of Facilities Services

## DOD Hazardous Material Information (ANSI Format) For Cornell University Convenience Only

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SUDAN IV, CERTIFIED, 19810-2

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<u>Section 1 - Product and Company Identification</u>	<u>Section 9 - Physical &amp; Chemical Properties</u>
<u>Section 2 - Compositon/Information on Ingredients</u>	<u>Section 10 - Stability &amp; Reactivity Data</u>
<u>Section 3 - Hazards Identification Including Emergency Overview</u>	<u>Section 11 - Toxicological Information</u>
<u>Section 4 - First Aid Measures</u>	<u>Section 12 - Ecological Information</u>
<u>Section 5 - Fire Fighting Measures</u>	<u>Section 13 - Disposal Considerations</u>
<u>Section 6 - Accidental Release Measures</u>	<u>Section 14 - MSDS Transport Information</u>
<u>Section 7 - Handling and Storage</u>	<u>Section 15 - Regulatory Information</u>
<u>Section 8 - Exposure Controls &amp; Personal Protection</u>	<u>Section 16 - Other Information</u>

The information in this document is compiled from information maintained by the United States Department of Defense (DOD). Anyone using this information is solely responsible for the accuracy and applicability of this information to a particular use or situation.

Cornell University does not in any way warrant or imply the applicability, viability or use of this information to any person or for use in any situation.

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**Section 1 - Product and Company Identification**  
**SUDAN IV, CERTIFIED, 19810-2**

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**Product Identification:** SUDAN IV, CERTIFIED, 19810-2  
**Date of MSDS:** 10/02/1992 **Technical Review Date:** 01/28/1998  
**FSC:** 6550 **NIIN:** LIIN: 00N082236  
**Submitter:** N EN  
**Status Code:** C  
**MFN:** 01  
**Article:** N  
**Kit Part:** N

#### **Manufacturer's Information**

**Manufacturer's Name:** ALDRICH CHEMICAL CO INC  
**Post Office Box:** 355  
**Manufacturer's Address1:**  
**Manufacturer's Address2:** MILWAUKEE, WI 53201  
**Manufacturer's Country:** US  
**General Information Telephone:** 414-273-3850  
**Emergency Telephone:** 414-273-3850  
**Emergency Telephone:** 414-273-3850  
**MSDS Preparer's Name:** N/P  
**Proprietary:** N  
**Reviewed:** N  
**Published:** Y  
**CAGE:** 60928  
**Special Project Code:** N

#### **Contractor Information**

**Contractor's Name:** ALDRICH CHEMICAL CO INC  
**Post Office Box:** 355  
**Contractor's Address1:** 1001 WEST ST PAUL AVE  
**Contractor's Address2:** MILWAUKEE, WI 53233  
**Contractor's Telephone:** 414-273-3850  
**Contractor's CAGE:** 60928

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#### **Section 2 - Compositon/Information on Ingredients**

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**SUDAN IV, CERTIFIED, 19810-2**

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**Ingredient Name:** 2-NAPHTHOL, 1-((4-(O-TOLYAZOL)-O-TOLYL)AZO)-; (1-((4-(O-TOLYLAZO)-O-TOLYL)AZO)-2-NAPHTHOL)

**Ingredient CAS Number:** 85-83-6 **Ingredient CAS Code:** M

**RTECS Number:** QL5775000 **RTECS Code:** M

**=WT: =WT Code:**

**=Volume: =Volume Code:**

**>WT: >WT Code:**

**>Volume: >Volume Code:**

**<WT: <WT Code:**

**<Volume: <Volume Code:**

**% Low WT: % Low WT Code:**

**% High WT: % High WT Code:**

**% Low Volume: % Low Volume Code:**

**% High Volume: % High Volume Code:**

**% Text: N/K**

**% Enviromental Weight:**

**Other REC Limits: N/K**

**OSHA PEL: N/K (FP N) OSHA PEL Code: M**

**OSHA STEL: OSHA STEL Code:**

**ACGIH TLV: N/K (FP N) ACGIH TLV Code: M**

**ACGIH STEL: N/P ACGIH STEL Code:**

**EPA Reporting Quantity:**

**DOT Reporting Quantity:**

**Ozone Depleting Chemical: N**

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**Section 3 - Hazards Identification, Including Emergency Overview****SUDAN IV, CERTIFIED, 19810-2**

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**Health Hazards Acute & Chronic:** ACUTE:HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES EYE AND SKIN IRRITATION. EXPOSURE CAN CAUSE: STOMACH PAINS, VOMITING, DIARRHEA. CHRONIC:LABORATORY EXPERIMENTS HAVE SHOWN MUTAGENIC EFFECTS. TARGET ORGAN(S):LIVER. TARGETORGAN DATA:TUMORIGENIC (EQUIVOCAL TUMORIGENIC AGENT BY RTECS (EFTS OF OVEREXP)

**Signs & Symptoms of Overexposure:**

HLTH HAZ:CRITERIA & TUMORS AT SITE OF APPLICATION).

**Medical Conditions Aggravated by Exposure:**  
NONE SPECIFIED BY MANUFACTURER.

**LD50 LC50 Mixture:** NONE SPECIFIED BY MANUFACTURER.

**Route of Entry Indicators:**

**Inhalation:** YES

**Skin:** YES

**Ingestion:** YES

**Carcinogenicity Indicators**

**NTP:** NO

**IARC:** NO

**OSHA:** NO

**Carcinogenicity Explanation:** NOT RELEVANT

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**Section 4 - First Aid Measures**  
**SUDAN IV, CERTIFIED, 19810-2**

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**First Aid:**

EYES:IMMEDIATELY FLUSH W/COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. SKIN:IMMEDIATELY FLUSH W/COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING & SHOES. DISCARD CONTAMINATED CLOTHING & SHOES. INHAL:REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTF RESP. IF BRTHG IS DIFFICULT, GIVE OXYGEN. INGEST:WASH OUT MOUTH W/WATER PROVIDED PERSON IS CONSCIOUS. CALL MD.

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**Section 5 - Fire Fighting Measures**  
**SUDAN IV, CERTIFIED, 19810-2**

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**Fire Fighting Procedures:**

USE NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).

**Unusual Fire or Explosion Hazard:**

EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

**Extinguishing Media:**

WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

**Flash Point:** **Flash Point Text:** N/K

**Autoignition Temperature:**

**Autoignition Temperature Text:** N/A

**Lower Limit(s):** N/K

**Upper Limit(s):** N/K

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**Section 6 - Accidental Release Measures**  
**SUDAN IV, CERTIFIED, 19810-2**

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**Spill Release Procedures:**

EVACUATE AREA. WEAR NIOSH APPROVED SCBA, RUBBER BOOTS & HEAVY RUBBER GLOVES. WEAR DISPOSABLE COVERALLS & DISCARD THEM AFTER USE. SWEEP UP, PLACE IN A BAG & HOLD FOR WASTE DISPOSAL. VENTILATE AREA & WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

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**Section 7 - Handling and Storage**  
**SUDAN IV, CERTIFIED, 19810-2**

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**Handling and Storage Precautions:**

**Other Precautions:**

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**Section 8 - Exposure Controls & Personal Protection**  
**SUDAN IV, CERTIFIED, 19810-2**

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**Respiratory Protection:**

WEAR APPROPRIATE NIOSH APPROVED RESPIRATOR.

**Ventilation:**

USE ONLY IN A CHEMICAL FUME HOOD.

**Protective Gloves:**

CHEMICAL-RESISTANT GLOVES.

**Eye Protection:** ANSI APPROVED CHEM WORKERS GOGGLES (FP N).

**Other Protective Equipment:** EYE WASH FOUNTAIN & DELUGE SHOWER WHICH MEET ANSI DESIGN CRITERIA (FP N). WEAR SUITABLE PROTECTIVE CLOTHING.

**Work Hygienic Practices:** WASH THOROUGHLY AFTER HANDLING.

**Supplemental Health & Safety Information:** MP:390F,199C (DECOMPOSES).

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**Section 9 - Physical & Chemical Properties**  
**SUDAN IV, CERTIFIED, 19810-2**

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**HCC:****NRC/State License Number:****Net Property Weight for Ammo:****Boiling Point: Boiling Point Text: N/K****Melting/Freezing Point: Melting/Freezing Text: SUPP DATA****Decomposition Point: Decomposition Text: N/K****Vapor Pressure: N/K Vapor Density: N/K****Percent Volatile Organic Content:****Specific Gravity: N/K****Volatile Organic Content Pounds per Gallon:****pH: N/K****Volatile Organic Content Grams per Liter:****Viscosity: N/P****Evaporation Weight and Reference: N/K****Solubility in Water: N/K****Appearance and Odor: RED-BROWN POWDER.****Percent Volatiles by Volume: N/K****Corrosion Rate: N/K**

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**Section 10 - Stability & Reactivity Data  
SUDAN IV, CERTIFIED, 19810-2**

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**Stability Indicator: YES****Materials to Avoid:**

STRONG OXIDIZING AGENTS.

**Stability Condition to Avoid:**

NONE SPECIFIED BY MANUFACTURER.

**Hazardous Decomposition Products:**

TOXIC FUMES OF: CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES.

**Hazardous Polymerization Indicator: NO****Conditions to Avoid Polymerization:**NOT RELEVANT

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**Section 11 - Toxicological Information  
SUDAN IV, CERTIFIED, 19810-2**

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**Toxicological Information:**

N/P

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**Section 12 - Ecological Information**  
**SUDAN IV, CERTIFIED, 19810-2**

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**Ecological Information:**

N/P

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**Section 13 - Disposal Considerations**  
**SUDAN IV, CERTIFIED, 19810-2**

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**Waste Disposal Methods:**

DISPOSAL MUST BE I/A/W FEDERAL, STATE & LOCAL REGULATIONS (FP N). DISSOLVE OR MIX MATERIAL W/COMBUSTIBLE SOLVENT & BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AFTERBURNER & SCRUBBER.

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**Section 14 - MSDS Transport Information**  
**SUDAN IV, CERTIFIED, 19810-2**

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**Transport Information:**

N/P

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**Section 15 - Regulatory Information**  
**SUDAN IV, CERTIFIED, 19810-2**

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**SARA Title III Information:**

N/P

**Federal Regulatory Information:**

N/P

**State Regulatory Information:**

N/P

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**Section 16 - Other Information**  
**SUDAN IV, CERTIFIED, 19810-2**

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**Other Information:**

N/P

**HAZCOM Label Information**

**Product Identification:** SUDAN IV, CERTIFIED, 19810-2

**CAGE:** 60928

**Assigned Individual:** N

**Company Name:** ALDRICH CHEMICAL CO INC

**Company PO Box:** 355

**Company Street Address1:** 1001 WEST ST PAUL AVE

**Company Street Address2:** MILWAUKEE, WI 53233 US

**Health Emergency Telephone:** 414-273-3850

**Label Required Indicator:** Y

**Date Label Reviewed:** 01/28/1998

**Status Code:** C

**Manufacturer's Label Number:**

**Date of Label:** 01/28/1998

**Year Procured:** N/K

**Organization Code:** G

**Chronic Hazard Indicator:** Y

**Eye Protection Indicator:** YES

**Skin Protection Indicator:** YES

**Respiratory Protection Indicator:** YES

**Signal Word:** WARNING

**Health Hazard:** Moderate

**Contact Hazard:** Slight

**Fire Hazard:** Slight

**Reactivity Hazard:** None

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