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HEALTH AND SAFETY PLAN FOR REMEDIAL INVESTIGATION AT SKEET AND PISTOL RANGE AND INCINERATOR DISPOSAL SITE NAS CORPUS CHRISTI TX

3/1/2010

TETRA TECH, NUS

Comprehensive **L**ong-term **E**nvironmental **A**ction **N**avy

CONTRACT NUMBER N62467-04-D-0055

Health and Safety Plan
for
Remedial Investigation
at
Skeet and Pistol Range
and
Incinerator Disposal Site at

Naval Auxiliary Landing Field Cabaniss
Corpus Christi, Texas

Contract Task Order 0135

March 2010

NAVFAC
Naval Facilities Engineering Command
NAVFAC SOUTHEAST

NAS Jacksonville
Jacksonville, Florida 32212-0030

TETRA TECH NUS, Inc.

HEALTH AND SAFETY PLAN
FOR
REMEDIAL INVESTIGATION
AT
SKEET AND PISTOL RANGE
AND
INCINERATOR DISPOSAL SITE

NAVAL AUXILIARY LANDING FIELD CABANISS
CORPUS CHRISTI, TEXAS

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Naval Facilities Engineering Command
Southeast
NAS Jacksonville
Jacksonville, Florida 32212-0030

Submitted by:
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Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-04-D-0055
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MARCH 2010

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1.0 INTRODUCTION

The objective of this Health and Safety Plan (HASP) is to provide the safety and health requirements, practices, and procedures for Tetra Tech NUS, Inc. (TtNUS) personnel participating in remedial investigation at the Skeet and Pistol Range and the Incinerator Disposal Site at the Naval Auxiliary Landing Field (NALF) Cabaniss, located in Corpus Christi, Texas.

This HASP is to be used in conjunction with the Tetra Tech NUS UXO SOP (Attachment II) and the Health and Safety Guidance Manual. The Guidance Manual provides detailed information pertaining to hazard recognition and control, and TtNUS standard operating procedures. This HASP and the contents of the Guidance Manual were developed to comply with the requirements stipulated in 29 CFR 1910.120 (OSHA's Hazardous Waste Operations and Emergency Response Standard). Both documents must be present at the site to satisfy these requirements.

This HASP has been written to support proposed tasks and techniques associated with the scope of work as presented in Section 4.0. It 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. Should the proposed work site conditions and/or suspected hazards change, or if new information becomes available, this document will be modified.

NAVFAC SE has prepared a Controlled Burn Plan for activities to be held at the Former Incinerator Disposal Site at NALF Cabaniss. Tetra Tech NUS site personal are responsible to review and follow this document prior to site activities.

1.1 AUTHORITY

This work is authorized under the Comprehensive Long - Term Environmental Action Navy (CLEAN) contract N62467-04-D-055 Contract Task Order (CTO) 0135, administered through the U.S. Navy, Naval Auxiliary Landing Field (NALF) Cabaniss, located in Corpus Christi, Texas.

1.2 KEY PROJECT PERSONNEL AND ORGANIZATION

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

- The Tetra Tech PM is responsible for the overall direction of health and safety for this project.

- The Project Health and Safety Officer (PHSO) is responsible for developing the HASP in accordance with applicable OSHA regulations. Specific responsibilities include:

  i. Providing information regarding site contaminants and physical hazards.
  ii. Establishing air monitoring and decontamination procedures.
  iii. Assigning personal protective equipment.
  iv. Determining emergency response procedures and emergency contacts.
  v. Stipulating training requirements.
  vi. Reviewing appropriate training and medical surveillance certificates.
  vii. Providing standard work practices to minimize potential injuries and exposures.

- The Tetra Tech Field Operations Leader (FOL) is responsible for implementation of the HASP 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 may include:

  i. Coordinating the health and safety activities with the FOL.
  ii. Selecting, applying, inspecting, and maintaining personal protective equipment.
  iii. Establishing work zones and control points.
  iv. Implementation of the air monitoring program for on-site activities.
  v. Verifying training and medical clearances of on-site personnel status in relation to site activities.
  vi. Implementing pertinent health and safety programs as they pertain to site activities.
  vii. Coordination with identified emergency services.
  viii. Providing site specific training for on-site personnel.

- The Unexploded Ordnance (UXO) Specialist directs daily implementation and enforcement of the CTO requirements as they apply to munitions and explosive of concern (MEC) and material potentially presenting an explosive hazard (MPPEH) support and safety during site activities. The UXO Specialist has the overall responsibility for the day-to-day MEC/MPPEH operations at the site and directs site personnel resources at the site on MEC/MPPEH support issues to ensure their safety. The UXO Specialist will be responsible for the site MEC/MPPEH.

1.3 UNEXPLODED ORDNANCE RESPONSIBILITIES AND LINES OF AUTHORITY

For MEC safety the UXO Technician on site has the responsibility for MEC/ safety and the authority to stop work and report MEC safety issues as they arise.

A UXO Specialist (Technician III) will be present onsite to oversee the UXO escort and avoidance activities. The UXO Tech III will have a minimum of 8 years of EOD/UXO experience including prior military EOD and/or commercial UXO experience in munitions response actions and/or range clearance activities. The UXO Technician III will meet the minimum qualification standards as stated in Table 4-1 DDESB TP 18 dated 20 Dec 2004 (see Attachment III).

This individual shall have the specific training, knowledge, and experience necessary to implement the HASP and verify compliance with applicable safety and health requirements as well as the site quality control plan. The UXO specialist must have the ability to implement the approved MEC and explosives safety program in compliance with the DOD, Federal, state, and local statutes and codes; analyze MEC and explosives operational risks, hazards, and safety requirements; establish and ensure compliance with the site specific safety requirements for MEC and explosives operations; enforce personnel limits and safety exclusion zones for MEC clearance operations, UXO and explosives transportation, storage, and destruction; conduct safety inspections to ensure compliance with MEC and explosives safety codes; and operate and maintain air monitoring equipment required at a site for airborne contaminants. The UXO specialist shall be on-site during UXO related work and has immediate stop work authority. Other responsibilities of the UXO Tech III may include:

- Be present during field activities to implement the HASP
- Inspect site activities to identify safety and occupational health deficiencies and correct them
- Coordinate changes/modifications to the HASP
- Conduct and document worker MEC/MPPEH safety awareness briefings (initial and daily)
- Conduct and document visitor MEC/MPPEH safety awareness briefing prior to allowing visitors on site
- Select proper PPE and enforce proper wear, use and procedures
- Stop work if unacceptable health and safety conditions exist or unsafe acts are observed
- Ensure site personnel are trained in accordance with the HASP
- Ensure that adequate communication between field personnel and emergency response personnel
- Ensure required exclusion zones are established and maintained
- Ensure intrusive operations are conducted in accordance to the Work Plan
- Implement the approved MEC/MPPEH safety program
- Analyze MEC and explosives operational risks, hazards, and safety requirements

- Enforce personnel limits and safety exclusion zones for UXO operations
- Conduct safety inspections to ensure compliance with MEC safety codes
- Conduct quality control inspections to ensure compliance with the work plan

1.4 STOP WORK AUTHORIZATION

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 Project Manager and the Corporate Health and Safety Manager. Through observations and communication, all parties involved shall then develop, communicate, and implement corrective actions necessary and appropriate to modify the task and to resume work.

1.5 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: NALF Cabaniss **Site Contact:** Gary LaFlore

Address: Cabaniss, Corpus Christi, Texas **Phone Number:** (361) 961-5354

Navy RPM: Helen Lockard **Phone Number:** (904) 542-6308

Purpose of Site Visit: This field investigation entails multiple tasks and activities (see Section 4.0) including well installation, a controlled burn, multi-media sampling and a geophysical survey.

Proposed Dates of Work: March 2010 to completion

Project Team:

TtNUS Personnel:	**Discipline/Tasks Assigned:**
G. Kenneth Grim, Jr.	Task Order Manager (TOM)
Matthew M. Soltis, CIH, CSP	Manager of Health and Safety (HSM)
Clyde Snyder	Project Health and Safety Officer (PHSO)
TBD	Field Operations Leader (FOL)
TBD	Field Technician
TBD	Site Safety Officer (SSO)
Ralph Brooks	Unexploded Ordinance (UXO) Manager
Non-TtNUS Personnel	**Affiliation/Discipline/Tasks Assigned**
TBD	Subcontractor
TBD	Surveyor

Hazard Assessments (for purposes of OSHA 29 CFR 1910.132) and HASP preparation conducted by:
Clyde Snyder

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, the field team will primarily evacuate and assemble to an area unaffected by the emergency and notify the appropriate local emergency response personnel/agencies. When ill or if inflicted with 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. TtNUS personnel may participate in minor event response and emergency prevention activities such as:

- Initial fire-fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Provision of initial medical support for injury/illness requiring only first-aid level support
- Provision of site control and security measures as necessary

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards are the types of emergencies which could be encountered during site activities. To minimize or eliminate the potential for these emergency situations, pre-emergency planning activities will include the following:

- Coordinating with NALF Cabaniss Emergency Services personnel to ensure that TtNUS emergency action activities are compatible with existing emergency response procedures.

- Establishing and maintaining information at the project staging area (support zone) for easy access in the event of an emergency. This information may include the following:

  - 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 phone numbers.

- Identifying a chain of command for emergency action. During the controlled burn at the Incinerator Disposal Site. Tetra Tech personnel will operate under the procedures outlined in the Controlled Burn Plan and stay outside the prescribed safety zone under the direct control of the Burn Manager.

- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible. During initial site training personnel will review the Controlled Burn Plan of this plan.

- Utilizing the necessary equipment to safely accomplish identified tasks.

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. Visual observation will also play a role in detecting potential exposure events to some chemical hazards. 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. Survey findings are documented in the site logbook. Where potential hazards exist, TtNUS will initiate control measures to prevent adverse effects to human health and the environment.

2.3.2 Prevention

TtNUS will minimize the potential for emergencies by following the Health and Safety Guidance Manual and ensuring compliance with the HASP and applicable OSHA regulations. Daily site surveys of work areas, prior to the commencement of that day's activities, 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; monitoring instrumentation readings which indicate levels of contamination are greater than instituted action levels; and evidence of personnel overexposure to potential site contaminants.

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. Safe places of refuge will be identified prior to the commencement of site activities 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. During an evacuation, personnel will remain at the refuge location until directed otherwise by the on-site Incident Commander of the Emergency Response.

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 CONTACTS

Prior to initiating field activities, 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.

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 filed onsite (see Attachment IV).

TABLE 2-1

EMERGENCY REFERENCE

NALF CABANISS, CORPUS CHRISTI, TEXAS

EMERGENCY AGENCY/CONTACT	TELEPHONE NUMBER
EMERGENCY	**911**
Christus Spohn Hospital South	(361) 985-5000
NAS Corpus Christi Base Security Dispatch	(361) 961-2375
NAS Corpus Christi Base Security Operations	(361) 961-3491
NAS Corpus Christi Base Security Operations Patrol	(361) 961-2282
Poison Control Center	(800) 222-1222
Navy Onsite Representative, NAS Corpus Christi Gary LeFlore	(361) 961-3704
NAVFAC RPM Helen :Lockard	(904) 542-6308
Tetra Tech NUS, Inc., Houston Office G. Kenneth Grim Jr. (Task Order Manager) (TOM)	(832) 251-6023
Health and Safety Manager (HSM) Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer (PHSO) Clyde Snyder	(412) 921-8904

2.6 EMERGENCY ROUTE TO HOSPITAL

Christus Spohn Hospital South
5950 Saratoga Blvd
Corpus Christi, TX 78414
(361) 985-5000

From the site take Saratoga Boulevard southeast 6 miles. Hospital on left.

FIGURE 2-1

ROUTE TO THE HOSPITAL:

2.7 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Site personnel will be working in close proximity at NALF Cabaniss. As a result, hand signals, voice commands, and line of site communication will be established to alert site personnel of an emergency.

If an emergency occurs, the following procedures are to be initiated:

- Initiate the evacuation via hand signals, voice commands, or line of site communication
- Report to the designated refuge point
- Once non-essential personnel are evacuated, appropriate response procedures will be taken
- Describe to the Incident Coordinator the pertinent incident details.
- When UXO is discovered the UXO Technician will flag the location.
  - The area, if necessary, will be barricaded or otherwise protected.
  - The NALF Cabaniss POC will be notified and NALF Cabaniss EOD will be contacted for treatment if necessary.
  - Site operations will stop, and the area will be under the control of the UXO Technician until relieved by the NALF Cabaniss POC or NALF Cabaniss EOD.

In the event that site personnel cannot mitigate the hazardous situation site personnel will:

- Dial 911 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.

2.8 INJURY/ILLNESS REPORTING

If any TtNUS personnel are injured or develop an illness as a result of working on site, the TtNUS Incident Report Form (Attachment V) must be followed. Following this procedure is necessary for documenting of the information obtained at the time of the incident.

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 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 by suitable and appropriate conveyance (i.e. 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 Department (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 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	Chest Tightness / Pressure
Tearing	Nausea / Vomiting
Headache	Dizziness
Cough	Weakness
Shortness of Breath	

Delayed Symptoms:

Weakness	Loss of Appetite
Nausea / Vomiting	Abdominal Pain
Shortness of Breath	Headache
Cough	Numbness / Tingling

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

Burning of eyes, nose, or throat	Nausea / Vomiting
Tearing	Dizziness
Headache	Weakness
Cough	Loss of Appetite
Shortness of Breath	Abdominal Pain
Chest Tightness / Pressure	Numbness / Tingling
Cyanosis	

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

NALF Cabaniss is located on the eastern side of Nueces County, Texas, and lies approximately eight miles west of Naval Air Station Corpus Christi (NASCC). The installation is immediately bounded on the east by Brezina Road, on the north by Ayers Street and FM 286, to the west by Saratoga Road, and to the south by Oso Creek. The installation encompasses a total of 923 acres and lies just outside the corporate bounds of the City of Corpus Christi. The installation boundary area includes Air Installation Compatible Use Zone (AICUZ) lands that extend northwest and southeast from the main acreage of the installation. These AICUZ lands are Navy property acquired to encompass noise zones and Accident Potential Zones in the event an accident were to occur on approach to or departing from the runways at NALF Cabaniss. NALF Cabaniss is bounded to the south by Oso Creek, a perennial water body that ultimately flows into Oso Bay. Beyond Oso Creek are agricultural and industrial properties. The area east of the installation is comprised of a mix of agricultural, industrial, and residential areas. North of the current boundary are former buildings and recreational areas that were once a part of the installation, were transferred to the General Services Administration (GSA) for disposal in 1958, and are now the property of the local school district. Residential zones lie beyond these buildings to the north. A former landfill is located directly west of the installation.

3.1 FACILITY DESCRIPTION

NALF Cabaniss is an outlying field (OLF) that supports Naval air training operations out of NASCC, home to the Chief of Naval Air Training, maintains and operates facilities and provides services and material to support the operations of the aviation facilities of the Naval Air Training Command and other tenant activities. The general command assignment is pilot training, primarily focusing on primary and intermediate flight maneuvering and traffic pattern operations.

NALF Cabaniss is located eight miles west of NASCC. The installation occupies 923 acres and was originally constructed with four 5,000-foot runways. The primary role of the installation is to support flight training operations originating from NASCC. Training Air Wing FOUR, based at the main installation, performs touch-and-go landing training between the main installation, NALF Cabaniss, and NALF Waldron, three miles south of NASCC. The airfield is lighted, so that night flight training, as well as daylight training, is possible.

NALF Cabaniss is covered with tall grasses, shrubs, trees, and other low-lying vegetation. Grasses and other vegetation near the operational runways are maintained through periodic mowing in support of flight training operations.

3.2 SPECIFIC SITE TO BE INVESTIGATED

3.2.1 Skeet and Pistol Range

The Skeet and Pistol Range was located in the southeastern corner of the installation, 1,230 feet southeast of Runway 31 and 400 feet north of Oso Creek. A former drainage ditch lies to the west of the former range, while another drainage canal currently intersects the eastern end of the former range area. The area surrounding the former range is open and covered in vegetation

The former range was originally constructed in 1942 and 1943. Initially, the site contained only the skeet range, comprised of two large firing arcs for skeet shooting, three smaller firing arcs for trap shooting, and an armory. Wood-frame "high" and "low" skeet houses were positioned at the ends of each skeet firing arc, which measured approximately 148 feet in length. The trap firing arcs were present on the east side of the range, were smaller in size than the skeet firing arcs (approximately 82 feet in length) and had trap houses centered in the middle of each firing arc. By January 1944, an additional skeet firing arc was added on the western side of the skeet range. All firing arcs faced to the southwest toward the installation boundary and Oso Creek. World War II-era skeet and trap ranges were typically constructed with five firing positions per firing arc.

Station records and aerial photographs indicate the skeet range was expanded in 1943 through the addition of the pistol range to the west. The two ranges were connected by a road and sidewalk. The pistol range was located 200 feet west of the skeet range and was comprised of 15 firing positions facing to the southwest towards an earthen target butt positioned 50 yards from the end of the firing area. Pistol ranges were typically constructed with firing lines located 10, 25, and 50 feet from the target area

The Skeet and Pistol Range was generally used for small arms qualification and moving target orientation training for naval aviators, although the range may have also been used for recreational purposes. Ammunition used at the site likely included 12-, 16-, and 20-gage and .410 caliber shotgun munitions; other small caliber ammunition (e.g., .22 caliber, .38 caliber, .45 caliber, and 9-mm) were likely used at the site for pistol training purposes based on the typical use of these small arms ranges. According to installation personnel and available documentation, no other munitions were used at the site.

Operation of the Skeet and Pistol Range as a training facility ceased at an unknown date. Station drawings and aerial photography of NALF Cabaniss indicate the Skeet and Pistol Range was taken out of service (demolished) sometime between 1958 and 1964; however, no records were found indicating the exact date of the range demolition.

3.1.2 Former Incinerator Disposal Site

The former Incinerator Disposal Site located at NALF Cabaniss covers approximately 20 acres, southwest of Runway 31 and within the boundaries of a former sanitary landfill. The former incinerator disposal site was used by the City of Corpus Christi and the Army to incinerate confiscated drug material, small arms, and ordnance items in a boiler. Incineration operations began at an unknown date and were terminated in approximately 1980. The area is currently covered in dense vegetation and has no military use.

A visual survey conducted at the site indicated the presence of munitions scrap and Munitions and Explosives of Concern (MEC) at the site in two discrete locations: (1) in and around the boiler and (2) on the ground surface near Perimeter Road, approximately 450 feet west of the boiler. A Time Critical Removal Action was conducted, removing the items. Of the 20 acre burn unit, MEC is suspected to be present within a 3 acre area. The suspected type of ordnance contamination at the site is incompletely treated MEC, ejected MEC, and munitions scrap containing residual explosives.

4.0 SCOPE OF WORK

This section discusses the activities that are to be performed at the sites. The Activity Hazard Analysis (AHAs) found in Section 14 of the APP provides information related to each of the tasks that are to be performed as part of the scope of work. As new phases or tasks are to be performed at the sites, the AHAs will be modified accordingly.

The proposed debris removal action consists of the following:

- Mobilization/Demobilization
- Surface Removal of Non-Munitions Related Debris, as applicable
  - Site Survey
  - Survey site boundaries
- Vegetation Management
  - Install firebreaks
  - Manage vegetation burning operation
  - Cut vegetation to proper height
- Soil Boring and monitoring well installation via Direct push Technology (DPT) or Hollow Stem Auger (HSA)
- Multi media sampling
  - Groundwater
  - Surface and subsurface soil
  - Sediment
  - XRF Analysis
- Decontamination
- IDW Management

If tasks other than those presented in this HASP are performed at the sites, this section of the HASP and the APP will be modified accordingly.

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

The purpose of this section is to identify the anticipated hazards and appropriate hazard prevention/hazard control measures that are to be observed for each planned task or operation. These topics have been summarized for each planned task through the use of task-specific Activity Hazard Analysis (AHAs), which are to be reviewed in the field with the task participants prior to initiating any task. Additionally, potential hazard and hazard control matters that are relevant but are not necessarily task-specific are addressed it 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 SAFE WORK PRACTICES

UXO escort and avoidance will be provided for activities associated with site survey, vegetation management, and debris removal activities. Based on historical site activities, it is conservatively assumed that MEC may be present. In addition to the task-specific work practices and restrictions identified in the AHAs attached to this HASP, the following general safe work practices are to be followed when conducting work on-site.

- Plan and mark entrance, exit, and emergency evacuation routes.
- Rehearse unfamiliar operations prior to implementation.
- Use the “buddy system” and maintain visual contact with other on-site team members.
- Establish appropriate safety zones including support, contamination reduction, and exclusion zones.
- Prohibit unnecessary personnel from visiting the operations site.
- Non-essential vehicles and equipment should remain within the support zone.
- Establish appropriate decontamination procedures for leaving the site.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.
- Work will be conducted by a UXO-qualified technician III, as defined in DDESB TP 18.
- The UXO specialist will conduct a detector-aided sweep of designated areas prior to entry and commencement of any activities.
- Surface locations will be screened (visual observation and magnetic detection) for the presence of UXO.
- The traffic routes (foot pathways) and work area dimensions, sufficient in size to conduct the operation, will be marked using flagging indicating an area cleared for access by general personnel.

The following safety precautions and rules will be observed by the site personnel:

- Report UXO or unidentified objects to the UXO Technician.
- Remove from the area any person showing evidence of explosive poisoning or dermatitis.
- Suspend operations immediately upon approach of an electrical storm within ten miles.
- If explosive materials are burning, or their ignition is imminent, immediately evacuate the area.
- Have a vehicle(s) in the area capable of evacuating personnel in case of an accident or emergency.
- Have communications equipment in the area in case of an accident or emergency.

5.2 DRILLING OPERATIONS SAFE WORK PRACTICES

The following Safe Work Practices are to be followed when working in or around drilling operations.

- Identify underground utilities and buried structures before drilling.

- Drilling rigs (DPT, HSA) will be inspected by a competent person (the SSO or designee) prior to the acceptance of the equipment at the site and prior to the use of the equipment. Repairs or deficiencies identified will be corrected prior to use. The inspection will be accomplished using the Equipment Inspection Checklist provided in Attachment VII. Inspection frequencies will be once every 10 day shift or following repairs.

- The work area around the point of operation will be graded to the extent possible to remove any trip hazards near or surrounding operating equipment.

- The driller's helper will establish an equipment staging and lay-down plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards. Mechanisms to secure heavy objects, such as drill flights, will be provided to avoid the collapse of stacked equipment.

- Potentially contaminated tooling will be wrapped in polyethylene sheeting for storage and transport to the centrally located decontamination unit.

- Prior to drilling, one member of the crew will be identified as the person with primary responsibility for engaging the emergency shut-off device in the event of an emergency. This person will be responsible for visually verifying that the area is clear and for verbally alerting site personnel prior to engaging the equipment.

- Minimize contact to the extent possible with contaminated tooling and environmental media.

- Support functions (sampling and screening stations) will be maintained a minimum distance from the drilling rig of the height of the mast plus 5 feet to remove these activities from within physical hazard boundaries.

- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the drill rig.

- In order to minimize contact with potentially contaminated tooling and media and to minimize lifting hazards, multiple personnel should move heavy tooling, where necessary.

- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone. Site visitors will be escorted.

- Equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the SSO to determined cleanliness prior to moving to the next location, exiting the site, or down time for maintenance.

- Motorized equipment will be fueled prior to the commencement of the day's activities. During fueling operations, equipment will be shutdown and bonded to the fuel provider.

- When not in use, drill rigs will be shutdown, emergency brakes set, and wheels chocked. Areas subjected to subsurface investigative methods will be restored to equal or better condition than original to remove any contamination brought to the surface and to remove any physical hazards. In situations where these hazards cannot be removed, these areas will be barricaded to minimize the impact on field crews working in the area.

5.3 CONTROLLED BURN FORMER INCINERATOR DISPOSAL SITE

The Navy will conduct vegetation removal via a controlled burn of the 20 acre Former Incinerator Disposal Site. MEC was discovered at the site during the Preliminary Assessment and Site Investigation so there is historical precedence indicating that MEC may still be present on-site. TtNUS Unexploded Ordnance (UXO) personnel will assist with burn planning and will be present on site during the burn. TtNUS UXO personnel will assist with laying/clearing the firebreaks and they will enforce a safe stand off distance for workers. The stand off distance is:

- Essential personnel teams (NALF Cabaniss Fire Dept, TtNUS UXO Specialist) will stay 302 ft from the burn site in the area known as the Hazard Fragment Distance.
- Non-essential personnel will be 1300 feet from the burn site and upwind of any smoke or fire.

All personnel will abide by the rules of the Burn Manager. Essential personnel will use appropriate PPE to protect themselves from fragmentation in the event of an unintentional detonation if required to be inside the Hazard Fragment Distance (HFD) of 302 ft. UXO personnel will do an initial sweep of the burn unit to locate surface MEC and perform blow-in-place, when necessary. During fire operations all TtNUS personnel will not enter the fire area. Fire suppression or being in the area where fire is burning requires respiratory protection (Self Contained Breathing Apparatus (SCBA) along with flame retardant proximity clothing referred to as "Bunker Clothing". TtNUS personnel are not cleared for work in a fire area.

WEATHER, FUEL, & FIRE BEHAVIOR: Weather information will be obtained from the National Weather Service (NWS) and the Division of Forestry (DOF). A decision to burn will be based on the following weather parameters:

WEATHER AND FUEL PARAMETERS	LOW	HIGH	OPTIMAL
Temperature (˚F)	50	85	65-80
Relative Humidity (%)	25	60	40-50
Wind Direction	-	-	N, NE, NW
Wind Speed (20ft forecast) (mph)	5	30	10-15
Wind Speed (mid-flame) (mph)	3	20	8-12
Transport Wind Direction	-	-	N
Transport Winds (mph)	9	-	-
Mixing Height (ft)	1500	5000 +	-
Change of Thunderstorm (%)	0	40	-
Heat Index	-	85	80

The burn will not be conducted if these weather parameters cannot be met.

HOLDING PLAN and CONTINGENCIES: Crews will keep all fires in bounds of the designated control lines. Ignition will cease if a spot fire is declared outside the designated area. Any spot fires will be attacked aggressively. All spot fires will be secured before ignition will continue. NAS Corpus Christi Fire Department will be providing burn suppression support.

For more information on the controlled burn refer to the Navy Controlled Burn Plan for the Former Incinerator Disposal Site at NALF Cabaniss.

5.4 MEC/MEC-RELATED ITEMS SAFE WORK PRACTICES

One of the obvious hazards associated with this activity is the potential for encountering MEC. 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. All 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 all other Department of Navy and DOD requirements regarding personnel, equipment, and procedures. The contractor will perform all 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.

5.4.1 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 work sites. 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 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).

5.4.2 Surface Soil Sampling MEC 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.

5.4.3 Subsurface Soil Sampling MEC 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.

6.0 HAZARD ASSESSMENT AND CONTROLS

This section provides reference information regarding the chemical and physical hazards which may be associated with activities that are to be conducted as part of the scope of work.

6.1 CHEMICAL HAZARDS

Contaminants of concern associated with these two sites include various metals of particular concern is Lead. In previous sampling events these contaminants were found to exist through out the site. It is possible that levels above the Time weighted Average may be achieved. These metals are below the visible spectrum for this reason dust monitoring will be required will be encountered that are of concern to field crews. It is recommended that exposure (via inhalation, ingestion, or skin contact) to these contaminants be minimized through the use of PPE and good work hygiene practices. For further information on these contaminants and other potential contaminants see Table 6-1.

6.1.1 Metals

Generally, there are 35 metals that concern us because of occupational or residential exposure; 23 of these are the heavy elements or "heavy metals". The following heavy metals have been detected on site above the reporting level: antimony, arsenic, cadmium, chromium, mercury, nickel, vanadium, zinc etc. However, these levels are not considered as large a health and safety concern as lead during the normal course of work at this site.

Given the nature of planned activities and that work will be conducted outside in the open air, however, it us highly unlikely that any appreciable airborne concentrations will be present. It is anticipated that the greatest potential for exposure to site contaminants is during intrusive activities (i.e., soil boring and sampling). Contaminants may be present bound to particulates. Exposure to contaminants bound to particulates is most likely to occur through ingestion of contaminated soil or water, or hand-to-mouth contact during site activities. For this reason, PPE and basic hygiene practices (washing face and hands before leaving site) will be extremely important.

As indicated in this table, from a worst-case scenario, potential site contaminants can possibly be present at concentrations that could pose an inhalation hazard to site personnel. 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 contaminants through dilution and dispersion.

- The soil value used was the ***highest*** concentration detected during the most recent field investigation monitoring events and may only be present at one location.

As a result of these factors, it is likely that workers participating in this activity will encounter airborne concentrations of contaminants that could represent an occupational exposure concern. To monitor this exposure route, real-time direct reading monitoring instruments will be used (as described in Section 7.0). Air monitoring will be performed during intrusive activities (soil boring, soil sampling and groundwater sampling) IDW management activities, will also likely to involve encountering or the release of airborne contaminants.

Exposure Avoidances: Examples 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.
- Wearing surgeon's-style gloves whenever handling potentially-contaminated media, including groundwater and any potential free product, sampling equipment, and sample containers.

6.1.1.1 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 stomachaches, 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 this COC include inhalation, ingestion, and direct skin contact. These potential exposure routes and the means that will be used to prevent or control them are addressed below.

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

Contaminant of Concern	Highest Concentration in Soils Necessary to Reach PEL	Amount of Dust-in-Air that would have to be generated before PEL/TLV would be reached	Current OSHA PEL And NIOSH REL
Lead	4,570 mg/kg	2.5 mg/m^3	OSHA: 0.05 mg/m^3, TWA_8 NIOSH 0.05 mg/m^3, TWA_8

Table Notes:

TWA_8: Average air concentration over an 8-hour work period that is not to be exceeded

$2mg/m^3$ – Visible dust

NA – not available

Ingestion and Skin Contact

Potential exposure concerns 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 is 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.

6.2 PHYSICAL HAZARDS

The following is a list of physical hazards that may be encountered at the site or may be present during the performance of site activities.

- Unexploded Ordnance (UXO)
- Slip, trips, and falls
- Heat/Cold stress
- Pinch/compression points
- Natural hazards (snakes, ticks, poisonous plants, etc.)
- Vehicular and equipment traffic
- Inclement weather

These hazards are discussed further below, and are presented relative to each task in the task-specific activity hazard analysis.

6.2.1 Unexploded Ordnance (UXO)

Although not expected, UXO may be at the ground surface and could still be capable of functioning. This HASP details the minimum requirements for performing work in areas of suspected UXO. There is no "safe" procedure for dealing with UXO, merely procedures that are considered less dangerous. Maximum safety in any UXO operation, however, can be achieved through adherence to applicable safety precautions and a thoroughly planned approach. Personnel engaged in UXO operations shall be thoroughly trained in explosive safety and be capable of recognizing hazardous explosive exposures.

6.2.2 Slips, Trips, and Falls

During various site activities there is a potential for slip, trip, and fall hazards associated with wet, steep, or unstable work surfaces. To minimize hazards of this nature, personnel required to work in and along areas prone to these types of hazards will be required to exercise caution, and use appropriate precautions and other means suitable for the task at hand. Site activities will be performed using the buddy system.

6.2.3 Heat/Cold Stress

It is always necessary for the field team to be aware of the signs and symptoms and the measures appropriate to prevent heat/cold stress. This is addressed in detail in Section 4.0 of the TtNUS Health and Safety Guidance Manual.

6.2.4 Pinch/Compression Points

Handling of tools, machinery, and other equipment on site may expose personnel to pinch/compression point hazards during normal work activities. Where applicable, equipment will have intact and functional guarding to prevent personnel contact with hazards. Personnel will exercise caution when working around pinch/compression points, using additional tools or devices (e.g., pinch bars) to assist in completing activities.

6.2.5 Vehicular and Equipment Traffic

Hazards associated with vehicular and equipment traffic is likely to exist during various site activities and whenever site personnel performed work on or near roadways. When working near roadways, site personnel will wear high visibility vests.

6.2.6 Heavy Equipment Hazards

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

- Equipment will be inspected using the Equipment Inspection Checklist provided in Attachment VI.
- 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.
- Personnel will not be present within the swing radius of the excavation equipment.
- Personnel will remain at least four feet away from the edge of any excavation.

6.3 NATURAL HAZARDS

Insect/animal bites and stings, poisonous plants, parasites, and inclement weather are natural hazards that may be present given the location of activities to be conducted. In general, avoidance of areas of known infestation or growth will be the preferred exposure control for insects/animals and poisonous plants. Specific discussion on principle hazards of concern follows:

6.3.1 Indigenous Snakes

Indigenous animals including snakes (poisonous and non-poisonous varieties), raccoons, and other animals native to the region may be present at the site. These animals may be encountered if work locations encroach on nesting or territories claimed by these animals.

To avoid the obvious hazards conveyed as part of a direct encounter, the following actions will be taken to minimize impact on the field crews and/or operations. The FOL/SSO will preview access routes and work locations for nesting areas or signs of animal activities (tracks, foraging areas, etc.). Identified suspect areas will be communicated to the field crews. Snake chaps will be required as a precaution.

Venomous Snakes of Corpus Christi, Texas

There are few poisonous snakes in Corpus Christi, Texas. Corpus Christi, Texas's poisonous snakes are very heavy-bodied – they look "fat." They also have broad, spade-shaped heads that are distinctly wider than their narrow necks. The heads of non-venomous snakes are typically about the same width as their bodies. Such distinctions are not completely reliable, as some species such as water snakes can be rather stout, and many species of snakes will flatten their heads when bluffing, giving the head a spade-like shape as well. The pupils of the venomous snakes of Corpus Christi, Texas are vertical slits rather than round. This distinction may not hold elsewhere, but works in this state.

Do not attempt to handle or kill a snake that you believe may be venomous. Simply keep at a safe distance and move on your way. Snakes do not actively seek out people and bite them. Given the chance, snakes will almost always try to escape an encounter. If you leave them alone, they will make every effort to leave you alone as well. Be very careful to avoid the head when handling dead snakes. A snake's reflexes can remain functional hours after death, and supposedly "dead" snakes have bitten people.

Copperhead - The most common venomous species is the copperhead, and even it has a restricted range in Corpus Christi, Texas.

Appearance: The copperhead is a moderately large snake that typically measures 24 to 36 inches in length. Its head is reddish-brown in color and its body is tan. The body is marked with 15 to 19 mahogany lateral bands with darker edges that are wide on the sides and narrow on the back. The lateral bands are occasionally interrupted along the midline. Viewed from above, these bands appear hourglass shaped. Irregular brown spots are often found between the bands. The copperhead has a wedge-shaped head, sensory pits, and vertically elliptical "cat-like" pupils. The young are pale with a yellow tipped tail and are 8 to 9 inches in length.

Ecology: The copperhead is found primarily in high, dry, rocky and well-forested areas dominated by oaks and hickories. This species is very secretive and does not tolerate human presence. The copperhead is active at night the warmest part of the year and is more likely to defend itself during the evening hours. It can be found resting under logs, in cracks of foundations, and under rocks. Small rodents such as mice are its primary prey, but it also eats large moth larvae and lizards.

Timber Rattlesnakes - Timber rattlesnakes are rare and usually restricted to some of the forested hills in south central Texas.

Appearance: These snakes are Corpus Christi, Texas's largest, averaging 48 to 72 inches in length with a rattle on the end of their tail. They can be found in south central Corpus Christi, Texas. The timber rattlesnake is a thick-bodied snake with a wide head distinct from the neck, typical of our venomous snakes. The color pattern of the timber rattler is very variable, ranging from sulfur yellow and buff brown, to dark gray. Regardless of the pattern, a series of wide black cross bands line the back along the length of the body. These cross bands have been described as "blunt chevrons." Its distinctly wedge-shaped head, sensory pit, and elliptical eye slits are characteristic of snakes in the viper family.

Ecology: The timber rattlesnake is native to heavily forested areas in the hills of southern Corpus Christi, Texas. It feeds on small mammals and birds. The timber rattler hibernates inside the cracks and crevices of rocky hillsides. Timber rattlesnakes do not stalk their prey, but rather remain motionless and wait for their prey to move within striking distance. Populations of timber rattlesnakes are mostly limited to areas fairly isolated from human development.

Snake Bites

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, as necessary.

- Immobilize the bite victim to the extent possible. Physical exertion will 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. With a couple wraps of the pressure wrap in place over the bite area, apply a splint, and continue the application of the pressure

wrap. The purpose for the splint is to restrict the movement of the extremity, this along with the pressure wrap will aid in restricting the toxins from leaving the site of the bite.

- Seek medical attention immediately.

6.3.2 Poisonous Plants

Various plants which can cause allergic reactions may be encountered during field work. These include poison ivy, poison oak, and poison sumac. Contact with these plants may occur when clearing vegetation for access to work areas, or as a result of movement through these plants. During the control burn activity smoke containing the remnants of burned plants will cause an adverse reaction to site personnel if inhaled. An irritating, allergic reaction can occur after direct contact with the plant or indirect contact through some piece of equipment or clothing article. Oils are transferred from the plant to exposed skin, clothing, or piece of equipment. The degree of the irritating, allergic reaction can vary significantly from one person to the next.

Protective measures to control and minimize the effects of this hazard may include, but not be limited to, the following:

- Identify plants for field personnel.

  - Poison Ivy - Characterized by climbing vines, three leaf configuration ovate to elliptical in shape, deep green leaves with a reddish tint, greenish flowers, and white berries.

  - Poison Sumac - Characterized as a tall bush of the sumac family bearing compound leaves (7-13 entire leaflets), branched from a central axis, drooping, with auxiliary clusters of white fruit: However, these white fruits and berries may exist only during pubescent stages.

  - Poison oak - 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.

- Protective measures may include wearing disposable garments such as Tyvek when clearing brush. These may be carefully removed and disposed of along with any oils accumulated from the plants.

- Personal Hygiene - The oils obtained from the plants will only elicit an allergic response when the person's bare skin layer is contacted. This can be aggravated when skin pores are open (perspiring), or through breaks in the skin such as 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, lunchtime, etc. personnel should wash 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 skin.

These plants present an airborne sensitization hazard when burned. This is not to occur as part of this scope of work and therefore will not be addressed.

6.3.3 Ticks/Spiders/Other Insects

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 – Pesticides analytical screening includes chlordane, endrin, lindane, methoxychlor, toxaphene and heptachlor. For effective protection, insect repellants should contain at least 10% DEET. Always follow the manufacture's label instructions for proper application, re-application and precautions for use.

- 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. The Site Visit Team 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 support specialist 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 UXO support specialist should attempt to 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.

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. However 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.) that this information is noted on your medical data sheet provided in Attachment IV. In situations where you employ Benadryl or Doctor/Health Care Provider recommended antidotes insure you have these pharmaceuticals with you.

Mosquitoes and Sand Flies

The mosquito, *Aedes aegypti*, is a mosquito that can spread the dengue fever, Chikungunya and yellow fever viruses, and other diseases. The mosquito can be recognized by white markings on legs and a marking of the form of a lyre on the thorax. The mosquito originated from Africa but is now found in the tropics worldwide. Sand flies pose a nuisance and physical hazard to field personnel as well as being distracting and leading to accidents and transmitting organisms through their bite. Sand fly bites that are repeatedly scratched can cause secondary infections.

Ticks

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 attaching 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 have been identified in the transmission of diseases including Lyme's disease. 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.

Fire Ants

Fire ants present a unique situation when working outdoors in Puerto Rico. Their aggressive behavior and their ability to sting repeatedly can pose a unique health threat. The picture depicts a fire ant mound on a lawn next to a sidewalk.

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. Her painful bite results 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 and call Poison Center 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 call Poison Center immediately.
- A tetanus booster shot may be needed after a bite from a brown recluse spider.

6.3.4 Parasites

Avoid walking and working in wet or swampy areas unprotected due to the presence of a variety of etiologic (disease-causing) agents. Contact with surface water will be kept to a minimum. There have been several incidents of infection by schistosomes (blood flukes) from contact with surface water. The aquatic snail vector, Australorbis Glabratus, transmits the schistosomes into surface waters, predominantly drainage ditches. Even momentary contact (especially in the presence of blisters, cuts, and open sores) with contaminated surface water is sufficient to acquire an infection. Accidental skin contact requires that the area be washed with isopropyl alcohol. Symptoms of infection are fever, diarrhea, itchy skin, and CNS damage. Schistosomiasis is hard to treat and, once established in its host, may remain for several years.

6.3.5 Inclement Weather

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, etc.) conditions arise, activities will be temporarily suspended or terminated until hazardous conditions no longer exist.

7.0 AIR MONITORING

Previous data indicates that the contaminants could be present in significant concentrations to present an inhalation hazard during planned site activities, as a precautionary measure to assure that such exposures are avoided and documented, plus the metals may be below the visible spectrum. For these reasons a dust particulate monitor will be used to monitor worker dust particulate exposures present at the site. Real-time monitoring instrumentation, action levels, and identified PPE will be used to control exposures to potentially contaminated media. According to the OSHA standard for Particulates Not Otherwise Regulated the PEL for total dust is 15 mg/m^3.

Generation of dusts should be minimized. If the PEL is achieved, use area wetting methods. Site contaminants may adhere to or be part of airborne dusts or particulates. The generation of dusts should be minimized to avoid inhalation of contaminated dusts or particulates. For this project, evaluation of dust concentrations will be performed by using a MiniRAM (or equivalent) dust particulate meter and by observing work conditions for visible dust. The MiniRAM is a portable, Nephelometric, airborne particle monitor/dust monitor. This instrument measures the concentration of airborne particles (both solid and liquid). The ranges are 0.01 to 10 mg/m^3 and 0.1 to 100 mg/m^3. Powered by a 10-hour internal rechargeable battery, the MiniRAM can be used to measure all forms of aerosols including dust, fumes, smokes, and fogs.

Instruments will be used primarily to monitor source points and worker breathing zone (BZ) areas, while observing instrument action levels. The SSO shall obtain and document the daily background reading at an upwind, unaffected area and observe for readings above that background level. The SSO shall monitor source areas (e.g., above collected samples and confined areas, etc.) for the presence of any reading above the daily-established background level. If elevated readings are observed above the PEL of 15 mg/m^3, the SSO shall monitor the workers' BZ areas with the dust monitor. If elevated readings are observed, the following process will be followed:

- The SSO shall order site personnel to stop work and retreat upwind to a safe, unaffected area, where they will remain until further directed by the SSO.

- The SSO shall begin wetting procedures to control dust and then re-approach the work area while continuously monitoring the BZ areas.

- Only when levels are below the PEL standard in BZ areas will work be permitted to resume.

- If background levels are not regained, the SSO will contact the HSM for additional direction.

OSHA General Dust Standard

PNOR, total dust: 15 mg/m^3.

OSHA Lead Standard:

Workers can only be exposed to lead at concentrations less than 50 micrograms per cubic meter of air averaged over an 8-hour period.

7.1 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the equipment vendor. Operational checks and field calibration will be performed on the instruments by Site personnel each day prior to their use. Field calibration will be performed on instruments according to manufacturers' recommendations. These operational checks and calibration efforts will be performed in a manner that complies with the employee's health and safety training, the manufacturer's recommendations, and with the applicable manufacturer SOPs (copies of which can be found in the Health and Safety Guidance Manual that will be maintained on site for reference). Calibration efforts must be documented. Figure 7-1 is provided for documenting calibration efforts. This information may instead be recorded in a field operations logbook, provided that the information specified in Figure 8-1 is recorded. This required information includes the following:

- Date calibration was performed.
- Name of the individual calibrating the instrument.
- Instrument name, model, and serial number.
- Any relevant instrument settings and resultant readings (before and after) calibration.
- Identification of the calibration standard (lot number, source concentration, supplier).
- Any relevant comments or remarks.

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

This section is included to specify health and safety training and medical surveillance requirements for TtNUS personnel participating in on site activities. TtNUS personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at the NAPR. TtNUS personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training within the past 12 months before being cleared for site work. In addition, 8-hour supervisory training is required for site supervisory personnel.

Documentation of TtNUS introductory, 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

Site-specific training will be conducted. 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. This training documentation will be employed to identify personnel who through record review and attendance of the site-specific training are cleared for participation in site activities. This document shall be maintained at the site to identify and maintain an active list of trained and cleared site personnel.

A pre-activities training session will be conducted prior to initiating site work. This will consist of a brief meeting at the beginning of each day to discuss operations planned for that day, and a review of the appropriate AHAs with the planned task participants. A short meeting may also be held at the end of the day to discuss the operations completed and any problems encountered.

8.3 MEC TRAINING

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 and to track site personnel's training status. The UXO Specialist shall be responsible for ensuring training qualifications through review of training documentation and for monitoring the status of on-site personnel to insure during the course of this project site personnel do not cycle outside of their training compliance status. The documentation supporting training compliance and status shall be maintained at the project site and be made available, upon request.

- UXO Specialist (UXO Technician Level III)
  - Meet the minimum qualification requirements listed in Table 4-1, DDESB TP18
  - Minimum of 8 years UXO/EOD experience (prior military and/or commercial experience.

8.3.1 Subject Matter Training

In addition, in support of this project, on-site personnel will be provided training in:

- UXO Avoidance and Hazards of UXO expected to be encountered.
- Hazard Communication (29 CFR 1910.1200)
- Hearing Conservation (29 CFR 1910.95)

8.4 MEDICAL SURVEILLANCE

TtNUS personnel participating in project field activities will have had a physical examination meeting the requirements of TtNUS's medical surveillance program. Documentation for medical clearances will be maintained in the TtNUS Pittsburgh office and made available, as necessary, and will be documented using Figure 8-1 for every employee participating in onsite work activities at this site.

Each field team member, including visitors, entering the exclusion zone(s) shall be required to complete a copy of the Medical Data Sheet (see Attachment IV of this HASP). 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.

FIGURE 8-1

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of the debris removal activities to be performed at NAPR, and that I have received site-specific training which included the elements presented below:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Emergency response procedures (evacuation and assembly points)
- Incipient response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Review of the use of Activity Hazard Analysis
- Stop work authorization and process
- Review Navy Controlled Burn Plan

I have been given the opportunity to ask questions and all of my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements indicated below are accurate to the best of my knowledge.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	Medical Exam

9.0 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. It is anticipated that a three-zone approach will be used during work at this site. This approach will be comprised of an exclusion zone, a contamination reduction zone, and a support zone. It is also anticipated that this approach will control access to site work areas, restricting access by the general public, minimizing the potential for the spread of contaminants, and protecting individuals who are not cleared to enter work areas.

9.1 EXCLUSION ZONE

The exclusion zones for this project will be limited to those areas of the site where active work is being performed plus a designated safe area surrounding the work area. Exclusion zones will be delineated as deemed appropriate, through means such as erecting visibility fencing, barrier tape, cones, and/or postings to inform and direct personnel.

9.2 CONTAMINATION REDUCTION ZONE

Because there are no contaminants expected at the site, the contamination reduction zone (CRZ) is unnecessary at this site.

9.3 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 away from potential exposure to site contaminants during normal working conditions or foreseeable emergencies.

9.4 ACTIVITY HAZARD ANALYSES

Exclusion Zone work conducted in support of this project will be performed using Activity Hazard Analyses (AHAs) to guide and direct field crews on a task by task basis. AHAs for the tasks to be performed and previously described in Section 4.0 are attached to this HASP. Use of the AHAs will provide the communication line for reviewing protective measures and hazards associated with each operation. As an ongoing quality assurance effort, the UXO Specialist will review operations to ensure elements of the AHAs adequately represent those being conducted. Where deficient, they will be corrected and that information forwarded to the PHSO for inclusion in future such activities.

9.5 SITE SECURITY

Site security will be accomplished using field personnel. TtNUS will retain complete control over active operational areas. As this activity takes place at a Navy facility open to public access, the first line of security will take place using exclusive zone barriers, site work permits, and any existing barriers at the sites to restrict the general public. The second line of security will take place at the work site referring interested parties to the Base Contact. The Base Contact will serve as a focal point for base personnel, interested parties, and serve as the final line of security and the primary enforcement contact.

9.6 SITE MAP

Once the areas of operation, access routes, topography, and dispersion routes are determined, a site map will be generated and adjusted as site conditions change. These maps will be posted to illustrate up-to-date adjustment of zones and access points.

9.7 BUDDY SYSTEM

Personnel engaged in on site activities will practice the "buddy system" to ensure the safety of personnel involved in this operation.

9.8 COMMUNICATION

External communication will be accomplished by using cellular or landline telephones predetermined and approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities at NAPR, the UXO Specialist will approve cellular telephone communications.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

It is not anticipated that bulk hazardous materials (over 55 gallons) will be generated or handled at any given time as part of this scope of work as work is conducted using hand tools. It is also not anticipated that such spillage would constitute a danger to human health or the environment. However, as the job progresses, some potential may exist for accumulating IDW, such as decontamination fluids, soil cuttings, disposable sampling equipment, and personal protective equipment (PPE).

10.2 POTENTIAL SPILL AREAS

Potential spill areas will be periodically monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Currently, limited areas are vulnerable to this hazard including:

- Resource deployment
- Waste transfer
- Central staging

It is anticipated that the IDW generated as a result of this scope of work will be containerized, labeled, and staged to await further analyses. The results of these analyses will determine the method of disposal through off site services.

10.3 LEAK AND SPILL DETECTION

To establish an early detection of potential spills or leaks, a periodic walk-around by the personnel staging or disposing of drums area will be conducted during working hours to visually determine that storage vessels are not leaking. If a liquid leak is detected, the contents will be transferred, using a hand pump, into a new vessel. The leak will be collected and contained using absorbents such as Oil-Dry, vermiculite, or sand, which are stored at the vulnerable areas in a conspicuously marked drum. This used material, too, will be containerized for disposal pending analysis. Inspections will be documented in the project logbook.

10.4 PERSONNEL TRAINING AND SPILL PREVENTION

Personnel will be instructed in the procedures for incipient spill prevention, containment, and collection of hazardous materials in the site-specific training. The FOL and the SSO will serve as the Spill Response

Coordinators for this operation, should the need arise. It is not anticipated that a spill would occur that onsite personnel could not handle.

10.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

The following represents the types of equipment that should be maintained at the staging areas for the purpose of supporting this Spill Prevention/Containment Program:

- Sand, clean fill, or other non combustible absorbent (Oil-Dry)
- Drums (55-gallon UN 1A1 or 1A2)
- Shovels, rakes, and brooms
- Container labels

10.6 SPILL CONTROL PLAN

This section describes the procedures the Tetra Tech field crew members will employ upon the detection of a spill or leak.

- Notify the SSO or FOL immediately upon detection of a leak or spill.

- Employ the PPE stored at the staging area.

- Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel.

- Spread the absorbent material in the area of the spill, covering it completely.

- Transfer the material to a new drum and or container; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.

- Re-containerize spills, including 2-inch of top cover (if over soils) impacted by the spill. Await test results for treatment or disposal options.

It is not anticipated that a spill will occur that the field crew cannot handle. Should this occur, notification of the appropriate Emergency Response agencies will be carried out by the FOL or SSO in accordance with the procedures discussed in Section 2.0 of this HASP.

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 are not allowed, under any circumstances, to enter confined spaces**. A confined space is defined as an area which has one or more of the following characteristics:

- 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, manholes, sewers, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

Additionally, a Permit-Required Confined Space must also have one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly caving walls or by a floor that 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 Health and Safety Guidance Manual 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.

12.0 MATERIALS AND DOCUMENTATION

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

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- A OSHA Job Safety and Health Poster
- Training/Medical Surveillance Documentation Form (Blank)
- First-Aid Supply Usage Form
- Emergency Reference Form (Section 2.0, extra copy for posting)
- Directions to the Hospital

12.1 MATERIALS TO BE POSTED AT THE SITE

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

- **The OSHA Job Safety & Health Protection Poster (posted)** - This poster should be conspicuously posted in places where notices to employees are normally posted, as directed by 29 CFR 1903.2 (a)(1). The UXO Specialist shall ensure that this poster is not defaced, altered, or covered by other material. The law also states that reproductions or facsimiles of the poster shall be at least 8 1/2 by 14 inches with 10 point type. See Attachment VII.

- **Site Clearance (maintained)** - This list is found within the training section of the HASP (Figure 8-1). This list identifies the 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 the phone communications points and in each site vehicle.

- **Medical Data Sheets/Cards (maintained)** - Medical Data Sheets will be filled out by on-site 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 the personnel to be carried on their person.

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

The purpose of maintaining or posting this information, as stated above, is to allow site personnel quick access. Variations concerning location and methods of presentation are acceptable providing the objective is accomplished.

13.0 ACRONYMS / ABBREVIATIONS

AHA	Activity Hazard Analyses
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long-Term Environmental Action Navy
CSP	Certified Safety Professional
DOD	Department of Defense
DRI	Direct Reading Instrument
EOD	Explosive Ordnance Disposal
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
IDW	Investigation Derived Waste
MDAS	Material Documented and Safe
MEC	Munition and Explosives of Concern
MPPEH	Material Potentially Presenting and Explosive Hazard
N/A	Not Available
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PHSO	Project Health and Safety Officer
PPE	Personal Protective Equipment
SOP	Standard Operating Procedures
SSO	Site Safety Officer
SWMU	Solid Waste Management Unit
TBD	To be determined
TOM	Task Order Manager
TtNUS	Tetra Tech NUS, Inc.
UXO	Unexploded Ordnance

ATTACHMENT I

ACCIDENT PREVENTION PLAN

ACCIDENT PREVENTION PLAN
FOR THE
REMEDIAL INVESTIGATION

AT

SKEET AND PISTOL RANGE
and
INCINERATOR DISPOSAL SITE

NAVAL AUXILIARY LANDING FIELD CABANISS
CORPUS CHRISTI, TEXAS

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY CONTRACT

Submitted to:
Naval Facilities Engineering Command Southeast
NAS Jacksonville
Jacksonville, Florida 32212-0030

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive, Foster Plaza 7
Pittsburgh, Pennsylvania
(412) 921-7090

CONTRACT NUMBER N62467-04-D-0055
CONTRACT TASK ORDER 0135

March 2010

PREPARED UNDER THE SUPERVISION OF:

G. KENNETH GRIM, JR.
TASK ORDER MANAGER
TETRA TECH NUS, INC.
HOUSTON, TEXAS

APPROVED FOR SUBMISSION BY:

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

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APPENDIX

LIST OF TABLES

ACRONYMS

§	Section
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
APP	Accident Prevention Plan
BLS	Bureau of Labor Statistics
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CPR	Cardiopulmonary resuscitation
SCP	Certified Safety Professional
CTO	Contract Task Order
DART	Days Away/Restricted Duty/Transfer
dB	Decibels
DDESB	Department of Defense Explosives Safety Board
DEET	N, N-diethyl-m-toluamide
DNT	Dinitrotoluene
DPT	Direct Push Technology
EM	Engineer Manual
EOD	Explosive Ordnance Disposal
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSA	Hollow Stem Auger
HTRW	Hazardous Toxic and Radioactive Waste
MC	Munitions constituents
MEC	Munitions and explosives of concern
MPPEH	Material potentially presenting an explosive hazard
MSDS	Material Safety Data Sheet
NAICS	North American Industry Classification System
NALF	Naval Auxiliary Landing Field
NAVFAC	Naval Facilities Engineering Command
NRL	Naval Research Laboratory
NRR	Noise Reduction Rating
OSHA	Occupational Safety and Health Administration
PID	Photoionization Detector
PHSO	Project Health and Safety Officer

PPE	Personal protective equipment
RCIR	Recordable Case Incident Rate
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SHM	Safety and Health Manager
SSC	Site Safety Coordinator
SSO	Site Safety Officer
SI	Site Inspection
Tetra Tech	Tetra Tech NUS, Inc.
TOM	Task Order Manager
TP	Technical Paper
UXO	Unexploded Ordnance
UXOSO/QC	Unexploded Ordnance Safety Officer/Quality Control
USACE	United States Army Corps of Engineers

1.0 SIGNATURE SHEET

CONTRACT NO. N62467-04-D-0055
ACCIDENT PREVENTION PLAN FOR
NAVAL AUXILIARY LANDING FIELD CABANISS
CORPUS CHRISTI, TEXAS

Prepared by:

Clyde Snyder
Tetra Tech NUS
Project Health and Safety Officer

Signature

(412) 921-8904
Phone

Concurred by:

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

Signature

(412) 921-8912
Phone

Approved by:

Mark Perry
Tetra Tech NUS
President

Signature

(412)921-7217
Phone

2.0 BACKGROUND INFORMATION

Contractor: Tetra Tech NUS

Contract Number: N62467-04-D-0055, CTO 0135

Project Name: Remedial Investigation

2.1 PROJECT DESCRIPTION

The objective of this investigation is to perform a Phase 1 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI).

This Accident Prevention Plan (APP) addresses only the activities for Tetra Tech NUS (Tetra Tech) and their sub-contractor personnel. Other contractors or subcontractors are excluded in this APP and are to be addressed in safety and health planning documents prepared by that employer.

This APP and the associated Site-Specific Health and Safety Plan (HASP) are for use during the completion of MC sampling tasks using unexploded ordnance (UXO) avoidance support at NALF. These documents address 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 Code of Federal Regulations (CFR), § 1910.120(b).

This APP and the accompanying HASP are available to (1) on-site personnel who may be exposed to hazardous on-site conditions, including Tetra Tech and subcontractor personnel participating in field activities and UXO avoidance activities, and (2) 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 Identification, 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
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- ☐ 22 - Work Platforms
- ☐ 23 - Demolition
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- ☐ 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 employees will be performing work are included as part of the Sampling and Analysis Plan (SAP) for the work associated with this field effort at NALF.

2.3 TETRA TECH SAFETY STATISTICS

The following table presents safety statistics for Tetra Tech for the last 3 calendar years compared to the national averages for our industry. This comparison uses data collected by the United States Department

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 NAICS Code 562910 RCIR and DART Case Rates

	Remediation and other Waste Management Services 2009	Tetra Tech 2007	Tetra Tech 2007	Tetra Tech 2008	Tetra Tech 2009
Total Recordable Case Incident Rate (RCIR)	4.7	0.55	0.91	0.3	0.48
Days Away/Restricted Duty/Transfer Case Rate (DART)	3.22	0.27	0.30	0.3	0.24

The data comparison illustrate that Tetra Tech's 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
Policy Year 2009-2010:	0.74

2.4 WORK PHASES

Work on this project will occur in the following phases. Associated dates when Tetra Tech personnel will be on site performing work will be listed for each phase of the project.

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

2.5 SPECIFIC SITE ACTIVITIES

The detailed Scope of Work for field activities performed during UXO support during the site investigation at NALF will include the following tasks:

- Mobilization/demobilization
- Soil and groundwater sampling following UXO avoidance techniques to screen for munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH).
- Vegetation Management

For each of these tasks a detailed Activity Hazard Analyses (AHAs) are available in Section 14.0 of this APP.

3.0 STATEMENT OF SAFETY AND HEALTH POLICY

Tetra Tech 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.

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

Mark T. Perry, P.E.
President

Matthew M. Soltis

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

Tetra Tech NUS. Inc.
January 2010

4.0 RESPONSIBILITIES AND LINES OF AUTHORITY

The Tetra Tech Site Safety Officer (SSO) for this project is appointed by the Project Manager (PM) and is responsible for field implementation of tasks and procedures contained in the HASP (see Section 15.0) portion of the APP. The SSO for this project is the UXO Technician. The SSO has completed 40-Hour HAZWOPER and subsequent 8-Hour HAZWOPER Refresher Training, 8-Hour HAZWOPER Supervisor Training, and First Aid/Cardiopulmonary Resuscitation (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 SSO has primary responsibility for responding to and correcting emergencies and for responding appropriately 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.

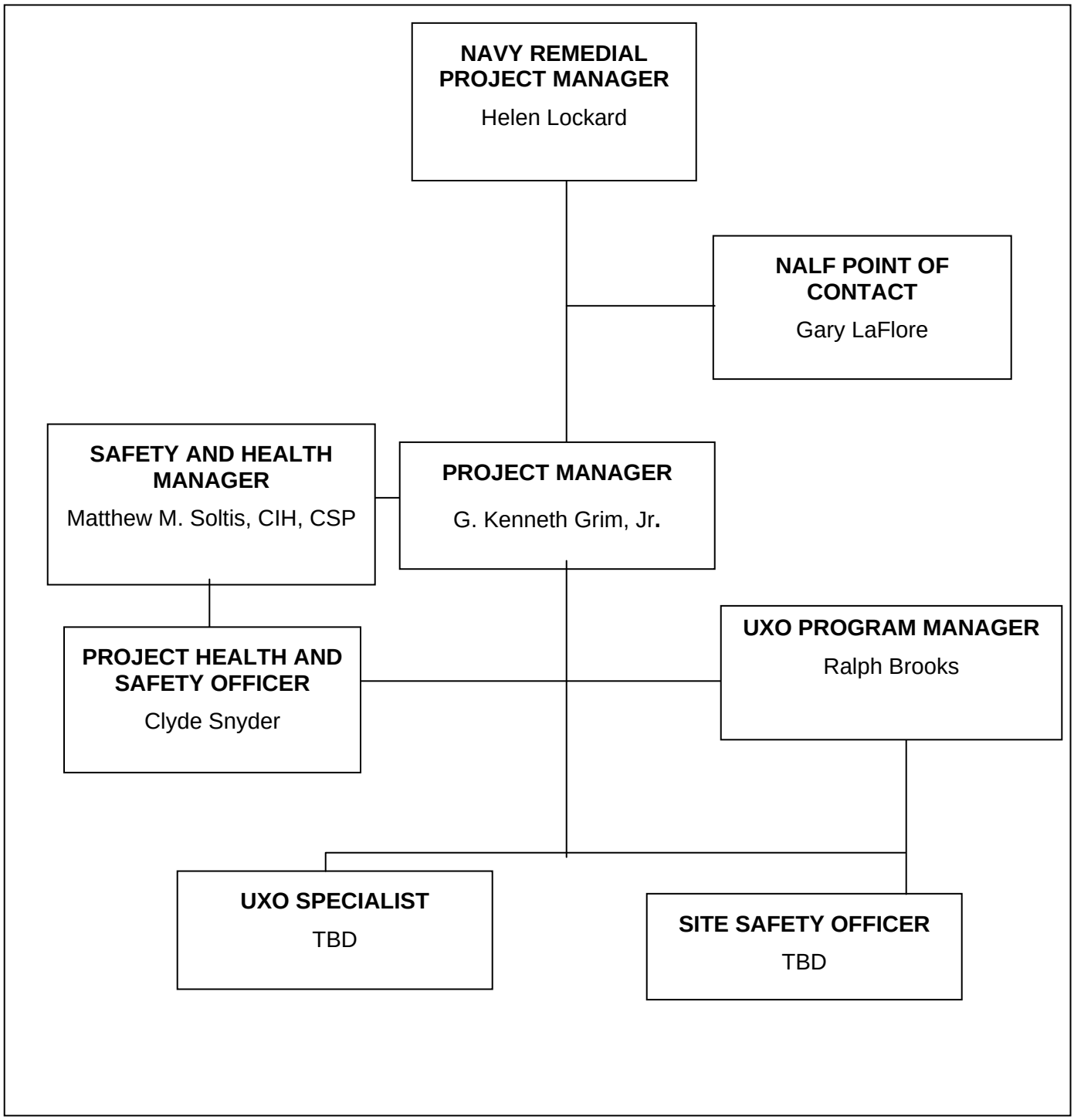
Personnel are required to report injuries, illnesses, spills, fires, and property damage as soon as possible to the SSO. The SSO is notified of any on-site emergencies and is responsible for ensuring that the appropriate emergency procedures described in this section are followed. The SSO is also responsible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

Management at Tetra Tech has the authority and responsibility for implementing and maintaining this APP and HASP. An organization chart presenting the lines of authority for this project is on the next page.

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 and as the Safety and Health Manager (SHM) for the planned work addressed in this APP.

All employees are empowered, authorized, and responsible to STOP WORK at any time when there is, or there appears to be, an imminent and uncontrolled safety or health hazard. 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 Project Manager and the Corporate Health and Safety Manager. Through observations and communication, all parties involved shall then develop, communicate, and implement corrective actions necessary and appropriate to modify the task and to resume work.

ORGANIZATION CHART
ON-SITE SUPPORT OF
SI ACTIVITIES AT NALF



5.0 SUBCONTRACTORS

Tetra Tech may employ a subcontractor in the performance of work covered by this APP. Any subcontractor participating at work at NALF Cabaniss 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 APP and HASP. The 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 must meet OSHA training, medical surveillance, and PPE requirements to be permitted to enter areas where exposure to hazardous materials is possible.

This APP and associated HASP is rigorously enforced during this field effort. Violators of the HASP are verbally notified upon first violation. The Tetra Tech SSO then notes the violation in the field logbook. Upon second violation, the Tetra Tech PM, the violator and his/her supervisor are notified. A third violation results in a written notification and the violator's eviction from the site. The written notification is sent to the human resources department and the Safety and Health Manager (SHM).

Any violations deemed 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 can be oral or written. 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 shall 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 are discussed at the beginning of each workday by the SSO at

the daily tailgate safety meeting. Significant HASP revisions are 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 29 CFR §1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER). Furthermore, site personnel must satisfy any specialized training requirements that are presented in the AHAs for tasks to be completed under this CTO.

6.1 MANDATORY TRAINING AND CERTIFICATIONS

Tetra Tech personnel qualification and training certification documentation will be obtained by the PM/FOL and included in Appendix 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 training requirements necessary to be on the site. Specialized operations (UXO) or responsibilities (Blood-borne pathogen-First Aid) will also require additional training for personnel filling those roles. UXO Technicians will carry certificates on their person.

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 SSO will present a briefing for site personnel who 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)
- Environmental surveillance (air monitoring) equipment use and maintenance
- Action levels and 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 is covered 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 the FOL or SSO Field Log Book). 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.

These emergencies 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 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.

Emergencies are also reported to the Navy RPM. Contact information for these individuals is in the HASP.

7.0 SAFETY AND HEALTH INSPECTIONS

It is Tetra Tech's internal policy that job sites involving work for NAVFAC SE are subject to audits by corporate safety staff. Daily site safety inspections are conducted by the Tetra Tech SSO during this field effort to ensure safe work areas and compliance with the HASP. The items noted during field audits are reported to the Tetra Tech SHM 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 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 to continue excellent safety performance on NAVFAC contracts to support the Navy in their safety efforts. Specifically, Tetra Tech will perform work in a manner that is consistent with the Zero Incident Philosophy. It is our goal to plan and perform the work in a manner that integrates safety and health considerations so that work is accomplished without experiencing any worker injuries or illnesses, environmental releases/impacts, or property damage. 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 is 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 reported using the Tetra Tech incident reporting process and forms. Attachment IV of the HASP has the detailed information on incident reporting. The SHM is responsible for assuring that incidents and serious near-miss events are adequately investigated and is 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 Incident Report (in the HASP). Forms must be reviewed by the PM and the SSO.

Hazardous work conditions or unsafe work practices is 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 is assessed and action may range from complete shutdown of the operation to phased correction. Tetra Tech employees working on this project will have "Stop Work" authority in the event that a potentially serious action or condition is observed. Tetra Tech 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 will ensure that a minimum of two people have current certifications in CPR, First Aid, and Blood-borne Pathogens. These employees will only render basic

CPR and First Aid, however, they are authorized to perform emergency rescue or other duties up to the level of their training.

Attachment III of the HASP is the Medical Data Sheet is to be completed by site personnel and made available in the case of an incident. The closest hospital to the sites and directions to it are included in the HASP, as well as contact numbers for both the hospital and ambulance services. Tetra Tech personnel are to perform a drive by of the 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 used for work tasks at the site is 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 matrixes. 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 Project Health and Safety Officer (PHSO) when writing the APP and HASP, and is confirmed through a rigorous review process by the Tetra Tech 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 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 warrant a higher level of protection, field personnel will withdraw from the site, immediately notify the Tetra Tech 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. Some indicators of the need for reassessment are discussed in HASP.

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 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. Site personnel will use the procedures presented in the HASP to obtain optimum performance from PPE.

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 and safety procedures are included in the HASP and this APP.

- ☐ Layout Plan
- ☒ Emergency Response 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) INFORMATION

Tetra Tech's HASP must accompany this APP on job sites. The HASP contains information specific to the NALF 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 will be the means used to meet the requirements outlined in this APP.

Additionally, site-specific AHAs (Section 14.0) and the Tetra Tech's UXO SOP (Attachment II of the HASP) are developed to comply with OSHA requirements and EM 385-1-1 requirements. By adhering to requirements specified in the AHAs, work is 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, are documented on a revised AHA form and are subject to additional review by the Tetra Tech 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 and sampling activities provided in support of the NALF field activities.

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Mobilization **ANALYZED BY/DATE: C. Snyder 3/10**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
Mobilization/Demobilization Assembling, packing, unpacking equipment and supplies	1. Minor cuts, abrasions, or contusions handling equipment and tools	1. Wear cut-resistant gloves when handling items with sharp or rough edges.
Performing a Jobsite Hazard Evaluation and initial/exit inspections of the intended work areas.	2. Heavy lifting (muscle strains and pulls)	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).
Performing initial clearance of travel pathways (foot/vehicular).	3. Vehicular traffic at the work site	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.
	4. Intermittent high noise levels	4. Although not considered a highly probable event, based on the anticipated activities, the use of hearing protection may occasionally be required (at the UXO Specialist's discretion). The UXO Specialist will observe the following: • Any available data or monitoring results collected from similar operations and/or collected during this activity. • 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 brush cutting equipment typical site control boundary will be 10- feet. This is a sufficient distance to remove personnel from excessive noise levels. Inside this boundary personnel will wear hearing protection. • Lastly, the employees may utilize the following general rule of thumb to help make these determinations: • 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. Hearing protection will consist of either ear muffs or ear plugs that have a Noise Reduction Rate (NRR) of at least 25 decibels (dB).

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Mobilization **ANALYZED BY/DATE: C. Snyder 3/10**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
	5. Slip/trip/fall hazards	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.
	6. Natural Hazards	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.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Hand tools (dollies, hand carts, hand knives, shovels, etc.)	Visual inspection of hand tools prior to use by user. UXO Specialist to perform regular inspections for housekeeping issues and surveys of operational areas to insure compliance with the HASP.	None required

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: UXO Surface Survey **ANALYZED BY/DATE: C. Snyder 3/10**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
UXO Surface Survey – Identifying MEC/UXO materials on the surface/near surface prior to debris removal activities	1. Injury due to contact with brush cutting tools. These include the following potential hazards: • Struck by • Overhead hazards • Eye injury • Foot injury • Intermittent noise	1. Be aware of safe work zones and use the designated routes of approach at the sites. • Only authorized and essential personnel will be permitted in the work area. • Wear safety vest when working near roadways. • Hard hats, safety impact eye protection, and steel toe safety footwear must be worn in areas where brush cutting is active. 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. - Hearing protection will be worn as needed. The following general rule of thumb applies: - *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.* - *Hearing protection will consist of either ear muffs or ear plugs that have an NRR of at least 25 dB*
	2. Insect/animal bites	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.
	3. MEC/UXO/MPPEH Hazards	3. MEC/UXO/MPPEH operations will be conducted by trained UXO Technicians. Non-UXO personnel will be clear of the area during initial sweeps and excavation operations. Exclusion zone distances will be defined by the UXO Specialist in the field. Magnetometers will be tested prior to use. Any MEC/UXO/MPPEH items on the surface and near surface will flagged for UXO avoidance. UXO Technicians will clear vehicle and foot travel paths within the area. Support personnel and equipment will wait until the clearance is complete. • If MEC/UXO is observed, the UXO Specialist Technician making the observation will signal to stop operations and take the following precautions: • The UXO Specialist will inspect the MEC/UXO to determine if it is munitions

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: UXO Surface Survey **ANALYZED BY/DATE: C. Snyder 3/10**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
		scrap or munitions debris. This identification and the exact location will be recorded in the logbook. • Munitions scrap or munitions debris that cannot be certified as "explosive free" will be treated as MEC. • Any MEC/UXO item discovered during UXO Surface Sweep operations will be flagged for UXO avoidance as stated in the Work Plan. • The UXO Specialist will request EOD support for MEC items. • MEC/UXO items discovered will be reported to the Navy RPM. An inventory will be maintained by the UXO Specialist with locations, and descriptions for the MEC/UXO discovered during this operation, and the Navy RPM will be provided an update about the inventory on a daily basis.
	4. Strains/sprains from heavy or improper lifting	4. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure a clear path of travel and good grasp on objects, lift with legs not back, obtain help when needed to lift large, bulky, or heavy items).
	5. Slip/trip/fall hazards	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.
	6. Electrical storms/ inclement weather (high winds, heavy rains, etc.)	6. If electrical storms or inclement weather are in the area as determined through local forecasting or weather alerts issued, the UXO Specialist 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 UXO Specialist's direction. Personnel will be directed to seek suitable shelter that will provide adequate protection from the elements. Lightning threat detection will be coordinated within NAPR's existing systems.
	7. Natural Hazards	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.

TABLE V-1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: UXO Surface Survey **ANALYZED BY/DATE: C.Snyder 3/10**

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Personal Protective Equipment: **Minimum**: Safety toe boots, hard hats, and safety impact eye protection (when in active heavy vehicle operation areas or when handling heavy boxes and/or containers) • Work gloves • Work clothes **Optional items**: Hearing protection as needed. High-visibility vests when near active traffic areas. For UXO Technicians - Safety 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. **HTRW**: none	1. Initial PPE inspection performed by the UXO Specialist. Ongoing (prior to each use) inspections are the responsibility of PPE users.	1. 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 UXO Specialist 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.

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Soil Boring **ANALYZED BY/DATE: C.Snyder 3/10**

Activity/Phase	Potential Hazards	Recommended Actions/Controls
Direct Push or Hollow Stem (DPTor HSA) Activities including: - Soil borings using a MacroCore Sampler or split spoon - Soil sampling This activity employs hydraulic pressure and percussion hammer to advance tooling into the ground. - Well installation	***Physical hazards:*** 1) Heavy equipment hazards (pinch/compressions points, rotating equipment, hydraulic lines, etc.)	***Physical Hazards*** The DPT/HSA unit will be inspected prior to use. - The inspections will be documented using the Equipment Inspection Checklist found in the Attachment IV. - Equipment will be operated and supported by certified operators and knowledgeable ground crew. - Site control boundaries for this operation will be set at least 25 feet from the point of operation. This distance has been established to remove unauthorized and non-essential personnel from physical hazards associated with this operation. - The potential exists during the soil boring using MacroCore Samplers and Dual tube applications to get fingers caught within pinch points during the hydraulic driving unit as well as between wrenches and hard surfaces when opening the samplers. The driller will make sure all hands/fingers are clear before actuating the controls. - Helper will exercise caution when opening the MacroCore or Dual tube to avoid catching fingers between wrenches, wrench and immovable object in the event the wrench slips. Make sure there is a pipe vise to secure the sampler when opening. Roll Over - The operator should select the best possible approach vantages to move the unit up the slope to the selected boring location. - Slope angles greater than 35 degrees should avoid. Select a different angle of approach where necessary. Locations on steep hills where this hazard exists should utilize other equipment more suited for this terrain. - The unit should be moved straight up and down the grade, not across to avoid tipping. - Preview travel paths for holes, etc. that may cause potential tipping. Where necessary grade access routes to fill in holes and compact soft spots within the selected travel lane. - Operate the unit at a suitable rpm for the terrain and conditions. - Keep away from unstable embankments. - See Section 5.1 of the MHASP for additional information.
	2) Noise in excess of 85 dBA	Noise levels associated with this operation range from 90-102 dBA during advancement of tooling. Controlling this hazard shall be accomplished employing two separate approaches as follows: - As hearing protection will be employed it is the responsibility of the SSHO to implement the Site-Specific Hearing Conservation Program found in Section 6.0 of the HSGM. - Boundaries will be established to limit the affect of the noise hazard (See above). - Use hearing protection (ear plugs, muffs, etc,) - Remember the general rule of thumb - *Excessive noise levels (>85dBA) are being approach when you have to raise your voice to talk to someone within 2 feet of your location.* - See Section 5.1.4 of the MHASP or Section 6.0 of the HSGM for additional information concerning

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Soil Boring **ANALYZED BY/DATE: C.Snyder 3/10**

Activity/Phase	Potential Hazards	Recommended Actions/Controls
		controlling this hazard.
	3) Energized systems (contact with underground or overhead utilities)	All drilling activities will be preceded by the utility locating and clearance. See Section 7.0 of the HSGM, Utility Locating and Excavation Clearance SOP. In addition, the Driller will contact - Utilities Underground Location Center 1-800-424-5555 or 811. - In addition, to passive detection methods such as walking over the site to identify surface monuments, persons at the facility will be questioned regarding utilities safe distances and locations. - Soil boring well locations within ½ the diameter of the utility plus 3 feet will require the drillers to confirm the location of the utility by hand using hand augers or similar passive measures to insure the utility is where it is marked. - Clearance from overhead utilities will proceed as specified in the TtNUS Utility Clearance SOP.
	4) Lifting (strain/muscle pulls) - These hazards are associated with lifting various HSA/DPT tooling as well as well construction supplies	Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques as described in Section 4.4 of the HSGM.
	5) Slips, trips, and falls	Preview work locations for unstable/uneven terrain. See Section 4.1 of the HSGM concerning measures to combat hazards associated with uneven or slippery terrain. The most effective methods is selecting proper approach routes as well as maintaining a clutter free work area.
	6) Cuts /Lacerations	To prevent cuts and lacerations associated with this activity, the following provisions are required: - Always cut away from yourself and others, then, if a knife slips, you will not impale yourself or others. - Do not place items to be cut in your hand or on your knee. - Change out blades as necessary to maintain a sharp cutting edge. Many accidents result from struggling with dull cutting attachments. • It is recommended that the knife system and acetate liner holder developed by Geoprobe be used when cutting open acetate liners. These items have been engineered to allow sample acquisition without putting the sampler at risk during the cutting of the acetate liners. In addition, the following safe work practices will assist in the minimization of this hazard: - Whenever practical, wear cut resistant gloves (e.g., leather or heavy cotton work gloves) whenever hand cutting at least on the non-knife hand and arm.

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Soil Boring **ANALYZED BY/DATE: C.Snyder 3/10**

Activity/Phase	Potential Hazards	Recommended Actions/Controls
		- Keep cutting surfaces clean and smooth.
	7) Vehicular and foot traffic	Use traffic-warning signs, flag persons, and high visibility vests as determined by the SSHO when working along traffic thoroughfares. In addition, use physical barricades, when working within normal traffic flow patterns/traffic lanes. Maintain safe working distances from moving machinery and equipment.
	8) Inclement weather	To minimize hazards of this nature, the following provisions shall be employed: - Electrical storms/high winds - Suspend or terminate operations until directed otherwise by SSHO. Follow the 30/30 rule. - As this investigation will take place in the winter/spring time frame the potential for cold stress induced injuries is possible. To combat this hazard, personnel should a) Dress in layers employing insulated clothing that will wick moisture away from the body. This will permit the removal of garments to control the heat load. b) The SSHO shall monitor personnel for signs of cold stress. Personnel should report ▪ Pain in the extremities. ▪ Discoloration of the extremities ▪ Drowsiness, fatigue, irritability are all indicators of hypothermia. ▪ Shivering is a sign internal core temperature has dropped to 95°F. When maximum shivering occurs work should be stopped and personnel allow to warm before work is resumed. NOTE: SSHO remember Older worker with poor circulation. Workers on certain medications will be more vulnerable to these hazards. Additional precautions should be focused in these areas. External Monitoring – Temperature, wind speed and humidity can be obtained from local resources or through temporary stations. Biological Monitoring – A thermometer will be required to measure core temperatures. Remember as the core temperature drops the body will move more of the blood supply to control this from subsequent reduction. In doing so you can also employ a capillary response by lightly squeezing the fingertips. If the blood supply back to the finger tips is greater than 2 seconds circulation is being affected. Follow the provisions as specified in Section 4.6 of the Tetra Tech NUS, Inc. Health and Safety Guidance Manual regarding the identification and evaluation of heat/cold stress related conditions.

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Soil Boring **ANALYZED BY/DATE: C.Snyder 3/10**

Activity/Phase	Potential Hazards	Recommended Actions/Controls
Decontamination of Heavy Equipment This activity will take place at the soil boring. These items will be washed and rinsed. Rinse water will be disposed of properly	1. Struck by – items falling/ Pinches and compressions	Hazards associated with this activity are considered minimal. Provide drying racks or similar device to secure wash parts from falling during the drying process. • The potential exists during the soil boring using MacroCore Samplers to get fingers caught within pinch points during the hydraulic driving unit as well as between wrenches and hard surfaces when opening the samplers. The driller will make sure all hands/fingers are clear before actuating the controls. • Helper will exercise caution when opening the MacroCore or Dual tube to avoid catching fingers between wrenches, wrench and immovable object in the event the wrench slips. Make sure there is a pipe vise to secure the sampler when opening.
	2.Contaminant/ chemical contact.	Wear prescribed PPE - Rubber gloves, apron for cleaning and handling contaminated equipment. • Review MSDS for decontamination solution – Liquinox.
	3. Lifting hazards	Wash buckets should be filled only to 80% capacity to limit the amount of weight carried to and from the wash area. This is especially critical over uneven ground and steep terrain. This will also minimize spills. Place the buckets in a large plastic mortar tub to control incidental releases. It is not anticipated that greater than 55 –gallons including well purge waters will be generated as part of this investigation activity.

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Soil Boring **ANALYZED BY/DATE: C. Snyder 03/2010**

Chemical hazards: Based on historical use the following contaminants may be encountered metals particularly lead. Exposure to contaminants bound to particulates is most likely to occur through ingestion of contaminated soil or water, or hand-to-mouth contact during site activities. For this reason, PPE and basic hygiene practices (washing face and hands before leaving site) will be extremely important.
As indicated in this table, from a worst-case scenario, potential site contaminants can possibly be present at concentrations that could pose an inhalation hazard to site personnel

Exposure Routes: All exposure routes are possible. However the most predominant is considered to be skin contact and ingestion. This consideration is based on working in an open air environment and a relatively moderate vapor pressure especially during the colder periods/seasons. Diligent use of PPE, decontamination and good work hygiene practices will minimize if not eliminate exposure via this route.

Exposure Limits: **Work place Exposure control limits/values published are as follows:**
OSHA PEL: 0.05 mg/m^3.
ACGIH TWA-TLV: 0.05 mg/m^3
NIOSH REL: 0.05 mg/m^3.

Materials used in Soil Boring and Well construction:

Liquinox: Decontamination detergent. Mildly irritating to the eyes, skin, and mucous membranes. May cause nausea and vomiting if swallowed.

In all cases, review MSDS before use.

Hazard Monitoring Required:	**Decontamination Procedures:**	**Permits/Requirements:**
Min-Ram dust monitor. If elevated readings are observed above the PEL of 15 mg/m^3, the SSO shall monitor the workers' BZ areas with the dust monitor. If elevated readings are observed, the following process will be followed: If elevated readings are observed in the workers breathing zone, stop work evacuate to unaffected area until readings subside. Contact the PHSO. Soil will be collected and contained per the Sampling and Analysis Planl. No air monitoring is required due to the materials in question being metals. Good hygiene paractices and PPE will be adequate to avoid exposure.	**Equipment** – MacroCore Sampler – This activity will take place at the HSA/DPT Rig. The outer sleeve and cutting shoe will be washed and rinsed in 5-gallon buckets until visibly clean. **Personnel** – • Secure all drilling operations. • Wash and rinse disposable PPE. • Dispose of dedicated PPE as general refuse. • Wash hands and face or use a hygienic wipes to remove potential contaminants from the	- Obtain Drillers License/Certification for Texas for planned drilling activities - Obtain well permits for planned drilling activities

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Soil Boring **ANALYZED BY/DATE: C. Snyder 03/2010**

It should be noted that based on the small surface area exposed (well head and IDW collection container – 5-gallon bucket) soil cores airborne concentrations greater than background are not anticipated.	hands and face. This will minimize potential ingestion exposures.	

PPE Required

Hard-hat	☒ Yes	☐ No	Hearing Protection (Plugs/Muffs)	☒ Yes	☐ No
Safety Glasses	☒ Yes	☐ No	Safety belt/harness	☐ Yes	☒ No
Chemical/splash goggles	☐ Yes	☒ No	Radio/Cellular Phone	☐ Yes	☐ No
Splash Shield	☐ Yes	☒ No	Barricades	☒ Yes	☐ No
Splash suits/coveralls	☐ Yes	☐ No	Gloves (Type – See Note)	☒ Yes	☐ No
Impermeable apron	☐ Yes	☐ No	Work/rest regimen	☐ Yes	☒ No
Steel toe work shoes/boots	☒ Yes	☐ No	Chemical Resistant Boot Covers	☐ Yes	☐ No
High Visibility vest	☐ Yes	☐ No	Tape up/use insect repellent	☐ Yes	☐ No
First Aid Kit	☒ Yes	☐ No	Fire Extinguisher	☒ Yes	☐ No
Safety Shower/Eyewash	☒ Yes	☐ No	Other	☐ Yes	☐ No

Modifications/Exceptions: High visibility vests for high traffic areas; Nitrile or neoprene gloves and impermeable aprons for handling contaminated drilling equipment, nitrile surgeon gloves for handling sampling tools. Hard hats are required when working near operating equipment, when overhead hazards exist, or when required in the area. Hearing protection will also be required when working in the vicinity (25-feet or less) of the DPT rig.

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Soil Boring **ANALYZED BY/DATE: C. Snyder 03/2010**

Training Required	**Emergency Equipment**	**H&S Supporting Program Requirements**
- 29 CFR 1910.120 (e) 40-Hour General Site Worker Training - 29 CFR 1910.120 (e) (8) 8-Hour General Site Worker Refresher Training - 29 CFR 1910.120 (e) (4) 8-Hour General Site Worker Supervisory Training - 29 CFR 1910.120 (e) Site Specific Training (See Section 2.0 of the HSGM, Attachment 2-2). - Tail Gate Meeting Attendance **Medical Clearance/Surveillance Required** - Be a participant in a Medical Surveillance Meeting the Requirements of 29 CFR 1910.120 (f) - Completed a Medical Data Sheet (See Section 3, Figure 3-6 of the HSGM for Blank forms) Documentation to be maintained onsite.	- First Aid Kit - Fire Extinguisher - Map to Hospital (Figure 3-2) - Emergency Contact List (Table 3-1) - Spill pads for oils	• Hazard Communication Program(Section 5.0 HSGM) - Collect and review MSDS for Decontamination Solution - Liquinox • Hearing Conservation Program (Section 6.0 HSGM)

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Surface and Subsurface Soil Sampling **ANALYZED BY/DATE: C. Snyder 03/2010**

Activity/Phase	Potential Hazards	Recommended Actions/Controls
Surface and subsurface soil sampling.	1. Minor cuts, abrasions or contusions handling equipment and tools	1. Wear cut-resistant gloves when handling items with sharp or rough edges.
	2. Slips, trips, falls	2. Clear intended work areas and walking paths of roots, weeds, limbs, and other ground hazards. Practice good housekeeping to keep the site clear of obstructions, materials, equipment, and other tripping hazards. Ensure that work boots have adequately aggressive sole design. Use caution when working on uneven and wet ground.
	3. Chemical exposure to metals	3. Wear surgeon's gloves when handling potentially contaminated media and samples, avoid contact with potentially contaminated media to the extent possible, use good decontamination techniques and practice good personal hygiene (hands and face washing) when exiting work area. Hand-to-mouth activities in the work area will be prohibited (eating, drinking, smoking, etc.).
	4. Energized systems (contact with underground or overhead utilities).	4. Drilling activities will proceed in accordance with the Utility Locating and Excavation Clearance SOP in Section 7.0 of the HSGM. Utility clearances will be obtained, in writing, and locations identified and marked prior to activities.
	5. Insect bites, snake bites, and contact with poisonous plants.	5. Shake out boots before donning. Use insect repellants according to manufacturer's label recommendations (i.e. for proper application and re-application practices and schedules), Generally, products containing at least 10% DEET should be used and should be applied to exposed skin; products containing stronger active ingredients such as Permethrin should be applied to clothing only. Tape pants leg to work boot joints with duct tape. Wear light-colored clothing to better see and remove any insects. Perform close body inspections at least daily upon leaving the site. Avoid potential nesting areas (brush, deadfall, etc.) where insects or snakes may be present. Review natural hazards information in Section 4.0 of the HSGM with field team as appropriate based on site observations and conditions.

TABLE 1

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Surface and Subsurface Soil Sampling **ANALYZED BY/DATE: C. Snyder 03/2010**

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Sample collection tools and containers (jars, spatulas, spoons, etc.) and hand auger	Visual inspection prior to use by user.	Training/experience in proper sample collection, handling and chain of custody requirements.
Personal Protective **Equipment: <u>Minimum</u>**: Steel toe boots, safety glasses **<u>Optional items</u>**: Hardhat **<u>Chemical Protection</u>**: Nitrile gloves	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections are the responsibility of PPE users.	OSHA 40-hour HAZWOPER training, plus appropriate 8-hour annual refresher training for all task participants. Supervisors must have completed additional 8 hours of HAZWOPER training. Also review the AHA during pre-task tailgate safety briefing with all intended task participants. 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 SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: Decontamination **ANALYZED BY/DATE: C. Snyder 03/2010**

ACTIVITY/PHASE	POTENTIAL HEALTH HAZARDS	RECOMMENDED ACTIONS/CONTROLS
Decontamination	1. Exposure to contaminated media	1. Follow good decontamination practices (work from top down and outside in). Nitrile gloves are to be the last item of PPE removed. Wash hands and face following personal decontamination and prior to performing any hand-to-mouth activity. 2. Use an appropriate disinfectant to: - clean gloves after handling traps/rodents and prior to disposal - to decontaminate traps which contained or were soiled by rodents - to decontaminate instruments or any other objects which may have been contaminated 3. Wash bare hands as soon as possible and before engaging in hand-to-mouth activities.
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Hand tools (hand brushes, sprayers, etc.)	Visual inspection prior to use by user. Check wooden handles for cracks or splinters.	Read Work Plan section about decontamination procedures and investigative derived waste (IDW) disposal.
Personal Protective Equipment: Minimum: Nitrile gloves, steel toe shoes/boots, safety glasses **Optional items**: Tyvek suit or apron for splash protection. **Chemical Protection**: If contact with overspray cannot be avoided, rain suit or moisture-repellant disposable coveralls may be specified by the SSO.	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	OSHA 40-hour HAZWOPER training, plus appropriate 8-hour annual refresher training for all task participants. Supervisors must have completed additional 8 hours of HAZWOPER training. Also, review AHA during pre-task tailgate safety briefing with all intended task participants. 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 SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: Vegetation Management **ANALYZED BY/DATE: C. Snyder 03/2010**

ACTIVITY/PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS/CONTROLS
Vegetation Management	Chemical hazards:	No Chemical hazards are anticipated as part of this activity.
	Controlled Burn at the Former Incinerator Site	Review the Navy Controlled Burn Plan for the former Incinerator Disposal site at NALF Cabaniss. The Burn Plan lists safety measures and site requirements for the controlled burn.
	1. Physical hazards:	All equipment will be: - Inspected in accordance with Federal safety and transportation guidelines, OSHA and manufacturers design and documented as such using Equipment Inspection Checklist provided in Attachment III. - Only manufacturer approved parts may be used in repair of site equipment. - Operated by knowledgeable ground crew. - Restrictions at the operation (All personnel not directly supporting this clearance activity will remain at least 50-100 feet from the point of this operation). - Hand signals will be established by both the chipper operator and backhoe operator prior to the commencement of clearing activities. - All personnel will be instructed in the location and operations of the emergency shut off device(s). This device will be tested initially (and then periodically) to insure its operational status. - Work areas will be kept clear of clutter to permit escape, if necessary. - All safety devices and controls will be tested prior to the start of work, and checked periodically to insure equipment is safe for operation. - Buddy system - At least two persons will be in close contact with one another when operating the chipper. One to engage safety controls to assist the other worker should the need arise. - Work gloves, long hair, loose fitting clothing will be secured to avoid snagging and entanglement in brush or moving chipper components. - Personnel will not place hands or feet past the entry plane of the feed hopper.
	2. Chipper Operations	- Brush and limbs will be fed butt first, to allow these materials to sweep past the worker to avoid any hooking or dragging actions. Recommended Safe Work Practices - Inspect the chainsaw prior to each use. Insure the blade is adjusted and sharp,

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: Vegetation Management **ANALYZED BY/DATE: C. Snyder 03/2010**

ACTIVITY/PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS/CONTROLS
	3. Chainsaw Operations	and all parts are lubricated per the manufacturer's instruction. - Test all safety devices initially and then periodically to insure a safe operational status. - When starting the chainsaw, place it on a firm surface. Place your foot in the hand guard at the rear of the saw, grip the top handle, pull the start cord with the free hand. Never attempt to start the saw free hand, or by placing it on your knee. - Never cut with tip of the chain saw blade. - Plan the cut. Know where the tree will fall. Have a clear escape plan when dropping trees greater than 2 inches in girth. - Preview the tree to be dropped looking for insect nests bees and hornets that may be nesting in hollowed out trunks and tree tops. - Do not stand between falling trees, branches, equipment or other trees. - Never cut above your head. - Cut only wood with the chain saw. - Where prescribed safety equipment as described in the Safe Work Permit. - Monitor, the condition of the saw during use, make adjustments, as necessary. - When cutting a limb, cut from the opposite side of the trunk, the trunk will act as a shield to protect the worker. - Be attentive as to how the trunk may move when removing limbs, keep yourself out of the pathway of falling limbs or branches. - Keep the work area free from clutter to avoid potential slip, trip, and fall hazards.
	4. Hand Tools	If hand tools (brush hooks, machetes, etc.) are used to clear brush and small trees the following precautions should be followed: - Inspect handles are they in good condition (no cracks, splinters, loose heads/cutting apparatus. - Check cutting tools edges all blades should be sharp without knicks or gouges in the blade. - All hand tools (brush hooks, machetes, etc.) should be kept in a sheath when not in use. - A 10-foot perimeter will be established around areas where brush clearing is being conducted.
	5. General Safety Hazards	Note: Excessive noise levels (raising your voice to speak to someone within two feet) will be require the use of hearing protection.

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: Vegetation Management **ANALYZED BY/DATE: C. Snyder 03/2010**

ACTIVITY/PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS/CONTROLS
		Avoid insect nesting areas, employ repellents. Report potential hazards to the SSO. - A backhoe or hand tools (rakes, pitch forks, etc.) will be used to pull brush away from piles to avoid nesting areas. Do not use hands or feet for this purpose. - Traffic considerations: Establish safe zones and routes of approach to the operation. All personnel working among equipment traffic are required to wear reflective vests. Secure all loose clothing articles to avoid possible entanglement. Boundaries will be established based on the size of trees give sufficient space to keep personnel away from hazards (noise, flying projectiles, etc.)
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Personal Protective Equipment: Minimum: Safety toe boots, hard hats, and safety impact eye protection (when in active heavy vehicle operation areas or when using saws, chippers etc.) • Work gloves • Work clothes • Snake chaps • Safety Glasses Optional items: Hearing protection as needed. High-visibility vests when near	1. Initial PPE inspection performed by the SSO. Ongoing (prior to each use) inspections are the responsibility of PPE users.	1. 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 SSO 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.

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: Vegetation Management **ANALYZED BY/DATE: C. Snyder 03/2010**

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
active traffic areas. For UXO Areas - Safety 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. HTRW: none		

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: Surveying **ANALYZED BY/DATE: C. Snyder 03/2010**

ACTIVITY/PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS/CONTROLS
Geographical and GPS surveying. **.**	1) Flying projectiles/Struck by	1) When hammering wooden hubs into the ground there is a possibility that shards may break off. To protect from potential eye injury during this activity personnel will wear safety glasses. - Crack or damage hubs will not be used. - Use a suitable hammer to drive the hubs. The hammer shouldn't be so heavy that and additional person must hold the hub while you drive it into the ground. - Inspect the hammer to insure the head is attached tightly and there are no indication of mushrooming head that could also become a flying projectile should it break off.
	2) Slips/Trips/Falls	2) Remove/identify trip hazards from the work area. - Maintain good housekeeping within the work area. - Place the hubs in a bucket or similar device. That way should you fall you are less likely to impale yourself.
	3) Insect Bites	3) This area is in an urban setting insects will not be a major issue. However, should this assumption be incorrect the following will apply: - Insects – Use repellants applied liberally to skin and clothing per the Manufacturers requirements. - Wear light colored clothing – This will assist in controlling heat stress as well as making crawling insects on your body easier to detect. ☝ Remember: Fire ants commonly build their nests along well pads, building edges, and sidewalks. Examine the work area for any nests in the area that you must work. If you are allergic, remind the SSO of your condition.
	4) Pressurized hazards/potential contaminant exposure	4) Through the course of this activity, the surveyors will be required to open the wells to measure the top of the riser after they are installed. The potential exists for pressure to build in monitoring wells. This pressure may cause the j-plug to fly off and strike the surveyor. To prevent injury - Open from an upwind position. As soon as the well is open, step away allow the well to off-gas for a minute. - Do NOT place your face over the well, when opening. - Wear safety glasses, when opening.
	5) Vehicle Traffic Hazards	5) To minimize potential Vehicle traffic hazards during this activity: - Avoid activities during peak traffic times early morning, early evening (People

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: Surveying **ANALYZED BY/DATE: C. Snyder 03/2010**

ACTIVITY/PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS/CONTROLS
		going or coming home from work). - Neighborhood drivers may be distracted by the by site activities keep all vehicles and equipment at least 5-feet from the roads edge. - Avoid placing obstructions along the sides of the road that may cause field personnel to move into the flow of traffic to avoid your activities or equipment. - Maintain at least 5-feet of space between you and moving traffic. Where this is not possible, use flaggers and/or signs to warn oncoming traffic of activities near or within the travel lanes. - Face Traffic: whenever feasible, if moving within the 5-feet of required space, or into traffic, attempt to face moving traffic at all times. Always leave an escape route. - Wear High Visibility shirts/vests to increase visual recognition by Drivers. - Do not rely on the Driver's visibility, judgment, or ability. Make eye contact. Carefully and deliberately use hand signals so they will not startle or confuse the Driver(s) before moving into traffic. - Move Deliberately: Do not make sudden movements that might confuse a Driver. - Avoid interrupting traffic flow and minimize crossing traffic lanes.

Hazard Monitoring Required:	**Decontamination Procedures:**	**Permits/Requirements:**
Visual observation of work practices by the FOL and/or the SSHO to minimize potential physical hazards (i.e., improper lifting, unsecured loads, cutting practices, etc.). Inclement Weather – Use the 30/30 Rule – If there is 30 seconds or less between thunder and lightning go inside for 30 minutes or more since the last thunder.	Good personal hygiene practices should be employed prior to breaks lunch or other period when hand to mouth contact occurs. This will minimize potential ingestion exposures.	- Texas Licensed Surveyor

PPE Requirements *(Italicized items are as conditions dictate or at the SSHO's discretion)*
Level D – Standard field attire (sleeved shirts, long pants), steel toe work boots, surveyors working along highways and traffic pathways shall wear high visibility vests to increase visual recognition.

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: Surveying **ANALYZED BY/DATE: C. Snyder 03/2010**

Training Required	**Emergency Equipment**	**H&S Supporting Program Requirements**
- 29 CFR 1910.120 (e) Site Specific Training (See Section 2.0 of the HSGM, Attachment 2-2). - Safe Work Packet Review/Safety or Tail Gate Meeting **Medical Clearance/Surveillance Required** Completed a Medical Data Sheet (See Section 3, Figure 3-6 of the HSGM for Blank forms)	- First Aid Kit (For each work crew) - Fire Extinguisher (2A:B:C for general operations) - Map to Hospital (Figure 6-1 one placed in the First Aid Kit) - Emergency Contact List (Table 6-1. Place one in the First Aid Kit)	None required.

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: UXO Avoidance During Soil Sampling Activities **ANALYZED BY/DATE:C. Snyder 03/2010**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
1. Soil sampling activities, including UXO avoidance, using Hand Augering Technique, and XRF field screening of lead in soil	1. MEC/MPPEH Hazards	1. MEC/MPPEH avoidance operations will be conducted by trained UXO Technicians. Non-UXO personnel will be escorted while in the area of concern. The site investigation team will be accompanied by a UXO Technician II or higher during the fieldwork and intrusive operations. Exclusion zone distances will be defined based on those specified in the Work Plan. Operations will immediately stop if MEC/MPPEH is discovered and UXO Technicians will secure the area. The non-UXO personnel will leave the area. If MEC/MPPEH is observed, the UXO Technician making the observation will signal to stop operations and take the following precautions: • The UXO Technician will inspect the MEC/MPPEH to determine its condition, if possible. No suspect MEC/MPPEH will be moved or disturbed during this phase of the investigation. This identification and the exact location will be recorded in the logbook. • Any MEC/MPPEH item discovered will be flagged for UXO avoidance as stated in the Work Plan/ESS Determination. • The UXO Technician will notify the NALF POC, who will in turn notify the appropriate Military Explosives Ordnance Disposal (EOD). • MEC/MPPEH items discovered will be reported to the Navy RPM and NAVFAC Southeast. • An inventory will be maintained by the UXO Technician with locations and descriptions for the MEC/MPPEH discovered during this operation, and the Navy RPM will be provided an update about the inventory on a daily basis. • If at any time during the sampling activities, MEC, suspect MEC, MPPEH, or munitions debris are discovered in the excavation area, the operations will stop and the item will be reported.
	2. Insect/animal bites	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 N,N-diethyl-m-touluamide (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.
	3. Inclement weather	3. If electrical storms or inclement weather are in the area, as determined through local forecasting or weather alerts issued, the SSO/UXO Technician 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/UXO Technician’ direction. Personnel will be directed to seek suitable shelter that will provide adequate protection from the elements. Lightning threat detection will be coordinated within NALF’s existing systems.

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: UXO Avoidance During Soil Sampling Activities **ANALYZED BY/DATE:C. Snyder 03/2010**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
	4. Slips/Trips/Fall Hazards	4. Practice good housekeeping to the extent possible and conduct the following: • Maintain clear walking and working areas. • Eliminate, when possible, any debris and rutted areas that may create a tripping hazard. • Remaining hazards should be pointed out to the UXO Technicians. • Personnel will return the site to a neat and orderly condition prior to leaving the site. • Exit and access pathways will be maintained free of obstructions.
	5. Radiation (X-Ray)	The area where the XRF device is used will be restricted. The operator will ensure that only personnel critical to the operation are in the area. The operator will ensure good general housekeeping is practiced to control potential contamination within a confined area. The operator will practice good work hygiene practices to minimize potential introduction of residual contamination into the body through hand to mouth contact. Knowledgeable personnel will operate the XRF instrument. • The operator must never point the instrument at themselves or another person. • 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. The instrument should be stored, in a locked case, or locked cabinets when not in use. • When in use, the instument must remain in the direct control of the trained and certified operator. • 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. • 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. Chemical contaminants, MC contaminants, and/or decontamination fluids	6. 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: • 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.

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: UXO Avoidance During Soil Sampling Activities **ANALYZED BY/DATE:C. Snyder 03/2010**

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
		• 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). • Decontaminate the equipment and supplies between sampling and prior to leaving the site.

TABLE 1

NALF ACTIVITY HAZARD ANALYSIS

ACTIVITY: UXO Avoidance During Soil Sampling Activities **ANALYZED BY/DATE:C. Snyder 03/2010**

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Personal Protective Equipment (Minimum): Safety toe boots, hard hats, and safety impact eye protection (when handling heavy boxes and/or containers) • Work gloves for MEC operations • Nitrile gloves for sampling events. • Work clothes **Optional items**: • High-visibility vests when near active traffic areas. For UXO Technicians - Safety toe shoes/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 safety 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. • Sampling equipment **HTRW**: Lead and other MC listed in Section 6.0 of the HASP	Initial PPE inspection performed by the SSO/UXO Technician. Ongoing (prior to each use) inspections are the responsibility of PPE users.	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 SSO/UXO Technician 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. 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. Site personnel must carefully read the manufactures instructions for the proper calibration and operation of the air monitoring instruments. Knowledgeable operators with OHSA 29 CFR 1910.120 Hazardous Waste Site Worker 40 hour training.

15.0 HEALTH AND SAFETY PLAN

This APP and the site-specific HASP must be used together and be available for site personnel during the duration of this work.

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

Revision 0
March 2010

APPENDIX TO ACCIDENT PREVENTION PLAN

Appendix 1

Employee training/qualifications are to be collected and attached by PM/FOL prior to the start of site activities.

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

ATTACHMENT II

UXO

STANDARD OPERATING PROCEDURE

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	

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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

- 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.

c. UXO personnel are responsible for maintaining current status with training and medical surveillance requirements, as specified in the project-specifc 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 ordnance, 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

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

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 capabilitities 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.

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

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:

Parameter	Action Level
Total Organic Vapors	Any sustained level above background
Airborne particulates	Readings >2.5 mg/m^3
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:

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_2 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)

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

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

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 them 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.**

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

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

TABLE 4-1 OF THE DEPARTMENT OF DEFENSE EXPLOSIVES SAFETY BOARD TECHNICAL PAPER #18

Table 4-1. Minimum Qualification Standards

Position Description	Training Required (Notes 1, 2, & 3)	Minimum Years of EOD/UXO Experience (Note 4)	Special Requirements (Note 5)
Senior UXO Supervisor	1, 2, or 3	10 years	Significant experience in all aspects of munitions response actions or range clearance activities, as appropriate for the contracted operation. Five years experience in supervisory positions.
UXO Safety Officer	1, 2, or 3	8 years	Experience in all phases of munitions response actions or range clearance activities, as appropriate for the contracted operation, and applicable safety standards.
UXO Quality Control Specialist	1, 2,3	8 years	Experience in all phases of munitions response actions or range clearance activities, as appropriate for the contracted operation, and the transportation, handling and storage of munitions and commercial explosives.
UXO Technician III	1, 2 or 3	8 years	Prior military EOD and/or commercial UXO experience in munitions response actions or range clearance activities, as appropriate for the contracted operation.
UXO Technician II	1 or 2 ------or------ 3	N/A -------or------ 3 years	Prior military EOD experience ----------or---------- Experience in response munitions response actions or range clearance activities, as appropriate for the contracted operation, plus specific project/explosives safety training.
UXO Technician I	3	0	Successfully completed formal course of instruction appropriate to this skill level
UXO-Sweep Personnel	Equipment and site specific training	N/A	Safety Equipment and site specific training. (Experience at this position is not required for UXO Technician I certification.)

ATTACHMENT IV

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 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 V

INCIDENT REPORT FORM

TETRA TECH, INC.
Safety Excellence

TETRA TECH INCIDENT REPORT

Report Date	Report Prepared By	Incident Report Number

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)	☐	Complete IR Form Only
Injury or Illness	☐	Complete Form IR-A; Injury or Illness
Property or Equipment Damage, Fire, Spill or Release	☐	Complete Form IR-B; Damage, Fire, Spill or Release
Motor Vehicle	☐	Complete Form IR-C; Motor Vehicle

INFORMATION ABOUT THE INCIDENT

Description of Incident

_____

_____

_____

Date of Incident	Time of Incident
	_____ AM ☐ PM ☐ *OR* Cannot be determined ☐
Weather conditions at the time of the incident	**Was there adequate lighting?**
	_____ Yes ☐ No ☐

Location of Incident

_____ Was location of incident within the employer's work environment? Yes ☐ No ☐

Street Address	City, State, Zip Code and Country
Project Name	**Client:**
Tt Supervisor or Project Manager	**Was supervisor on the scene?**
	Yes ☐ No ☐

WITNESS INFORMATION (attach additional sheets if necessary)

Name	Company
Street Address	**City, State and Zip Code**
Telephone Number(s)	

CORRECTIVE ACTIONS

Corrective action(s) immediately taken by unit reporting the incident:

_____

_____

_____

Corrective action(s) still to be taken (by whom and when):

_____

_____

_____

ROOT CAUSE ANALYSIS LEVEL REQUIRED

Root Cause Analysis Level Required: Level - 1 ☐ Level - 2 ☐ None ☐

Root Cause Analysis Level Definitions

Level - 1	**Definition:** 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. The following events may trigger a Level 1 RCA: ▪ Work related fatality ▪ Hospitalization of one or more employee where injuries result in total or partial permanent disability ▪ Property damage in excess of $75,000 ▪ When requested by senior management
Level - 2	**Definition:** 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. The following events will require a Level 2 RCA: ▪ OSHA recordable lost time incident ▪ Near miss incident that could have triggered a Level 1 RCA ▪ When requested by senior management

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.

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?	**Time individual began work**
Yes ☐ No ☐	_____ AM ☐ PM ☐ *OR* Cannot be determined ☐

Safety equipment

Provided? Yes ☐ No ☐

Used? Yes ☐ No ☐ If no, explain why

_____
_____
_____

Type(s) provided:
☐ Hard hat ☐ Protective clothing
☐ 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”

_____

_____

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”

_____

_____

_____

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”.

_____

_____

MEDICAL CARE PROVIDED

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

_____

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

Name of physician or health care professional	**Facility Name**
Street Address, City State and Zip Code	**Type of Care?**
_____ _____	Was individual treated in emergency room? Yes ☐ No ☐ Was individual hospitalized overnight as an in-patient? Yes ☐ No ☐ Did the individual die? Yes ☐ No ☐ If yes, date: _____ Will a worker’s compensation claim be filed? Yes ☐ No ☐
Telephone Number	

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 ☐ No ☐ NA ☐

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 ☐ No ☐			
Agency: _____ Yes ☐ No ☐			
Other: _____ Yes ☐ No ☐			

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?	**Did ambulance respond to the accident?**
Yes ☐ No ☐	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 ☐ Female ☐	**Gender**	Male ☐ Female ☐
Was traffic citation issued to Tetra Tech driver? Yes ☐ No ☐		Was traffic citation issued to driver of other vehicle? Yes ☐ No ☐	
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 ☐ Female ☐			Yes ☐ No ☐	Yes ☐ No ☐	Injured ☐ Died ☐
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 ☐ Female ☐			Yes ☐ No ☐	Yes ☐ No ☐	Injured ☐ Died ☐

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

ATTACHMENT VI

EQUIPMENT INSPECTION CHECKLIST

Heavy Equipment Inspection Checklist

Company:_____ **Unit/Serial No#:**_____

Inspection Date: ____/____/____ **Time:**_____:____ **Equipment Type:**_____
(e.g, earthmoving equipment - tractors backhoes, bulldozers, etc.)

Project Name:_____ **Project No#:**_____

Yes	No	NA	Requirements	Comments
☐ ☐	☐ ☐	☐ ☐	Seat Belts • Are available for intended operator and passengers (where applicable) • Seat Belts are operational?	
☐	☐	☐	Roll-Over Protection (ROPS) • Roll-over protection structures (ROPS) are provided on vehicles and heavy equipment (including scrapers, tractors, loaders, bulldozers, carryalls, etc.)	
☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	Brakes • Brake systems capable of stopping and holding fully loaded equipment • Parking Brake functions properly • Wheel Chocks available (where and as applicable)	
☐ ☐	☐ ☐	☐ ☐	Access • Non-slip steps • Grab Handles (3-Point Grab/Step Mounting Points)	
☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	Audible Alarms • Audible alarms – All bidirectional machines, such as rollers, compacters, front-end loaders, bulldozers, and similar equipment, shall be equipped with a horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction. - Back up Alarms – All self propelled equipment with an obstructed view to the rear will be equipped with a reverse gear signal alarm distinguishable from the surrounding noise level. • Horn functioning properly	

Yes	No	NA	Requirements	Comments
			Highway Use • Fenders for equipment that can exceed 15mph • Fire Extinguisher • Are exhaust emissions directed away from the Operator? • Cab - Clean, free from debris, tools or equipment that can interfere with foot Control. - Free from storage of flammable material/solvents • Mirrors, • Safety glass - Equipped with defrosters - Windshield wipers • Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use? • Gauges functioning properly • Tires (Tread) or tracks • Steering (standard and emergency) • Are tools and material secured to prevent movement during transport?	
			Fluid Levels: • Engine oil • Transmission fluid • Brake fluid • Cooling system fluid • Hoses and belts • Hydraulic oil	
			Fueling • Fueling of vehicles and heavy equipment is done with the engine off. • No smoking is permitted at or near the fuel storage or refueling area. A sign is posted stating: NO SMOKING WITHIN 50 FEET. • No sources of ignition are present near the fuel storage or refueling area. • A dry chemical or carbon dioxide fire extinguisher (rated 6:BC or larger) is in a location accessible to the fueling area, no closer than 50-feet. • Safety cans available?	

Yes	No	NA	Requirements	Comments
☐	☐	☐	Safety Guards – • Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact?	
☐	☐	☐	• Hot pipes and surfaces are protected from accidental contact?	
☐	☐	☐	• High pressure pneumatic lines have safety cable to prevent thrashing should it become disconnected?	
☐	☐	☐	Attachments • Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use?	
☐	☐	☐	Operator Qualifications • Does the operator have proper licensing where applicable, (e.g., CDL)?	
☐	☐	☐	• Does the operator, understand the equipment's operating instructions?	
☐	☐	☐	• Is the operator experienced with this equipment?	
☐	☐	☐	• Is the operator 21 years of age or more?	
☐	☐	☐	PPE Required • Hardhat	
☐	☐	☐	• Safety glasses	
☐	☐	☐	• Work gloves	
☐	☐	☐	• Chemical resistant gloves_____	
☐	☐	☐	• Steel toed Work Boots	
☐	☐	☐	• Chemical resistant Boot Covers	
☐	☐	☐	• Apron	
☐	☐	☐	• Coveralls Tyvek, Saranex, cotton)_____	
☐	☐	☐	Key(s)?	
☐	☐	☐	Operating Manual?	
☐	☐	☐	Other Hazards • Excessive Noise Levels _____ dBA	
☐	☐	☐	• Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.)	
☐	☐	☐	- MSDSs available?	

Approved for Use ☐ Yes ☐ No ☐ See Comments

_____ Site Health and Safety Officer

_____ Operator

ATTACHMENT VII

OSHA POSTER

Job Safety and Health

It's the law!

OSHA

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

OSHA 3165-12-06R