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HEALTH AND SAFETY PLAN FOR SMALL ARMS RANGE SITE INSPECTION AT NAVAL  
SUPPORT ACTIVITY MIDSOUTH MILLINGTON SUPPACT TN  
2/1/2010  
TETRA TECH NUS

# Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-04-D-0055

and

CONTRACT NUMBER N62467-03-D-0057



## Health and Safety Plan for Small Arms Range Site Inspection at Naval Support Activity Mid-South Millington, Tennessee

Contract Task Order 00107  
Contract Task Order F275

February 2010



Midwest

201 Decatur Avenue  
Building IA, Code EV  
Great Lakes, Illinois 60088

**HEALTH AND SAFETY PLAN  
FOR  
SMALL ARMS RANGE SITE INSPECTION  
AT  
NAVAL SUPPORT ACTIVITY MID-SOUTH  
MILLINGTON, TENNESSEE**

**Submitted to:  
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CONTRACT TASK ORDER 0107 and  
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**February 2010**

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## **1.0 INTRODUCTION**

This Health and Safety Plan (HASP) including the attached Accident Prevention Plan (APP) have been developed to provide safe work practices and procedures for Tetra Tech NUS, Inc. (TtNUS) and subcontractor personnel where applicable. These safe work practices and procedures are intended to control site-specific and task specific hazards that are inherent or anticipated to be associated with the investigation activities to be conducted at the Naval Support Activity (NSA) Mid-South located in Millington, Tennessee.

In addition to the HASP/APP, a copy of the TtNUS Health and Safety Guidance Manual (HSGM) must be present at the site during the performance of site activities. The HSGM provides additional supporting information pertaining to the HASP/APP, as well as TtNUS Standard Operating Procedures (SOPs). Both documents must be present at the site to comply with the requirements stipulated in the Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response standard or HAZWOPER) and where applicable elements of 29 CFR 1926 Construction Industry standards.

This HASP/APP has been developed using the latest available information regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work at the site. The HASP/APP will be modified if new information becomes available. Changes to the HASP/APP will be made with the approval of the TtNUS Project Health and Safety Officer (PHSO) and the TtNUS Health and Safety Manager (HSM). Requests for modifications to the HASP/APP will be made by the Project Manager (PM). Requests for changes will be directed to the PHSO, who will determine if the changes are necessary. The PM will be responsible for notifying affected personnel of any changes to the HASP/APP or HSGM.

### **1.1 KEY PROJECT PERSONNEL AND ORGANIZATION**

This section defines overall responsibility for site safety and health for TtNUS and subcontractor employees engaged in onsite activities. Personnel assigned to these positions will exercise the primary responsibility for onsite health and safety. These persons will be the primary point of contact for any questions regarding the safety and health procedures and the selected control measures that are to be implemented for onsite activities.

The TtNUS PM is responsible for the overall direction of health and safety for this project.

The PHSO is responsible for developing this HASP/APP in accordance with applicable OSHA regulations. Specific responsibilities include:

- i. Providing information regarding site contaminants and physical hazards associated with the site.
- ii. Establishing air monitoring and decontamination procedures.
- iii. Assigning personal protective equipment based on task and potential hazards.
- iv. Determining emergency response procedures and emergency contacts.
- v. Stipulating training requirements and reviewing appropriate training and medical surveillance certificates.
- vi. Providing standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
- vii. Modifying this HASP/APP, as it becomes necessary.

The TtNUS Field Operations Leader (FOL) is responsible for implementation of the HASP/APP with the assistance of an appointed Site Safety Officer (SSO). The FOL manages field activities, executes the work plan, and enforces safety procedures as applicable to the work plan.

The SSO supports site activities by advising the FOL on the aspects of health and safety on site. These duties include:

- i. Coordinating health and safety activities with the FOL.
- ii. Selecting, applying, inspecting, and ensuring personal protective equipment are properly maintained.
- iii. Establishing work zones and control points in areas of operation. Responsibilities also includes monitoring access/egress points during active operations.
- iv. Implementation of hazard monitoring program for onsite activities including point source, perimeter and area surveillance.
- v. Verification of training and medical clearance status of onsite personnel status in relation to site activities. In doing such confirms each team member's suitability to perform assigned tasks and responsibilities.
- vi. Implementation of Hazard Communication, Respiratory Protection Programs, and other associated health and safety programs as they may apply to site activities.
- vii. Coordination of emergency services. This includes the implementation and periodic evaluation of the Emergency Action Plan to ensure its continued suitability as it pertains to the execution of onsite activities.

- viii. Provides site-specific training for onsite personnel. This includes the initial review of this HASP/APP with identified personnel as well as conducting periodic Tail Gate Safety Meetings to ensure the safety and well being of the site personnel.
- ix. Investigation of accidents and injuries (Attachment I – Incident Report Form)
- x. Providing input to the PHSO regarding the need to modify this HASP/APP or applicable health and safety associated documents as per site-specific requirements.

The Unexploded Ordnance (UXO) Technician will be responsible for advising the PM on UXO matters, including the measures that will be necessary to effectively implement and adhere to the Unexploded Ordnance and Chemical Warfare Agents Activities SOP (Attachment II). Duties will include the following:

- i. Conducting UXO avoidance surveys prior to and during site activities.
- ii. Participating in site specific training sessions as it pertains to UXO avoidance activities.
- iii. Maintaining familiarity with the TtNUS UXO SOP.
- iv. Conducting daily and in progress functional tests on instruments used in the survey
- v. Conducting the instrument assisted survey with the Site Geologist
- vi. Keeping current with pertinent new information and technologies.

Compliance with the requirements stipulated in this HASP/APP is monitored by the SSO and coordinated through the TtNUS PHSO and the HSM.

In some cases, one person may be designated responsibilities for more than one position. For example, at NSA Mid-South, the FOL may also be responsible for SSO duties. This action will be performed only as credentials, experience, and availability permits.

## **1.2 STOP WORK AUTHORITY**

ALL employees are empowered, authorized, and responsible to STOP WORK at any time when an imminent and uncontrolled safety or health hazard is perceived. In a Stop Work event (immediately after the involved task has been shut down and the work area has been secured in a safe manner) the employee shall contact the Tetra Tech PM the Corporate HSM. Through observations and

**1.3 SITE INFORMATION AND PERSONNEL ASSIGNMENTS**

**Site Name:** NSA Mid-South

**Client Contacts:**

David Criswell

Howard Hickey

Remedial Project Manager

NAVFAC Project Manager

**Address:**

BRAC PMO SE

NVAFAC PMO

4130 Faber Place, Suite 202

201 Decatur Ave. Bldg 1-A

North Charleston, SC 29405

Great Lakes, IL 60088-2801

**Phone Numbers:**

(843) 743-2130

(847) 688-2600 ext. 243

**Navy Onsite Representative:**

Jim Heide

(901) 874-5367

**Purpose of Site Visit:** Site Inspections of Rifle Range, Horse Stable Skeet Range #2, Pistol Range, Trap/Skeet Ranges #1 and #2, Aircraft Firing Range, Horse Stables Skeet Range #1

**Proposed Dates of Work:** January 2010 until completion

**Project Team:**

**TtNUS Personnel:**

**Discipline/Tasks Assigned:**

**Telephone Number**

Lawson Anderson

PM

(901) 523-9500

Fred Grosskopf

FOL

(832) 251-6058

Ralph Brooks

UXO Manager

(770) 413-0965, ext. 231

Matthew M. Soltis, CIH, CSP

HSM

(412) 921-8912

Eric M. Samuels

PHSO

(770) 413-0965, ext. 232

TBD

SSO

TBD

**Non-TtNUS Personnel**

**Affiliation/Discipline/Tasks Assigned**

Melissa Corbett

Manager, Cor-Bits Coring & Cutting, LLC

(901) 382-2594

The hazard assessment for HASP/APP preparation has been conducted by: Eric M. Samuels

## **2.0 EMERGENCY ACTION PLAN**

### **2.1 INTRODUCTION**

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an emergency. In the event of an emergency which goes beyond TtNUS onsite resources, personnel will evacuate to a safe place of refuge and the appropriate emergency response agencies will be notified. It has been determined that the majority of potential emergency situations would be better supported by local emergency responders. Based on this determination, TtNUS will only provide emergency action support to events within their training capabilities and available onsite resources. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. At least one member of the field team will have current certification for the provision of first aid and CPR. The NSA Mid-South Point of Contact, Mr. Jim Heide, will be notified any time emergency response agencies are contacted. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(I)(1)(ii).

TtNUS will, as necessary, provide the following emergency action measures:

- Initial stage fire fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Initial medical support for injuries or illnesses requiring basic first-aid
- Site control and security measures until emergency responders arrive.

### **2.2 EMERGENCY PLANNING**

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards and UXO are the types of emergencies that could be encountered during site activities.

To minimize and eliminate the potential for these emergency situations, pre-emergency planning activities will include the following (which are the responsibility of the SSO and/or the FOL):

- Coordinating with local Emergency Response personnel to ensure that TtNUS emergency action activities are compatible with existing emergency response procedures. Base Fire Protection and Emergency Services will be notified of scheduled events and activities. This is most imperative in situations where their services may be required.
- Establishing and maintaining information at the project staging area (Support Zone) for easy access in the event of an emergency. This information will include the following:
  - Chemical Inventory of chemicals used onsite, with Material Safety Data Sheets.
  - Onsite personnel medical records (Medical Data Sheets).
  - A log book identifying personnel onsite each day.
  - Hospital route maps with directions (these should also be placed in each site vehicle).
  - Emergency Notification - phone numbers.

The TtNUS FOL and/or the SSO will be responsible for the following tasks:

- Serve as the Emergency Action Incident Commander. Deployment of resources and personnel as well as accounting for personnel during an emergency action will be their responsibility. They will also determine when and if to notify identified Emergency Response Agencies based on whether emergency action requirements are greater than onsite resources.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Pre entry and then periodically surveying the work areas to ensure conditions that would predispose personnel to potential emergencies are eliminated or barricaded. In addition, report these conditions to site personnel prior to commencement of work to ensure they are aware of potential hazards in that work area.
- Conduct periodic evaluations of operations in progress to ensure this HASP/APP is being followed.

UXO Technician/personnel will be responsible for:

- Anomaly avoidance techniques used for the intrusive surface soil and subsurface soil activities. It is understood that the use of two-way communication devices (cellular phones and radios) may be used at the NSA Mid-South, providing such equipment is intrinsically safe and under 5 watts power output.

If two-way communication is available, its use will be cleared with Base personnel prior to initiating activities.

- Providing the necessary equipment to safely accomplish identified tasks.

Additional employee responsibilities to assist in minimizing or eliminating potential emergencies include:

- Conducting assigned tasks employing the safety equipment and safe work practices as defined in this HASP/APP.
- Reporting unsafe conditions or practices to the FOL/SSO/UXO Support personnel..
- Provide constructive input during Tail Gate or safety meetings.
- Recognizing that each employee has a responsibility in that they are responsible for their own actions or how those actions may affect others.

## **2.3 EMERGENCY RECOGNITION AND PREVENTION**

### **2.3.1 Recognition**

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. To adequately recognize chemical exposures, site personnel must have a clear knowledge of signs and symptoms of exposure associated with site contaminants. Tasks to be performed at the site, potential hazards associated with those tasks and the recommended control methods are discussed in detail in Sections 5.0 and 6.0. Additionally, early recognition of hazards will be supported by daily site surveys to eliminate any situation predisposed to an emergency. Munitions and Explosives of Concern (MEC) will be avoided. If MEC are discovered, the location will be recorded and NSA Mid-South will be notified. These surveys findings will be documented by the FOL and/or the SSO in the Site Health and Safety log book, however, site personnel will be responsible for reporting hazardous situations. Where potential hazards exist, TtNUS will initiate control measures to prevent adverse effects to human health and the environment.

Through the initial hazard assessment, the following elements have been identified as potential emergency scenarios beyond the capabilities of the field personnel and onsite resources:

#### **DPT Drilling – Utility Strike**

- **Hazards**
  - Possible electrocution, or un-controlled release from pressurized systems

- **Control Measures**
  - Utility clearance activities including walking over the area(s) looking for ground surface monuments indicating the possible existence of subsurface structures.
  - Ensure onsite first aid/CPR trained personnel are available to provide immediate assistance for injured personnel.
  - Identify utilities control points (shut off valves) for utilities passing through identified work areas.
  - Identify emergency contact information for utility damage.
  - Assuring that the utility response capabilities are available during the time work is being performed.

### **Unexploded Ordnance - Detonation**

- **Hazard**
  - DPT Drilling/Direct Contact – Detonation
- **Control measures**
  - UXO Screening/Identification/Avoidance measures training and implementation.
  - Limiting work to within cleared areas.
  - DO NOT pick up or handle suspicious items.
  - Report suspicious articles to UXO Support personnel.
  - Follow UXO Avoidance measures identified during UXO SOP training and directions provided during Tail Gate or safety meeting sessions.
  - Ensure onsite First Aid/CPR trained personnel are available to provide immediate assistance for injured personnel.

### **Indigenous hazards**

- **Hazards**
  - Snake/Insect/Spider/Tick bites and stings
- **Control measures –**
  - Survey work areas pre-commencement of activities for possible nesting/habitat markers.
  - Clear brush and debris in the immediate work area.
  - Exercise caution when picking up or removing ground debris. Always pull towards your body. If there is a snake underneath the item will serve as a shield.
  - If you are allergic, carry a current prescription and Doctor recommended antidote with you. Instruct fellow team members as to the proper use and application of this antidote.
  - Personnel who have allergies should not be employed to conduct initial clearance or surveys of work areas.

- Ensure onsite First Aid/CPR trained personnel are available to provide immediate assistance for injured personnel.

The above actions will provide early recognition for potential emergency situations, and allow TtNUS to initiate the necessary control measures.

### **2.3.2      Prevention**

TtNUS personnel will minimize the potential for emergencies by following the HSGM and ensuring compliance with the HASP/APP and applicable OSHA regulations. Daily site surveys of work areas, prior to the commencement of that day's activities, by the FOL and/or the SSO and/or the UXO Support person will also assist in prevention of illness/injuries when hazards are recognized early and control measures initiated.

## **2.4            EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE**

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety or welfare of site workers. Specific examples of conditions that may initiate an evacuation include, but are not limited to the following:

- Severe weather conditions;
- Fire or explosion;
- Emergencies identified in Section 2.3.1

In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the TtNUS FOL. Safe places of refuge will be identified prior to the commencement of site activities by the SSO and will be conveyed to personnel as part of the pre-activities training session. This information will be reiterated during daily safety meetings. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area or a location from which emergency responders can be directed to the scene. During an evacuation, personnel will remain at the refuge location until directed otherwise by the TtNUS FOL or the on-site Incident Commander of the Emergency Response Team. The FOL or the SSO will perform a head count at this location to account for and to confirm the location of site personnel. Emergency response personnel will be immediately notified of any unaccounted personnel. The SSO will document the names of personnel onsite (on a daily basis) in the site Health and Safety Logbook. This information will be utilized to perform the head count in the event of an emergency.

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate evacuation routes. As a result, assembly points will be selected and communicated to the workers relative to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site.

## **2.5 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES**

TtNUS personnel will be working in close proximity to each other at NSA Mid-South. As a result, cell phones (if service is available), hand signals, two-way radio communications (if approved and meet the requirements outlined in Section 2.2 of this document), voice commands, and line of site communication will be sufficient to alert site personnel of an emergency. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations. If an emergency warranting evacuation occurs, the following procedures are to be initiated:

- Initiate the evacuation via radio communications, hand signals, voice commands, line of site communication, or vehicle horns. The following signals shall be utilized when communication via vehicle horn is necessary:

HELP	three short blasts	( . . . )
EVACUATION	three long blasts	( - - - )

- Report to the designated refuge point.
- Once non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the FOL (FOL will serve as the Incident Coordinator) pertinent incident details.

In the event that site personnel cannot mitigate the hazardous situation, the FOL and/or the SSO will enact emergency notification procedures to secure additional assistance in the following manner:

- Dial the facility emergency telephone number and call other pertinent emergency contacts listed in Table 2-1 and report the incident. Give the emergency operator the location of the emergency, the type of emergency, the number of injured, and a brief description of the incident. Stay on the phone

and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

## **2.6 EMERGENCY CONTACTS**

Prior to initiating field activities, site personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an accident. Table 2-1 provides a list of emergency contacts and their associated telephone numbers. This table must be posted where it is readily available to site personnel. Facility maps should also be posted showing potential evacuation routes and designated meeting areas.

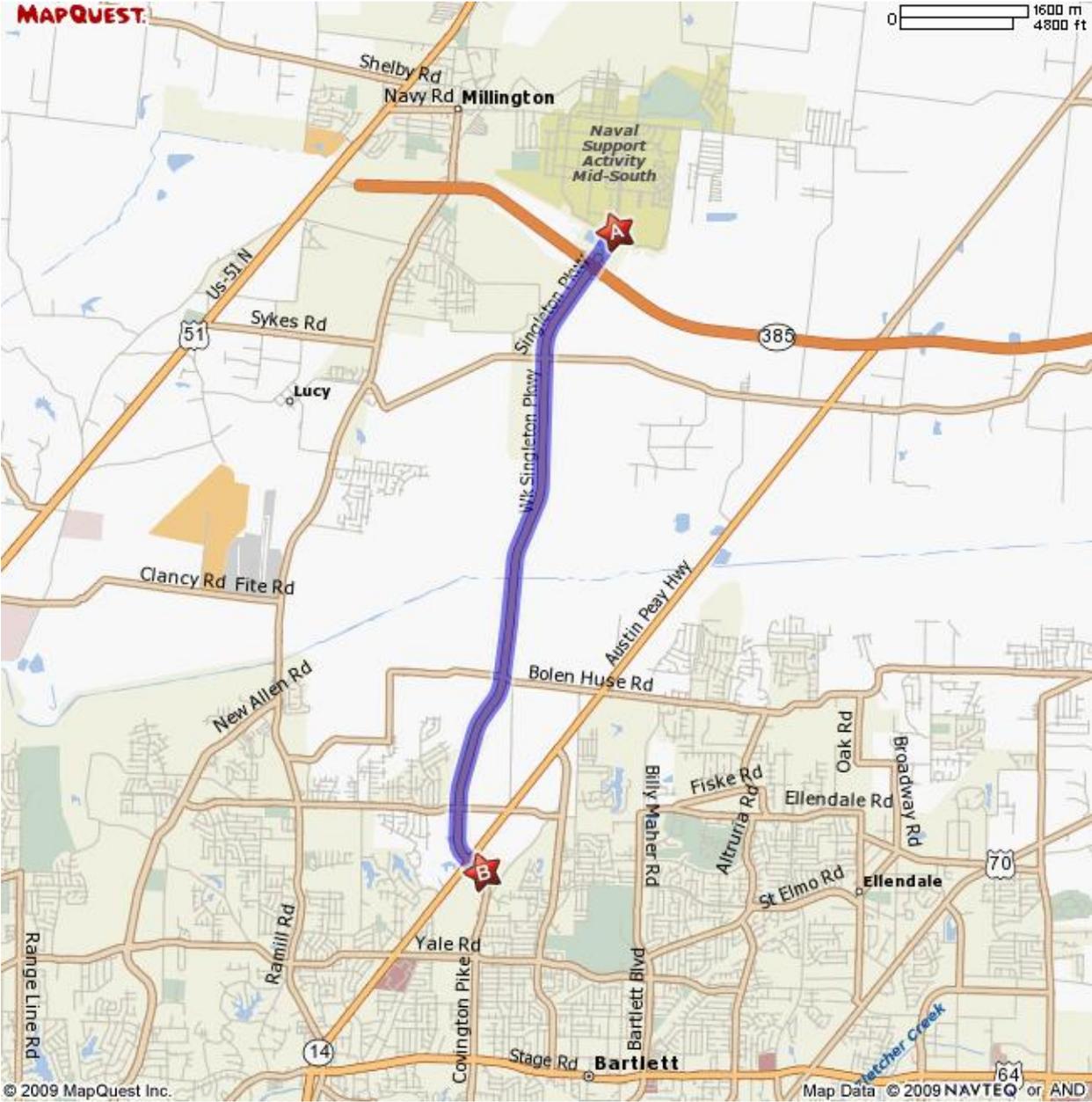
**TABLE 2-1**  
**EMERGENCY CONTACTS**  
**NSA MID-SOUTH MILLINGTON, TN**

EMERGENCY AGENCY / CONTACT	TELEPHONE NUMBER
<b>EMERGENCY</b> – On Facility – Security (Security, Fire, Ambulance, etc.)	<b>(901) 874-5533</b>
Methodist North Hospital, Memphis, Tenn	(901) 516-5200
Navy Onsite Representative at NSA Mid-South Jim Heide	(901) 874-5367
NAVFAC PMO Howard Hickey	(847) 688-2600 ext. 243
BRAC PMO David Criswell	(843) 743-2130
NSA Mid-South Explosive Safety Officer (if applicable)	(901) 874-5533
Utility Strike Navy – Base Operating Services System (BOSS)	(901) 874-5744 (24-hour hotline) (901) 874-5533 (Secondary number)
Utility Strike BRAC – MLG&W	(901) 528-4465 (Emergency Hotline)
Chemtrec	(800) 963-5289
National Response Center	(800) 424-8802
Poison Control Center	(800) 222-1222
WorkCare	(800) 455-6155 ext.109
Task Order Manager Lawson Anderson	(901) 523-9500
UXO Manager Ralph Brooks	(770) 413-0965 ext. 231 (404) 661-4916 (cell)
Health and Safety Manager (HSM) Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer (PHSO) Eric M. Samuels	(770) 413-0965 ext. 232

**2.7 EMERGENCY ROUTES TO HOSPITALS**

- Start out going southwest on Singleton Ave toward Wasp Ave. 0.1 mi
- Singleton Ave becomes Singleton Pkwy. 1.4 mi
- Singleton Pkwy becomes TN-204 S. 5.3 mi
- 3960 New Covington Pike is on the left.

**FIGURE 2-1  
ROUTE TO METHODIST NORTH HOSPITAL**



## 2.8 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT

During any site evacuation, decontamination procedures will be postponed only if doing so does not further jeopardize the welfare of site workers. Decontamination will be postponed if the incident warrants immediate evacuation. Lead is the primary contaminant of concern. If the injured party has contacted lead contaminated soils the hospital staff will be notified so they provide decontamination prior to treatment.

TtNUS personnel will perform removal of personnel from emergency situations and may provide initial medical support for injury/illnesses requiring only first-aid/CPR level support. Medical attention above that level will require assistance and support from the designated emergency response agencies. Attachment I provides the procedure to follow when reporting an injury/illness, and the form to be used for this purpose. **If the emergency involves personnel exposures to chemicals, follow the steps provided in Figure 2-2.**

## 2.9 INJURY/ILLNESS REPORTING

If any TtNUS or subcontractor personnel are injured or develop an illness as a result of working on site, the TtNUS "Incident Report Form" (Attachment I) must be followed.

- Secure emergency situation, care for any injured personnel, secure the site. Send one person to the hospital with the HASP/APP with the injured person. This person will notify Work Care.
- Notify the PM, HSM of the incident, Begin the onsite investigation through the completion of the applicable sections of Attachment I.
- Based on the directions received from the PM, the PM can contact Mr. Heide or the FOL may do so upon receiving the approval from the PM.
- DO NOT speculate, complete applicable sections of Attachment I to define cause and affect.

Following this procedure is necessary for documenting the information obtained at the time of the incident. Also, as soon as possible, NSA Mid-South contact, Mr. Jim Heide must be informed of any incident or accident that requires medical attention.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets (Attachment III) filed onsite. If an exposure to hazardous materials has occurred, provide information on the chemical, physical, and toxicological properties of the subject chemical(s) to medical service personnel.

## FIGURE 2-2

### POTENTIAL EXPOSURE PROTOCOL

The purpose of this protocol is to provide guidance for the medical management of injury situations.

In the event of a personnel injury or accident:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this HASP/APP by suitable and appropriate conveyance (e.g. ambulance for serious events)
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- If the injured person is a Tetra Tech NUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. WorkCare physicians will monitor the care of the victim. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 and enter Extension 109, being prepared to provide:
  - Any known information about the nature of the injury.
  - As much of the exposure history as was feasible to determine in the time allowed.
  - Name and phone number of the medical facility to which the victim(s) has/have been taken.
  - Name(s) of the involved Tetra Tech NUS, Inc. employee(s).
  - Name and phone number of an informed site officer who will be responsible for further investigations.
  - Fax appropriate information to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety Department (Matt Soltis) and Human Resources (Marilyn Duffy) at 412-921-7090

As data is gathered and the scenario becomes more clearly defined, this information should be forwarded to WorkCare.

WorkCare will compile the results of the data and provide a summary report of the incident. A copy of this report will be placed in each victim's medical file in addition to being distributed to appropriately designated company officials.

Each involved worker will receive a letter describing the incident but deleting any personal or individual comments. A personalized letter describing the individual findings/results will accompany this generalized summary. A copy of the personal letter will be filed in the continuing medical file maintained by WorkCare.

**FIGURE 2-2 (continued)**

**WORKCARE  
POTENTIAL EXPOSURE REPORT**

Name: \_\_\_\_\_ Date of Exposure: \_\_\_\_\_

Social Security No.: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Client Contact: \_\_\_\_\_ Phone No.: \_\_\_\_\_

Company Name: \_\_\_\_\_

**I. Exposing Agent**

Name of Product or Chemicals (if known): \_\_\_\_\_

Characteristics (if the name is not known)

Solid          Liquid          Gas          Fume          Mist          Vapor

**II. Dose Determinants**

What was individual doing? \_\_\_\_\_

How long did individual work in area before signs/symptoms developed? \_\_\_\_\_

Was protective gear being used? If yes, what was the PPE? \_\_\_\_\_

Was their skin contact? \_\_\_\_\_

Was the exposing agent inhaled? \_\_\_\_\_

Were other persons exposed? If yes, did they experience symptoms? \_\_\_\_\_

**III. Signs and Symptoms** (check off appropriate symptoms)

**Immediately With Exposure:**

Burning of eyes, nose, or throat

Tearing

Headache

Cough

Shortness of Breath

Chest Tightness / Pressure

Nausea / Vomiting

Dizziness

Weakness

**Delayed Symptoms:**

Weakness

Nausea / Vomiting

Shortness of Breath

Cough

Loss of Appetite

Abdominal Pain

Headache

Numbness / Tingling

**IV. Present Status of Symptoms** (check off appropriate symptoms)

Burning of eyes, nose, or throat

Tearing

Headache

Cough

Shortness of Breath

Chest Tightness / Pressure

Cyanosis

Nausea / Vomiting

Dizziness

Weakness

Loss of Appetite

Abdominal Pain

Numbness / Tingling

Have symptoms: (please check off appropriate response and give duration of symptoms)

Improved: \_\_\_\_\_ Worsened: \_\_\_\_\_ Remained Unchanged: \_\_\_\_\_

**V. Treatment of Symptoms** (check off appropriate response)

None: \_\_\_\_\_ Self-Medicated: \_\_\_\_\_ Physician Treated: \_\_\_\_\_

## 3.0 SITE BACKGROUND

### 3.1 SITE HISTORY AND BACKGROUND

Naval Support Activity (NSA) Mid-South is located in the Town of Millington in Shelby County, Tennessee, approximately 20 miles north of Memphis, 180 miles west of Nashville, and 7 miles east of the Mississippi River. The facility encompasses 1,600 acres and serves as one of the largest inland Navy installations in the world. As of April 2002, the base employed 1,100 people including enlisted personnel, officer personnel, and civilians. Seven MRP-eligible sites were identified at NSA Mid-South, including, Pistol Range, Rifle Range, Aircraft Firing Range, Trap/Skeet Ranges #1 and #2, Horse Stables Skeet Range #1, and Horse Stables Skeet Range #2.

To facilitate discussion, the seven MRP-eligible sites have been divided into the following two groups:

- Firing Ranges
  - Rifle Range
  - Pistol Range
  - Aircraft Firing Range.
  
- Skeet Ranges –
  - Trap/Skeet Ranges #1 and 2
  - Horse Stables Skeet Range #1
  - Horse Stables Skeet Range #2

#### 3.1.1 Firing Ranges

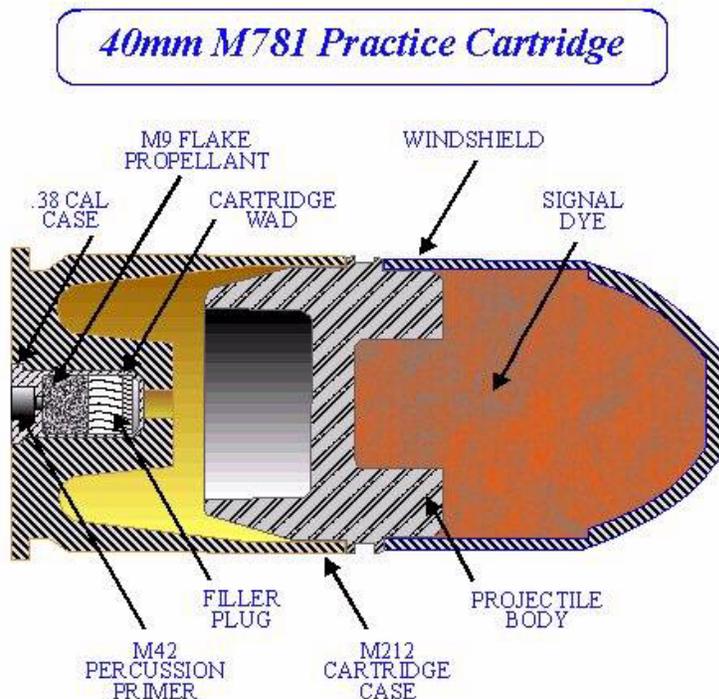
This section discusses the former firing ranges, including the Pistol Range, Rifle Range, and Aircraft Firing Range.

##### **Pistol Range**

The former Pistol Range consists of approximately 0.5 acre from the firing line to a containment berm located behind the former target areas and is located near the southern border of the installation, east of Singleton Avenue, off the Perimeter Security Patrol Road. The Pistol Range was constructed after 1948 at the former location of a skeet range and was in use until 1994.

Property records indicate that the range, when active, consisted of a berm, shooting stations, targets, and an armory. The firing line maintained 16 firing positions with targets that were operated via a manual, mechanical cable system from behind the firing lines. This included five target lines, one each at 7 yards, 15 yards, 25 yards, 1,000 inches and 50 yards. The targets present at the pistol range were made of paper and secured to aboveground posts. A U-Shaped berm, approximately 10-15 feet tall and 500 feet long encompassed the area behind and on both sides of the target lines. Munitions use was limited to small arms ammunition, including 0.22-caliber, 0.30-caliber, 9-mm, 0.38-caliber, and 0.45-caliber ammunition. These munitions are considered munition constituents (MC).

Expended rounds were visually identified on the surface of the containment berm. Also identified at the base of the containment berm was 40-mm training rounds. The 40-mm rounds are considered MEC. An example of a 40mm Training/Practice Round is provided below. Vegetation (comprised primarily of poison oak "trees") present on the berm is to have been cleared by the Public Works Department prior to conducting the SI to aid in identification of additional expended ammunition.



The M781 practice cartridge replaced the M407 practice cartridge. The M781 is a low-cost, un-fuzed, fixed-round of practice ammunition ready for use as issued. The cartridge case is made of plastic material and the projectile is also plastic with an aluminum-rotating band. The ogive is made of a frangible plastic material and contains a colored dye in granular form, the consistency of talcum powder, which is used to generate a signature. The propulsion system consists of a standard .38 caliber blank.

This round is blue zinc (looks like an egg) or aluminum with white markings. It produces a yellow or orange signature on impact.

40mm Low-Velocity Grenades

**Source:** [Gary's U.S. Infantry Weapons Reference Guide](#)

## Rifle Range

The former Rifle Range consists of approximately 11 acres from the firing line to a containment berm formerly located behind the target area. It is located near the northern border of the installation, east of Attu Extension and south of Kerrville Rosemark Road. It is adjacent to a military housing complex. The

range was built in 1942. After closure of the range in the mid-1960's, soils from the containment berm were used for site work during construction of the Naval Hospital in 1965. A review of historical records and previous environmental reports available do not indicate remediation of the Rifle Range either before or after removal of the berm.

The range, when active, consisted of a berm, shooting stations, targets, target house, and three magazines. This included three firing lines (one each at 50, 100, and 200 yards). A containment berm, approximately 450 feet long, was located behind the targets. The targets were wooden in composition and were raised and lowered from a concrete vault located in front of the containment berm. Munitions use was limited to small arms ammunition, including 0.22-caliber, 0.30-caliber and 0.50-caliber machine gun ammunition. No MC has been identified between the areas of the former firing lines and former containment berm and no expended munitions fragments were noted at the Rifle Range. Even though the target area and berm were previously removed, the concrete pads marking the locations of the former firing points are still present.

#### **Aircraft Firing Range (Bore Sighting Range)**

The former Aircraft Firing Range consists of approximately 8.5 acres located near the southern border of the installation, west of Singleton Avenue, directly south of "B" Street. The Aircraft Firing Range was constructed in 1942 and was used for bore sightings of fixed-wing machine guns on aircraft through World War II. Later, the range was converted to an aircraft maintenance garage and remained in use until 1995 when the Army Reserve began using the area. A containment berm was previously associated with the Aircraft Firing Range but was removed prior to use of the area by the Army Reserve.

The range, when active, consisted of the Machine Gun Test Building, which later became an aircraft maintenance garage, Instruction Building, offices, and two berms. The targets were typically wooden stands covered with cloth placed in front of the containment berms. The containment berms, each approximately 200 feet long, were located south of, and parallel to, the former building. Munitions use was limited to small arms ammunition, including 0.30- and 0.50-caliber machine gun ammunition. No MC has been identified between the areas of the former firing lines and former containment berms.

#### **3.1.2 Skeet Ranges**

This section discusses the former skeet ranges, including Trap/Skeet Ranges #1 and #2, Horse Stables Skeet Range #1, and Horse Stables Skeet Range #2.

### **Trap/Skeet Ranges #1 and #2**

Former Trap/Skeet Ranges #1 and #2 consist of approximately 79 acres, located near the southern border of the installation, east of Singleton Avenue, off the Perimeter Security Patrol Road, adjacent to the former Pistol Range. The ranges were built around 1943, with Trap/Skeet Range #1 having an unrecorded closure date sometime after World War II and Trap/Skeet Range #1 closing in 2005. No remedial efforts are documented for closure of the ranges.

The range, when active, had a firing line, skeet office, armory, two clay pigeon storage buildings, an ammunition storage building, an instruction building, and shooting stations and targets. Munitions use was limited to small arms ammunition, primarily 12- and 20-gauge shotgun shells.

Of note is that a portion of Solid Waste Management Unit (SWMU) 2, a closed solid waste landfill that served the former Naval Air Station (NAS) Memphis, is located within the defined boundaries of the Former Trap Skeet Ranges #1 and #2. To maintain the integrity of the landfill cap, investigation of the portion of SWMU 2 that lies within the boundaries of the Former Trap Skeet Ranges #1 and #2 has been removed from this SI. Broken skeet targets are present on the ground surface. Skeet fragments and shotgun shell casings were observed near SWMU 2 at the former Trap Skeet Ranges #1 and #2.

### **Horse Stables Skeet Range #1**

The former Horse Stables Skeet Range #1 consists of approximately 36 acres on the northern portion of the installation, east of Attu Street Extension, adjacent to the Rifle Range. The ranges were built in 1945 and closed in the summer of 1952 for the construction of a Navy family housing area. No remedial efforts are documented for the closure of the range. The range had a magazine, shed, a skeet tower, a firing arch, and high and low houses. The magazine, a shed and skeet tower, were used also for the adjacent skeet range. Munitions use was limited to small arms ammunition, primarily 12- and 20-gauge shotgun shells. No expended munitions fragments or skeet targets are present on the ground surface at the former Horse Stables Skeet Range #1.

### **Horse Stables Skeet Range #2**

The former Horse Stables Skeet Range #2 consists of approximately 42 acres, on the northern portion of the installation, west of Attu Street Extension, adjacent to Horse Stables Skeet Range #1. The range was built around 1942 and closed in 1946. The range, when active, had a magazine, shed, and skeet tower in addition to a firing arch and high and low houses, typical structures associated with a skeet range. The magazine, shed, and skeet tower were used also for the adjacent skeet range. Munitions use was limited to small arms ammunition, primarily 12- and 20-gauge shotgun shells. No expended munitions fragments

or skeet targets are present on the ground surface at the former Horse Stables Skeet Range #2 during the site visit.

## 4.0 SCOPE OF WORK

This section describes the project tasks that will be performed at NSA Mid-South. Additionally, each task has been evaluated and the associated hazards and recommended control measures are listed in the Accident Prevention Plan and Activity Hazard Analysis in Attachment IV of this HASP/APP. The planned activities involved in this effort are presented in detail in the Work Plan developed for the project. If new tasks are to be performed at the site, the Accident Prevention Plan and Activity Hazard Analysis and this section will be modified accordingly.

Field Tasks to be performed during the small arms range site investigation include:

- Mobilization/demobilization, initial site surveys, and utility clearance
- Soil Boring with DPT/Hand Auger
- Surface and sub-surface soil sample collection and associated tasks
  - Concrete coring
- Decontamination
- Investigation-Derived Waste (IDW) removal and disposal
- Land survey with Global Positioning System (GPS)
- XRF lead analysis of soil

The tasks will be performed in accordance with Standard Operating Procedures (SOPs) included in the project Sampling and Analysis Plan (SAP) in Appendix A.

MEC anomaly avoidance field procedures will only be practiced for the field investigation activities being performed by TtNUS at the Pistol Range due to the presence of 40-mm training rounds. Specific tasks to be conducted include the following:

- MEC surface/subsurface avoidance:
  - Conducted by UXO Technicians implementing UXO avoidance measures.
  - An Explosive Safety Submission (ESS) Determination will be prepared to support this activity. UXO avoidance will be practiced at the times during this field work. Under no circumstance will MEC and Material Potentially Presenting an Explosive Hazard (MPPEH) be moved or otherwise disturbed during this phase of the investigation. The ESS Determination will be prepared to presume that an ESS is not required (minor intrusive activities using UXO avoidance techniques for subsurface soil sampling will be performed in conjunction with UXO surface surveys,

downhole magnetometer surveys will be performed for soil borings; no other intrusive activities are anticipated)

The above listing represents a summation of the tasks as they apply to the scope and application of this HASP/APP. For more detailed description of the associated tasks, please refer to the Site-Specific Work Plan. If additional tasks are determined to be necessary, this HASP/APP will be amended and a hazard evaluation of the additional tasks performed.

## **5.0 IDENTIFYING AND COMMUNICATING TASK-SPECIFIC HAZARDS AND GENERAL SAFE WORK PRACTICES**

This section identifies general safe work practices that are to be incorporated to minimize potential hazards and appropriate hazard prevention/hazard control measures that are to be observed for each planned task or operation. Potential hazard and hazard control matters that are relevant but are not necessarily task-specific are addressed in the following portions of this section.

Section 6.0 presents additional information on hazard anticipation, recognition, and control relevant to the planned field activities.

### **5.1 GENERAL SITE SAFE WORK PRACTICES**

In addition to the task-specific work practices and restrictions identified in the AHAs attached to this HASP/APP, the following general safe work practices are to be followed when conducting work on-site.

- Eating, drinking, chewing gum or tobacco, taking medication, or smoking in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists is prohibited. The primary contaminant of concern is lead. Given the nature of the tasks to be conducted the primary route of exposure is via hand to mouth transfer.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. If a source of potable water is not available at the work site that can be used for hands-washing, the use of waterless hands cleaning products will be used, followed by actual hands-washing as soon as practicable upon exiting the site. It is recommended that hand wipes such as D-Lead be employed to remove potentially lead contaminated soils from the hands and face.
- Avoid contact with potentially contaminated substances including puddles, pools, mud, or other such areas. Avoid, kneeling on the ground or leaning or sitting on equipment. Keep monitoring equipment away from potentially contaminated surfaces. This will aid in preventing incidental contact and transfer into unaffected areas.
- Plan and mark entrance, exit, and emergency evacuation routes.
- Rehearse unfamiliar operations prior to implementation.

- Buddies should maintain visual contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.
- Establish appropriate safety zones including support, contamination reduction, and exclusion zones.
- Minimize the number of personnel and equipment in contaminated areas (such as the exclusion zone). Non-essential vehicles and equipment should remain within the support zone.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report injuries, illnesses, and unsafe conditions, practices, and equipment to the SSO.
- Observe co-workers for signs of toxic exposure and heat or cold stress.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

## **5.2 DRILLING SAFE WORK PRACTICES**

Mechanized equipment will undergo a complete equipment inspection utilizing Attachment V (Equipment Inspection Checklist) to ensure the equipment is operational and suitable for use.

### **5.2.1 Utility Clearance**

Mechanized drilling activities will proceed in accordance with the Utility Locating and Excavation Clearance utilizing the CWAP described in Section 4.0 of this HASP.

- The utility clearances will be obtained, in writing, and locations identified and marked, prior to activities. If it is not obtainable/unknown or your location infringes within 3-feet of an underground utility advancement must proceed by hand to confirm the utility location. Section 7.0 of the HSGM has additional passive methods as it pertains to utility locating and clearance.
- DPT operations will be conducted at a safe distance from overhead power lines also discussed in Attachment II (minimum 20-feet).
- The typical timeline for marking and providing clearances by an outside provider is 10 days. If utilities are cleared by the local utility provider or outside service, a ticket, or ticket number will typically be

provided referring to the clearance. Tickets have an expiration date. If the ticket expires it must be re-issued or extension must be granted by the issuing agency.

- The FOL is responsible to ensure that utility locations/markings on the ground are maintained so they remain visible (repaint, pin flags, etc.), and to annotate maps with these locations so they may be incorporated into the site map.
- Lastly, once marks are placed on the ground and have been cleared, only limited leeway (3-feet) exists to stray from the planned and approved intrusive locations.
- Where possible record utility locations using GPS units.
- Ensure that machine guarding is in place and properly adjusted.
- The drillers or driller helper will establish an equipment staging and laydown plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards. Secure heavy objects such as drill rods, continuous tubing and MacroCore samplers to avoid the collapse of stacked equipment.

### **5.2.2 Drilling**

- Minimize contact to the extent possible with contaminated tools and environmental media.
- Potentially contaminated tools will be placed on polyethylene sheeting.
- Areas surrounding the borings/wells will be restored to at least original condition.
- Support functions (sampling and screening stations) will be maintained a minimum distance from the drill rig of the height of the mast plus five feet or 25-feet for DPT Rigs whichever is greater.
- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the drill rig.
- During maintenance, use only manufacturer provided/approved equipment (i.e. auger flight connectors, etc.)

- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone. Site visitors will be escorted.
- The equipment used within the exclusion zone that has come in contact with contaminated media will undergo a complete decontamination and evaluation by the FOL and/or the SSO to determine cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.
- The motorized equipment will be fueled prior to the commencement of the day's activities. During fueling operations the equipment will be shutdown.
- When not in use the drill rigs will be shutdown, and emergency brakes set.
- The areas subjected to subsurface investigative methods will be restored to equal or better condition. In situations where these hazards cannot be removed these areas will be barricaded to minimize the impact on field crews working in the area and the general population who may have access to these areas.

### **5.2.3 Hand Augering/Soil Corer Sampling**

This activity can be physically demanding based on the type of geology and subsurface encumbrances encountered. To reduce the potential for muscle strain and damage the following practices will be employed:

- Stretch and limber your muscles before heavy exertion. This hazard becomes more predominant in the early morning hours (prior to muscles becoming limber) and later in the day (as a result of fatigue).
- Job rotation – Share the duties so that repetitive actions do not result in fatigue and injury.
- Increase break frequencies as needed especially as ambient conditions may dictate.
- Do not force the hand tool or use cheater pipes or similar devices to bypass an obstruction. Move to another location near the sampling point. Exerting additional forces on the sampling devices can result in damage and/or failure which could potentially injure someone in the immediate vicinity.
- Do not over compromise yourself when applying force to the Soil Corer or hand auger. If there is a sudden release this could result in a fall or muscle injury due to strain.

#### **5.2.4 Concrete Coring Safe Work Practices**

- Identify underground utilities before commencing any concrete operations.
- Conduct safety checks on equipment and extension cords
- Use electrical outlets equipped with ground fault circuit interrupter (GFCI) or an extension cord combined with a GFCI.
- Use wetting techniques to minimize dust and friction.
- When applying water to the core bit the operator should apply water until the slurry begins to look like heavily creamed coffee.
- Wear the well-fitting nitrile gloves (rather than cotton or leather gloves) when in coring.
- Wash and dry hands before putting on gloves and every time that you remove your gloves.
- Replace grossly contaminated or worn-out gloves.
- Make sure the drill rig is properly anchored.
- Standing on a drill rig will cause the bit to bind up in the hole
- Use the manufacturers recommended speed (revolutions per minute) for the diameter of the bit used.

#### **5.3 MEC/MEC-RELATED ITEMS SAFE WORK PRACTICES**

One of the obvious hazards associated with this activity is the potential for encountering MEC at the Pistol Range. The unintended detonation of MEC or a MEC-related item could result in injury or possibly death.

MEC represents a potential safety hazard at this site and may constitute an imminent and substantial endangerment to personnel and the local populations due to its explosive potential. The activities involving work in areas potentially containing MEC hazards shall be conducted with approval from the Naval Ordnance Safety and Security Activity (NOSSA) and in accordance with OPNAV 8020.15,

NAVSEA Operations Pamphlet (OP) 5, NOSSAINST 8020.15, and DOD 6055.9-Std., and the other Department of Navy and DOD requirements regarding personnel, equipment, and procedures. The contractor will perform the work in accordance with the approved Explosives Safety Submission (ESS) Determination per NOSSAINST 8020.15.

To address MEC hazards, the following measures will be incorporated.

### **5.3.1 General MEC Avoidance Measures**

TtNUS Unexploded Ordnance (UXO) Support will perform a visual survey of the areas the Site Inspection Team will enter (access/egress routes and proposed work areas) at the Pistol Range. During the pre-planning phase of the visit the team will identify the areas they wish to inspect.

- Avoid contact with potential MEC or MPPEH by avoiding metallic objects and possible plastic components and following the instructions of the UXO Technicians.
- Site personnel will follow instructions and directions provided by the UXO Technician.
- Site personnel will restrict themselves to the areas identified by UXO personnel.
- Personnel will be assigned in such a manner to permit the direct visual observation of one another as well as provide any emergency assistance should it be required.
- Personnel will notify the UXO Technician should they encounter suspect MEC items or unidentified items.
- Smoking is prohibited on site.
- Matches, lighters, or other fire, flame, or spark-producing devices are prohibited at the site.
- Cell phones or two-way radios will only be used under the direct supervision and expressed permission of the UXO Technician.
- Personnel shall suspend outdoor activities in the event of inclement weather (thunderstorms, lightning, heavy rain).

### **5.3.2 Surface Soil Sampling Measures**

Surface soil samples are normally collected at depths from 0 to 6 inches below ground surface. The following paragraphs describe anomaly avoidance procedures for soil sampling between 0 and 6 inches below ground surface on a site with known or suspected MEC.

- The UXO technician must conduct an access survey of the routes to and from the proposed investigation site as well as an area around the investigation site.
- The UXO technician must perform a detector aided surface survey at each proposed surface soil sampling site for any indication of MEC.
- The UXO technician must conduct a survey of the proposed sampling locations using geophysical instruments capable of detecting the smallest known or anticipated military munitions to a depth of 1 foot.
- If anomalies are detected at a proposed sampling location or too many anomalies are detected in a general area of interest, an alternate location for collection of surface soil samples will be selected.
- Detected anomalies will be prominently marked with survey flagging or pin flags for avoidance during sampling activities.

### **5.3.3 Subsurface Soil Sampling Measures**

Subsurface soil samples are normally collected at depths from 6 inches below ground surface to depth. The following paragraphs describe anomaly avoidance procedures for subsurface soil sampling on a site with known or suspected MEC.

- The UXO technician must conduct an access survey of the routes to and from the proposed investigation site as well as an area around the investigation site.
- The UXO technician must perform a detector aided surface survey at each proposed subsurface soil sampling site for any indication of MEC.
- The UXO technician must conduct a subsurface survey of the proposed sampling locations using a downhole magnetometer at 2 foot intervals until sample depth is achieved.

- If anomalies are detected at a proposed sampling location or too many anomalies are detected in a general area of interest, an alternate location for collection of subsurface soil samples will be selected.
- Detected anomalies will be prominently marked with survey flagging or pin flags for avoidance during sampling activities.

#### 5.4 X-RAY SAFE WORK PRACTICES

The safe and proper operation of the Innov-X XRF instruments is important. These instruments produce ionizing radiation and should **ONLY** be operated by individuals, who have been trained and received a manufacturer's training certificate. The general safe work practices for XRF Sampling are as follows:

- The area where the device will be used will be identified using signs warning persons entering the area of the activities being conducted.
- The operator will ensure persons not critical to the operation are not in the area demarcated for this purpose.
- The operator will insure good general housekeeping is practiced in the analytical area to control potential contamination within a confined space.
- The operator will practice good work hygiene practices to minimize potential introduction of residual contamination into the body through hand to mouth contact.
- Radiation levels reported during testing are  $< 0.1$  mR/hr on all surfaces of the analyzer except at or near the exit port for the radiation. This means that if an operator follows standard operating procedures, they will not obtain any detectable radiation dose above naturally occurring background radiation, on their hand while holding the analyzer, or on any area of their body.
- Plug the battery charger into a grounded electrical outlet that is easily accessible at all times. Do not pull on cords and cables. When unplugging the cord from the electrical outlet, grasp and pull the cord by the plug.
- Handle battery packs properly; do not: disassemble, crush, puncture, short external contacts, dispose of in fire or water, or expose a battery pack to temperatures higher than  $60\text{ }^{\circ}\text{C}$  ( $140\text{ }^{\circ}\text{F}$ ). Do not

attempt to open or service a battery pack. Improper handling or charging may cause the battery to explode.

- Keep all safe guards and warning labels in place
- **Proper Usage.** Never point the instrument at another person. Never hold a sample in your hand and test that part of the sample.
- **Establish Controlled Areas.** The location of storage and use should be of restricted access to limit potential exposure to possible ionizing radiation. In use, the target should not be hand held and the area at least three paces beyond the target should be unoccupied.
- **Specific Controls.** The instrument should be stored, in a locked case, or locked cabinets when not in use. When in use, it must remain in the direct control of a factory trained, certified operator.
- **Time - Distance - Shielding Policies.** Operators should minimize the time around the energized instrument, maximize the distance from the instrument window during shots, and shoot into high density materials whenever possible. Under no circumstances should the operator point the instrument at themselves or others whether energized or not.
- **Prevent Exposure to Ionizing Radiation.** - All reasonable measures, including labeling, operator training and certification, and the concepts of time, distance, & shielding, should be implemented to limit radiation exposure to as low as reasonably achievable (ALARA).

## 6.0 HAZARD ASSESSMENT

The following section provides information regarding the chemical, physical, and natural hazards anticipated to be present during the activities to be conducted.

### 6.1 CHEMICAL HAZARDS

The potential health hazards associated with the small arms ranges at NSA Mid-South include inhalation and ingestion of various contaminants that may be present. Lead is assumed to be the primary inorganic munitions constituent (MC) of concern because it was the primary component of the spent munitions used during operation of each small arms range; and because of its documented human toxicity. The other inorganic MCs that comprised the ammunition used at the firing ranges (e.g., antimony, zinc, copper, arsenic and tin) were traditionally present in much smaller fractions than lead and are accepted to be historically co-located with the lead. Nitroglycerin (NG), in the form of smokeless powder and ejection of unburned propellants, is another MC associated with firing ranges; and is suspected (along with lead) to be present at firing points. PAHs may be present in tar used to bind clay pigeons at skeet ranges.

Any steps taken to mitigate potential exposures to lead will adequately address other MCs at the site.

#### 6.1.1 Lead Properties and Exposure Signs/Symptoms

In its pure state, lead is a heavy, ductile, soft gray solid. Severe symptoms of acute lead poisoning can include seizures, unconsciousness, paralysis, or swelling in the brain. Most lead poisoning comes from low levels of exposure over a long period of time. The major organ systems affected are the central nervous system, gastrointestinal tract and the renal system. Neurological effects may include poor coordination, weakness in hands and feet, headaches, seizures, paralysis, and coma. Gastrointestinal symptoms may include stomach aches, cramping, constipation, or diarrhea, nausea and vomiting. Other symptoms include persistent, unexplained fatigue, headache, muscle weakness, and higher rates of tooth decay.

The principle routes that a worker could be exposed to lead include ingestion, and direct skin contact, and inhalation, these potential exposure routes and the means that will be used to prevent or control them are addressed below.

**Ingestion and Skin Contact:** Potential exposure to lead may also occur through ingesting or coming into direct skin contact with contaminated soils. The likelihood of worker exposure concerns through these two routes are also considered more likely. This of course can be minimized, provided that workers

follow good personal hygiene and standard good sample collection/sample handling practices, and wear appropriate PPE as specified in this HASP/APP. Examples of onsite practices that are to be observed that will protect workers from exposure via ingestion or skin contact include the following:

- No hand-to-mouth activities on site (eating, drinking, smoking, etc.)
- Washing hands upon leaving the work area and prior to performing any hand to mouth activities.
- Diligently following decontamination procedures to minimize possible transfer into unaffected areas.
- Wearing surgeon's-style gloves whenever handling potentially-contaminated media, including soils, hand tools, and sample containers.

It is recommended that hand wipes and detergents similar to D-Lead be utilized for decontamination purposes as it more affectively removes and binds the lead contaminant.

**Inhalation:** No data is available from previous investigations at this worksite. Worker exposure to airborne concentrations of lead or other associated metals that could represent a health concern is considered to be possible, but not highly likely. The data presented in Table 6-1 indicate that significantly dusty conditions (i.e., enough dust to obscure vision over a very short distance of only a few feet) with an extremely high lead concentration in soil would be necessary before any lead exposure concern via inhalation would be encountered. Based on the nature of the planned activities and on anticipated site conditions, it is very unlikely that workers will encounter dust concentrations approaching the level presented in Table 6-1.

**TABLE 6-1  
COMPARISON OF WORST-CASE LEAD AIR CONCENTRATIONS  
WITH CURRENT OCCUPATIONAL EXPOSURE LIMITS**

<b>Contaminant of Concern</b>	<b>Highest Concentration in Soils Necessary to Reach PEL</b>	<b>Amount of Dust-in-Air that would have to be generated before PEL/TLV would be reached</b>	<b>Current OSHA PEL And NIOSH REL</b>
Lead	5,000 mg/kg	2.5 mg/m <sup>3</sup>	OSHA: 0.05 mg/m <sup>3</sup> , TWA <sub>8</sub> NIOSH 0.05 mg/m <sup>3</sup> , TWA <sub>8</sub>

Table Notes:

TWA<sub>8</sub>: Average air concentration over an 8-hour work period that is not to be exceeded

2mg/m<sup>3</sup> – Visible dust

NA – not available

As indicated in this table, from a worst-case scenario, it is highly unlikely that airborne concentrations of lead could exceed the OSHA PEL TWA<sub>8</sub>. In regarding the results of this data evaluation, it is important to recognize the following:

- The planned work area is outdoors, with ample natural ventilation that will reduce any airborne concentrations through dilution and dispersion,
- The majority of sites to be investigated are vegetated so dust generation should be minimal;
- The intended soil sampling methodologies should not result in high concentrations of airborne dust
- To control particulates including metals, efforts to knock down visible dust should be put in place when it occurs. This includes area wetting.

As a result of these factors, it is very unlikely that workers participating in this activity will encounter any airborne concentrations of lead that would represent an occupational exposure concern. The use of common dust suppression methods should be adequate to maintain airborne concentrations of the soil contaminants below levels of concern.

## **6.2 PHYSICAL HAZARDS**

The physical hazards that may be present during the performance of site activities are summarized below:

- MEC (Munitions and Explosives of Concern)
- MPPEH (Materials Potentially Presenting an Explosive Hazard)
- Fire
- Vehicular and foot traffic
- Heavy equipment hazards
- Ambient temperature extremes
- Slips, trips, and falls

These physical hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual.

### **6.2.1 Contact with MEC/MPPEH**

Field personnel will practice UXO avoidance techniques when working at the Pistol Range and anytime suspect MEC/MPPEH is encountered. If suspect MEC is encountered during site activities, the work will stop and personnel will evacuate and secure the site until the NSA Mid-South IRP Manager and UXO PM

are notified. Work will not resume until the proper notifications have been made, emergency response is coordinated if needed, and the NSA Mid-South contact receives permission from NOSSA to resume operations.

- In general, field personnel will practice UXO avoidance techniques.
  - Do not pick-up or kick any unknown materials.
  - Notify the UXO personnel if you encounter unknown materials.
  - Where the potential exists for MEC/MPPEH, the UXO technician will clear the access routes and work areas.

### **6.2.2 Fire Hazard**

To handle a fire hazard, personnel will refrain from:

- Improperly disposing of cigarettes or matches from vehicles or during site activities.
- Parking vehicles in high grassy areas (i.e., where the grasses are high enough to be in direct contact with the vehicle undercarriage).
- Exhaust and other elevated temperature components may cause the grasses to catch fire.

### **6.2.3 Vehicular and Foot Traffic**

Hazards associated with vehicular and equipment traffic may exist during various site activities and whenever site personnel perform work on or near roadways. To minimize the potential for injuries associated with these hazards, personnel will be present to control traffic as necessary through the use of warning signs, traffic cones, and flags. Additionally, site personnel will be instructed to maintain awareness of traffic and moving equipment when performing site activities. When working near roadways, site personnel will wear high visibility vests when working along established or congested traffic patterns. In addition, the following measures will be employed to minimize these hazards:

- Obstructions along the sides of the road may cause site personnel to move into the flow of traffic to avoid your activities or equipment.
- Maintain at least 6-feet of free space between work site and moving traffic.
- When necessary use flaggers and/or warning signs to alert oncoming traffic of activities.
- Always attempt to face traffic when within the 6-foot free space area.

- Always leave an escape route.
- Make eye contact with the motor vehicle driver.
- Carefully and deliberately use hand signals so they will not startle or confuse motorists or be mistaken for a flagger's direction before moving into traffic.
- Move deliberately and avoid making sudden movements that might confuse a motorist.
- Avoid interrupting traffic flow and minimize crossing traffic lanes.
- Always be alert for curious motorists.
- Motorists are distracted from driving when look to see what is happening, as a result, accidents occur.
- When moving traffic through the work area, keep vehicles separated so they move through the area accident free.
- Control speed through the work area.

#### **6.2.4 Heavy Equipment Hazards**

The following precautions will be used when working at or near the heavy equipment:

- The equipment will be inspected using the Equipment Inspection Checklist provided in Attachment V.
- Heavy equipment will be operated and supported by knowledgeable operator(s).
- Self-propelled equipment with restricted field of vision moving backwards shall be equipped with a back up alarm.

#### **6.2.5 Ambient Temperature Extremes**

Because of the geographical location of the planned work, the likely seasonal weather conditions that will exist during the planned schedule, and the physical exertion that can be anticipated with some of the planned tasks, it will be necessary for the field team to be aware of the signs and symptoms and the

measures appropriate to prevent both cold and heat stress. This is addressed in detail in section 4.0 of the TtNUS Health and Safety Guidance Manual, which the SSO is responsible for reviewing and implementing as appropriate on this project.

Work performed when temperatures are below 50 degrees Fahrenheit (°F) may result in varying levels of cold stress (frost nip, frost bite, etc.) depending on factors such as temperature, wind speed, and humidity; psychological factors such as metabolic rate and moisture content of the skin; and other factors such as the protective clothing being worn.

In general, early signs of heat-related disorders include heat rash, cramps, heavy sweating which may be followed by the complete shutdown of a person's ability to sweat, pale/clammy skin, headaches, dizziness, in coordination, and other maladies. To prevent heat stress disorders, the following preventive measures are to be implemented by the SSO:

- When possible, schedule the most physically-demanding tasks so that they are performed during cooler periods of the day such as early morning or late afternoon
- Educate the field staff in heat stress signs and symptoms so that they can monitor themselves and their co-workers
- Schedule frequent breaks during the hottest parts of the day (such as a few minutes each hour). Breaks should be in shaded areas, and in a location where workers can remove PPE, wash their hands, and drink fluids
- Drinking fluids should be cool and non-caffeinated. Sports-drinks with electrolytes are acceptable provided that they do not contain alcohol. Water is also acceptable.

For more information on heat stress recognition and prevention, consult section 4.0 of the TtNUS Health and Safety Guidance Manual.

#### **6.2.6 Slips Trips and Falls**

This is a predominant hazard regarding this site. During various site activities there is a potential for slip, trip, and fall hazards associated with wet, or unstable work surfaces. Other factors exacerbating this hazard may include:

- When carrying bulky loads.

- Maneuvering through and over debris and vegetation to gain access to sample location.
- Unstable terrain
- Poor housekeeping

To minimize hazards of this nature, personnel required to work in and along areas prone to these types of hazards will:

- Exercise caution, and use appropriate precautions.
- Clear access routes of debris and potential trip hazards. These routes should be maintained.
- Break loads into small manageable sizes.
- Site activities will be performed using the buddy system.

Always maintain a clean area of operation.

## 6.3 NATURAL HAZARDS

### 6.3.1 Indigenous Snakes

Within Tennessee there are three groups of Pit Vipers (Copperheads, Cottonmouths, and Rattlesnakes) and the Coral Snake that may be encountered in this particular region.

#### **Southern Copperhead (*Agkistrodon Contortrix*)**

- Copperhead snakes grow to about 53 inches in length.
- They live in or near most wooded areas throughout the state.
- They are frequently found around stone walls, debris piles, rotting logs and large flat stones.
- The bite is extremely painful.



Copperheads are found in wet wooded areas, high areas in swamps, and mountainous habitats, although they may be encountered occasionally in most terrestrial habitats. Adults usually are 2 to 3 ft. long. Their general appearance is light brown or pinkish with darker, saddle-shaped cross bands. The head is solid brown. Their leaf-pattern camouflage permits copperheads to be sit-and-wait predators, concealed not only from their prey but also from their enemies. Copperheads feed on mice, small birds, lizards, snakes, amphibians, and insects, especially cicadas. Like young cottonmouths, baby

copperheads have a bright yellow tail that is used to lure small prey animals.

### **Cottonmouths - Water Moccasin (Agkistrodon Piscivorus)**

- The cottonmouth snake grows to about 52 inches in length.
- The cottonmouth lives in lakes, streams, swamps and marshes.
- The venom is more dangerous than a copperhead.

Cottonmouths are found in association with every type of wetland habitat; this species often wanders overland in search of food. Adults reach lengths of 3 to 4 ft. and often are heavy-bodied. The color pattern is variable, but the backs of adults are usually drab brown or olive with darker cross bands. The belly is a combination of dull yellow and brown and the underside of the tail usually is black. This species is unquestionably the most common venomous snake found in wet-land habitat types. However, the harmless brown water snake, which is very common in aquatic areas frequented by humans, often is mistaken for the venomous cottonmouth. If disturbed, the cottonmouth will often stand its ground and give an open-mouthed threat display. Brown water snakes, when disturbed, will drop from overhanging tree limbs and flee.

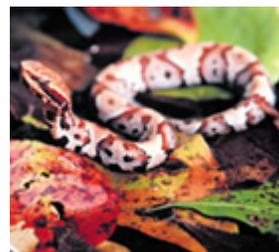
The Latin name piscivorous means 'fish eating,' indicating its dietary characteristics. Cottonmouths can be dark-brown, olive-brown, olive- green or almost solid black. They are marked with wide, dark bands, which are more distinct in some individuals than in others. Juvenile snakes are more brilliantly marked. The cottonmouth gets its name from the white tissue inside its mouth, which it displays when threatened.



**Cottonmouth - Light Phase**



**Cottonmouth - Dark Phase**



### Juvenile cottonmouth

#### Timber Rattlesnake (Canebrake) - *Crotalus horridus*

- This rattlesnake grows to about 65.5 inches in length.
- When disturbed it usually remains motionless or attempts to crawl away therefore, there are few reports of bites.
- Though rare, the bites are very painful.



This species occupies a wide diversity of terrestrial habitats, but is



found most frequently in deciduous forests and high ground in swamps. Heavy-bodied adults are usually 3 to 4, and occasionally 5, ft. long. Their basic color is gray with black cross bands that usually are chevron-shaped. Timber rattlesnakes feed on various rodents, rabbits, and occasionally birds. These rattlesnakes are generally passive if not disturbed or pestered in some way. When a rattlesnake is encountered, the safest reaction is to back away--it will not try to attack you if you leave it alone

#### Pygmy Rattlesnake - *Sistrurus miliarius*

Pygmy rattlesnakes may occur in association with wet areas in wooded habitats or swamps, scrub oak-longleaf pine forest habitats, or other wooded sites. Individuals are heavy-bodied, but usually are only slightly more than 1 ft. long. The general color of this snake is dull gray with dark gray or brown blotches on the back and sides. The small size of the pygmy's rattles makes the "buzz" difficult to hear. This species is so small and well camouflaged that people seldom see pygmy rattlers that are coiled atop pine straw or dead leaves. This snake feeds on mice, lizards, snakes, and frogs.



#### Snake Avoidance Measures

- Avoidance will be the first line of defense. If you see them, do not harass them, attempt to capture, move or otherwise disturb them. Leave them alone!
- Do not pick up ground cover as this could be a potential nesting area or ambush point.

- Stick to well-used trails and wear over-the-ankle boots and loose-fitting long pants. Avoid tall grass, weeds and heavy underbrush which snakes commonly frequent. If these areas cannot be avoided, wear snake chaps.
- Be observant in open, sunny areas, as snakes are cold-blooded and need to “sun themselves” to regulate their body temperature.
- Do not put your hands where you cannot see.
- Step ON logs and rocks, never over them, and be especially careful when climbing rocks. Snakes will also crawl along buildings and doorways as the building or logs offer protection on one side. Examine the area carefully before entering buildings (stepping over door way threshold plates) not regularly used and maintained.

### **Snakebite Control Measures**

Initial efforts will be directed to avoid, where possible, nesting and territorial areas. However, should field personnel come in contact with these animals and receive a bite, the following actions are necessary.

- Obtain a detailed description of the snake. This and the bite mark will enable medical personnel administering medical aid to provide prompt and correct antidotes.
- Immobilize the bite victim to the extent possible. Physical exertion can mobilize the toxins (if poisonous varieties) from the bite point systemically through the body.
- Apply a pressure wrap (for extremities), just above and over the bite area using whatever is available (an article of clothing). A couple of wraps of the pressure wrap in place over the bite area limits movement and restricts toxins from leaving the site of the bite.
- Seek medical attention immediately.

It should be noted that these avoidance measures will be employed for other natural hazards such as spiders, bees, fire ants, etc.

### **6.3.2 Insect Bites and Stings**

Many of the planned site activities will occur outside in areas that are not improved or maintained. As a result, the potential for encountering natural hazards exists. The following information is provided as a

precaution to help recognize and avoid these types of hazards. Insect bites and stings may be difficult to control. However, in an effort to minimize this hazard the following control measures will be implemented where possible.

- Commercially available bug sprays and repellents will be used whenever possible. Products such as DEET should not be applied directly to the skin due to potential irritation. This product, when permitted for use, should be applied over clothing articles.
- Where possible, loose-fitting and light-colored clothing with long sleeves should be worn. This will also aid in insect control by providing a barrier between the field person and the insects and will aid in visual recognition of crawling insects against the lighter background. Pant legs should be secured to the work-boots using duct tape to prevent access by ticks.
- Clothing/limited body checks for ticks and other crawling insects should be conducted upon exiting heavily vegetated areas. Field personnel should perform a more detailed check of themselves when showering in the evening. Ticks prefer moist areas of the body and will migrate to those locations.
- The UXO personnel will preview access routes and work areas in an effort to identify physical hazards including nesting areas in and around the work sites. These areas will be flagged or otherwise communicated to the field team.
- The SSO will determine if site personnel are allergic to bee and other insect stings and bites (using completed Medical Data Sheets). Field crew members who are allergic to bites should have access to an emergency kit containing antihistamine or whatever method of response is recommended by their Doctor/Health Care Provider.

Any allergies (insect bites, bee stings, etc.) must be reported on the Medical Data Sheet (Attachment III).

### **Bees, Wasps and Hornets**

- Bees, hornets, yellow jackets, wasps and even mosquitoes can sting or bite.
- Though irritating and uncomfortable, in most cases insect bites or stings are harmless.
- Insect bites can cause allergic reactions in some people.
- If stung, remove the stinger by scraping a card across the wound (do not squeeze).

- Wash the area with warm, soapy water.
- Apply a cold compress to control swelling.
- Take aspirin for pain and an antihistamine, as needed, for minor itching and swelling.
- If you experience a body-wide reaction, severe local swelling, especially around the face or neck, or have difficulty breathing, call 911 immediately.

It is important that if you have allergies (to bee stings, fire ants, etc.) it is critical that this information is noted on your medical data sheet provided in Attachment III. In situations where you use Benadryl or Doctor/Health Care Provider recommended antidotes ensure you have these pharmaceuticals with you.

### **Stinging Caterpillars**

Most people know that bees, ants, hornets, and wasps can sting. Only a few people know that caterpillars also belong in the group of stinging insects.

- Some caterpillars and the larvae of certain moths possess stinging 'hairs.' These hairs are a defense mechanism against predators.
- When these 'hairs' are touched, they easily enter the skin and break off. The feeling has been described as a needle prick.
- Just like a bee sting, depending on the person, the reaction to these bites may be local redness, swelling, burning or itching, possibly progressing to more severe reactions.
- Persons who are more hypersensitive may experience severe swelling, nausea, and heightened systemic reactions such as vomiting, hives or a headache.
- Caterpillar hairs going into the eye can cause tearing, irritation, and difficulty with bright lights. In case of an eye exposure, eye irrigation should be performed.
- Swallowing a caterpillar can result in mouth and throat irritation, drooling, difficulty swallowing and hives.
- Stings mostly occur in late summer to the early autumn months.

- If you find a caterpillar on your body, do not brush it off with your hand - use a stick to remove it.

Treatment of a caterpillar sting:

- Place a piece of tape over the sting site and pull it off - don't jerk it off. Do this several times using a different piece of tape each time.
- Wash the area thoroughly with warm soapy water.
- An antihistamine can be taken by mouth. A corticosteroid cream can be applied to the area surrounding the sting.
- The very young, elderly or persons with compromised health prior to the stings are more likely to have a severe reaction.

**Tick and Mosquito Transmitted Illnesses and Diseases**

- Tick bites are common and usually harmless, but occasionally may result in Rocky Mountain spotted fever or Lyme disease.
- It usually takes about 24 hours of tick attachment to a "host" for disease to be transmitted.
- The symptoms can begin as early as a few days after a bite or take as long as two weeks before appearing.
- Symptoms include headache, chills, fever and rash - much like the flu.
- If bitten, carefully remove the tick using blunt tweezers. Grasp the tick close to the skin and pull straight out with a steady pressure. Check to see that the entire tick has been removed.
- Clean with warm, soapy water, then apply an antiseptic.
- Be observant of and if any of the above symptoms develop, contact your doctor immediately.

Ticks and mosquitoes have been identified in the transmission of diseases including Lyme's disease, West Nile virus, and malaria. Warm months (Spring through early fall) are the most predominant time for

this hazard. Information concerning Lyme's Disease including recognition, evaluation, tick removal, and control is provided in Section 4.0 of the TtNUS Health and Safety Guidance Manual.

Malaria may occur when a mosquito or other infected insect sucks blood from an infected person, and the insect becomes the carrier to infect other hosts. The parasite reproduces within the mosquito, and is then passed on to another person through the biting action. Acute symptoms include chills accompanied by fever and general flu-like symptoms. This generally terminates in a sweating stage. These symptoms may recur every 48 to 72 hours.

### **Fire Ants**

Fire ants present a unique situation when working outdoors in many southern states. Their aggressive behavior and their ability to sting repeatedly can pose a unique health threat. The bite injects venom that causes an extreme burning sensation. Pustules form, and can become infected if scratched. Allergic reactions of people sensitive to the venom include dizziness, swelling, shock and in extreme cases unconsciousness and death.

### **Black Widow Spider**

The female black widow spider has a round, glossy black abdomen one-half inch in diameter with an orange-red hourglass marking her belly.



- The bite may be painful resulting in redness and warmth at the site as well as muscle cramps, twitching, rigid abdomen, difficulty breathing, weakness, headache, nausea and vomiting.
- The male black widow spider is solid in color, and his bite is not venomous.
- If bitten, wash the area with warm, soapy water. If experiencing any symptoms listed above seek medical attention immediately.

### **Brown Recluse Spider**

The brown recluse spider is small, about one-half inch long with an oval body and a dark violin-shaped marking on its back.

- Its bite causes pain, redness, tenderness and a bull's eye appearance, progressing to ulceration.
- Bites may go unnoticed until a lesion develops.
- If bitten wash the area with warm, soapy water and seek medical attention immediately.
- A tetanus booster shot may be needed after a bite from a brown recluse spider.



### 6.3.3 Poisonous Plants

Various plants that can cause an allergic reaction may be encountered during field work. These include, but are not limited to, poison ivy, poison oak, and poison sumac. Contact may occur when clearing vegetation to gain access to work areas.

Protective measures to control and minimize the effects of poisonous plants include the following:

- Identify plants for field personnel.
  - Poison Ivy plants are characterized climbing shrubbery, three-leaf configuration ovate to elliptical in shape, greenish flowers, and white berries that produce irritating oils.
  - Poison Sumac plants characterized as a tall bush of the sumac family bearing compound leaves (7-13 entire leaflets) branched from a central axis, drooping, with axially clusters of white fruit producing irritating oils.
  - Poison oak plants are characterized as similar to poison ivy consisting of a shrub, stems erect, 0.3 to 2.0 meters tall, leaflets consist of broad thick lobes coarsely serrated configuration, denser at the base, less so than the top.
- Use of disposable garments such as Tyvek when clearing brush. After use remove and properly dispose of disposable PPE, do not reuse.
- Practice personal hygiene. The oils from the plants will only cause an allergic response when the person's protective skin layer is penetrated. This can be accomplished through pores open when perspiring, or through cuts, nicks, scratches, etc. This can also be accomplished when using excessively hot water for cleaning the skin, which also causes pores to open. Prior to break time wash potentially exposed skin with cool water and soap to remove as much of the oils as possible. In

heavily vegetated areas of these plants, additional measures including barrier creams and blocks may be used to prevent the oils from accessing and penetrating the dermal layer.

#### **6.3.4 Inclement Weather**

The project tasks under this Scope of Work will be performed outdoors. As a result, inclement weather may be encountered. In the event that adverse weather (electrical storms, excessive temperature ranges, etc.) conditions arise, the FOL and/or the SSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

## **7.0 HAZARD MONITORING**

### **7.1 AIR MONITORING**

Based on a calculation of potential worst-case exposure to airborne concentrations of the contaminants of concern, and the potential to generate sufficient airborne particulates through the planned operations is considered negligible. Therefore, direct reading instruments will not be used to evaluate the presence of airborne site contaminants. As conditions present themselves, other potentially hazardous conditions maybe evaluated such as ambient temperature extremes and excessive noise levels provided in Section 4.0 and 6.0 respectively of the HSGM. This evaluation will be at the discretion of the SSO based on site specific conditions. If conditions or tasks change then this will be re-evaluated.

In order to further minimize exposure potential, site personnel will use area wetting techniques, if necessary, for dust suppression if visible dust is present during sampling activities.

## **8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS**

### **8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING**

This section specifies health and safety training and medical surveillance requirements for both Tetra Tech NUS and subcontractor personnel participating in on site activities.

Tetra Tech NUS and subcontractor personnel who will engage in field associated activities as described in this HASP/APP must have completed:

- 40 hours of introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120(e).
- 8-Hour Refresher Training, if the identified persons had introductory training more than 12 months prior to site work.
- 8-hour Supervisory training in accordance with 29 CFR 1910.120(e)(4), if their assigned function will involve the supervision of subordinate personnel.

Documentation of introductory training or equivalent work experience, supervisory, and refresher training as well as site-specific training will be maintained at the site. Copies of certificates or other official documentation will be used to fulfill this requirement.

### **8.2 SITE-SPECIFIC TRAINING**

Tetra Tech NUS will provide site-specific training to Tetra Tech NUS employees and subcontractor personnel who will perform work on this project. Figure 8-1 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities.

TtNUS will conduct a pre-activities training session prior to initiating site work. Additionally, a brief meeting will be held daily to discuss operations planned for that day. At the end of the workday, a short meeting may be held to discuss the operations completed and any problems encountered.

### **8.3 MEDICAL SURVEILLANCE**

Tetra Tech NUS and subcontractor personnel participating in project field activities will have had a physical examination. Physical examinations shall meet the minimum requirements of paragraph (f) of

OSHA 29 CFR 1910.120. The physical examinations will be performed to ensure that personnel are medically qualified to perform hazardous waste site work.

Documentation for medical clearances will be maintained at the job site and made available, as necessary. Subcontractor personnel may use an alternative documentation for this purpose. The "Subcontractor Medical Approval Form" can be used to satisfy this requirement, or a letter from an officer of the company. The letter should state that the persons listed in the letter participate in a medical surveillance program meeting the requirements contained in paragraph (f) OSHA 29 CFR 1910.120, entitled "Hazardous Waste Operations and Emergency Response." The letter should further state the following:

- The persons listed have had physical examinations under this program within the frequency as determined sufficient by their occupational health care provider
- Date of the exam

A sample Subcontractor Medical Approval Form and form letter have been provided to eligible subcontractors in the Bid Specification package.

### **8.3.1 Medical Data Sheet**

Each field team member, including subcontractors and visitors, entering the exclusion zone(s) shall be required to complete and submit a copy of the Medical Data Sheet that is available in Attachment III of this HASP/APP. This shall be provided to the SSO, prior to participating in site activities. The purpose of this document is to provide site personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

### **8.4 SUBCONTRACTOR EXCEPTION**

If through the execution of their contract elements, the subcontractor will not enter the exclusion zone and there is no potential for exposure to site contaminants, then subcontractor personnel may be exempt from the training and medical surveillance requirements with the exception of Section 8.2. Examples of subcontractors who may qualify as exempt from training and medical surveillance requirements may include surveyors who perform surveying activities in site perimeter areas or areas where there is no potential for exposure to site contaminants and support or restoration services. Use of this Subcontractor Exception is strictly limited to the authority of the CLEAN Health and Safety Manager.



## **9.0 SPILL CONTAINMENT PROGRAM**

### **9.1 SCOPE AND APPLICATION**

It is anticipated that quantities of bulk potentially hazardous materials (greater than 55-gallons) will not be handled during the site activities. However, as the investigation continues, the potential for generating/accumulating decontamination fluids and used PPE exists.

As needed, 55-gallon drums (UN1A2) will be used to contain materials generated during sampling activities. The drum(s) will be labeled with the site name and address, the type of contents, and the date the container was filled as well as an identified contact person. As warranted, samples will be collected and analyzed to characterize the material and determine appropriate disposal measures. Once characterized the drum(s) will be removed from the staging area and disposed of in accordance with Federal, State and local regulations.

### **9.2 POTENTIAL SPILL AREAS**

Potential spill areas associated with this project (as defined in Section 4.0) may include the following locations:

- Decontamination areas
  - Containment of decontamination liquids will be monitored to prevent and control spills that may spread contamination through accidental release of these materials.
  
- Fuel Storage areas
  - The resource storage area where safety cans, secondary containment will be used for storage of any fuels and oil. Fuel storage will be limited to 10-gallons onsite storage.
  
- Investigation point
  - Hydraulic operated DPT units – The potential exists during operation of DPT equipment for hydraulic lines to rupture. To prevent possible contamination due to such a rupture, plastic will be placed under the back of the DPT to capture and contain any incidental release of hydraulic fluid. In addition, sorbent materials such as Oil Dry and sorbent pads will be maintained immediately accessible during operations.

Areas designated for handling, loading, and unloading of potentially contaminated waters and debris present limited potential for leaks or spills. However these areas too will be supported by spill containment provisions.

### **9.3 LEAK AND SPILL DETECTION**

To establish an early detection of potential spills or leaks, periodic inspections by the SSO will be conducted during working hours to visually determine that containers are not leaking. If a leak is detected, the first approach will be to transfer the container contents using a hand pump into a new container. Other provisions for the transfer of container contents will be made and appropriate emergency contacts will be notified, if necessary. In most instances, leaks will be collected and contained using absorbents such as Oil-dry, and/or sand, which may be stored at the staging area in a conspicuously marked drum. This material too, will be containerized for disposal pending analyses. Inspections will be documented in the Project Logbook.

### **9.4 PERSONNEL TRAINING AND SPILL PREVENTION**

Personnel will be instructed on the procedures for spill prevention, containment, and collection of hazardous materials in the site-specific training. The FOL and/or the SSO will serve as the Spill Response Coordinator for this operation should the need arise.

### **9.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT**

The following represents the types of equipment that may be maintained at the staging area for the purpose of supporting this Spill Containment Program (depending on the likelihood that drums and/or liquid wastes are generated).

- Sand, clean fill, or other noncombustible absorbent (oil-dry)
- Drums (55-gallon U.S. DOT 1A1 and/or 1A2)
- Shovels, rakes, and brooms
- Labels

### **9.6 SPILL CONTROL PLAN**

This section describes the procedures the TtNUS field crewmembers will employ upon the detection of a spill or leak.

- Notify the SSO or FOL immediately.

- Take immediate actions to stop the leak or spill by plugging or patching the drum or raising the leak to the highest point. Avoid contacting drum contents. Spread the absorbent material in the area of the spill covering completely.

It is not anticipated that a spill will occur which the field crews cannot handle. Should this occur; however, the FOL or SSO will notify appropriate emergency response agencies.

## 10.0 SITE CONTROL

This section outlines the means by which TtNUS will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site as well as minimize potential exposure to physical hazards. A three-zone approach will be used to control site activities. This three-zone approach will utilize an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. Use of such controls will restrict the general public, minimize the potential for the spread of contaminants, and protect individuals who are not cleared to enter work areas.

### 10.1 EXCLUSION ZONE

The exclusion zone will be considered those areas of active operations plus an established safety zone depending on the task. The following represent the exclusion zone boundaries for the following identified tasks:

- MEC Operations – 200 feet surrounding the work zone
- Soil sampling – 5 feet surrounding the sample collection points
- Decontamination – 5 feet surrounding the point of operation
- DPT drilling – the height of the mast plus 25 feet

Exclusion zones may be delineated using barrier tape, cones and/or drive poles, and postings to inform and direct facility site personnel and visitors, as necessary.

#### 10.1.1 Exclusion Zone Clearance

A pre-startup site visit will be conducted by members of the field team in an effort to identify proposed subsurface investigation locations, conduct utility clearances, and provide up-front notices concerning scheduled activities within the facility:

- identify and remove physical hazards where possible
- identify access/egress routes,
- identify and place control mechanisms within drainage channels that may influence the migration of contaminants,
- select emergency assembly points.

When base personnel are working within the proximity of this investigation, they will be moved or their operation temporarily discontinued to protect them from potential hazards associated with this operation.

## **10.2 CONTAMINATION REDUCTION ZONE**

The Contamination Reduction Zone (CRZ) will be a buffer area between the Exclusion Zone and any area of the site where contamination is not suspected. The personnel and equipment decontamination will not take place in this area, but will take place at a central location established for this project. This area instead will serve as a focal point in supporting Exclusion Zone activities.

## **10.3 SUPPORT ZONE**

The Support Zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. The Support Zones will be established at areas of the site where exposure to site contaminants would not be expected during normal working conditions or foreseeable emergencies.

## **10.4 SITE VISITORS**

Site visitors for the purpose of this document are identified as representing the following groups of individuals:

- Personnel invited to observe or participate in operations by TtNUS
- Regulatory personnel (TDEC, EPA, OSHA, etc.)
- NSA Mid-South personnel
- Other authorized visitors

Personnel working on this project are required to gain initial access to the site by coordinating with the TtNUS FOL or designee and following established site access procedures.

Upon gaining access to the site, site visitors wishing to observe operations in progress will be escorted by a TtNUS representative (arranged for by the FOL) and shall be required to meet the following minimum requirements:

- Site visitors will be routed to the FOL, who will sign them into the field logbook. Information to be recorded in the logbook will include the individual's name (proper identification required), the entity which they represent, and the purpose of the visit.
- Site visitors will be required to produce the necessary information supporting clearance to the site. This shall include information attesting to applicable training (40-hours of HAZWOPER training) and medical surveillance as stipulated in Section 8.0 of this document. In addition, to enter the site

operational zones during planned activities, visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this HASP/APP.

**Note:** Visitors will be escorted by UXO personnel while at the Pistol Range site.

Once the site visitors have completed the above items, they will be permitted to enter the operational zone. Visitors are required to observe the protective equipment and site restrictions in effect at the site at the time of their visit. Visitors not meeting the requirements stipulated in this plan will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause the termination of onsite activities until the unauthorized visitor is removed from the premises. Removal of unauthorized visitors will be accomplished with support of Mr. Heide NSA Mid-South POC or on-site security personnel.

## **10.5 SITE SECURITY**

Site security will be accomplished using existing base security resources and procedures, supplemented by TtNUS personnel, if necessary. TtNUS will retain control over active operational areas. The first line of security will take place at the base boundaries restricting the general public. The second line of security will take place at the work site referring interested parties to the FOL. The FOL will serve as a focal point for site personnel, and will serve as the final line of security and the primary enforcement contact.

## **10.6 SITE MAPS**

A site map will be generated once access routes, utilities, etc., are determined, and it will be adjusted as site conditions change. These maps will show potential points of contact with the public, roadways, and other significant characteristics that may impact site operations and safety. Site maps will be posted to illustrate up-to-date collection of contaminants and adjustment of zones and access points if warranted.

## **10.7 BUDDY SYSTEM**

Personnel engaged in onsite activities will practice the "buddy system" to ensure their safety during this operation.

## **10.8 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS**

TtNUS personnel will retain MSDSs for chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of chemicals used on site will be developed using

Section 5.0 of the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location and will be available for anyone to review upon request.

## **10.9 COMMUNICATION**

TtNUS personnel will be working in close proximity to each other at NSA Mid-South. As a result and since two-way radio communication may or may not be available, hand signals, voice commands, and line of site will provide the initial means of communication. It is understood that the use of two-way communication devices (cellular phones and radios) may be used at the NSA Mid-South, providing such equipment is intrinsically safe and under 5 watts power output. If two-way communication is available, its use will be cleared with Base personnel prior to initiating activities.

External communication will be accomplished by using provided telephones at the site or approved cellular phones. External communication will primarily be used for the purpose of resource, emergency resource communication, and project logistics coordination..

## **10.10 SAFE WORK PERMITS AND ACCIDENT PREVENTION PLAN**

Work conducted in support of this project will be performed using Safe Work Permits (SWPs) to guide and direct field crews on a task by task basis. Partially completed SWPs for the work to be performed are provided in Attachment VII of HASP/APP. These permits were completed to the extent possible as part of the development of this HASP/APP. It is the SSO's responsibility to finalize and complete the blank portions of the SWPs based on current, existing conditions the day the task is to be performed, and then review that completed permit with the task participants as part of a pre-task tail gate briefing session. This will ensure that site-specific considerations and changing conditions are appropriately incorporated into the SWP, provide the SSO with a structured format for conducting the tail gate sessions, and will also give personnel an opportunity to ask questions and make suggestions. The SWPs require the signature of the FOL or SSO.

In addition to the SWPs, personnel should consult the AHAs located in the APP for further information regarding safe work practices associated with MEC activities. Use of the APPs will provide the communication line for reviewing protective measures and hazards associated with each operation. This HASP/APP will be used as the primary reference for selecting levels of protection and control measures. The APP will take precedence over the HASP/APP when more conservative measures are required based on specific site conditions.

As an ongoing quality assurance effort, the SSO will review operations to ensure elements of the permit adequately represent those being conducted. Where deficient, they will be corrected and that information forwarded to the PHSO for inclusion in future such activities.

## **10.11 SANITATION AND BREAK AREAS**

This section will address the following items:

- Toilets
- Potable water
- Showers and change rooms
- Break Areas

### **10.11.1 Toilets**

One toilet will be provided for every 20 people. Toilets will be unisex and will have locking doors. The toilet provided will either be a chemical toilet and service provider or the flush toilet readily accessible at a predetermined approved location.

### **10.11.2 Potable Water**

Potable water as well as electrolyte balance sports drinks such as Gatorade will be provided to the field crews for fluid replacement, as it is necessary under conditions of ambient temperature extremes. Storage and dispensing will proceed as follows:

- Containers will be clean and replenished daily.
- Containers will clearly marked as to their contents (Potable Water – Drinking Water Only; Gatorade, etc.).
- Dispensing locations will be placed in identified break areas within the support zone. The most likely location will be at a support vehicle staged near the work area. This will serve as an area for cooling or warming as well as an identified food and drink consumption area.
- If larger containers are used, dispensing cups will be provided.
- The coolers used for storage of potable drinks and cups will be stored in plastic bags away from potentially contaminating materials when not in use.

Fluid intake recommendations may be made based on the medical evaluations conducted at the end of the decontamination process, as necessary based on ambient conditions.

**10.11.3 Showers and Change Rooms**

Based on this scope and duration of this project shower facilities and locker rooms will not be required.

**10.11.4 Break Areas**

Given the location and the time of the year, structured suitable locations for work breaks and warming/cooling regimens will be necessary. Facility management will be contacted regarding provision of a sheltered location to work out of.

## 11.0 CONFINED SPACE ENTRY

It is not anticipated, under the proposed scope of work, that confined space and permit-required confined space activities will be conducted. **Therefore, personnel under the provisions of this HASP/APP are not allowed, under any circumstances, to enter confined spaces.**

**A confined space** is defined as a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

**A Permit-Required Confined Space** is a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere.
- Contains a material that has the potential to engulf an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
- Contains any other recognized, serious, safety or health hazard.

For further information on confined space, consult the SSO or call the PHSO. If confined space operations are to be performed as part of the scope of work, detailed procedures and training requirements will have to be addressed and this HASP/APP modified.

## 12.0 MATERIALS AND DOCUMENTATION

The TtNUS FOL shall ensure the following materials/documents are taken to the project site and used when required.

- A complete copy of this HASP/APP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- MSDSs for chemicals brought onsite, including decontamination solutions, fuels, lime, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (posted in the site trailers or workspace provided by NSA Mid-South)
- Training/Medical Surveillance Documentation Form (Blank)
- Emergency Reference Information (Section 2.0, extra copy for posting)

### 12.1 MATERIALS TO BE POSTED OR MAINTAINED AT THE SITE

The following documentation is to be posted or maintained at the site for quick reference purposes. In situations in which posting these documents is not feasible (such as no office trailer), these documents should be separated and immediately accessible.

**Chemical Inventory Listing (posted)** - This list represents the chemicals brought onsite, including decontamination solutions, sample preservations, fuel, etc. This list should be posted in a central area.

**Material Safety Data Sheets (MSDSs) (maintained)** - The MSDSs should also be in a central area accessible to site personnel. These documents should match the listings on the chemical inventory list for substances used onsite. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.

**The OSHA Job Safety & Health Protection Poster (posted)** - This poster, as directed by 29 CFR 1903.2 (a)(1), should be conspicuously posted in places where notices to employees are normally posted. Each FOL shall ensure that this poster is not defaced, altered, or covered by other material.

**Site Clearance (maintained)** - This list is found within the training section of the HASP/APP (See Figure 8-2). This list identifies site personnel, dates of training (including site-specific training), and

medical surveillance. The list indicates not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

**Emergency Phone Numbers and Directions to the Hospital(s) (posted)** - This list of numbers and directions will be maintained at phone communications points and in each site vehicle.

**Medical Data Sheets/Cards (maintained)** - Medical Data Sheets will be completed by onsite personnel and filed in a central location. The Medical Data Sheet will accompany any injury or illness requiring medical attention to the medical facility. A copy of this sheet or a wallet card will be given to site personnel to carry on their person.

**Hearing Conservation Standard (29 CFR 1910.95) (posted)** - This standard will be posted any time hearing protection or other noise abatement procedures are used.

**Personnel Monitoring (maintained)** - Results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.

**Placards and Labels (maintained)** - Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using Department of Transportation (DOT) placards and acceptable (Hazard Communication 29 CFR 1910.1200(f)) labels.

The purpose, as stated above, is to allow site personnel quick access to this information. Variations concerning location and methods of presentation are acceptable as long as the objection is accomplished.

### 13.0 ACRONYM LIST

ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
APR	Air Purifying Respirators
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CNS	Central Nervous System
CRZ	Contamination Reduction Zone
CSP	Certified Safety Professional
DOD	Department of Defense
DOT	Department of Transportation
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
FID	Flame Ionization Detector
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
HSM	Health and Safety Manager
LEL/O <sub>2</sub>	Lower Explosive Limit/Oxygen
MC	Munitions constituents
MEC	Munitions and Explosives of Concern
MPPEH	Materials Potentially Presenting an Explosive Hazard
NAVFAC	Naval Facilities Engineering Command
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PEL	Permissible Exposure Limit
PG	Professional Geologist
PHSO	Project Health and Safety Officer
PID	Photo Ionization Detector
PM	Project Manager
PPE	Personal Protective Equipment
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
SSO	Site Safety Officer

STEL	Short Term Exposure Limit
SVOC	Semi Volatile Organic Compound
TBD	To Be Determined
TiNUS	Tetra Tech NUS, Inc.
TWA	Time Weighted Average
USEPA	United States Environmental Protection Agency
UXO	Unexploded Ordnance
WP	Work Plan

**ATTACHMENT I**  
**INCIDENT REPORT FORM**



<b>Report Date</b>	<b>Report Prepared By</b>	<b>Incident Report Number</b>
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**INSTRUCTIONS:**

All incidents (including those involving subcontractors under direct supervision of Tetra Tech personnel) must be documented on the IR Form.

Complete any additional parts to this form as indicated below for the type of incident selected.

TYPE OF INCIDENT (Check all that apply)	Additional Form(s) Required for this type of incident
Near Miss (No losses, but could have resulted in injury, illness, or damage)	<input type="checkbox"/> Complete IR Form Only
Injury or Illness	<input type="checkbox"/> Complete Form IR-A; Injury or Illness
Property or Equipment Damage, Fire, Spill or Release	<input type="checkbox"/> Complete Form IR-B; Damage, Fire, Spill or Release
Motor Vehicle	<input type="checkbox"/> Complete Form IR-C; Motor Vehicle

**INFORMATION ABOUT THE INCIDENT**

**Description of Incident**

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<b>Date of Incident</b>	<b>Time of Incident</b>
	_____ AM <input type="checkbox"/> PM <input type="checkbox"/> OR Cannot be determined <input type="checkbox"/>

<b>Weather conditions at the time of the incident</b>	<b>Was there adequate lighting?</b>
	_____ Yes <input type="checkbox"/> No <input type="checkbox"/>

**Location of Incident**

\_\_\_\_\_ Was location of incident within the employer's work environment? Yes  No

<b>Street Address</b>	<b>City, State, Zip Code and Country</b>

<b>Project Name</b>	<b>Client:</b>

<b>Tt Supervisor or Project Manager</b>	<b>Was supervisor on the scene?</b>
	Yes <input type="checkbox"/> No <input type="checkbox"/>

**WITNESS INFORMATION (attach additional sheets if necessary)**

<b>Name</b>	<b>Company</b>

<b>Street Address</b>	<b>City, State and Zip Code</b>

**Telephone Number(s)**

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CORRECTIVE ACTIONS				
<b>Corrective action(s) immediately taken by unit reporting the incident:</b>				
<hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>				
<b>Corrective action(s) still to be taken (by whom and when):</b>				
<hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/> <hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>				
ROOT CAUSE ANALYSIS LEVEL REQUIRED				
Root Cause Analysis Level Required: Level - 1 <input type="checkbox"/> Level - 2 <input type="checkbox"/> None <input type="checkbox"/>				
<b>Root Cause Analysis Level Definitions</b>				
<b>Level - 1</b>	<p><b>Definition:</b> A Level 1 RCA is conducted by an individual(s) with experience or training in root cause analysis techniques and will conduct or direct documentation reviews, site investigation, witness and affected employee interviews, and identify corrective actions. Activating a Level 1 RCA and identifying RCA team members will be at the discretion of the Corporate Administration office.</p> <p>The following events may trigger a Level 1 RCA:</p> <ul style="list-style-type: none"> <li>▪ Work related fatality</li> <li>▪ Hospitalization of one or more employee where injuries result in total or partial permanent disability</li> <li>▪ Property damage in excess of \$75,000</li> <li>▪ When requested by senior management</li> </ul>			
<b>Level - 2</b>	<p><b>Definition:</b> A Level 2 RCA is self performed within the operating unit by supervisory personnel with assistance of the operating unit HSR. Level 2 RCA will utilize the 5 Why RCA methodology and document the findings on the tools provided.</p> <p>The following events will require a Level 2 RCA:</p> <ul style="list-style-type: none"> <li>▪ OSHA recordable lost time incident</li> <li>▪ Near miss incident that could have triggered a Level 1 RCA</li> <li>▪ When requested by senior management</li> </ul>			
<b>Complete the Root Cause Analysis Worksheet and Corrective Action form. Identify a corrective action(s) for each root cause identified within each area of inquiry.</b>				
NOTIFICATIONS				
Title	Printed Name	Signature	Telephone Number	Date
Project Manager or Supervisor				
Site Safety Coordinator or Office H&S Representative				
Operating Unit H&S Representative				
Other: _____				

The signatures provided above indicate that appropriate personnel have been notified of the incident.

**INSTRUCTIONS:**

Complete all sections below for incidents involving injury or illness.  
Do NOT leave any blanks.  
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)

**EMPLOYEE INFORMATION**

**Company Affiliation**

Tetra Tech Employee?

TetraTech subcontractor employee (directly supervised by Tt personnel)?

Full Name

Company (if not Tt employee)

Street Address, City, State and Zip Code

Address Type

Home address (for Tt employees)

Business address (for subcontractors)

**Telephone Numbers**

Work: \_\_\_\_\_

Home: \_\_\_\_\_

Cell: \_\_\_\_\_

Occupation (regular job title)

Department

Was the individual performing regular job duties?

Yes  No

Time individual began work

\_\_\_\_\_ AM  PM  OR Cannot be determined

**Safety equipment**

Provided? Yes  No

Type(s) provided:  Hard hat  Protective clothing

Used? Yes  No  If no, explain why

Gloves  High visibility vest

Eye protection  Fall protection

Safety shoes  Machine guarding

Respirator  Other (list)

**NOTIFICATIONS**

Name of Tt employee to whom the injury or illness was first reported

Was H&S notified within one hour of injury or illness?

Yes  No

Date of report

H&S Personnel Notified

Time of report

Time of Report

If subcontractor injury, did subcontractor's firm perform their own incident investigation?

Yes  No  If yes, request a copy of their completed investigation form/report and attach it to this report.

## INJURY / ILLNESS DETAILS

**What was the individual doing just before the incident occurred?** Describe the activity as well as the tools, equipment, or material the individual was using. Be specific. Examples: "Climbing a ladder while carrying roofing materials"; "Spraying chlorine from a hand sprayer"; "Daily computer key-entry"

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**What Happened?** Describe how the injury occurred. Examples: "When ladder slipped on wet floor and worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time"

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**Describe the object or substance that directly harmed the individual:** Examples: "Concrete floor"; "Chlorine"; "Radial Arm Saw". If this question does not apply to the incident, write "Not Applicable".

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## MEDICAL CARE PROVIDED

Was first aid provided at the site: Yes  No  If yes, describe the type of first aid administered and by whom?

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Was treatment provided away from the site: Yes  No  If yes, provide the information below.

<b>Name of physician or health care professional</b>	<b>Facility Name</b>
<b>Street Address, City State and Zip Code</b>	<b>Type of Care?</b>
	Was individual treated in emergency room? Yes <input type="checkbox"/> No <input type="checkbox"/>
	Was individual hospitalized overnight as an in-patient? Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>Telephone Number</b>	Did the individual die? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, date: _____
	Will a worker's compensation claim be filed? Yes <input type="checkbox"/> No <input type="checkbox"/>

**NOTE: Attach any police reports or related diagrams to this report.**

## SIGNATURES

I have reviewed this report and agree that all the supplied information is accurate

Affected individual (print)	Affected individual (signature)	Telephone Number	Date

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

**INSTRUCTIONS:**

Complete all sections below for incidents involving property/equipment damage, fire, spill or release.  
Do NOT leave any blanks.  
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)

**TYPE OF INCIDENT (Check all that apply)**

Property Damage       Equipment Damage       Fire or Explosion       Spill or Release

**INCIDENT DETAILS**

**Results of Incident:** Fully describe damages, losses, etc.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Response Actions Taken:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Responding Agency(s) (i.e. police, fire department, etc.)

Agency(s) Contact Name(s)

\_\_\_\_\_  
\_\_\_\_\_

**DAMAGED ITEMS (List all damaged items, extent of damage and estimated repair cost)**

Item:	Extent of damage:	Estimated repair cost

**SPILLS / RELEASES (Provide information for spilled/released materials)**

Substance	Estimated quantity and duration	Specify Reportable Quantity (RQ)
		_____ Exceeded? Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>

**FIRES / EXPLOSIONS (Provide information related to fires/explosions)**

Fire fighting equipment used? Yes  No  If yes, type of equipment: \_\_\_\_\_

**NOTIFICATIONS**

Required notifications	Name of person notified	By whom	Date / Time
Client: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			
Agency: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			
Other: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			

Who is responsible for reporting incident to outside agency(s)?    Tt  Client  Other  Name: \_\_\_\_\_

Was an additional written report on this incident generated?    Yes  No  If yes, place in project file.

**INSTRUCTIONS:**

Complete all sections below for incidents involving motor vehicle accidents. Do NOT leave any blanks.  
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form) \_\_\_\_\_

**INCIDENT DETAILS**

Name of road, street, highway or location where accident occurred \_\_\_\_\_ Name of intersecting road, street or highway if applicable \_\_\_\_\_

County

City

State

Did police respond to the accident?

Yes  No

Did ambulance respond to the accident?

Yes  No

Name and location of responding police department \_\_\_\_\_

Ambulance company name and location \_\_\_\_\_

Officer's name/badge # \_\_\_\_\_

Did police complete an incident report? Yes  No  If yes, police report number: \_\_\_\_\_  
Request a copy of completed investigation report and attach to this form.

**VEHICLE INFORMATION**

How many vehicles were involved in the accident? \_\_\_\_\_ (Attach additional sheets as applicable for accidents involving more than 2 vehicles.)

**Vehicle Number 1 – Tetra Tech Vehicle**

**Vehicle Number 2 – Other Vehicle**

Vehicle Owner /  
Contact  
Information

Vehicle Owner /  
Contact  
Information

Color

Color

Make

Make

Model

Model

Year

Year

License Plate #

License Plate #

Identification #

Identification #

Describe damage to vehicle number 1

Describe damage to vehicle number 2

Insurance Company Name and Address

Insurance Company Name and Address

Agent Name

Agent Name

Agent Phone No.

Agent Phone No.

Policy Number

Policy Number

### DRIVER INFORMATION

Vehicle Number 1 – Tetra Tech Vehicle		Vehicle Number 2 – Other Vehicle	
Driver's Name		Driver's Name	
Driver's Address		Driver's Address	
Phone Number		Phone Number	
Date of Birth		Date of Birth	
Driver's License #		Driver's License #	
Licensing State		Licensing State	
Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>	Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>
Was traffic citation issued to Tetra Tech driver? Yes <input type="checkbox"/> No <input type="checkbox"/>		Was traffic citation issued to driver of other vehicle? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Citation #		Citation #	
Citation Description		Citation Description	

### PASSENGERS IN VEHICLES (NON-INJURED)

List all non-injured passengers (excluding driver) in each vehicle.  
 Driver information is captured in the preceding section.  
 Information related to persons injured in the accident (non-Tt employees) is captured in the section below on this form.  
 Injured Tt employee information is captured on FORM IR-A

Vehicle Number 1 – Tetra Tech Vehicle		Vehicle Number 2 – Other Vehicle	
How many passengers (excluding driver) in the vehicle? ____		How many passengers (excluding driver) in the vehicle? ____	
Non-Injured Passenger Name and Address		Non-Injured Passenger Name and Address	
Non-Injured Passenger Name and Address		Non-Injured Passenger Name and Address	
Non-Injured Passenger Name and Address		Non-Injured Passenger Name and Address	

### INJURIES TO NON-TETRATECH EMPLOYEES

Name of injured person 1				Address of injured person 1		
Age	Gender	Car No.	Location in Car	Seat Belt Used?	Ejected from car?	Injury or Fatality?
	Male <input type="checkbox"/> Female <input type="checkbox"/>			Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Injured <input type="checkbox"/> Died <input type="checkbox"/>
Name of injured person 2				Address of injured person 2		
Age	Gender	Car No.	Location in Car	Seat Belt Used?	Ejected from car?	Injury or Fatality?
	Male <input type="checkbox"/> Female <input type="checkbox"/>			Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Injured <input type="checkbox"/> Died <input type="checkbox"/>

### OTHER PROPERTY DAMAGE

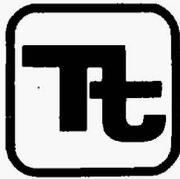
Describe damage to property other than motor vehicles	
Property Owner's Name	Property Owner's Address

COMPLETE AND SUBMIT DIAGRAM DEPICTING WHAT HAPPENED

A large, empty rectangular box with a black border, intended for drawing a diagram. The box occupies most of the page below the instruction header.

## **ATTACHMENT II**

**UNEXPLODED ORDNANCE AND CHEMICAL  
WARFARE AGENTS ACTIVITIES  
STANDARD OPERATING PROCEDURES FOR  
NSA MID-SOUTH**



TETRA TECH NUS, INC.

# STANDARD OPERATING PROCEDURES

Number HS-2.0	Page 1 of 14
Effective Date 09/03	Revision 1
Applicability Tetra Tech NUS, Inc.	
Prepared Earth Sciences Department	

Subject  
UNEXPLODED ORDNANCE AND CHEMICAL  
WARFARE AGENTS ACTIVITIES

Approved  
D. Senovich *DS*

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## 1.0 GENERAL

This Standard Operating Procedure (SOP) was prepared in accordance with applicable U.S. Army Corps of Engineers procedures and policies governing field activities requiring Unexploded Ordnance (UXO) and Chemical Warfare Material (CWM) operations. All personnel conducting operations under this SOP must read and understand applicable parts of references listed in paragraph 9.1 below prior to commencing any work described within this SOP. Other documents supporting this SOP include project-specific Work Plans and Health and Safety Plans which are prepared for the purpose of accomplishing work that contain a UXO or CWM component.

## 2.0 PURPOSE

This SOP applies to all operations involving UXO and/or CWM support during field operations at various sites where Tetra Tech NUS (TtNUS) personnel are present. It provides procedural requirements for any activity involving UXO and CWM, as well as detailed procedures for the location, identification, documentation, and emergency response actions pertaining to UXO/CWM activities.

## 3.0 APPLICABILITY

This SOP applies to persons who may visit any site where TtNUS is performing work that involve some UXO or CWM component. Compliance the content of this SOP is mandatory for all TtNUS personnel, subcontractors, and visitors to any site where UXO/CWM activities are in progress.

## 4.0 RESPONSIBILITIES

### Project Manager

Effective implementation of this SOP at the project level will be the ultimate responsibility of the assigned TtNUS Project Manager. The Project Manager is responsible for ensuring that all applicable rules and regulations are complied with, and that all necessary safety precautions are taken to conduct operations in accordance with this SOP. To fulfill this responsibility, the assigned Project Manager is required to ensure that appropriately-qualified technical staff are involved in all stages of project planning and field work, as well as for ensuring that appropriate resources are marshaled and used on his/her assigned projects. For projects involving UXO and/or CWM, this will involve ensuring that a suitably qualified and experienced UXO technician and a site Health and Safety Officers are part of the project team. In some cases, the assigned UXO Technician may also serve as the project site Health and Safety Officer.

It is also the responsibility of the Project Manager to ensure that all personnel conducting field activities in accordance with this SOP have proper training (including hazard control briefings) and, if required, the proper certifications for the job being performed.

### UXO Technician

A suitably qualified and experienced UXO Technician will be included as part of the project team where these types of concern are known or suspected to exist. The UXO Technician will be primarily responsible for advising the Project Manager on all UXO/CWM matters, including on the measures that will be necessary to effectively implement and adhere to this SOP. Other specific duties will include:

- Providing technical expertise and input into project planning activities and documents such as the project-specific Work Plan and Health and Safety Plan
- Clearing worksite areas of UXO/CWM concerns prior to the initiation of any other onsite activities

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- Participating in the development and conductance of site specific training sessions and daily tailgate meetings to communicate UXO/CWM matters to the field personnel
- Maintaining a sound familiarity with the contents of this SOP, the contents of the references listed in section 9.1, and keeping current with new information and technology pertinent to UXO/CWM matters

#### **Site Health and Safety Officer**

A suitably qualified and experienced health and safety professional will be assigned to all projects that involve fieldwork. Project-specific responsibilities will include:

- Effectively implementing the requirements and restrictions specified in the project-specific Health and Safety Plan
- Ensuring that all personnel participating in onsite activities have satisfied all appropriate medical and training qualifications prior to participating in any onsite intrusive activities.
- Conduct initial site-specific health and safety training for all personnel participating in onsite activities prior to their participation in any onsite intrusive activities.
- Conduct tail-gate safety briefings prior to the initiation of all tasks, but not less than daily.
- On certain projects, these duties may be assigned to the UXO Technician. This would be considered acceptable on field projects where the predominant concern is contact with UXO and/or CWM, and minimal health concerns or requirements (e.g., chemical exposures or monitoring) exist.

#### **Corporate Health and Safety Manager**

Perform periodic project audits and evaluations to determine the ongoing effectiveness of this SOP to address UXO/CWM concerns, and review and evaluate this SOP to determine any revisions that are appropriate.

### **5.0 LOCATION OF OPERATIONS**

Activities where UXO and/or CWM concerns may exist may be encountered in support of various TtNUS contracts, with potential project sites located throughout the continental United States and abroad. Wherever the installation/site is located, it will be necessary to ensure that project planning activities include collecting available historical information that may be pertinent to these issues, as well as identifying and addressing contract/client-specific requirements and any location-specific requirements (e.g., State, local-level, or host-nation requirements). A detailed site description, discussion of known and/or suspected contamination sources, and results of previous studies will be provided to field personnel as part of their field mobilization and initial site-specific training activities.

The initial project evaluation must involve the performance of a preliminary risk assessment, including the investigation of probable contaminants, potential transport pathways, the identification of potential receptors, and a preliminary evaluation of human health and environmental concerns. Preliminary identification of applicable or relevant and appropriate requirements (ARARs) will also be made available to field personnel conducting activities at the installation.

### **6.0 PERSONNEL QUALIFICATIONS AND REQUIREMENTS**

6.1 Personnel Qualifications: Qualifications of those personnel actively involved in UXO/CWM operations shall be as follows:

- a. UXO personnel shall be graduates an accredited Explosive Ordnance Disposal (EOD) School such as Indian Head or Eglin Air Force Base.
- b. The Senior UXO Supervisor (SUXOS) for the operation will have been awarded the Master EOD Badge and have served at least 15 years in military EOD assignments, of which more than 10 years were in a supervisory position.

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- c. UXO personnel are responsible for maintaining current status with training and medical surveillance requirements, as specified in the project-specific Health and Safety Plans and OSHA 29 CFR 1010.120, paragraphs (e) and (f).

6.2 Personnel Requirements: During any activity where the possibility that UXO and or CWM may be encountered (no matter how remote), the following requirements will be met:

- a. One UXO-qualified technician will be required to support each field team engaged in operations in areas that might contain UXO/CWM.
- b. One UXO-qualified technician will be present at the site during all activities to provide UXO/CWM support in the event their services are required.

## 7.0 PERSONNEL LIMITS

The activities to be conducted under most contracts will not normally be conducted in areas requiring maximum personnel limitations except for intrusive UXO activities. Work will not be permitted unless at least two persons are present in the work area. The provisions of 29 CFR 1910.120 concerning personnel qualifications and requirements will be followed while working on-site. Any additional personnel limitation requirements specified by the client or the project work location (e.g., state, local ordinance, host nation, etc.) will also be identified and adhered to at all times.

7.1 Personnel Limits for UXO Operations:

- a. UXO Avoidance Operations – Two UXO Technicians (one UXO Technician III and one UXO Technician II)
- b. UXO Intrusive Operations - Three UXO Technicians (one UXO Technician III and two UXO Technician II)

## 8.0 MATERIAL LIMITS

The properties and configurations of specific explosive materials are not addressed in this SOP. That level of detail is required to be addressed in project-specific Work Plans and Health and Safety Plans. This SOP must be maintained onsite along with these project-specific documents to aid in appropriate communication and implementation activities. Bulk liquids to be used for decontamination of equipment will be maintained in 2-gallon containers or less. Material Safety Data Sheets (MSDSs) will be kept on file in the TtNUS Command Post for any chemical substances brought to the project site by TtNUS and TtNUS subcontractor personnel. This is addressed in greater detail in section 5. of the TtNUS Health and Safety Guidance Manual.

## 9.0 SAFETY REQUIREMENTS

9.1 Referenced Safety Requirements: The safety requirements that apply to the UXO/CWM operations covered under this SOP are:

- a. OSHA 29 CFR 1910.120 and 1926.65 – Hazardous Waste Operations and Emergency Response (HAZWOPER). Available online at:  
[http://www.osha.gov/pls/oshaweb/owasrch.search\\_form?p\\_doc\\_type=STANDARDS&p\\_toc\\_level=0&p\\_keyvalue=OSHA\\_Std\\_toc.html](http://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=0&p_keyvalue=OSHA_Std_toc.html)

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- b. US Army Corps of Engineers Engineering Regulation 385-1-92, *Safety and Occupational Health Document Requirements for Hazardous, Toxic and Radioactive Waste (HTRW) and Ordnance and Explosive Waste (OE) Activities*.
- c. US Army Corps of Engineers Engineering Regulation (ER) 385-1-96, *Safety and Health Requirements*. Available on line at:  
<http://www.usace.army.mil/publications/eng-manuals/em385-1-1/toc.htm>.
- d. US Army Corps of Engineers Engineering Pamphlet (EP) 1110-1-18, *Ordnance and Explosive (OE) Response*.
- e. US Army Corps of Engineers Engineering Pamphlet (EP) 75-1-2, *Unexploded Ordnance Support for Hazardous, Toxic and Radioactive Waste and Construction Activities*.
- f. US Army Corps of Engineers Engineering Pamphlet (EP) 75-1-3, *Chemical Warfare Material Response*.
- g. US Army Technical Manual 9-1300-206 (TM 9-1300-206), *Ammunition and Explosive Hazards*.
- h. Technical Manual 60A-1-1-31, *Explosive Ordnance Disposal Procedures, General Information on EOD Disposal Procedures*.

9.2 Specific Safety Requirements:

- a. All site operations will be suspended if any site worker encounters an item of suspected UXO/CWM. Site work will remain suspended until the item is inspected and cleared by the UXO Technician.
- b. All site operations will be suspended if so ordered by an authorized client representative (i.e., Installation Range Control and/or Safety Office).
- c. A minimum of two UXO-qualified technicians will be present during all UXO-related activities.
- d. Standard work practices as outlined in project-specific Health and Safety Plans and/or Work Plans will be observed.

9.3 Inherent UXO/CWM Hazards: UXO/CWM operations have inherent safety and health risks associated with the various field activities conducted. All planned activities will be conducted in accordance with the requirements of the references listed in Section 9.1 above, as safety is the primary consideration in all UXO/CWM activities. Every effort should be made to determine all hazards associated with the site through a thorough research of archives, past site/range uses, and any other available information. Some of the hazards to consider are:

- a. Propellant, Explosives, and Pyrotechnics (PEP)
- b. Depleted Uranium (DU)
- c. White Phosphorus (WP)
- d. Corrosive chemicals (acids and bases) and decontamination agents
- e. Toxic gases, liquids and solids
- f. Corroded and damaged containers, munitions bodies, drums, etc.
- g. Fuze conditions
- h. Etiological agents

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## 10.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Task-specific PPE will be identified in project-specific Health and Safety Plans. Typical PPE for project sites where the principle concern is for UXO/CWM will include the items listed below. Items marked with an asterisk (\*) will be available and will be used as specified in the Health and Safety Plan and/or as determined by the TtNUS Site Health and Safety Officer.

- a. Safety glasses
- b. Safety shoes (and protective over boots or steel-toed rubber boots). NOTE: During geophysical survey operations, the UXO technicians will not wear steel-toed boots as they interfere with the magnetometer survey; however, around heavy equipment and activities where foot and overhead hazards may exist, steel-toed boots and hard hats will be worn.
- c. Cotton clothing (with protective coveralls\*)
- d. Gloves (type to be specified for each project task in the Health and Safety Plan and/or by the site Health and Safety Officer)
- e. Respiratory protection equipment\* (29CFR1910.134)
- f. Hearing protection\*
- g. Hard hats\*

## 11.0 EMERGENCY RESPONSE AND CONTINGENCY PLANS

11. Emergency Contacts: The identification of (and means to communicate with) appropriate local emergency response agencies must be identified as part of project planning/mobilization activities, and these agencies must be contacted prior to the initiation of any onsite work. These initial communications must determine the capabilities of these agencies to respond to foreseeable emergency situations, their willingness to respond, and their locations/driving directions/phone numbers. These details must be specified in the project-specific Health and Safety Plan and posted in the site Command Center/Field office.

At a minimum, the names and means of communication (phone number, radio frequency, etc.) of the following parties must be included in the project-specific Emergency Contacts procedure:

- a. Local Emergency Fire Response that will respond (i.e., local Fire Department)
- b. Emergency Medical Assistance (Hospital, Emergency Room, and ambulance service that will respond)
- c. Installation Safety Office or other client safety/emergency response contact
- d. Installation EOD Office/Detachment
- e. Installation Environmental Office

The senior TtNUS managing employee onsite (Project Manager, Site Manager, Site Supervisor, Field Operations Leader) is responsible for initiating these calls in the event of an emergency where such support is needed. If the Project Manager is not onsite at the time of an emergency event, he/she must be added to the above list of contacts.

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In the event of an emergency, all site personnel will be evacuated to a predetermined location away from the work place. Emergency Response Planning will be addressed in the project-specific Health and Safety Plan and will be in accordance with either 29 CFR 1910.38(a) or 1910.120(l). TtNUS will utilize the Installations Base Fire Protection and Emergency Services in emergencies or potential emergencies.

11.2 Contingency Plans: The following contingency plans will be implemented:

- a. Pre-Planning – Upon arrival at the site/installation, the TtNUS Field Operations Leader (FOL) and/or the Site Safety Officer will meet with the Base or local Fire Protection Department, Base Security Personnel or local Police Department, and onsite and/or offsite Emergency services to notify them of the activities that are to be undertaken, when, and where. All site personnel will be required to follow established base/local emergency procedures and will rely on base/local services to handle emergency calls when needed.
- b. Emergency Escape Procedures and Assignments – Upon notification of a site emergency that requires evacuation, all site personnel will proceed to predetermined locations based on emergency location and wind direction. An alternate assembly point will be designated in case personnel cannot reach these locations without danger to their lives and health. These primary and alternate escape routes and meeting places will be designated during the daily hazard control briefing. Personnel will be trained to remain at the assembly points until directed to either resume work or to leave the site.
- c. Procedures to Account for Site Personnel – The site work force is typically small enough that accounting for personnel will not be a problem via visual head counting. On projects with larger field team sizes, roll calls will be taken using the daily sign in logs, logbook entries, or the tail-gate briefing sheets. Accounting for personnel will be the Field Operations Leader's responsibility.
- d. Rescue and Medical Duties – TtNUS personnel will not be authorized to participate in emergency rescue operations. Typical first aid response equipment that is to be on hand at a project site includes suitable first aid kit, an emergency eye wash station, and Class ABC fire extinguishers.
- e. Activation of Emergency Response Procedures - Should an emergency occur which requires the support of outside services, the appropriate contacts will be made by the senior TtNUS managing employee onsite (Project Manager, Site Manager, Site Supervisor, Field Operations Leader). A list of appropriate contacts will be posted at the Command Post. Cellular phones, land-line phones, or hand-held radios will be the primary means of communication.
- f. Airborne Chemical Release Contingency Plan –
  - (1) Chemical Release Monitoring – every member of the site team will be responsible for observing and reporting any gross chemical releases or conditions that could lead to releases. Air monitoring will be performed as described in the project-specific Work Plans and Health and Safety Plans.
  - (2) Responses to Measured Airborne Chemical Releases – the readings on monitoring instrumentation will be compared to the action levels specified in the project-specific Work Plans and Health and Safety Plans. The primary purpose of appropriate real-time monitoring instruments will be monitor worker breathing zone areas for the protection of employee health. The project-specific Health and Safety Plan will specify actions that are to be taken in the event that monitoring instrument readings indicate that detected

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concentrations may represent a health threat to onsite workers. Area and perimeter monitoring as well as sample screening activities may also be called for in the Work Plan or Health and Safety Plan, but these are secondary purposes for the use of these instruments.

Unless otherwise specified in a project-specific Health and Safety Plan, the following monitoring instrument action levels and response measures will be observed on UXO/CWA sites:

<u>Parameter</u>	<u>Action Level</u>
Total Organic Vapors	Any sustained level above background
Airborne particulates	Readings >2.5 mg/m <sup>3</sup>
Flammable Vapors	10% of the Lower Explosive Limit (LEL)

If such levels are noted at site perimeters or adjacent to neighboring residential or commercial property, the TtNUS Field Operations Leader and/or the Site Safety Officer will notify the appropriate client or base contacts.

- g. Liquid Release Monitoring – All field team members will be responsible for observing and reporting any liquid chemical releases or conditions that could lead to a release. If field operations on site result in a release of liquid chemicals in the absence of vapors, field personnel will attempt to contain the liquid by means of berms constructed with available equipment. If the work team cannot control the spill, they will leave the area for the assembly point quickly, without panic. The TtNUS Field Operations Leader and/or the Site Safety Officer will notify the appropriate client/base contact. This is not considered to be a significant probability during operations. However, in the unlikely instance that it should occur, field personnel may effect these types of defensive efforts, providing that such a response does not appear to present a chemical overexposure or other personal health or safety threat.

## 12.0 TYPICAL CLIENT/FACILITY SAFETY POINTS OF CONTACT

The following positions are typically encountered on UXO/CWA projects. Communication and coordination with these positions should be implemented and maintained throughout all project activities (from pre-field operations planning through to project close-out).

- a. Installation Safety Management Office
- b. Installation Ordnance Officer and/or EOD Officer
- c. Installation Radiation Officer
- d. Installation Environmental Office

## 13.0 TOOLS AND EQUIPMENT

Tools and equipment necessary to safely and effectively accomplish the objectives of a project will be detailed in the project-specific Work Plans and Health and Safety Plans. Items commonly required for UXO/CWM operations are presented below:

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**13.1 Personal Protective Equipment**

- a. Respiratory Protective Equipment (i.e., air purifying or air supplied devices)
- b. Dermal (chemical resistant) protective equipment (e.g., coveralls, gloves, eye and face protection)
- c. Physical safety PPE (hard hats, hearing protection, safety glasses, safety shoes, etc.)

**13.2 Air Monitoring Equipment**

- a. Explosive/O<sub>2</sub> Meter (Combustible Gas Indicator)
- b. Direct reading Organic Vapor Analyzer (PID or FID)
- c. Direct reading particulate meter
- d. Radiation Survey Meters and TLD Badges

**13.3 Geophysical/Hydrology Survey Instrumentation**

- a. Magnetometers (Cesium Vapor, Schonstedt)
- b. Electromagnetic Terrain Conductivity Meter (EM-31)
- c. Time-Domain Electromagnetic All-Metals Detector (EM-61)
- d. Water Level Indicator/Recorder
- e. pH/Temperature/Conductivity Meter for water samples (Horiba, etc.)
- f. Survey Equipment (transit, tripod, level, etc.) as required

**13.4 UXO Support Equipment**

- a. Schonstedt Magnetic Locators (GA-52Cx or equivalent passive instrument) will be used for UXO surface survey during UXO activities. The GA-52Cx detects the magnetic field of any ferromagnetic object.
- b. Schonstedt MG-220 Magnetic Gradiometer (Down-Hole Magnetometer or equivalent will be used to conduct down hole UXO checks. The MG-220 detects the magnetic field of any ferromagnetic object as it is lowered into a borehole.
- c. Marking tape, pin flags, stakes, utility spray paints, etc.

**13.5 CWM Support Equipment**

- a. Chemical Agent Identification Kits (M18A2 Kit)
- b. ICAMs (Individual Chemical Agent Monitor)

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### 13.6 Decontamination Equipment

As required by the level of protection for each site. See Site Health and Safety Plan for specifics.

### 13.7 Hand Tools/ Miscellaneous Equipment

As may be required.

## 14.0 ENVIRONMENTAL CONCERNS

The field operations covered by this SOP will be performed in such a manner as to minimize the effects of pollution of air, water, or land and to control noise and dust emissions within reasonable limits.

Every effort will be made to:

- a. Protect the land areas and to preserve them in their existing condition.
- b. Protect water resources, including measures for run-off or run-off controls if applicable.
- c. Implement sediment control measures, where warranted. These measures will also be implemented to control erosion.

Usually, field operations will generate solid and liquid waste (Investigative Derived Waste – IDW) requiring onsite handling and possible offsite disposal. The major types of waste to be generated, their environmental concerns, and their handling and disposition are summarized below:

- a. Personal and equipment decontamination containers disposed offsite following a thorough decontamination. Liquid waste will be included with well purging and development fluids.
- b. Personal Protective Equipment (PPE) will be double-bagged and will be the responsibility of TtNUS to dispose of according to applicable regulations. Disposal will normally be offsite.

It is not anticipated that any chemical releases will occur during the field activities.

The MSDSs for chemicals being brought onto the installation for use in field operations will be listed on a site-specific Chemical Inventory and maintained at the TtNUS Field Command Post. Copies of these documents are to be made available to client and offsite representatives who may be called upon to respond to an emergency event.

## 15.0 UXO/CWM PROCEDURES FOR FIELD OPERATIONS

15.1 General – field procedures for work on any installation can include any or all of the following tasks:

- a. Initial entry into suspect areas
- b. CWM operations
- c. Surface and subsurface sampling
- d. Monitoring well installation
- e. Exploratory trenching

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- f. Geophysical surveys
- g. Other miscellaneous operations

15.2 Initial Entry – initial entry into suspect areas require an UXO-qualified technician with a magnetometer (GA-52Cx) to screen a path into the area. The screened area is marked with lanes using either pin flags with plastic pins or marking tape. Suspect items on the surface and subsurface magnetic anomalies will be marked, usually with a different color tape or flag, and will be avoided by team members. The site where the work is to be conducted will be thoroughly screened for UXO/CWM contamination prior to any work commencing. All personnel will stay within the cleared areas and not venture out into areas not screened. If an area that has magnetic anomalies cannot be avoided, the UXO-qualified technician will hand excavate down to the anomaly to check to see if a hazard exists. Before excavation begins, the immediate area will be cleared of non-essential personnel outside of what could be a fragmentation zone (as determined by the UXO Technician). If the excavation reveals a hazard, the emergency notification procedures in paragraph 11.0 will apply.

15.3 CWM Operations - prior to conducting CWM operations, an Emergency Response Plan as required by 29CFR1910.120 and DA Pam 50-6 will be developed and implemented. Most of the information required to develop this plan should be obtained from the installation safety office; however, as a minimum, the following elements will be addressed:

- a. Pre-emergency planning and procedures for reporting incidents to appropriate government agencies for potential chemical exposure, person injuries, fire/explosions, environmental spills and releases, and discovery of radioactive materials.
- b. Personnel roles, lines of authority, communications.
- c. Posted instructions and list of emergency contacts: physicians, nearby notified medical facility, fire and police departments, ambulance service, state/local/federal environmental agencies, Certified Industrial Hygienist (CIH), and installation commander.
- d. Emergency recognition and prevention.
- e. Site topography, layout and prevailing weather conditions.
- f. Criteria and procedures for site evacuation (emergency alerting procedures/employee alarm system, emergency PPE and equipment, safe distance, place of refuge (assembly area), evacuation routes, site security and control).
- g. Specific procedures for decontamination and medical treatment of injured personnel.
- h. Route maps to nearest pre-notified medical facility.
- i. Criteria for initiating community alert program, contacts and responsibilities.
- j. Critique of emergency responses and follow-up.
- k. Material Safety Data Sheets (MSDS) for each hazardous substance anticipated to be encountered on site would be made accessible to site personnel at all times.

15.4 Sampling – sampling will be conducted in accordance with established protocols and methodologies. Site-specific sampling requirements will be presented in the project-specific Work Plans and/or in other project-specific documents such as Field Sampling and Analysis Plans and Quality Assurance Plans.

Prior to initiating any sampling activities, an UXO-qualified technician will screen sites potentially contaminated with UXO/CWM. A magnetometer will be used to screen entry into a suspect area as in paragraph 15.2 above. Lanes will be marked and suspect items and subsurface anomalies will be identified and avoided. The immediate sampling area will be surface-screened prior to the introduction of the sampling team into the area.

Prior to any subsurface intrusive sampling, another check with a magnetometer needs to be accomplished. The GA-52Cx Magnetic Locator (magnetometer) can be used for collecting

Subject  UNEXPLODED ORDNANCE AND CHEMICAL WARFARE AGENTS ACTIVITIES	Number HS-2.0	Page 12 of 14
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subsurface samples not greater than 0.5 feet. If excavation of a borehole or hand auguring hole is to exceed this depth, a MG-220 Magnetic Gradiometer (down hole magnetometer) shall be utilized with readings taken at two feet depth intervals.

If an anomaly is detected, the location will be marked and avoided. If appropriate and acceptable, an alternate sampling location (in a cleared area) will be designated. If the sampling location cannot be relocated then the UXO-qualified technician will hand excavate down to the anomaly to determine if it is hazardous. If it is not hazardous, the object will be set aside and the sampling event will continue. If the object has been determined to be hazardous or suspect, the sampling team will move out of the area and the emergency procedures listed in paragraph 11.0 will be implemented.

15.5 Monitoring Well Installation – the area within a 50-foot radius of the borehole and the off- road access path will be screened with the GA-52Cx magnetometer and be cleared of all metal objects. Once this is accomplished, the areas around borehole sites will be marked using colored marking tape and/or pin flags. Heavy equipment such as front-end loaders, backhoes, and bulldozers will not be used to develop or establish drill sites. The following action will be followed:

- a. The GA-52Cx magnetometer will be used directly over the borehole site to check for buried items down to 0.5 feet. After a surface check, the UXO-qualified technician will hand auger down to a depth of two feet and check down the hole using the MG-220 magnetometer.
- b. Once the hand-auguring hole has been cleared, the drill rig will be positioned over the proposed borehole. Drilling will commence to a depth of four feet, the drill auger will be removed from the borehole, the drill crew chief and UXO personnel will make observations of the soil from the core barrel and the soil removed from the hole by hand auger (if needed). The drilling log and lithologic log will be maintained in accordance with standard practices, noting any metal objects that may be found.
- c. The drilling derrick will be secured and drill rig moved to a position at least 20 feet from the borehole.
- d. The borehole will be checked again with the MG-220 magnetometer.
- e. If UXO or magnetic anomaly is present, the borehole will be abandoned and another location selected. The new borehole should be at least six feet from the original borehole. If a UXO or anomaly is not detected and the clearance is given, the drill rig shall be positioned back over the borehole, and drilling will proceed to the next depth (6 feet).
- f. Repeat above steps at intervals of 2 feet, until a depth of ten feet is reached. At the ten-foot interval, a magnetometer reading shall be taken with the MG-220 set on the maximum sensitivity. The instrument will detect larger objects (approaching 100 lbs.) that could be expected to penetrate to depths of 10 feet or more.
- g. After reaching the depth of ten feet, the above steps will be repeated at intervals of 4 feet, until the desired depth is reached.

15.6 Exploratory Trenching and Excavation – at times, exploratory trenching may be required to determine the lateral extent of a landfill, burial pit, or subsurface geophysical anomaly. Trenching and excavation to uncover a subsurface area will be conducted using a backhoe, an excavator, or sometimes a front-end loader. **Any trenching or excavation activities (regardless of depth) must be done in accordance with OSHA 29 Subpart P requirements, which must be considered and addressed in the project-specific Health and Safety Plan.**

Subject  UNEXPLODED ORDNANCE AND CHEMICAL WARFARE AGENTS ACTIVITIES	Number HS-2.0	Page 13 of 14
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On project sites where excavation activities are within the scope of work and a UXO/CWM concern exists, the following additional procedures will be utilized to conduct these operations:

- a. The surface of the area to be trenched or excavated will first be swept with the GA-52Cx magnetometer. Anomalies will be hand excavated to determine if hazardous.
- b. No more than 0.5 feet of surface soil will then be gingerly removed (scraped) from the area of concern.
- c. The heavy equipment will be removed at least 20 feet away from the area, and the area will be checked with the MG-220 magnetometer. If the area is a trench, the entire length of the trench will be checked with the MG-220 and the excavation can continue two feet at a time. If the area is a wide-open area, it can once again be checked with the GA-52Cx, but only 0.5 feet of soil removal can be excavated at a time.
- d. Anomalies will continue to be uncovered by hand excavation until the desired results are obtained and the trench/area is abandoned and refilled.
- e. Excavation will continue another 2 feet if using the MG220 or 0.5 feet if using the GA-52Cx magnetometer. Once again after the proper depth of soil is excavated, the heavy equipment is removed from the area (>20 feet) and the area is rechecked with the magnetometer. If excavation depths reach 4 feet, suitable means of access/egress must be provided (e.g., ladders) and atmospheric monitoring must be performed prior to any entries.
- f. The above procedures are followed until the desired depth is reached and/or the desired results are obtained.

Once the area or trench has been cleared, excavation can continue to the proper depth before the equipment is again moved away (at least 20 feet) and the area/trench.

- 15.7 Geophysical Surveys – there are several instruments that can be used to conduct geophysical surveys. The GA-52Cx (Schonstedt) and the MG-220 are magnetometers and are passive instruments. The Geonics Terrain Conductivity Meter (EM-31) is an active instrument and is commonly used to measure subsurface terrain conductivity. This information can be used geophysical surveys, as well as for locating voids, discontinuities in soil structures such as boundaries of disposal pits and buried conducting objects. An Ordnance Safety Analysis of the Geonics Model EM-61 Non-Contacting Terrain Conductivity Meter was conducted by the Naval Surface Warfare Center at the request of TtNUS in April 1993. The analysis concluded, in summary, that the “Geonics EM-61 poses no ordnance safety hazard when operated in the normal survey mode, where the device is held at hip height.” However, the Geonics EM-61 should not be used with the boom on the ground if ordnance is present or suspected.

When using the magnetometer or the EM-61, a UXO-qualified technician will conduct a surface sweep of the area to be surveyed to ensure that no surface ordnance or other hazards exist. The magnetometer is a passive instrument; therefore, no special ordnance safety precautions are required.

Manufacture recommended procedures for the EM-61 must be followed to ensure safe operation during the geophysical survey. Standard survey protocols and quality assurance methods will also be required during survey operations.

- 15.8 Miscellaneous Operations – due to the potential of UXO/CWM materials being encountered during field activities, UXO support will be provided at all site locations. UXO support will be

Subject  UNEXPLODED ORDNANCE AND CHEMICAL WARFARE AGENTS ACTIVITIES	Number HS-2.0	Page 14 of 14
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provided for any and all field activities that are in areas suspected to contain UXO and/or CWM. These areas also include those areas covered with water and creeks, canals, etc.

Operations that involve the inspection, hazard classification, segregation, and final disposal of UXO and UXO-related scrap will not be covered in this SOP. The demilitarization of UXO and UXO-related scrap is not authorized unless specific work plans, SOPs, health and safety plans and other established procedures are written and approved addressing these operations.

## **16.0 HAZARD CONTROL BRIEF**

A Health and Safety Hazard Control Briefing (i.e., tailgate meetings) will be conducted daily prior to the start of onsite activities. The briefing will be detailed and will cover the information in the Safe Work Permits for the anticipated tasks for the day, as well as applicable portions of this SOP. Additional briefings will be conducted as necessary for tasks that become necessary during the course of a workday, if they were not covered in the morning briefing. These briefings are in addition to (not in place of) the site-specific health and safety training that is required for all onsite personnel prior to their participation in any onsite, intrusive activities.

The following information will be given during the daily briefings:

- a. Overview of task(s) to be performed and review of appropriate Safe Work Permits with task participants.
- b. Overview of the day's objectives, as well as general site hazards
  - Unexploded Ordnance Hazards
  - Chemical Warfare Agents and Materials
  - Physical Hazards
- c. Overview of Standard Work Practices pertinent to the day's planned activities
- d. Review of any worker incidents or near-miss events, including a review of corrective/preventive measures to prevent recurrence
- e. Overview of Emergency Response Actions, evacuation routes and assembly points

## **17.0 SECURITY**

Field activities under various TtNUS contracts are typically unclassified and normal security measures apply in accordance with above references (paragraph 9.1 above). TtNUS personnel and their subcontractors will check in with the appropriate client/installation's security office and may be issued security badges for entry into certain work areas. This SOP will not cover special security requirements for projects involving UXO/CWM as most installations have established policies and procedures on reporting and securing recovered items that are UXO and/or CWM. The TtNUS Project Manager will incorporate all security procedures required by the installation into the site work plan.

**ATTACHMENT III**

**MEDICAL DATA SHEET**

## MEDICAL DATA SHEET

This Medical Data Sheet must be completed by on-site personnel and kept in the command post during the conduct of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project \_\_\_\_\_

Name \_\_\_\_\_ Home Telephone \_\_\_\_\_

Address \_\_\_\_\_

Age \_\_\_\_\_ Height \_\_\_\_\_ Weight \_\_\_\_\_

Person to notify in the event of an emergency: Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Drug or other Allergies: \_\_\_\_\_

Particular Sensitivities : \_\_\_\_\_

Do You Wear Contacts? \_\_\_\_\_

What medications are you presently using? \_\_\_\_\_

Name, Address, and Phone Number of personal physician: \_\_\_\_\_

**Note: Health Insurance Portability and Accountability Act (HIPAA) Requirements**

HIPAA took effect 1996 and was amended in April 14, 2003. Loosely interpreted, HIPAA regulates the disclosure of Protected Health Information (PHI) by the entity collecting that information. PHI is any information about health status (such as that you may report on this Medical Data Sheet), provision of health care, or other information. HIPAA also requires TtNUS to ensure the confidentiality of PHI. This Act can affect the ability of the Medical Data Sheet to contain and convey information you would want a Doctor to know if you were incapacitated. So before you complete the Medical Data Sheet understand that this form will not be maintained in a secure location. It will be maintained in a file box or binder accessible to other members of the field crew so that the can accompany an injured party to the hospital.

DO NOT include information that you do not wish others to know, only information that may be pertinent in an emergency situation or treatment.

\_\_\_\_\_  
Name (Print clearly)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## **ATTACHMENT IV**

# **ACCIDENT PREVENTION PLAN/ ACTIVITY HAZARD ANALYSIS**

**ACCIDENT PREVENTION PLAN  
FOR  
SMALL ARMS RANGE SITE INSPECTION  
AT  
NAVAL SUPPORT ACTIVITY MID-SOUTH  
MILLINGTON, TENNESSEE**

**Submitted to:  
Naval Facilities Engineering Command  
Midwest  
201 Decatur Avenue, Building 1-a  
Great Lakes, Illinois 60088-2801**

**Submitted by:  
Tetra Tech NUS, Inc.  
Foster Plaza 7  
661 Andersen Drive  
Pittsburgh, Pennsylvania 15220**

**CONTRACT NUMBER N62467-04-D-0055  
CONTRACT TASK ORDER 0107 and  
CONTRACT NUMBER N62467-03-D-0057  
CONTRACT TASK ORDER F275**

**February 2010**

**PREPARED UNDER THE SUPERVISION OF:**



**LAWSON ANDERSON  
PROJECT MANAGER  
TETRA TECH NUS, INC.  
MEMPHIS, TENNESSEE**

**APPROVED FOR SUBMISSION BY:**



**MATTHEW M. SOLTIS, CIH, CSP  
HEALTH AND SAFETY MANAGER  
TETRA TECH NUS, INC.  
PITTSBURGH, PENNSYLVANIA**

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**ATTACHMENTS**

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- 1 Employee Training/Qualifications

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- 1 NSA Mid-South Activity Hazard Analysis

## ACRONYMS

§	Section
dB	decibels
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
APP	Accident Prevention Plan
BLS	Bureau of Labor Statistics
CFR	Code of Federal Regulations
CPR	Cardiopulmonary resuscitation
CTO	Contract Task Order
DART	Days Away/Restricted Duty/Transfer
DDESB	Department of Defense Explosives Safety Board
EM	Engineer Manual
EMR	Experience modification rate
EOD	Explosive Ordnance Disposal
ESS	Explosive Safety Submission
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
MC	Munitions constituents
MEC	Munitions and explosives of concern
MPPEH	Material potentially presenting an explosive hazard
NAICS	North American Industry Classification System
NAVFAC SE	Naval Facilities Engineering Command Southeast
NEHC	Navy Environmental Health Center
NHSO	Navy Health and Safety Officer
NIOSH	National Institute of Occupational Safety and Health
NRR	Noise Reduction Rating
OSHA	Occupational Safety and Health Administration
PHSO	Project Health and Safety Officer
PM	Project Manager
PPE	Personal protective equipment
RCIR	Recordable Case Incident Rate
RPM	Remedial Project Manager
SHM	Safety and Health Manager
SSO	Site Safety Officer
SUXOS	Senior UXO Supervisor
TP	Technical Paper
UXO	Unexploded Ordnance
UXOSO/QC	Unexploded Ordnance Safety Officer/Quality Control

**1.0 SIGNATURE SHEET**

**NAVAL FACILITIES ENGINEERING COMMAND MIDWEST  
CONTRACT NUMBER N62467-04-D-0055  
ACCIDENT PREVENT PLAN FOR SMALL ARMS RANGE SITE INVESTIGATION  
at  
Naval Support Activity  
(NSA) Mid-South  
Millington, Tennessee**

Prepared by:

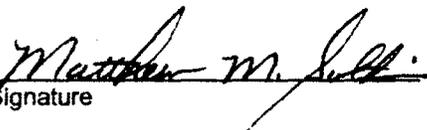
Eric Samuels  
Tetra Tech NUS  
Project Health and Safety Officer

  
Signature

(770) 413-0965  
Phone

Concurred by:

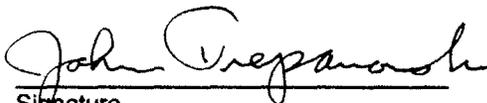
Matthew M. Soltis, CIH, CSP  
Tetra Tech NUS  
Safety and Health Manager

  
Signature

(412) 921-8912  
Phone

Approved by:

John Trepanowski  
Tetra Tech NUS  
Company Officer

  
Signature

(610)921-7217  
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## 2.0 BACKGROUND INFORMATION

Contractor: Tetra Tech NUS  
Contract Numbers: N62467-04-D-0055 and N62467-03-D-0057  
Project Name: SI of Small Arms Ranges at Naval Support Activity (NSA) Mid-South Millington,  
Tennessee

### 2.1 PROJECT DESCRIPTION

The objective of this task will be to implement SI field activities at the NSA Mid-South sites.

Naval Support Activity (NSA) Mid-South is located in the Town of Millington in Shelby County, Tennessee, approximately 20 miles north of Memphis, 180 miles west of Nashville, and 7 miles east of the Mississippi River. The facility encompasses 1,600 acres and serves as one of the largest inland Navy installations in the world. As of April 2002, the base employed 1,100 people including enlisted personnel, officer personnel, and civilians.

Seven MRP-eligible sites were identified at NSA Mid-South, including five on the current property (Pistol Range, Rifle Range, Aircraft Firing Range, Trap/Skeet Ranges #1 and #2, and Horse Stables Skeet Range #1). Two sites are on the former NAS Memphis property (pistol range and Horse Stables Skeet Range #2).

**This Accident Prevention Plan (APP) addresses only the activities to be performed by Tetra Tech NUS personnel.**

The site-specific health and safety provisions in this document have been developed for use during unexploded ordnance (UXO) avoidance support at the NSA Mid-South SI. Additional provisions may be found in the HASP and associated Safe Work Permits. This document addresses applicable items specified under the U.S. Army Corps of Engineers Safety and Health Requirements Manual, Engineering Manual (EM) 385-1-1, and United States Occupational Safety and Health Administration (OSHA) Title 29 of CFR, § 1910.120(b). This APP will be available and shall be reviewed by (1) the on-site personnel who may be exposed to hazardous on-site conditions, including Tetra Tech NUS and subcontractor personnel participating in field activities and UXO avoidance activities, and (2) the site visitors, including

regulatory agency representatives. Site-specific sections of EM 385-1-1 applicable to this field effort are as follows:

- 1 - Program Management
- 2 - Sanitation
- 3 - Medical and First Aid Requirements
- 4 - Temporary Facilities
- 5 - Personal Protective and Safety Equipment
- 6 - Hazardous Substances, Agents, and Environments
- 7 - Lighting
- 8 - Accident Prevention Signs, Tags, Labels, Signals, Piping System ID, and Traffic Control
- 9 - Fire Prevention and Protection
- 10 - Welding and Cutting
- 11 - Electrical
- 12 - Control of Hazardous Energy
- 13 - Hand and Power Tools
- 14 - Material Handling, Storage, and Disposal
- 15 - Rigging
- 16 - Machinery and Mechanized Equipment
- 17 - Conveyors
- 18 - Motor Vehicles and Aircraft
- 19 - Floating Plant and Marine Activities
- 20 - Pressurized Equipment and Systems
- 21 - Safe Access and Fall Protection
- 22 - Work Platforms
- 23 - Demolition
- 24 - Floor and Wall Holes and Openings
- 25 - Excavations
- 26 - Underground Construction, Shafts, and Caissons
- 27 - Concrete and Masonry Construction and Steel Erection
- 28 - Hazardous Waste Operations and Emergency Response (HAZWOPER)
- 29 - Blasting
- 30 - Contract Diving Operations

## 2.2 SITE MAPS

A facility location map and a site location map showing the location where Tetra Tech NUS employees will be performing work are included as part of the Work Plan for the work associated with this field effort at NSA Mid-South.

**2.3 TETRA TECH NUS SAFETY STATISTICS**

The following table presents safety statistics for Tetra Tech NUS for the last 3 calendar years compared to the national averages for our industry. This comparison uses data collected by the United States Dept. of Labor, Bureau of Labor Statistics (BLS), for different types of employers, segregated by North American Industry Classification System (NAICS) codes.

**Comparison of Tetra Tech and 2008 BLS Data for NAICS Code 541 (RCIR and DART Case Rates)**

	NAICS 541 Professional, Scientific and Technical Services 2008	Tetra Tech 2007	Tetra Tech 2008	Tetra Tech 2009
Total Recordable Case Incident Rate (RCIR)	1.1	0.91	0.3	0.2
Days Away/Restricted Duty/Transfer Case Rate (DART)	0.5	0.3	0.2	0.2

The data comparison illustrates that Tetra Tech' performance compares favorably with the most-recent national averages for the environmental engineering and hazardous waste services industries.

**Tetra Tech, Inc. Experience Modification Rates and OSHA Logs:**

Policy Year (October 1 - September 30) 2006-2007:	0.90
Policy Year 2007-2008:	0.92
Policy Year 2008-2009:	0.81

**2.4 WORK PHASES**

Work on this project will occur in the following phases. Associated dates when Tetra Tech NUS personnel will be on site performing work will be listed in the schedule for each phase of the project. Schedule will be published prior to start of work on site.

- Phase 1 – Mobilization
- Phase 2 – UXO Support (avoidance) and field activities
- Phase 3 – Demobilization
- Phase 4 – Reports

## **2.5 SPECIFIC SITE ACTIVITIES**

The detailed Scope of Work for field activities to be performed during UXO support during the site investigation at NSA Mid-South will include the following tasks:

- Mobilization/demobilization
- UXO surface surveys of proposed sampling areas at the Pistol Range for MEC
- Visual screening of sampling areas for MEC and MPPEH by Tetra Tech NUS

For each of these tasks, detailed Activity Hazard Analyses (AHAs) have been prepared and are provided in Section 14.0 of this APP.

## **3.0 STATEMENT OF SAFETY AND HEALTH POLICY**

Tetra Tech NUS is committed to providing our employees with a safe and healthful workplace. The principal elements of our program are founded on the requirements presented in the Health and Safety Policy presented on the following page.

## **4.0 RESPONSIBILITIES AND LINES OF AUTHORITY**

The Tetra Tech NUS Site Safety Officer (SSO) for this project has been appointed by the Project Manager (PM) and is responsible for field implementation of tasks and procedures contained in the HASP and portion of the APP. The SSO for this project may be the UXO Safety Officer/Quality Control (UXOSO/QC) technician on site. The SSO has completed 40-Hour HAZWOPER and subsequent 8-Hour HAZWOPER Refresher Training, 8-Hour HAZWOPER Supervisor Training, and First Aid/CPR and Blood-borne Pathogen training in accordance with regulatory requirements applicable to the work that will be performed for this project. The Tetra Tech NUS SSO has primary responsibility for responding to and correcting emergency situations and for taking appropriate measures to ensure the safety of site personnel and the public (e.g., evacuation of personnel from the site area). The SSO is also responsible for ensuring that corrective measures have been implemented, appropriate internal and Navy authorities have been notified, and follow-up reports have been completed.

Individual subcontractors are required to cooperate with the SSO within the parameters of their Scopes of Work.

Personnel are required to immediately report injuries, illnesses, spills, fires, and property damage to the SSO. The SSO must be notified of any on-site emergencies and is responsible for ensuring that the appropriate emergency procedures described in this section are followed. The SSO is also responsible for informing the Navy Remedial Project Manager (RPM) of major incidents and associated corrective actions.

Management at Tetra Tech NUS has the authority and responsibility for implementing and maintaining this APP and HASP. Specific responsibilities are discussed in Section 15. An organization chart presenting the lines of authority for this project is shown on the next page.



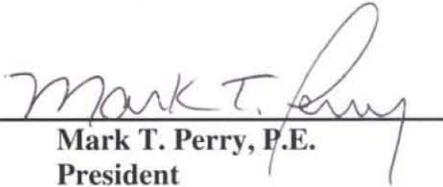
## TETRA TECH NUS, INC. HEALTH AND SAFETY POLICY



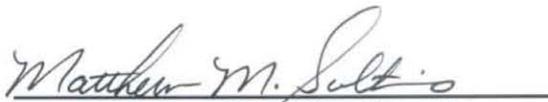
Tetra Tech NUS, Inc., is committed to providing our employees with a safe and healthful workplace. We believe that occupational injuries and illness can be prevented; and we are convinced that a strong Health and Safety Program is essential to achieve this objective.

The principal elements of our program are founded on the requirements that our managers and employees:

- Recognize a *personal responsibility* for their own health and safety and for actions that affect the health and safety of fellow employees.
- Integrate safety and health into *all aspects* of their work, with the well-being of employees as the primary concern in all activities.
- Comply with applicable *federal, state, and local regulations*, as well as with our internal Corporate and our clients' safety and health policies and procedures.
- Take an *active role* in the Health and Safety Program by providing input and constructive criticism for improvements to the program.



Mark T. Perry, P.E.  
President

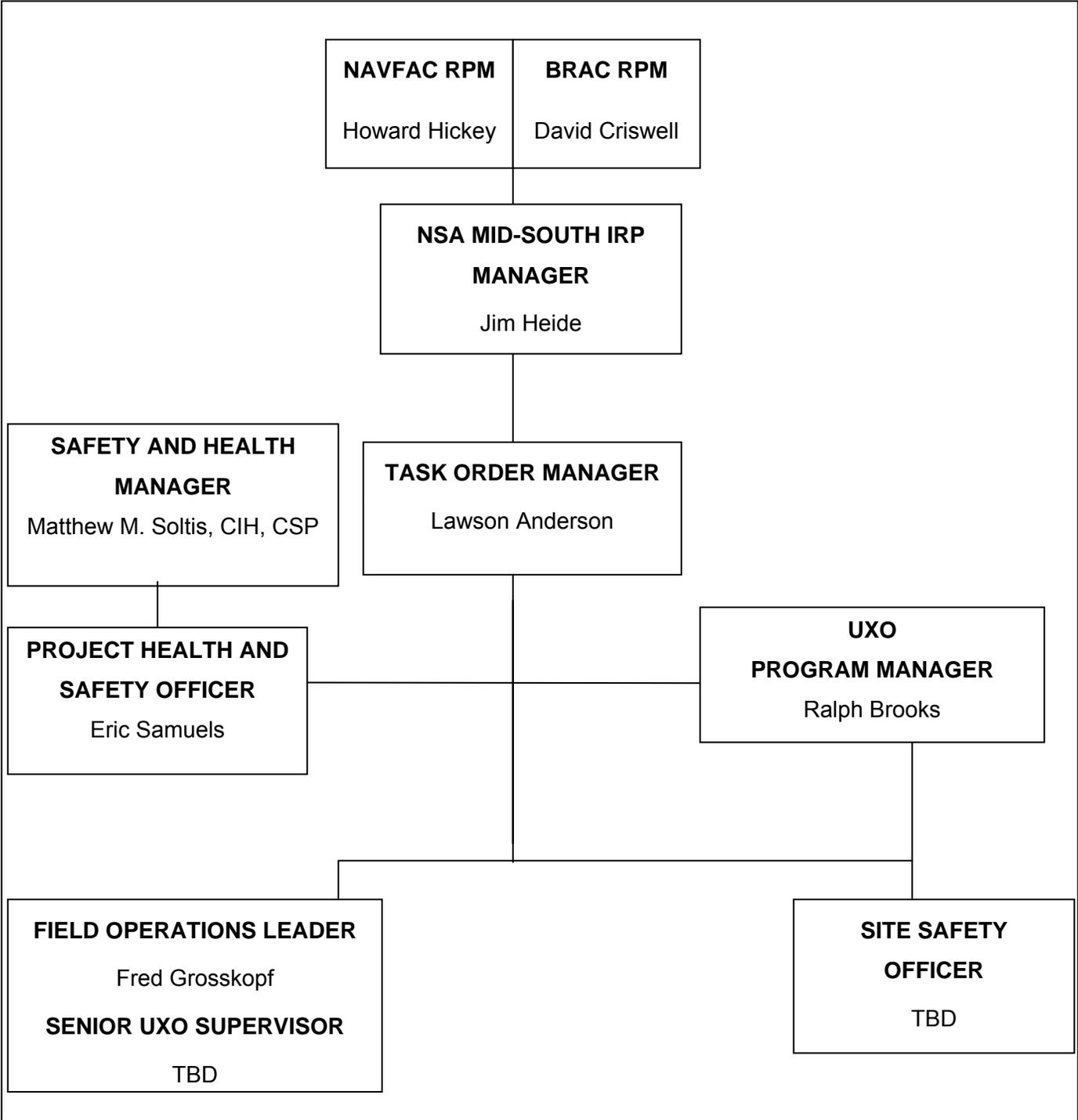


Matthew M. Soltis, CIH, CSP  
Health and Safety Manager



 Tetra Tech NUS, Inc.  
January 2010

**ORGANIZATION CHART  
FOR SI FIELD ACTIVITIES AT NSA MID-SOUTH**



The work under this contract, including this field effort, is subject to a comprehensive health and safety program developed, designed, and implemented by Matthew M. Soltis, CIH, CSP. Mr. Soltis serves as Director of Health and Safety for Tetra Tech NUS and as the Safety and Health Manager (SHM) for the planned work addressed in this APP.

## 5.0 SUBCONTRACTORS

Tetra Tech NUS may employ a subcontractor in the performance of work covered by this APP.

Any subcontractor participating in work at NSA Mid-South is required to prepare and adhere to safety planning and program documents (e.g., APP, HASP, etc.) as appropriate for the activities that they will perform on this project site. In addition, subcontractor personnel will also be required to read and comply with the sections of this Tetra Tech NUS APP and HASP. Subcontractor personnel entering the site must sign the Site-Specific Training Documentation form included in the HASP. Subcontractor personnel must comply with the applicable 29 CFR §1910.120 training and medical surveillance requirements. Subcontractors are responsible for providing personal protective equipment (PPE) needed to protect personnel as specified by their safety and health planning documents and by this APP, and are directly responsible for assuring the health and safety of their employees. Subcontractors who have not met OSHA training, medical surveillance, and PPE requirements are not permitted to enter areas where exposure to hazardous materials is possible.

This APP and associated HASP shall be rigorously enforced during this field effort. Violators of the HASP will be verbally notified upon first violation, and the violation will be noted by the Tetra Tech NUS SSO in a field logbook. Upon second violation, the violator will be notified in writing, and the Tetra Tech NUS PM and the violator's supervisor will be notified. A third violation will result in a written notification and the violator's eviction from the sites. The written notification will be sent to the human resources development and the SHM.

**NOTE:** Any violations that are deemed to be serious, intentional, or otherwise egregious will be subject to immediate corrective action, up to and including removal from the site, and will not require adherence to this progressive, three-step disciplinary process.

Personnel will be encouraged to report to the SSO any conditions or practices that they consider detrimental to their health or safety, or those they believe violate applicable health and safety standards. Such reports may be made orally or in writing. Personnel who believe that an imminent danger threatens human health or the environment are encouraged to bring the matter to the immediate attention of the SSO for resolution. Job site activities presenting danger to life or limb should be stopped immediately and reported to the SSO for resolution.

At least one copy of this APP and the HASP will be available to site personnel. Each vehicle taken to the job site will contain a copy of the APP and the HASP to ensure quick and easy access by employees. Minor changes in the HASP procedures will be discussed at the beginning of each work day by the SSO at the daily tailgate safety meeting. Significant HASP revisions must be discussed with the SHM and PM and approved via the HASP amendment form.

## **6.0 TRAINING**

Site personnel who may be exposed to hazardous conditions and who will participate in on site activities are required to meet the training requirements outlined in Section 6.1 below: Hazardous Waste Operations and Emergency Response. Furthermore, site personnel must satisfy any specialized training requirements that are presented in the AHAs for tasks to be completed under this Contract Task Order (CTO).

### **6.1 MANDATORY TRAINING AND CERTIFICATIONS**

Tetra Tech NUS personnel qualification and training certification documentation will be obtained by the PM/FOL and included in Attachment 1 of this APP, and a copy maintained on site. Mandatory training and certifications applicable to this project include the following:

- HAZWOPER as outlined in 29 CFR § 1910.120
- Current 8-hour HAZWOPER refresher
- The supervisory personnel will also have Supervisory Training in accordance with 29 CFR 1910.120(e)(4)

- As indicated above, these are base-specific training requirements necessary to be on the site. Specialized operations (UXO) or responsibilities (BBP-First Aid) will also require additional training for personnel filling those roles.

## **6.2 SITE-SPECIFIC SAFETY AND HEALTH TRAINING**

Prior to accessing active work areas of the sites or participating in any intrusive activities, site personnel and visitors will first be required to undergo a site-specific safety and health training session conducted by the SSO, which will include a review of the HASP and signing of the Site-Specific Training Documentation form. Site workers will be required to sign a Daily Tailgate Safety Meeting form (included in HASP). In addition, UXO team members on site will meet or exceed the requirements stated in the Department of Defense Explosives Safety Board (DDESB) Technical Paper (TP) 18 for their respective assignments. Before on-site activities begin, the Tetra Tech NUS SSO will present a briefing for site personnel that will participate in on-site activities. The following topics will be addressed during the pre-work briefing:

- Names of the SSO and designated alternate
- Site history
- Work tasks
- Hazardous chemicals that may be encountered on site
- Physical hazards that may be encountered on site
- PPE, including types of respiratory protection to be used for work tasks
- Mandatory training and certification requirements (e.g., HAZWOPER; HAZWOPER 8-hour Refresher; MEC-specific)
- Situations requiring an upgrade or downgrade of level of protection
- Site control measures including site communications and control zones
- Decontamination procedures
- Emergency communication signals and codes, including incident reporting procedures
- Environmental accident emergency procedures (in case contamination spreads outside the exclusion zone)
- Personnel exposure and accident emergency procedures (in case of falls, exposure to hazardous substances, and other hazardous situations)
- Fire and explosion emergency procedures
- Emergency telephone numbers
- Emergency routes

Any other health and safety-related issues that may arise before site activities begin will also be discussed during the pre-work briefing by the SSO.

Issues that arise during implementation of on-site activities will be addressed during tailgate safety meetings to be held daily before the workday or shift begins and will be documented in a Daily Tailgate Safety Meeting form (included in the HASP). The tailgate safety meetings will be attended by site workers, subcontractors, and visitors and will be conducted by the PM and/or SSO. Any changes in procedures or site-specific health and safety-related matters will be addressed during these meetings.

Emergency situations require follow-up and reporting. In addition to immediate reporting to the SSO and/or PM, an Incident Report Form must be completed, signed by the PM, SSO, and the employee's Office Manager, and submitted to the Tetra Tech NUS SHM within 24 hours of an emergency situation. The report must include proposed actions to prevent similar incidents from occurring in the future. The SHM must be fully informed of the corrective action process so that the SHM may implement applicable elements of the process at other sites.

Emergency situations must also be reported to the Navy RPM. Contact information for these individuals is listed in the HASP.

## **7.0 SAFETY AND HEALTH INSPECTIONS**

It is Tetra Tech NUS's internal policy that job sites involving work for Naval Facilities Engineering Command are subject to audits by corporate safety staff. Daily site safety inspections shall be conducted by the Tetra Tech NUS SSO during this field effort to ensure safe work areas and compliance with the HASP.

The items noted during field audits will be communicated to the Tetra Tech NUS HSM who maintains a corrective/preventive action database. Responsibility for resolving each item noted during these audits is assigned and tracked through resolution. Results from field audits are also regularly communicated throughout Tetra Tech NUS through training and electronic means as a method of continuous program improvement.

## **8.0 SAFETY HEALTH EXPECTATIONS AND COMPLIANCE**

It is the goal of Tetra Tech NUS to continue excellent safety performance on the NAVFAC contracts to support the Navy in their safety efforts. Specifically, Tetra Tech NUS will perform the work in a manner that is consistent with the Zero Incident philosophy. In accordance with this philosophy, it is our stated goal to plan and perform the work in a manner that integrates safety and health considerations so that it is accomplished without experiencing any worker injuries or illnesses, environmental releases/impacts, or property damage events.

In addition to the line and staff management functions described in this APP and the accompanying HASP, each individual performing work under this contract has the responsibility for their own personal health and safety, as well as assisting in assuring the health and safety of their co-workers. This element is also the first one listed in our corporate Health and Safety Policy Statement, which requires that "each employee recognize a *personal* responsibility for their own health and safety and for actions that affect the health and safety of fellow employees." This employee responsibility includes observing specified health and safety requirements and communicating with the designated SSO on matters such as the effectiveness of specified control measures, identification of new potential hazards, and other related issues.

An employee's failure to adhere to the requirements of this APP and HASP or to observe specified safety requirements and restrictions or to properly use identified protective equipment may lead to injury or illness. As a result, deviation from safety and health procedures is not tolerated. Failure to comply with health and safety procedures and requirements will lead to reprimand up to and including dismissal.

Health and safety-related information will be communicated to employees through meetings, postings, written communications, and reporting of hazards.

## **9.0 INCIDENT REPORTING**

Accidents or incidents as well as near-miss events are to be reported using the Tetra Tech NUS incident reporting process and forms. See Attachment I of the HASP for detailed information on incident reporting. The SHM is responsible for assuring that incidents and serious near-miss events are adequately investigated and is also responsible for collecting, tracking, and trending incident data (e.g., recordable cases, employee hours worked, etc.). Accidents involving near misses, injuries, or illnesses must be immediately reported to the PM and the SHM, and documented on the Tetra Tech NUS Incident Report (in the HASP). Forms must be reviewed by the PM and the SSO.

Hazardous work conditions or unsafe work practices will be corrected in a timely manner, both in the field and in the office. Upon discovery of an unsafe condition at a field site, the degree of hazard must be assessed and action may range from complete shutdown of the operation to phased correction. Tetra Tech NUS employees working on this project will have "Stop Work" authority in the event that a potentially serious action or condition is observed. Tetra Tech NUS will shut down a project during which life threatening, severe environmental impact, or significant equipment or property damage conditions may exist. Employees shall follow specific information for emergency evacuation and PPE usage as described in this APP and associated HASP. The PM and Navy RPM must be contacted regarding each incident.

## **10.0 MEDICAL SUPPORT**

As required by EM 385-1-1, Tetra Tech NUS will ensure that a minimum of two people have current certifications in CPR, First Aid, and Blood-borne Pathogens. Other than rendering basic CPR and First Aid, these employees are not expected to perform emergency medical duties. However, they are authorized to perform emergency rescue or other duties up to the level of their training.

Emergency medical assistance will be acquired from non-Navy sources. The closest hospital to the site is Methodist North Hospital, Memphis, Tenn. Directions to this hospital are included in the HASP, as well as contact numbers for both the hospital and ambulance services. Tetra Tech NUS personnel are instructed to perform a drive-by of the nearest hospital to ensure that it is accessible and available and that the most efficient route is well mapped.

## **11.0 PERSONAL PROTECTION REQUIREMENTS**

The levels of personal protection to be used for work tasks at the NSA Mid-South site have been selected based on the nature of the planned work activities and on the known or anticipated hazards; types and concentrations of contaminants that may be encountered on site; and contaminant properties, toxicity, exposure routes, and affected media. Specific PPE selected for this project is listed, by task, in the AHAs located in Section 14.0 of this APP.

PPE is selected by the PHSO when writing the APP and HASP, and is confirmed through a rigorous review process by the Tetra Tech NUS SHM. To assure proper PPE has been selected, both the physical and chemical hazards present at the job site are taken into account in both developing and

reviewing safety-related documents. In lieu of a separate hazard assessment document being developed by Tetra Tech NUS for Navy field efforts, the signatures of the SHM and the PHSO on the Signature Page of this APP constitute approval of the hazard assessment contained in the HASP.

The anticipated levels of protection selected for use by field personnel during site activities is Level D. If site conditions encountered during site activities warrant a higher level of protection, field personnel will withdraw from the site, immediately notify the Tetra Tech NUS SSO, and obtain further instructions.

PPE levels can be upgraded or downgraded based on a change in site conditions or investigation findings. When a significant change in site conditions occurs, hazards will be reassessed and decisions approved by the PHSO, PM, and SHM.

PPE has been selected based on the results of task-specific hazard assessments. Through the completion of employee training (e.g., introductory 40-hour hazardous waste training, annual refresher training, etc.), Tetra Tech NUS employees have been informed of the proper selection, use, and care of PPE items provided to them. After PPE is provided to an employee, the responsibility for using and caring for it appropriately is the responsibility of that employee. The SSO is responsible for assuring that these responsibilities are fulfilled through daily observations and work area inspections at the sites. The SSO is also responsible for assuring that appropriate and adequate supplies of PPE are maintained such that they are readily available for issuance/replacement and in a clean and sanitary manner and location.

## 12.0 APPLICABLE SITE SPECIFIC PLANS, PROGRAMS AND PROCEDURES

Listed below are potential site-specific plans and procedures that may be applicable to this Navy field effort. The required plans (as noted below) are included as attachments to this APP.

- Layout Plan
- Emergency Action Plan
- Spill Plan
- Firefighting Plan
- Posting of Emergency Telephone Numbers
- Wildfire Prevention Plan
- Man Overboard – Abandon Ship
- Hazard Communication Program
- Respiratory Protection Plan
- Health Hazard Control Program
- Lead Abatement Plan

- Asbestos Abatement Plan
- Abrasive Blasting Plan
- Confined Space Entry Plan
- Hazardous Energy Control Plan
- Critical Lift Procedure
- Contingency Plan for Severe Weather
- Access and Haul Road Plan
- Demolition Plan (engineering and asbestos surveys)
- Emergency Rescue (tunneling)
- Underground Construction Fire Prevention and Protection Plan
- Compressed Air Plan
- Formwork and Shoring Erection and Removal Plan
- Jacking Plan (lift) Slab Plan
- Health and Safety Plan
- Blasting Plan
- Diving Plan
- Prevention of Alcohol and Drug Abuse
- Fall Protection Plan
- Steel Erection Plan
- Night Operations Lighting Plan
- Site Sanitation Plan
- Fire Prevention Plan

### **13.0 CONTRACTOR (TETRA TECH NUS) INFORMATION**

Tetra Tech NUS's HASP must accompany this APP on job sites. The HASP contains information specific to the NSA Mid-South effort and provides requirements that employees must follow to ensure that their activities are carried out in accordance with both OSHA and applicable EM 385-1-1 requirements. Compliance with the HASP by Tetra Tech NUS will be the means used to meet the requirements outlined in this APP.

Additionally, site-specific AHAs (Section 14.0) have been developed that comply with OSHA requirements and EM 385-1-1 requirements. By adhering to requirements specified in the AHAs, work will be performed on site in a safe manner. Minor changes to AHAs based on actual site conditions are permitted as necessary and applicable by the SSO in the field. Major changes to AHAs, such as Scope of Work changes, must be documented on a revised AHA forms and are subject to additional review by the Tetra Tech NUS SHM.

## **14.0 SITE-SPECIFIC HAZARDS AND CONTROLS**

Detailed task-specific hazards and controls are provided in the AHAs attached to this APP. Table 1 details the AHAs for the UXO activities being provided in support of the NSA Mid-South field activities at the Pistol Range.

**TABLE 1**

**NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: Mobilization/Demobilization**

**ANALYZED BY/DATE: E. Samuels/J.Laffey 02/10**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
<p>Mobilization/Demobilization Assembling, packing, unpacking equipment and supplies.</p> <p>Performing a Jobsite Hazard Evaluation and initial/exit inspections of the intended work areas.</p> <p>Performing initial clearance of travel pathways (foot/vehicular).</p> <p>Land survey with GPS.</p>	<p>1. Minor cuts, abrasions, or contusions handling equipment and tools</p> <p>2. Heavy lifting (muscle strains and pulls)</p> <p>3. Vehicular traffic at the work site</p> <p>4. Intermittent high noise levels</p> <p>5. Slip/trip/fall hazards</p> <p>6. Natural hazards</p>	<p>1. Wear cut-resistant gloves when handling items with sharp or rough edges.</p> <p>2. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure a clear path of travel and good grasp on object. Lift with legs not back, obtain help when needed to lift large, bulky, or heavy items).</p> <p>3. Locate vehicle and equipment staging areas. Inform site personnel of equipment areas and of their responsibility to stay clear of moving vehicles. Observe designated and marked travel pathways. Wear safety vests when activities involve encroaching on active traffic ways.</p> <p>4. Although not considered a highly probable event, based on the anticipated activities, the use of hearing protection may occasionally be required (at the onsite SSO's/FOL's/SUXOS' discretion). The SSO or the FOL/SUXOS will observe the following:</p> <ul style="list-style-type: none"> <li>• Available data or monitoring results collected from similar operations and/or collected during this activity.</li> <li>• Use of hearing protection within an established distance from an operation potentially generating excessive noise levels until these levels can be quantified. For instance, during the operation of heavy equipment (DPT or drill rig) typical site control boundary will be the length of the boom plus 10- feet. This is a sufficient distance to remove personnel from excessive noise levels. Inside this boundary personnel will wear hearing protection.</li> <li>• Lastly, the employees may utilize the following general rule of thumb to help make these determinations:</li> <li>• If noise levels are such that a worker must raise their voice to communicate with someone who is within arm's reach (approximately 2 feet) of them, excessive noise levels are being approached and hearing protection is required.</li> </ul> <p>Hearing protection will consist of either ear muffs or ear plugs that have a Noise Reduction Rate (NRR) of at least 25 decibels (dB).</p> <p>5. Implement and maintain good housekeeping practices throughout work areas. Preview walking/working areas and maintain them to identify and avoid when possible slipping/tripping hazards. Preview work locations for unstable/uneven terrain.</p> <p>6. Inspect for the presence of poisonous plants and insects and avoid if possible. If it is not possible to avoid, wear appropriate protective clothing to minimize potential contact.</p>

**TABLE 1**  
**NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: Mobilization/Demobilization**

**ANALYZED BY/DATE: E. Samuels/J.Laffey 02/10**

<b>EQUIPMENT TO BE USED</b>	<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
Hand tools (dollies, hand carts, hand knives, shovels, etc.)	Visual inspection of hand tools prior to use by user. FOL/SUXOS to perform regular inspections for housekeeping issues and surveys of operational areas to ensure compliance with the HASP.	None required.

TABLE 1

NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS

ACTIVITY: UXO Avoidance Prior to Field/Sampling Activities

ANALYZED BY/DATE: E. Samuels 09/09

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
<p>UXO Surface Survey – Identifying MEC/UXO materials on the surface/near surface prior to sampling activities</p>	<p>1. Injury due to contact with operating/moving heavy equipment, if applicable. These include the following potential hazards:</p> <ul style="list-style-type: none"> <li>• Struck by</li> <li>• Overhead hazards</li> <li>• Eye injury</li> <li>• Foot injury</li> <li>• Intermittent noise</li> </ul> <p>2. If operating heavy equipment is not present during this task, then potential hazards would be limited to:</p> <ul style="list-style-type: none"> <li>• Insect/animal bites</li> </ul>	<p>1. Be aware of safe work zones and use the designated routes of approach at the sites. Personnel will not approach operating excavators closer than at least the length of the fully extended boom plus 5 feet, with a minimum distance of 25 feet from the point of operation.</p> <ul style="list-style-type: none"> <li>• Only authorized and essential personnel will be permitted in the work area.</li> <li>• Heavy equipment such as drill rigs will be equipped with movement warning systems (audible and/or visual).</li> <li>• Wear safety vest when working near heavy equipment.</li> <li>• Hard hats, safety impact eye protection, and steel toe safety footwear must be worn in areas where heavy equipment is actively operating. If steel toe footwear cannot be worn because of interferences with UXO detection devices, safety impact footwear with non-metallic toe protection (provided that the footwear satisfies ANSI Z-41 requirements for protective footwear) shall be used. <ul style="list-style-type: none"> <li>- Hearing protection will be worn at the discretion of the SSO's/SUXOS. The following general rule of thumb applies:</li> <li>- <i>If noise levels are such that a worker must raise their voice in order to communicate with someone who is within arm's reach (approximately 2 feet) of them, excessive noise levels are being approached and hearing protection is required.</i></li> <li>- <i>Hearing protection will consist of either ear muffs or ear plugs that have an NRR of at least 25 dB</i></li> </ul> </li> </ul> <p>2. Tape up joint between the bottom of pants legs and top of work boot with duct tape. Apply insect repellants containing at least 10 percent DEET. Follow manufacturer's label instructions for proper application and re-application. Perform close body inspections at the end of each day to detect/remove any insects. If walking through high grass or brush areas, wear snake chaps and avoid approaching or disturbing potential nesting areas.</p>



**TABLE 1**

**NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: UXO Avoidance Prior to Field/Sampling Activities**

**ANALYZED BY/DATE: E. Samuels 09/09**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
	<p>5. Slip/trip/fall hazards</p> <p>6. Electrical storms/ inclement weather (high winds, heavy rains, etc.)</p> <p>7. Natural Hazards</p>	<p>5. Implement and maintain good housekeeping practices throughout work areas. Preview walking/working areas and maintain them to identify and avoid possible slipping/tripping hazards. Preview work locations for unstable/uneven terrain.</p> <p>6. If electrical storms or inclement weather are in the area as determined through local forecasting or weather alerts issued, the SUXOS will suspend outside activities. The 30-30 rule shall be applied, which is "if a time interval of 30 seconds or less is between lightning and its thunder, go inside (building/vehicle) and stay inside for at least 30 minutes." If no additional lightning and/or thunder is noted within this 30 minutes work may resume at the SSO's/SUXOS' direction. Personnel will be directed to seek suitable shelter that will provide adequate protection from the elements. Lightning threat detection will be coordinated within NSA Mid-South's existing systems.</p> <p>7. Inspect for the presence of poisonous plants and insects and avoid if possible. If it is not possible to avoid, wear appropriate protective clothing to minimize potential contact.</p>

TABLE 1

NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS

ACTIVITY: UXO Avoidance Prior to Field/Sampling Activities

ANALYZED BY/DATE: E. Samuels 09/09

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<p><b>Personal Protective Equipment:</b></p> <p><b>Minimum:</b></p> <p>Steel toe boots, hard hats, and safety impact eye protection (when in active heavy vehicle operation areas or when handling heavy boxes and/or containers)</p> <ul style="list-style-type: none"> <li>• Work gloves</li> <li>• Work clothes</li> </ul> <p><b>Optional items:</b></p> <p>Hearing protection at SSO/SUXOS discretion High-visibility vests when near active traffic areas. For UXO Technicians - Steel toe/shank boots are required when working in areas where there is a danger of foot injuries due to falling or rolling objects or of objects piercing the sole. If steel toe footwear cannot be worn because of interferences with UXO detection devices, safety impact footwear with non-metallic toe protection (provided that the footwear satisfies ANSI Z-41 requirements for protective footwear) shall be used.</p> <p><b>HTRW:</b> none</p>	<p>Initial PPE inspection performed by the SUXOS. Ongoing (prior to each use) inspections are the responsibility of PPE users.</p>	<p>PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40-hour HAZWOPER training, which is to be verified by the SUXOS through initial training documentation and reviewed prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.</p>

**TABLE 1**  
**NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: Multi-Media Sampling Activities**

**ANALYZED BY/DATE: E. Samuels/J. Laffey 02/10**

<b>ACTIVITY / PHASE</b>	<b>POTENTIAL HAZARDS</b>	<b>RECOMMENDED ACTIONS / CONTROLS</b>
<p>UXO avoidance during sampling activities-identifying materials as not MEC/MPPEH-related prior to sampling.</p>	<p>1. MEC/UXO Hazards</p>	<p>1. MEC/UXO avoidance operations will be conducted by trained UXO Technicians. Non-UXO personnel will be escorted while in the area of concern.</p> <ul style="list-style-type: none"> <li>• The sampling team will be accompanied by a UXO Technician II or higher during fieldwork at the Pistol Range.</li> <li>• Exclusion zone distances will be defined based on those specified in the Work Plan.</li> <li>• Operations will immediately stop if MEC is discovered and UXO Technicians will secure the area. Non-UXO personnel will leave the area.</li> <li>• A downhole magnetometer will be used to survey the subsurface sampling locations.</li> <li>• The survey will occur at 2 foot intervals until sampling depth has been achieved.</li> <li>• If MEC/UXO is observed, the UXO Technician making the observation will signal to stop operations and take the following precautions:               <ul style="list-style-type: none"> <li>○ The UXO Technician will inspect the MEC/UXO to determine if it is munitions scrap or munitions debris.</li> <li>○ This identification and the exact location will be recorded in the logbook.</li> <li>○ Munitions scrap or munitions debris will be treated as MEC related material and will not be moved.</li> <li>○ Any MEC/UXO item discovered during UXO Surface Sweep operations will be flagged for UXO avoidance as stated in the Work Plan/ESS Determination.</li> <li>○ The SUXOS will notify the NSA Mid-South IRP Manager upon observation of suspect MEC items.</li> </ul> </li> <li>• An inventory will be maintained by the SUXOS with locations, and descriptions for suspect MEC/MPPEH discovered during this operation, and the Navy RPM will be provided an update about the inventory on a daily basis.</li> <li>• If at any time during the sampling activities, MEC, suspect MEC, MPPEH, or munitions debris are</li> </ul>

**TABLE 1**  
**NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: Multi-Media Sampling Activities**

**ANALYZED BY/DATE: E. Samuels/J. Laffey 02/10**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
	<p>2. Insect /animal bites</p> <p>3. Poisonous Plants</p> <p>4. Inclement Weather</p>	<p>discovered in the investigation area, operations will stop and the item will be reported.</p> <ul style="list-style-type: none"> <li>• The other metal scrap may be removed from the area of concern and consolidated if allowed under the conditions of the ESS Determination.</li> </ul> <p>2. Tape up joint between bottoms of pant legs and top of work boot with duct tape. Apply insect repellants containing at least 10 percent DEET. Follow manufacturer's label instructions for proper application and re-application. Perform close body inspections at the end of each day to detect/remove any insects. If walking through high grass or brush areas, wear snake chaps and avoid approaching or disturbing potential nesting areas.</p> <p>3. Inspect for the presence of poisonous plants and avoid if possible. If it is not possible to avoid, wear appropriate protective clothing to minimize potential contact.</p> <p>4. If electrical storms or inclement weather are in the area, as determined through local forecasting or weather alerts issued, the SUXOS will suspend outside activities. The 30-30 rule shall be applied, which is "if a time interval of 30 seconds or less is between lightning and its thunder, go inside (building/vehicle) and stay inside for at least 30 minutes." If no additional lightning and/or thunder is noted within 30 minutes, work may resume at the SSO's/SUXOS' direction. Personnel will be directed to seek suitable shelter that will provide adequate protection from the elements. Lightning threat detection will be coordinated within NSA Mid-South's existing systems.</p>

**TABLE 1**  
**NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: Multi-Media Sampling Activities**

**ANALYZED BY/DATE: E. Samuels/J. Laffey 02/10**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
	<p>5. Slips/Trips/Fall Hazards</p> <p>6. Concrete Coring Hazards</p> <p>7. Chemical contaminants, MC contaminants, and/or decontamination fluids</p>	<p>5. Practice good housekeeping to the extent possible and conduct the following:</p> <ul style="list-style-type: none"> <li>• Maintain clear walking and working areas.</li> <li>• Eliminate, when possible, any debris and rutted areas that may create a tripping hazard.</li> <li>• Remaining hazards should be pointed out to the UXO Technicians.</li> <li>• Personnel will return the site to a neat and orderly condition prior to leaving the site.</li> <li>• Exit and access pathways will be maintained free of obstructions.</li> </ul> <p>6. Identify underground utilities before commencing any concrete operations.</p> <ul style="list-style-type: none"> <li>• Conduct a safety check on equipment and extension cords.</li> <li>• Use electrical outlets with ground fault circuit interrupter (GFCI) or extension cords with GFCI.</li> <li>• Use wetting techniques to minimize dust and friction.</li> <li>• Apply water to core bit until slurry begins to look like heavily creamed coffee.</li> <li>• Wear the well-fitting nitrile gloves (rather than cotton or leather gloves) when in coring.</li> <li>• Wash and dry hands before putting on gloves and every time that you remove your gloves.</li> <li>• Replace grossly contaminated or worn-out gloves.</li> <li>• Make sure the drill rig is properly anchored.</li> <li>• Standing on a drill rig will cause the bit to bind up in the hole</li> <li>• Use the manufacturers recommended speed (revolutions per minute) for the diameter of the bit used.</li> </ul> <p>7. Exposure to potential site contaminants during this activity is unlikely given the nature of the work and the limited contact with potentially contaminated media. The following precautionary procedures will be implemented:</p> <ul style="list-style-type: none"> <li>• Generation of dusts should be minimized. If airborne dusts are observed, area wetting methods will be used. If area-wetting methods are not feasible, termination of activities may be used to minimize exposure to observed airborne dusts.</li> <li>• Use proper protective equipment and good hygiene practices to minimize contact with site contaminants and hazardous decontamination fluids. Obtain manufacturer's Material Safety Data Sheets (MSDS) for any decontamination fluids used on-site. These must be used in well-ventilated areas, such as outdoors. Use appropriate PPE as identified on MSDS. The chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication section of the Health and Safety Guidance Manual (Section 5).</li> <li>• Decontaminate the equipment and supplies between sampling and prior to leaving the site.</li> </ul>



**TABLE 1**  
**NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: Multi-Media Sampling Activities**

**ANALYZED BY/DATE: E. Samuels/J. Laffey 02/10**

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<p><b>Personal Protective Equipment:</b></p> <p><b>Minimum:</b></p> <ul style="list-style-type: none"> <li>• Steel toe boots, hard hats, and safety impact eye protection (during concrete coring or when in active heavy vehicle operation areas or when handling heavy boxes and/or containers)</li> <li>• Work gloves (cotton/leather)</li> <li>• Work clothes</li> </ul> <p><b>Optional items:</b></p> <ul style="list-style-type: none"> <li>• Traffic areas. Hearing protection at SSO/SUXOS discretion</li> <li>• Hard hat when working near over head hazards.</li> <li>• High-visibility vests when near high traffic areas.</li> <li>• For UXO Technicians - Steel toe/shank boots are required when working in areas where there is a danger of foot injuries due to falling or rolling objects or objects piercing the sole. If steel toe footwear cannot be worn because of</li> </ul>	<p>Initial PPE inspection performed by the SUXOS. Ongoing (prior to each use) inspections are the responsibility of PPE users.</p>	<p>PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40-hour HAZWOPER training, which is to be verified by the SUXOS through initial training documentation and reviewed prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.</p> <p>Explosive handling and transportation is not anticipated. If required this task will be conducted by qualified UXO Technicians. Therefore, this training and background is considered sufficient for this task.</p>

**TABLE 1**  
**NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: Multi-Media Sampling Activities**

**ANALYZED BY/DATE: E. Samuels/J. Laffey 02/10**

<b>EQUIPMENT TO BE USED</b>	<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
<p>interferences with UXO detection devices, safety impact footwear with non-metallic toe protection (provided that the footwear satisfies ANSI Z-41 requirements for protective footwear) shall be used.</p> <ul style="list-style-type: none"> <li>• <b>HTRW:</b> none</li> </ul>		

**TABLE 1  
NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: Decontaminaiton**

**ANALYZED BY/DATE: J. Laffey 02/10**

<b>ACTIVITY / PHASE</b>	<b>POTENTIAL HAZARDS</b>	<b>RECOMMENDED ACTIONS / CONTROLS</b>
Decontamination	<ol style="list-style-type: none"> <li>1. Decontamination fluids.</li> <li>2. Strains and muscle pulls from lifting.</li> <li>3. Slips, trips and falls</li> <li>4. Inclement weather</li> </ol>	<ol style="list-style-type: none"> <li>1. Read and follow the manufacturer's recommendations on the MSDS.</li> <li>2. Always use proper lifting techniques. When possible use machinery or multiple personnel for heavy lifts.</li> <li>5. Practice good housekeeping to the extent possible and conduct the following: <ul style="list-style-type: none"> <li>• Maintain clear walking and working areas.</li> <li>• Eliminate, when possible, any debris and that may create a tripping hazard.</li> <li>• Personnel will return the site to a neat and orderly condition prior to leaving the site.</li> <li>• Exit and access pathways will be maintained free of obstructions.</li> </ul> </li> <li>4. If electrical storms or inclement weather are in the area, as determined through local forecasting or weather alerts issued, the SUXOS will suspend outside activities. The 30-30 rule shall be applied, which is "if a time interval of 30 seconds or less is between lightning and its thunder, go inside (building/vehicle) and stay inside for at least 30 minutes." If no additional lightning and/or thunder is noted within 30 minutes, work may resume at the SSO's/SUXOS' direction. Personnel will be directed to seek suitable shelter that will provide adequate protection from the elements. Lightning threat detection will be coordinated within NSA Mid-South's existing systems.</li> </ol>

**TABLE 1  
NSA MID-SOUTH ACTIVITY HAZARD ANALYSIS**

**ACTIVITY: Decontaminaiton**

**ANALYZED BY/DATE: J. Laffey 02/10**

<b>EQUIPMENT TO BE USED</b>	<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
<p><b>Personal Protective Equipment:</b></p> <p><b>Minimum:</b></p> <ul style="list-style-type: none"> <li>• Safety toed shoes/boots,</li> <li>• Nitrile gloves</li> <li>• Work clothes</li> </ul> <p><b>Optional items:</b></p> <ul style="list-style-type: none"> <li>• Safety glasses and Splash shield (while using high pressure spray/steam )</li> <li>• Hearing protection when near high ambient noise levels.</li> <li>• Chemical resistive boot covers when using high pressure spray/steam.</li> <li>• <b>HTRW:</b> none</li> </ul>	<p>Initial PPE inspection performed by the SUXOS. Ongoing (prior to each use) inspections are the responsibility of PPE users.</p>	<p>PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40-hour HAZWOPER training, which is to be verified by the SUXOS through initial training documentation and reviewed prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.</p> <p>Explosive handling and transportation is not anticipated. If required this task will be conducted by qualified UXO Technicians. Therefore, this training and background is considered sufficient for this task.</p>

## **15.0 HEALTH AND SAFETY PLAN**

This APP is an attachment to the site-specific HASP and this document as a whole (HASP and APP) will be submitted to the Navy Environmental Health Center (NEHC) for review and comment.

## **16.0 REFERENCES**

United States Army Corps of Engineers (USACE). 2008. Engineer Manual (EM) 385-1-1, Safety and Health Requirements Manual. It is available online at:

<http://www.usace.army.mil/inet/usace-docs/eng-manuals/em385-1-1/entire.pdf>

***ATTACHMENTS TO ACCIDENT PREVENTION PLAN***

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**Attachment 1**

**Employee training/qualifications to be attached by PM/FOL**

(40-Hour HAZWOPER Certificates; 8-Hour HAZWOPER Refresher Certificates; First Aid/CPR Certificates; Employee Resumes as required)

**ATTACHMENT V**  
**EQUIPMENT INSPECTION CHECKLIST**

### Equipment Inspection Checklist

Company: \_\_\_\_\_

Unit/Serial No: \_\_\_\_\_

Inspection Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Time: \_\_\_\_ :

Equipment Type: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project No: \_\_\_\_\_

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency Stop Devices	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Emergency Stop Devices (At points of operation)</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Have the emergency shut offs identified been communicated to the field crew?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Has a person been designated as the Emergency Stop Device Operator?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Highway Use	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Cab, mirrors, safety glass?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Seat Belts?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Is the equipment equipped with audible back-up alarms and back-up lights?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Horn and gauges</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Brake condition (dynamic, park, etc.)</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Tires (Tread) or tracks</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Windshield wipers</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Exhaust system</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Steering (standard and emergency)</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Wheel Chocks?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Are tools and material secured to prevent movement during transport? Especially those within the cab?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Are there flammables or solvents or other prohibited substances stored within the cab?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>• Are tools or debris in the cab that may adversely influence operation of the vehicle (in and around brakes, clutch, gas pedals)</li> </ul>	

**Equipment Inspection Checklist**

Page 2

Unit/Serial No#: \_\_\_\_\_

Inspection Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Yes	No	NA	Requirement	Comments
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Fluid Levels:</b> <ul style="list-style-type: none"> <li>• Engine oil</li> <li>• Transmission fluid</li> <li>• Brake fluid</li> <li>• Cooling system fluid</li> <li>• Hoses and belts</li> <li>• Hydraulic oil</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>High Pressure Hydraulic Lines</b> <ul style="list-style-type: none"> <li>• Obvious damage</li> <li>• Operator protected from accidental release</li> <li>• Coupling devices, connectors, retention cables/pins are in good condition and in place</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Mast Condition</b> <ul style="list-style-type: none"> <li>• Structural components/tubing</li> <li>• Connection points</li> <li>• Pins</li> <li>• Welds</li> <li>• Outriggers</li> <li>• Operational</li> <li>• Plumb (when raised)</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Hooks</b> <ul style="list-style-type: none"> <li>• Are the hooks equipped with Safety Latches?</li> <li>• Does it appear that the hook is showing signs of wear in excess of 10% original dimension?</li> <li>• Is there a bend or twist exceeding 10% from the plane of an unbent hook?</li> <li>• Increase in throat opening exceeding 15% from new condition</li> <li>• Excessive nicks and/or gouges</li> <li>• Clips</li> <li>• Number of U-Type (Crosby) Clips                      (cable size 5/16 – 5/8 = 3 clips minimum)                      (cable size 3/4 – 1 inch = 4 clips minimum)                      (cable size 1 1/8 – 1 3/8 inch = 5 clips minimum)</li> </ul>	

**Equipment Inspection Checklist**

Page 3

Unit/Serial No#: \_\_\_\_\_

Inspection Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Power cable and/or hoist cable <ul style="list-style-type: none"> <li>Reduction in Rope diameter <math>\pi</math> (5/16 wire rope &gt; 1/64 reduction nominal size -replace) (3/8 to 1/2 wire rope &gt; 1/32 reduction nominal size-replace) (9/16 to 3/4 wire rope &gt; 3/64 reduction nominal size-replace)</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Number of broken wires (6 randomly broken wires in one rope lay) (3 broken wires in one strand)</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Number of wire rope wraps left on the Running Drum at nominal use (<math>\geq 3</math> required)</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- Lead (primary) sheave is centered on the running drum	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Lubrication of wire rope (adequate?)</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Kinks, bends – Flattened to &gt; 50% diameter</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hemp/Fiber rope (Cathead/Split Spoon Hammer) <ul style="list-style-type: none"> <li>Minimum <math>\frac{3}{4}</math>; maximum 1 inch rope diameter (Inspect for physical damage)</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Rope to hammer is securely fastened</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety Guards – <ul style="list-style-type: none"> <li>Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) the points of operations protected from accidental contact?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Hot pipes and surfaces exposed to accidental contact?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>High pressure lines</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Nip/pinch points</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operator Qualifications <ul style="list-style-type: none"> <li>Does the operator have proper licensing where applicable, (e.g., CDL)?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Does the operator, understand the equipment’s operating instructions?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Is the operator experienced with this equipment?</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> <li>Is the operator 21 years of age or more?</li> </ul>	

**Equipment Inspection Checklist**  
**Page 4**

Unit/Serial No#: \_\_\_\_\_

Inspection Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>PPE Required for Drill Rig Exclusion Zone</b> <ul style="list-style-type: none"> <li>• Hardhat</li> <li>• Safety glasses</li> <li>• Work gloves</li> <li>• Chemical resistant gloves _____</li> <li>• Steel toed Work Boots</li> <li>• Chemical resistant Boot Covers</li> <li>• Apron</li> <li>• Coveralls Tyvek, Saranex, cotton) _____</li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Other Hazards</b> <ul style="list-style-type: none"> <li>• Excessive Noise Levels? _____ dBA</li> <li>• Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.)               <ul style="list-style-type: none"> <li>- MSDSs available?</li> </ul> </li> <li>• Will On-site fueling occur               <ul style="list-style-type: none"> <li>- Safety cans available?</li> <li>- Fire extinguisher (Type/Rating - _____ )</li> </ul> </li> </ul>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Approved for Use     Yes     No     See Comments

\_\_\_\_\_  
 Site Health and Safety Officer

\_\_\_\_\_  
 Operator

**ATTACHMENT VI**

**OSHA POSTER**

# Job Safety and Health

## It's the law!



Occupational Safety  
and Health Administration  
U.S. Department of Labor

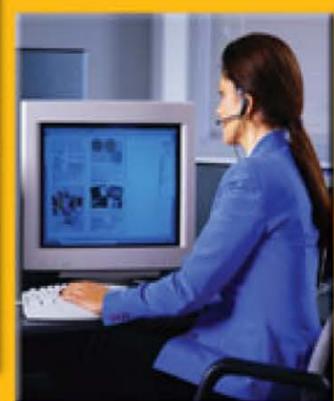
### EMPLOYEES:

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in that inspection.
- You can file a complaint with OSHA within 30 days of retaliation or discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have the right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violations.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records and records of your exposures to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.
- You must comply with all occupational safety and health standards issued under the *OSH Act* that apply to your own actions and conduct on the job.

### EMPLOYERS:

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the *OSH Act*.

This free poster available from OSHA –  
*The Best Resource for Safety and Health*



Free assistance in identifying and correcting hazards or complying with standards is available to employers, without citation or penalty, through OSHA-supported consultation programs in each state.

**1-800-321-OSHA**  
[www.osha.gov](http://www.osha.gov)

