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HEALTH AND SAFETY PLAN FOR SITE ASSESSMENT BUILDING 1932 UNDERGROUND  
STORAGE TANK NAS PENSACOLA FL  
4/1/2001  
TETRA TECH NUS

**Health and Safety Plan**  
**Site Assessment**  
at  
**Building 1932 -**  
**Underground Storage Tank Site**  
**Naval Air Station Pensacola**  
Pensacola, Florida



**Southern Division**  
**Naval Facilities Engineering Command**  
Contract No. N62467-94-D-0888  
Contract Task Order 0140A

April 2001

**HEALTH AND SAFETY PLAN**

**SITE ASSESSMENT  
AT  
Building 1932 -  
Underground Storage Tank Site**

**NAVAL AIR STATION PENSACOLA  
PENSACOLA, FLORIDA**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION-NAVY (CLEAN) CONTRACT**

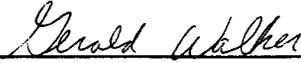
**Submitted to:  
Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive  
North Charleston, South Carolina 29406**

**Submitted by:  
Tetra Tech NUS, Inc.  
661 Andersen Drive  
Pittsburgh, Pennsylvania 15222**

**CONTRACT NUMBER N62467-94-D-0888  
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**April 2001**

**PREPARED UNDER THE  
SUPERVISION OF:**

  
GERALD WALKER, P.G.  
TASK ORDER MANAGER  
TETRA TECH NUS, INC.  
TALLAHASSEE, FLORIDA

**APPROVED FOR SUBMITTAL BY:**

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

**TABLE OF CONTENTS**

<b><u>Section</u></b>	<b><u>Page</u></b>
<b>1.0 INTRODUCTION .....</b>	<b>1-1</b>
1.1 KEY PROJECT PERSONNEL AND ORGANIZATION.....	1-1
1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS .....	1-3
<b>2.0 EMERGENCY ACTION PLAN .....</b>	<b>2-1</b>
2.1 INTRODUCTION .....	2-1
2.2 PRE-EMERGENCY PLANNING .....	2-1
2.3 EMERGENCY RECOGNITION AND PREVENTION .....	2-2
2.3.1 Recognition .....	2-2
2.3.2 Prevention .....	2-3
2.4 SAFE DISTANCES AND PLACES OF REFUGE .....	2-3
2.5 EVACUATION ROUTES AND PROCEDURES .....	2-3
2.6 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES .....	2-3
2.7 EMERGENCY CONTACTS .....	2-4
2.8 ROUTE TO HOSPITALS .....	2-5
2.9 DECONTAMINATION PROCEDURES/EMERGENCY MEDICAL TREATMENT.....	2-6
2.10 INJURY/ILLNESS REPORTING .....	2-6
<b>3.0 SITE BACKGROUND .....</b>	<b>3-1</b>
3.1 NAS PENSACOLA.....	3-1
3.2 BUILDING 1932 UST SITE.....	3-1
<b>4.0 SCOPE OF WORK .....</b>	<b>4-1</b>
<b>5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES SUMMARIZATION .....</b>	<b>5-1</b>
<b>6.0 HAZARD ASSESSMENT .....</b>	<b>6-1</b>
6.1 CHEMICAL HAZARDS .....	6-1
6.2 PHYSICAL HAZARDS .....	6-2
6.3 NATURAL HAZARDS.....	6-2
6.3.1 Insect/Animal Bites and Stings.....	6-2
6.3.2 Inclement Weather .....	6-4
<b>7.0 AIR MONITORING .....</b>	<b>7-1</b>
7.1 INSTRUMENTS AND USE .....	7-1
7.1.1 Photoionization Detector/Flame Ionization Detector.....	7-1
7.1.2 Hazard Monitoring Frequency .....	7-1
7.2 INSTRUMENT MAINTENANCE AND CALIBRATION.....	7-2
<b>8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS .....</b>	<b>8-1</b>
8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING .....	8-1
8.1.1 Requirements for TtNUS Personnel.....	8-1
8.1.2 Requirements for Subcontractors .....	8-1
8.2 SITE-SPECIFIC TRAINING .....	8-3
8.3 MEDICAL SURVEILLANCE .....	8-3
8.3.1 Medical Surveillance Requirements for TtNUS Personnel .....	8-3
8.3.2 Medical Surveillance Requirements for Subcontractors.....	8-5
8.3.3 Requirements for all Field Personnel .....	8-5
8.4 SUBCONTRACTOR EXCEPTIONS.....	8-5

## TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
<b>9.0</b>	<b>SITE CONTROL .....</b>	<b>9-1</b>
9.1	EXCLUSION ZONE .....	9-1
9.2	CONTAMINATION REDUCTION ZONE .....	9-1
9.3	SUPPORT ZONE .....	9-1
9.4	SAFE WORK PERMITS .....	9-1
9.5	SITE VISITORS .....	9-4
9.6	SITE SECURITY .....	9-4
9.7	SITE MAP .....	9-5
9.8	BUDDY SYSTEM .....	9-5
9.9	MATERIAL SAFETY DATA SHEETS (MSDS) REQUIREMENTS .....	9-5
9.10	COMMUNICATION .....	9-5
<b>10.0</b>	<b>SPILL CONTAINMENT PROGRAM .....</b>	<b>10-1</b>
10.1	SCOPE AND APPLICATION .....	10-1
10.2	POTENTIAL SPILL AREAS .....	10-1
10.3	LEAK AND SPILL DETECTION .....	10-1
10.4	PERSONNEL TRAINING AND SPILL PREVENTION .....	10-2
10.5	SPILL PREVENTION AND CONTAINMENT EQUIPMENT .....	10-2
10.6	SPILL CONTROL PLAN .....	10-2
<b>11.0</b>	<b>CONFINED-SPACE ENTRY .....</b>	<b>11-1</b>
<b>12.0</b>	<b>MATERIALS AND DOCUMENTATION .....</b>	<b>12-1</b>
12.1	MATERIAL TO BE POSTED OR MAINTAINED AT THE SITE .....	12-1
<b>13.0</b>	<b>GLOSSARY .....</b>	<b>13-1</b>

## ATTACHMENTS

- ATTACHMENT I - INJURY/ILLNESS PROCEDURE AND REPORT FORM
- ATTACHMENT II - STANDARD OPERATING PROCEDURE FOR UTILITY LOCATING AND EXCAVATION CLEARANCE
- ATTACHMENT III - EQUIPMENT INSPECTION CHECKLIST
- ATTACHMENT IV - SAFE WORK PERMITS
- ATTACHMENT V - MEDICAL DATA SHEET

## TABLES

<b><u>Table</u></b>		<b><u>Page</u></b>
2-1	Emergency Contacts .....	2-5
5-1	Tasks/Hazards/Control Measures Compendium .....	5-2
6-1	Chemical, Physical and Toxicological Data .....	6-5

## FIGURES

<b><u>Figure</u></b>		<b><u>Page</u></b>
2-1	Hospital Route .....	2-7
7-1	Documentation of Field Calibration .....	7-3
8-1	Training Letter .....	8-2
8-2	Site-Specific Training Documentation .....	8-4
8-3	Subcontractor Medical Approval Form .....	8-6
8-4	Medical Surveillance Letter .....	8-8
9-1	Blank Safe Work Permit.....	9-3

## 1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been written to encompass site activities that are to be conducted at the Naval Air Station Pensacola (NAS Pensacola), Pensacola, Florida as part of Contract Task Order (CTO) 0140. Specifically, this HASP addresses activities associated with the site assessment program that will be conducted at Building 1932 within NAS Pensacola. This HASP was prepared for NAS Pensacola as part of an overall effort conducted under Comprehensive Long-Term Environmental Action Navy (CLEAN III) administered through the U.S. Navy Southern Division Naval Facilities Engineering Command (NAVFAC), as defined under Contract Number N62467-94-D-0888. In addition to the HASP, a copy of the Tetra Tech NUS, Inc. (TtNUS) Environmental Health and Safety Guidance Manual must be present at the site during the performance of site activities. The Guidance Manual provides detailed information pertaining to the HASP, as well as TtNUS Standard Operating Procedures (SOP's). Both documents must be present at the site to comply with the requirements stipulated in the Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.120.

This HASP has been developed using the latest available information regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work and site. The HASP will be modified if new information becomes available. All changes to the HASP will be made by the Project Health & Safety Officer (PHSO) and approved by the TtNUS Health and Safety Manager (HSM) and the Task Order Manager (TOM). The TOM will notify affected personnel of all changes.

The elements of this HASP are in compliance with the requirements established by OSHA 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response" (HAZWOPER), and sections of 29 CFR 1926, "Safety and Health Regulations for Construction". The information contained in this plan, as well as policies on conducting onsite operations, have been obtained from the TtNUS Health and Safety Program.

### 1.1 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibility for site safety and health for TtNUS and subcontractor employees engaged in onsite activities. Personnel assigned to these positions will exercise the primary responsibility for all onsite 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 onsite activities.

- The TtNUS TOM is responsible for the overall direction of health and safety for this project.
- The PHSO is responsible for developing this HASP in accordance with applicable OSHA regulations. Specific responsibilities include:
  - i. Providing information regarding site contaminants and physical hazards associated with the site.
  - ii. Establishing air monitoring and decontamination procedures.
  - iii. Assigning personal protective equipment based on task and potential hazards.
  - iv. Determining emergency response procedures and emergency contacts.
  - v. Stipulating training requirements and reviewing appropriate training and medical surveillance certificates.
  - vi. Providing standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
  - vii. Modify this HASP, as it becomes necessary.
- The TtNUS 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 all aspects of health and safety on-site. These duties may include:
  - i. Coordinates all health and safety activities with the FOL.
  - ii. Selects, applies, inspects, and maintains personal protective equipment.
  - iii. Establishes work zones and control points in areas of operation.
  - iv. Implements air monitoring program for onsite activities.
  - v. Verifies training and medical clearance of onsite personnel status in relation to site activities.
  - vi. Implements Hazard Communication, Respiratory Protection Programs, and other associated health and safety programs as they may apply to site activities.
  - vii. Coordinates emergency services.
  - viii. Provides site-specific training for all onsite personnel.
  - ix. Investigates all accidents and injuries (see Attachment I - Injury/Illness Procedure and Report Form)
  - x. Provides input to the PHSO regarding the need to modify, this HASP, or applicable health and safety associated documents as per site-specific requirements.

- Compliance with the requirements stipulated in this HASP is monitored by the SSO and coordinated through the TtNUS CLEAN HSM.

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

## 1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

**Site Name:** Naval Air Station Pensacola **Address:** Pensacola, Florida

**Navy Engineer-in-Charge:** Mr. Byas Glover **Phone Number:** (843) 820-5651 or Code 18410

**Facility Contact:** Mr. Greg Campbell **Phone Number:** (850) 452-4611 ext. 103

**Purpose of Site Visit:** This activity is divided into a multi-task operation (see Section 4.0), including groundwater and soil sampling, and other related activities.

**Proposed Dates of Work:** Fieldwork is scheduled for June and July, 2000

### Project Team:

#### **TtNUS Personnel:**

TBD

TBD

Matthew M. Soltis, CIH, CSP

James K. Laffey  
(PHSO)

TBD

#### **Discipline/Tasks Assigned:**

Task Order Manager (TOM)

Field Operations Leader (FOL)

CLEAN Health and Safety Manager (HSM)

Project Health and Safety Officer

Site Safety Officer (SSO)

#### **Non-TtNUS Personnel**

#### **Affiliation/Discipline/Tasks Assigned**

TBD

\_\_\_\_\_

TBD

\_\_\_\_\_

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

Virginia M. Helms

TBD - To be determined

## 2.0 EMERGENCY ACTION PLAN

### 2.1 INTRODUCTION

This section is part of a planning effort to direct and guide field personnel in the event of an emergency. All site activities will be coordinated with NAS Pensacola Emergency Services prior to commencement. In the event of an emergency, which cannot be mitigated using onsite resources, personnel will evacuate to a safe place of refuge and the FOL will contact "911" to report the emergency. Site personnel may transport ill workers or those who have non-serious injuries to medical facilities, provided that such transport can be done safely. 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. NAS Pensacola Emergency Dispatch will be notified anytime outside response agencies are contacted. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(l)(1)(ii).

TtNUS will, through necessary services, include initial response measures for incidents 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 PRE-EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, injury or illness resulting from exposure to chemical or physical hazards are the most probable emergencies that can be encountered during site activities. To minimize and eliminate these potential emergency situations, pre-emergency planning activities associated with this project include the following. The SSO and/or the FOL are responsible for:

- Coordinating response actions with NAS Pensacola Emergency Services personnel to ensure that TtNUS emergency action activities are compatible with existing facility 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 includes the following:

- Chemical Inventory (for substances used onsite), with Material Safety Data Sheets.
  - Onsite personnel medical records (medical data sheets).
  - A logbook identifying personnel onsite each day.
  - Emergency notification phone numbers in all site vehicles
- 
- Identifying a chain of command for emergency action.
  - Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.

It is the responsibility of the TtNUS FOL to ensure that this information is available and present at the site.

## **2.3 EMERGENCY RECOGNITION AND PREVENTION**

### **2.3.1 Recognition**

Foreseeable emergency situations that may be encountered during site activities will generally be recognizable by visual observation. A clear knowledge of the signs and symptoms of overexposure to contaminants of concern may alert personnel of the potential hazards concerning themselves or their fellow workers. These potential hazards, the activities with which they have been associated, and the recommended control methods are discussed in detail in Sections 5.0 and 6.0 of this document. Additionally, early recognition will be supported by periodic site surveys to eliminate any conditions that may predispose site personnel or properties to an emergency. These surveys will consist of ensuring:

- Approach paths to monitoring wells are maintained (cleared, mowed, etc.)
- Monitoring well protective casings are cleared of spider and insect nests.

The FOL and the SSO will constitute the site evaluation committee responsible for these periodic surveys. Site surveys will be conducted at least once a week during the initiation of this effort. These surveys will be documented in the Project Logbook.

The above actions will provide early recognition for potential emergency situations. Should an incident take place, TtNUS will take defensive and offensive measures to control these situations. However, if the FOL and/or the SSO determine that an incident has progressed to a serious emergency situation, TtNUS will withdraw, and notify the appropriate response agencies.

### **2.3.2 Prevention**

TtNUS and subcontractor personnel will minimize the potential for emergencies by ensuring compliance with the HASP, the Health and Safety Guidance Manual, applicable OSHA regulations, and through periodic site surveys of work areas.

### **2.4 SAFE DISTANCES AND PLACES OF REFUGE**

In the event the site must be evacuated, all personnel will immediately stop activities and report to the FOL at the place of safe refuge. Safe places of refuge will be determined prior to commencement of site activities and will be conveyed to personnel as part of the daily safety meeting conducted each morning. Upon reporting to the refuge location, personnel will remain there until directed otherwise by the TtNUS FOL. The FOL or the SSO will take a head count at this location to confirm the location of all site personnel. The site logbook will be used to take the head count. Places of refuge will ideally be selected which offer a point for communication purposes should this be required.

### **2.5 EVACUATION ROUTES AND PROCEDURES**

Once an evacuation is initiated, personnel will proceed immediately to the designated place of refuge, unless doing so would further jeopardize the welfare of workers. In such an event, personnel will proceed to a designated alternate location (to be identified) and remain there until further notification from the FOL. The use of these locations as assembly points provides communication and a direction point for emergency services, should they be needed.

Evacuation procedures will be discussed prior to the initiation of any work at the site. This shall include identifying primary and secondary evacuation routes and assembly points. Evacuation routes from the site 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) will influence the designation of evacuation routes. As a result, assembly points at NAS Pensacola will be selected, and in the event of an emergency, field personnel will proceed to these points by the most direct route possible without further endangering themselves.

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

Since TtNUS personnel will not always be working in the proximity of each other, hand signals, voice commands, air horns, and/or two-way radios may comprise the mechanisms to alert site personnel of an emergency.

If an incident occurs, site personnel will initiate the following procedures:

- Initiate incident alerting procedures (if needed) verbally, by air horn, or using two-way radios.
- Evacuate non-essential personnel.
- Initiate initial response procedures.
- Describe to the FOL (who will serve as the Incident Commander) what has occurred in as much detail as possible.

In the event that site personnel cannot control the incident through offensive and/or defensive measures, the FOL and/or the SSO will enact emergency notification procedure to secure additional outside assistance in the following manner:

- Report the emergency to the NAS Pensacola Emergency Dispatch (See Table 2-1). Call 911 for outside emergency service if unable to contact the Emergency Dispatch.
- Give the emergency operator the location of the emergency and a brief description of what has occurred.
- Stay on the phone follow the instructions given by the operator
- The appropriate agency will be notified and dispatched
- Call Navy On-Site Representative
- Call TOM

If an incident occurs at outside of our designated operating areas impacting field personnel, the following procedures are to be initiated:

- Initiate an evacuation (if needed) by voice commands, hand signals, air horns, or two-way radio.
- Call Navy On-Site Representative
- Proceed to the assembly points as directed by NAS Pensacola or other Navy personnel.

## **2.7 EMERGENCY CONTACTS**

Prior to performing work at the site, all personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an incident. A mobile phone shall be available at the site. Table 2-1 provides a list of emergency contacts and their corresponding telephone numbers. These numbers will be used for all of the sites to be visited during this project. This table must be posted at the site where it is readily available to all site personnel.

**TABLE 2-1  
EMERGENCY CONTACTS  
NAS PENSACOLA**

<b>AGENCY</b>	<b>TELEPHONE</b>
NAS Pensacola - Emergency Dispatch	<b>(850) 452-3333</b>
EMERGENCY (outside services) (Police, Fire, and Ambulance Services)	911
Navy Engineer-in-Charge – Byas Glover	(843) 820-565; Code 18410
Navy Facility Contact – Greg Campbell	(850) 452-4611 Ext. 103
Navy Hospital	(850) 505-6600
Baptist Hospital	(850) 469-2313
TtNUS Tallahassee Office and Task Order Manager (Gerry Walker)	(850) 385-9899
CLEAN Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer James K. Laffey	(412) 921-8678
WorkCare	(800) 455-6155

## 2.8 ROUTE TO HOSPITALS

For emergency care only, non-Navy personnel are permitted to go to the Navy Hospital.

Navy Hospital  
Highway 98  
Pensacola, Florida  
(850) 505-6600

Directions to the Navy Hospital from the site are as follows:

Proceed out of Main Gate (Navy Blvd) heading north to US Highway 98. Turn left (heading west) on US 98 and proceed approximately 1 mile. Hospital will be on the right (Building 2268).

Baptist Hospital (850)469-2313, 1000 W. Moreno street, will be used for all non-emergency care services.

Directions to this Hospital from the Main Gate of NAS Pensacola are:

Proceed out of Main Gate (Navy Blvd) heading north to Hwy 292. Turn right (heading east) on Hwy 292 until it turns into Garden Street (approx. 3 miles). Take Garden Street to intersection with “E” Street. Turn left onto “E” Street and proceed approximately 1 mile to Hospital on left (corner of “E” Street and Moreno Street).

A map indicating the travel route from the site to the hospital is provided as Figure 2-1.

## **2.9 DECONTAMINATION PROCEDURES/EMERGENCY MEDICAL TREATMENT**

During any site evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. Decontamination will not be performed if the incident warrants immediate evacuation. However, it is unlikely that an evacuation would occur which would require workers to evacuate the site without first performing the necessary decontamination procedures.

TtNUS personnel will perform removal of personnel from emergency situations and may provide initial medical support for injury/illnesses requiring only first-aid level support. Medical attention above that level will require assistance and support from the designated emergency response agencies. **If the emergency involves personnel exposures to chemicals, contact our medical provider (WorkCare) at 800-455-6155.**

## **2.10 INJURY/ILLNESS REPORTING**

If any TtNUS personnel are injured or develop an illness as a result of working at the site, the TtNUS "Injury/Illness Procedure" (Attachment I) must be followed. Following this procedure is necessary for documenting all of the information obtained at the time of the incident.

# Hospital Route Map for NAS Pensacola



Streets98

## **3.0 SITE BACKGROUND**

### **3.1 NAS PENSACOLA**

NAS Pensacola is approximately 5,800-acres and is located on a peninsula bounded on the east and south by Pensacola Bay and Big Lagoon, and on the north by Bayou Grande.

### **3.2 BUILDING 1932**

The Building 1932 UST site is located within Forrest Sherman Field of NAS Pensacola. The site is the former location of a 500-gallon underground waste oil tank that was removed 22 March 1995. During the tank removal, groundwater samples were collected and determined to contain naphthalene and xylene at concentrations exceeding Florida Groundwater Guidance Concentrations.

On 8 March 2000, TtNUS conducted a site visit to the Building 1932 UST site. The site is currently operating as a facility gasoline station and convenience food store. Above ground fuel tanks are located south of the building and one monitoring well of unknown depth was observed near the west wall of the building.

During the initial Site Assessment investigation free-product was identified at the site. Two separate plumes were identified, one a dense oily product inductive of possible waste oil release and the second a lighter less viscous product inductive of gasoline or diesel fuel.

#### 4.0 SCOPE OF WORK

The following is a list of activities that are covered in this HASP for the CTO 140 project:

- Mobilization/demobilization
- Soil Boring
  - Direct Push Technology (DPT)
  - Hollow Stem Auger (HSA)
  - Mud Rotary Drilling
- Monitoring well installation
- Multi-media sampling, including:
  - Groundwater
  - Subsurface Soil
  - Investigation Derived Waste (IDW)
- Decontamination
- Performance of an aquifer test and tidal influence study
- Surveying
- IDW Management

The above listing represents a summarization of the tasks as they may apply to the scope and application of this HASP. For more detailed description of the associated tasks, refer to the Sampling and Analysis Plan (SAP). Any tasks to be conducted outside of the elements listed here will be considered a change in scope requiring modification of this document. The PHSO or a designated representative will submit all requested modifications to this document to the HSM.

## 5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES SUMMARIZATION

Table 5-1 of this section serves as the primary portion of the site-specific HASP that identifies the tasks to be performed as part of the scope of work. This table will be modified and incorporated into this document as new or additional tasks are performed at the site. The anticipated hazards, recommended control measures, air monitoring recommendations, required Personal Protective Equipment (PPE), and decontamination measures for each site task are discussed in detail. This table and the associated control measures shall be changed, if the scope of work, contaminants of concern, or other conditions change.

Through using the table, site personnel can determine which hazards are associated with each task and at each site, and what associated control measures are necessary to minimize potential exposure or injuries related to those hazards. The table also assists field team members in determining which PPE and decontamination procedures to use based on proper air monitoring techniques and site-specific conditions.

A Health and Safety Guidance Manual accompanies this table and HASP. The manual is designed to further explain supporting programs and elements for other site-specific aspects as required by 29 CFR 1910.120. The Guidance Manual should be referenced for additional information regarding air monitoring instrumentation, decontamination activities, emergency response, hazard assessments, hazard communication and hearing conservation programs, medical surveillance, PPE, respiratory protection, site control measures, standard work practices, and training requirements. Many of Tetra Tech NUS' SOPs are also provided in this Guidance Manual.

Safe Work Permits issued for all Exclusion Zone activities (See Section 9.4 and Attachment IV) will use elements defined in Table 5-1 as it's primary reference. The FOL and/or the SSO completing the Safe Work Permit will add additional site-specific information. In situations where the Safe Work Permit is more conservative than the direction provided in Table 5-1 due to the incorporation of site-specific elements, the Safe Work Permit will be followed.

<p>Soil boring activities using hollow-stem auger, mud rotary, and Direct Push Technology (DPT) drilling techniques.</p>	<p><b>Chemical hazards</b></p> <p>1) Potential contaminant is waste oil (and components benzene, ethylbenzene, toluene, xylene and naphthalene).</p> <p>Further information on these contaminants and other potential contaminants is presented in Table 5-1.</p> <p>2) Transfer of contamination into clean areas or onto persons</p> <p><b>Physical hazards</b></p> <p>3) Heavy equipment/machinery hazards (rotating equipment, struck by hazards, etc.)</p> <p>4) Noise in excess of 95 decibels (dBA)</p> <p>5) Energized systems (contact with underground or overhead utilities)</p> <p>6) Strain from heavy lifting</p> <p>7) Slip, trips, and falls</p> <p>8) Vehicular (highway) and equipment traffic</p> <p><b>Natural hazards</b></p> <p>9) Ambient temperature extremes (heat stress)</p> <p>10) Inclement weather</p> <p>11) Alligators, snakes, fire ants, ticks, poisonous plants, etc.</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media (e.g., soil, water, sediments, etc.). Generation of dusts should be minimized. Airborne dust clouds should be avoided or area wetting methods used. If area wetting methods are not feasible, termination of activities will be used to minimize exposure to excessive airborne dusts.</p> <p>2) Decontaminate all equipment and supplies between borings and prior to leaving the site.</p> <p>3) All equipment to be used will be:</p> <ul style="list-style-type: none"> <li>- Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600, 801, 802), and manufacturers design and documented as such using Equipment Inspection Checklist (See Attachment II of the HASP).</li> <li>- Operated by knowledgeable operators and ground crew.</li> <li>- Only manufacturer approved equipment may be used in conjunction with equipment repair procedures.</li> </ul> <p>In addition to the equipment considerations, the following safe work practices will be followed:</p> <ul style="list-style-type: none"> <li>- All personnel not directly supporting the drilling operation will remain at least the height of the mast plus 5 feet or 25 feet from the point of operation, whichever is greater.</li> <li>- All loose clothing, hair, jewelry or protective equipment will be secured to avoid possible entanglement.</li> <li>- Hand signals will be established prior to the commencement of drilling activities.</li> <li>- A remote sampling device must be used to sample drill cuttings near rotating tools.</li> <li>- Work areas will be kept clear of clutter.</li> <li>- 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.</li> <li>- Areas will be inspected prior to the movement of direct push rigs and support vehicles to eliminate any hazards. This will be the responsibility of the FCL and/or SSO.</li> <li>- Hearing protection will be used during all mechanized subsurface activities.</li> <li>- All utility clearances shall be obtained prior to subsurface activities. Prior to any subsurface investigations, the locations of all underground utilities and soil term supply piping will be identified and marked. Obtain written permit clearance prior to all subsurface investigations. See Attachment II of the HASP "SOP for Utility Locating and Excavation Clearance"</li> <li>- Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</li> <li>- Preview work locations for unstable/uneven terrain.</li> <li>- Traffic and equipment considerations are to include the following:             <ul style="list-style-type: none"> <li>- Establish safe zones of approach (i.e. mast + 5 feet).</li> <li>- Personnel must wear reflective vests in traffic areas.</li> <li>- All equipment shall be equipped with movement warning systems.</li> <li>- All activities are to be conducted consistent with the above requirements.</li> </ul> </li> <li>- Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the Health &amp; Safety Guidance Manual.</li> <li>- Suspend or terminate operations until directed otherwise by SSO</li> <li>- Avoid potential nesting areas of biting/stinging insects and snakes. Use commercially available insect repellents. Wear appropriate clothing, including snake chaps where warranted. If working in an area prone to alligators post a person to watch closely for the reptiles since they are highly territorial and extremely protective of their nests. Tape armbands and wristbands to prevent fire ants, ticks, chiggers, etc. from attaching themselves to you skin. Wear light colored clothing so that biting insects can be easily visible and be removed. Follow directions as specified in Section 6.3 and Section 4.0 of the Health and Safety Guidance Manual concerning natural hazards.</li> </ul>	<p>It is anticipated that potential contaminant concentrations at outdoor sample locations will not present an inhalation hazard.</p> <p>A Photoionization Detector w/ 10.6 eV UV lamp source or Fluorescence Detector will be used to screen for VOCs and SVOCs. The following guidance applies:</p> <p>Source (e.g., borehole) monitoring will be conducted at regular intervals determined by the SSO. The SSO will also monitor the breathing zone (BZ) of all potentially affected employees. Workers must evacuate to a safe area if sustained BZ concentrations exceed 50 ppm longer than 1 minute in duration.</p> <p>Work may resume when airborne readings in worker breathing zones return to less than 50 ppm.</p> <p>SO<sub>2</sub> contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be minimized to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be qualitative by observing work conditions for visible dust clouds or accumulations. Potential exposure to contaminants attached to dust particles will be controlled by using water to suppress dusts or by avoiding dust plumes.</p> <p>Where the utility clearance cannot be obtained in a reasonable period, or not located, drilling shall proceed with extreme caution using a magnetometer for periodic downhole surveys every 2 feet to a depth of at least 6 feet. The State of Florida requires that the first four feet be dug by hand, if utility location is unknown or within an established proximity of the utility or service. See Attachment II of this HASP for SOP.</p>	<p>All subsurface operations are to be initiated in Level D protection. Level D protection constitutes the following minimum protection:</p> <ul style="list-style-type: none"> <li>- Standard field attire (Sleeved shirt; long pants)</li> <li>- Steel-toe work boots or shoes</li> <li>- Safety glasses</li> <li>- Hardhat</li> <li>- Reflective vest for traffic areas</li> <li>- Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential exists for soiling work attire.</li> <li>- Nitrile gloves or leather gloves with surgical style liner gloves</li> <li>- Hearing protection during drilling or for other high noise areas as directed by the SSO.</li> </ul> <p>Note: The Safe Work Permit(s) for this task (see Attachment IV) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination - Will consist of a soap/water wash and rinse for reusable protective equipment (e.g., gloves). This function will take place at an area adjacent to the drilling operations bordering the support zone.</p> <p>The decontamination procedure for Level D protection will consist of:</p> <ul style="list-style-type: none"> <li>- Equipment drop</li> <li>- Soap/water wash and rinse of reusable outer gloves, as applicable</li> <li>- Outer coveralls, boot covers, and/or outer glove removal</li> <li>- Removal, segregation, and disposal of non-reusable PPE in bags/containers provided</li> <li>- Wash hands and face, leave contamination reduction zone.</li> <li>- Report for medical evaluation if heat stress monitoring is required due to ambient conditions</li> </ul>
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<p><b>Multi-media sampling, including groundwater and subsurface soil</b></p> <p>This task also includes sampling for ICW</p>	<p><b>Chemical hazards</b></p> <p>1) Potential contaminant is waste oil (and components benzene, ethylbenzene, toluene, xylene and naphthalene).</p> <p>Further information on these contaminants and other potential contaminants is presented in Table 6-1.</p> <p>2) Transfer of contamination into clean areas</p> <p><b>Physical hazards</b></p> <p>3) Noise in excess of 85 decibels (dBA)</p> <p>4) Strain from heavy lifting</p> <p>5) Heavy equipment/machinery hazards (rotating equipment, struck by hazards, etc.)</p> <p>6) Slip, trips, and falls</p> <p>7) Vehicular (highway) and equipment traffic</p> <p><b>Natural hazards</b></p> <p>8) Ambient temperature extremes (heat stress)</p> <p>9) Inclement weather</p> <p>10) Alligators, snakes, fire ants, ticks, poisonous plants, etc.</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposure to potentially contaminated media (e.g., air, water, soil). Generation of dusts should be minimized. Airborne dust clouds should be avoided or area wetting methods used. If area wetting methods are not feasible, termination of activities will be used to minimize exposure to observed airborne dusts. Establish site safety zones including exclusion, decontamination and support zones.</p> <p>2) Decontaminate all equipment and supplies between sampling locations and prior to leaving the site.</p> <p>3) When sampling at the drilling locations use hearing protection. The use of hearing protection outside of 25 feet from the drilling locations should be incorporated under the following condition:</p> <p>If you have to raise your voice to talk to someone who is within 2 feet of your location, hearing protection must be worn.</p> <p>4) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</p> <p>5) Avoid contact moving equipment and keep hands from the point of operation. A remote sampling device must be used to sample drill cuttings near rotating tools. The equipment operator shall shut down machinery if the sampler is near moving machinery parts. FCL/SBO will preview all work locations for removal of hazards, establish access/egress routes, approve all control points and boundaries, and emergency assembly areas.</p> <p>6) Preview work locations for unstable/swamp terrain.</p> <p>7) Traffic and equipment considerations are to include the following:</p> <ul style="list-style-type: none"> <li>- Establish safe zones of approach (i.e. Boom + 3 feet).</li> <li>- Personnel must wear reflective vests in traffic areas.</li> <li>- All equipment shall be equipped with movement warning systems.</li> <li>- All activities are to be conducted consistent with these requirements.</li> </ul> <p>8) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the Health &amp; Safety Guidance Manual.</p> <p>9) Suspend or terminate operations until directed otherwise by SBO</p> <p>10) Avoid potential nesting areas of biting/stinging insects and snakes. Use commercially available insect repellents. Wear appropriate clothing, including snake chaps where warranted. If working in an area prone to alligators post a person to watch closely for the reptiles since they are highly territorial and extremely protective of their nests. Tape snails and white areas to prevent the ants, ticks, chiggers, etc. from attaching themselves to you skin. Wear light colored clothing so that biting insects can be easily visible and be removed. Follow directions as specified in Section 8.3 and Section 4.0 of the Health and Safety Guidance Manual concerning natural hazards.</p>	<p>It is anticipated that potential condensant concentrations at outdoor sample locations will not present an inhalation hazard.</p> <p>A Photoionization Detector w/ 10.6 eV UV lamp source or Flame Ionization Detector will be used to screen for VOCs. The following guidance applies:</p> <p>Source (e.g., borohide) monitoring will be conducted at regular intervals determined by the SBO. The SBO will also monitor the breathing zone (BZ) of all potentially affected employees. Workers must evacuate to a safe area if sustained BZ concentrations exceed 50 ppm longer than 1 minute in duration.</p> <p>Work may resume when airborne readings in worker breathing zones return to less than 50 ppm.</p> <p>Site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be minimized to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be qualitative by observing work conditions for visible dust clouds or accumulations. Potential exposure to contaminants attached to dust particles will be controlled by using water to suppress dusts or by avoiding dust plumes.</p>	<p>Level D protection will be utilized for the initiation of all sampling activities.</p> <p><b>Level D - (Minimum Requirements)</b></p> <ul style="list-style-type: none"> <li>- Standard field attire (blew-out shirt; long pants)</li> <li>- Steel-toe work boots or shoes</li> <li>- Safety glasses</li> <li>- Surgical style gloves (double-layered if necessary)</li> <li>- Reflective vest for high traffic areas</li> <li>- Hardhat (when overhead hazards exist, or identified as a operation requirement)</li> <li>- Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists.</li> <li>- Hearing protection for high noise areas, or as directed on an operation by operation crewmembers.</li> </ul> <p>Note: The Safe Work Permit(s) for this task (See Attachment H) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination will consist of a removal and disposal of non-reusable PPE (gloves, coveralls, etc., as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"> <li>- Equipment drop</li> <li>- Outer coveralls, boot covers, and/or outer glove removal (as applicable)</li> <li>- Removal, segregation, and disposal of non-reusable PPE in bags/containers provided</li> <li>- Soap/water wash and rinse of reusable PPE (e.g., hardhat) if potentially contaminated</li> <li>- Wash hands and face, leave contamination reduction zone.</li> <li>- Report for medical evaluation if heat stress monitoring is required due to ambient conditions</li> </ul>
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Mobilization/ Demobilization  Surveying  Aquifer Testing	<p><b>Chemical hazards</b></p> <p>1) Potential containment is waste oil (and components benzene, ethylbenzene, toluene, xylene and naphthalene).</p> <p><b>Physical hazards</b></p> <p>2) Lifting (muscle strains and pulls)</p> <p>3) Pinches and compressions</p> <p>4) Slip, trips, and falls</p> <p>5) Heavy equipment/machinery hazards (rotating equipment, struck by hazards, etc.)</p> <p>6) Vehicular (highway) and equipment traffic</p> <p><b>Natural hazards</b></p> <p>7) Ambient temperature extremes (heat stress)</p> <p>8) Emergency Services</p>	<p>1) Discussion of Hazard Communication Program with all site personnel.</p> <ul style="list-style-type: none"> <li>- Location of MSDS for all chemicals brought on site</li> <li>- Procedures for labeling products used on site</li> <li>- Location of Chemical Inventory Sheet</li> </ul> <p>2) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</p> <p>3) Keep any machine guarding in place. Avoid moving parts. Secure loose clothing, jewelry, or long hair that could become entangled.</p> <p>4) Preview work locations for unstable/uneven terrain and any hazards.</p> <p>5) All equipment will be</p> <ul style="list-style-type: none"> <li>- Inspected in accordance with OSHA, and manufacturer design.</li> <li>- Operated by knowledgeable operators, and knowledgeable crowd.</li> </ul> <p>6) Traffic and equipment considerations are to include the following:</p> <ul style="list-style-type: none"> <li>- Establish safe zones of approach (i.e. 50m + 5 feet).</li> <li>- Personnel must wear reflective vests in traffic areas.</li> <li>- All equipment shall be equipped with movement warning systems.</li> <li>- All activities are to be conducted consistent with these requirements.</li> </ul> <p>7) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the Health &amp; Safety Guidance Manual.</p> <p>8) FOU/BSO will drive the Hospital Route prior to the start of operations.</p> <ul style="list-style-type: none"> <li>- Provide chemical inventory to the NAD Pensacola Emergency Services</li> <li>- Provide advance notice to the Security Force when any right of way may be impeded by site operations.</li> </ul>	Not required	<p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (Sleeved shirt; long pants)</li> <li>- Steel toe work boots or shoes</li> <li>- Safety glasses</li> <li>- Hardhat (when overhead hazards exist, or identified as a operation requirement)</li> <li>- Reflective vest for high traffic areas</li> <li>- Hearing protection for high noise areas, or as directed on an operation by operation scenario.</li> </ul>	Not required
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<p>Decontamination of Sampling and Heavy Equipment</p>	<p><b>Chemical Hazards</b></p> <p>1) Potential contaminant is waste oil (and components benzene, stybenzene, toluene, xylene and naphthalene).</p> <p>Further information on these contaminants and other potential contaminants is presented in Table 5-1.</p> <p>2) Decontamination fluids - Liquinox (detergent), acetone or isopropanol</p> <p><b>Physical Hazards</b></p> <p>3) Strains from heavy lifting          4) Noise in excess of 85 dBA          5) Flying projectiles          6) Vehicular (highway) and equipment traffic          7) Slips, trips, and falls</p> <p><b>Natural hazards</b></p> <p>8) Ambient temperature extremes (heat stress)</p>	<p>1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Obtain manufacturer's MSDS for any decontamination solvents used onsite. Use appropriate PPE as identified on MSDS. All 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).</p> <p>3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes.</p> <p>4) Wear hearing protection when operating pressure washer.</p> <p>5) Use eye and face protective equipment when operating pressure washer. All other personnel must be restricted from the area.</p> <p>6) Traffic and equipment considerations are to include the following:          - Establish safe zones of approach (i.e. 35 feet surrounding decontamination operation).          - Personnel must wear reflective vests in traffic areas.          - All equipment shall be equipped with movement warning systems.          - All activities are to be conducted consistent with these requirements.</p> <p>7) Preview work locations for unstable/known terrain.</p> <p>8) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the Health &amp; Safety Guidance Manual.</p>	<p>Use visual observation, and real-time monitoring instrumentation to ensure all equipment has been properly cleaned of contamination and dried. After decon is completed, scan equipment with a PID/PID. If any elevated readings (i.e., above background) are observed, perform decon again and re-scan. Repeat until no elevated PID/PID readings are noted.</p>	<p><b>For Heavy Equipment</b></p> <p>This applies to high pressure soapwater, steam cleaning vessels and rinse procedures.</p> <p><b>Level D Minimum requirements -</b></p> <ul style="list-style-type: none"> <li>- Standard field attire (loose shirt; long pants)</li> <li>- Steel-toe work boots or shoes</li> <li>- Chemical resistant boot covers</li> <li>- Nitrile outer gloves</li> <li>- PVC Rainalls or PE or PVC coated Tyvek</li> <li>- Safety glasses underneath a splash shield</li> <li>- Hearing protection (plugs or muffs).</li> </ul> <p><b>For sampling equipment, the following PPE is required</b></p> <p><b>Level D Minimum requirements -</b></p> <ul style="list-style-type: none"> <li>- Standard field attire (loose shirt; long pants)</li> <li>- Safety shoes (Steel toe/shank)</li> <li>- Nitrile outer gloves</li> <li>- Safety glasses</li> </ul> <p><i>In the event of overpray of chemical decontamination fluids use PVC Rainalls or PE or PVC coated Tyvek as necessary.</i></p>	<p>Personnel Decontamination will consist of a soapwater wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at the equipment decontamination area. This procedure will consist of:</p> <ul style="list-style-type: none"> <li>- Equipment drop</li> <li>- Soapwater wash and rinse of outer boots and gloves, as applicable</li> <li>- Soapwater wash and rinse of the outer splash suit, as applicable</li> <li>- Disposable PPE will be removed and bagged.</li> </ul> <p><b>Equipment Decontamination -</b> All heavy equipment decontamination will take place at a centralized decontamination pad utilizing steam or pressure washers. Heavy equipment will have the wheels and tires cleaned along with any loose debris removed, prior to transporting to the central decontamination area. All site vehicles will be restricted access to exclusion zones, or site have their wheel/tires sprayed off as not to track mud onto the roadways servicing this installation. Roadways shall be cleaned of any debris resulting from the on-site activity.</p> <p><b>Sampling Equipment Decontamination</b></p> <p>Sampling equipment will be decontaminated as per the requirements in the Sampling and Analysis Plan and/or Work Plan.</p> <p>MSDS for any decon solutions (Alconox, isopropanol, etc.) will be obtained and used to determine proper handling / disposal methods and protective measures (PPE, first-aid, etc.).</p> <p>All equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site.</p> <p>The PCL or the SSO will be responsible for evaluating equipment arriving onsite and that which is to leave the site. No equipment will be authorized access or exit without this evaluation.</p>
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TABLE 5-1  
 TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM FOR  
 BUILDING 1932 UST SITE, PENSACOLA, FLORIDA  
 PAGE 5 OF 5

<p><b>IDW management (including moving IDW drums to storage areas)</b></p>	<p><b>Chemical Hazards</b></p> <p>1) Potential contaminant is waste oil (and components benzene, ethylbenzene, toluene, xylene and naphthalene). Further information on these contaminants and other potential contaminants is presented in Table 6-1.</p> <p>2) Transfer of contamination into clean areas</p> <p><b>Physical hazards</b></p> <p>3) Noise in excess of 85 dBA          4) Strains from heavy lifting          5) Pinches and compressors          6) Slip, trips, and falls          7) Vehicular (highway) and equipment traffic          8) Drum Management</p> <p><b>Natural hazards</b></p> <p>9) Ambient temperature extremes (heat stress)          10) Alligators, snakes, fire ants, ticks, poisonous plants, etc.</p>	<p>1) Employ real-time monitoring instrumentation, action levels, and identify PPE to control exposure to potentially contaminated media (e.g. air, water).</p> <p>2) Decontaminate all equipment and supplies, if they become contaminated, between locations and prior to leaving the site.</p> <p>3) When working near heavy equipment, use hearing protection.</p> <p>4) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</p> <p>5) Keep any machine guarding in place. Avoid moving parts. Secure loose clothing, jewelry, or long hair that could become entangled.</p> <p>6) Preview work locations for unstable/uneven terrain.</p> <p>7) Traffic and equipment considerations are to include the following:          - Establish safe zones of approach.          - Personnel must wear reflective vests in traffic areas.          - All equipment shall be equipped with movement warning systems.          - All activities are to be conducted consistent with these requirements.</p> <p>8) Proper staging of drums.          - 4 drums to a pallet          - Retaining ring ball and IDW label must face outward          - Minimum of 3 feet between each row          - Must use a pneumatic drum cart.          - Maintain a drum inventory          - Separate drums based on media and location          - Label each drum with proper IDW labels</p> <p>9) Wear appropriate clothing for weather conditions. Provide acceptable shelter and breaks for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the Health &amp; Safety Guidance Manual.</p> <p>10) Avoid potential nesting areas of biting/stinging insects and snakes. Use commercially available insect repellents. Wear appropriate clothing, including snake chaps where warranted. If working in an area prone to alligators pool a person to watch closely for the reptiles since they are highly territorial and extremely protective of their nests. Tape armbands and wrists areas to prevent fire ants, ticks, chiggers, etc. from attaching themselves to you skin. Wear light colored clothing so that biting insects can be easily visible and be removed. Follow directions as specified in Section 6.3 and Section 4.0 of the Health and Safety Guidance Manual concerning natural hazards.</p>	<p>Required only when responding to a leak or spill. In that instance refer to the guidelines established in soil boring or sampling activities.</p>	<p>Level D protection will be utilized for the initiation of all IDW activities. Level D - (Minimum Requirements):</p> <ul style="list-style-type: none"> <li>- Standard field attire (shaved shirt; long pants)</li> <li>- Steel-toe work boots or shoes</li> <li>- Safety glasses</li> <li>- Hardhat</li> <li>- Reflective vest for traffic areas</li> <li>- Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential exists for soiling work attire.</li> <li>- Nitrile gloves or leather gloves with surgical style inner gloves</li> <li>- Hearing protection if near drilling operations or for other high noise areas as directed by the SSO.</li> </ul>	<p>Personnel Decontamination - WB consist of a soap/water wash and rinse for reusable protective equipment (e.g., gloves). This function will take place at an area adjacent to the operations bordering the support zone.</p> <p>This decontamination procedure for Level D protection will consist of:</p> <ul style="list-style-type: none"> <li>- Equipment drop</li> <li>- Soap/water wash and rinse of reusable outer gloves, as applicable</li> <li>- Outer coveralls, boot covers, and/or outer glove removal</li> <li>- Removal, segregation, and disposal of non-reusable PPE in bags/containers provided</li> <li>- Wash hands and face, leave contamination reduction zone.</li> </ul>
<p><b>Surveying</b></p>	<p><b>Chemical hazards:</b></p> <p>Exposure to air contaminants during this activity is anticipated to be unlikely given the limited contact with potentially contaminated media.</p> <p><b>Physical hazards:</b></p> <p>2) Slip, trips, and falls</p> <p><b>Natural Hazards:</b></p> <p>4) Insect weather          4) Alligators, snakes, fire ants, ticks, poisonous plants, etc.</p>	<p>2) Preview work locations and site lines for uneven and unstable terrain. Clear necessary vegetation, establish temporary means for traversing hazardous terrain) e., rope ladders, etc.)</p> <p>3) Suspend or terminate operations until directed otherwise by SSO</p> <p>4) Avoid potential nesting areas of biting/stinging insects and snakes. Use commercially available insect repellents. Wear appropriate clothing, including snake chaps where warranted. If working in an area prone to alligators pool a person to watch closely for the reptiles since they are highly territorial and extremely protective of their nests. Tape armbands and wrists areas to prevent fire ants, ticks, chiggers, etc. from attaching themselves to you skin. Wear light colored clothing so that biting insects can be easily visible and be removed. Follow directions as specified in Section 6.3 and Section 4.0 of the Health and Safety Guidance Manual concerning natural hazards.</p>	<p>Air monitoring is only needed only when volatile contaminants are present. The potential for exposure to air contaminants during this activity is considered minimal. Surveyors will be restricted from areas of active operations.</p>	<p>Surveying activities shall be performed in Level D protection</p> <p>Level D Protection consists of the following:</p> <ul style="list-style-type: none"> <li>- Standard field dress including shaved shirt and long pants</li> <li>- Steel-toe work boots or shoes</li> <li>- Safety glasses, hard hats (if working near machinery)</li> <li>- Snake chaps for heavily wooded area where encounters are likely.</li> <li>- Tyvek coveralls may be worn to provide additional protection against poisonous plants and insects, particularly ticks. Work gloves may be worn if desired.</li> </ul>	<p>Personnel Decontamination - A structured decontamination is not required as the likelihood of encountering contaminated media is considered remote. However, survey parties should inspect themselves and one another for the presence of ticks when exiting wooded areas, grassy fields, etc. This action will be employed to stop the transfer of these insects into vehicles, homes, and offices.</p>

## 6.0 HAZARD ASSESSMENT

The following section provides information regarding the chemical, physical, and natural hazards associated with the site to be investigated and the activities that are to be conducted as part of the scope of work. Table 6-1, which is included as part of this HASP, provides various information, exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data. Section 6.1 provides general information regarding all contaminants that may be present at the site.

### 6.1 CHEMICAL HAZARDS

The potential health hazards associated with work to be conducted at the Building 1932 UST site, NAS Pensacola, include inhalation, ingestion, and dermal contact of various contaminants (found in waste oil) that may be present in groundwater and subsurface soil. The following have been identified as the primary classes of these contaminants, including the specific compound(s) of interest:

- Volatile organic compounds (VOCs), found in waste oil including ethylbenzene, naphthalene, 1, 2, 4 trimethylbenzene, 1, 3, 5 trimethylbenzene, and xylene.
- Semi volatile organic compounds (SVOC's), found in waste oil including acenaphthene, bis(2-ethylhexylphthalate), fluorene, 2-methyltrophthalene, naphthalene, and phenanthrene.

Analysis of groundwater from the site conducted 8 March 2000, indicated that concentrations of xylene and naphthalene exceeded Florida Groundwater Guidance Concentrations.

It is anticipated that the greatest potential for exposure to site contaminants is during intrusive activities (soil borings and groundwater sampling). Contaminants may be present as volatiles or 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 soil disturbance activities. For this reason, PPE and basic hygiene practices (washing face and hands before leaving site) will be extremely important. Wetting procedures will be initiated if any tasks produce visible dust in workers' breathing zones.

Table 6-1 provides information on the compounds and individual substances identified as the potential site contaminants. Included is information on the toxicological, chemical, and physical properties of these substances. Certain information on this Table (such as glove selection) is based on clinical information regarding pure chemicals. Assessment of hazards and recommended control measures (such as nitrile surgeons gloves) within this HASP, however, are based on the diluted nature of media to be sampled and

the limited contact anticipated. The potential for significant contact through any route of exposure is not anticipated during this planned scope of work.

## 6.2 PHYSICAL HAZARDS

In addition to the chemical hazards discussed above, the following physical hazards may be present during the performance of the site activities.

- Heavy equipment hazards (pinch/compression points, rotating equipment, etc.).
- Slips, trips, and falls
- Lifting (strain/muscle pulls)
- Energized systems (contact with underground or overhead utilities)
- Noise in excess of 85 decibels (dBA)
- Flying projectiles
- Ambient temperature extremes (heat stress)
- Vehicular and foot traffic

These physical hazards are discussed in Table 5-1 as applicable to each site task. Further, many of these hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual.

## 6.3 NATURAL HAZARDS

Insect/animal bites and stings, poisonous plants, and inclement weather are natural hazards that may be present given the location of activities to be conducted. Given the location of NAS Pensacola, alligators, snakes and fire ants are a particular concern. In general, avoidance of areas of known infestation or habitat will be the preferred exposure control for insects/animals and poisonous plants. Specific discussion on principle hazards of concern follows:

### 6.3.1 Insect/Animal Bites and Stings

Various insects and animals may be present and should be considered. Alligators are indigenous to Florida and may be present in ponds, swamps, and other wet areas. Alligators are fairly inactive in the winter months when the water temperatures are cool; their metabolism slows down and there is little need for food. The breeding season is mostly during April and May (but may begin as early as mid-February); male and female move around more during this time. Nests are constructed by the female during June and July. Alligators are very protective of their domain during courtship and nesting. **Treat alligators with extreme caution. Never approach an alligator, either on land or in the water.** Alligators can outrun humans

for short distances. If sampling involves entering areas where alligators may be present, use an "alligator-watch" as a lookout, use a remote sampling device (such as a sample jar/vial on a long pole), and/or obtain the sample as quickly as possible and immediately leave the area.

Fire ants also present a unique situation when working outdoors in Florida. Their aggressive behavior and their ability to sting repeatedly can pose a unique health threat. The sting injects venom (formic acid) that causes an extreme burning sensation. Pustules form which can become infected if scratched. Allergic reactions of people sensitive to the venom include dizziness, swelling, shock and in extreme cases unconsciousness and death. People exhibiting such symptoms should see a physician. Fire ants can be identified by their habitat. They build mounds in open sunny areas sometimes supported by a wall or shrub. The mound has no external opening. The size of the mound can range from a few inches across to some which are in excess of two feet or more in height and diameter. When disturbed they defend it by swarming out and over the mound, even running up grass blades and sticks.

Also, areas to be investigated could be prime nesting and/or hiding locations for snakes. Personnel should avoid reaching into areas that are not visibly clear of snakes or insects. Snake chaps will be worn in areas of known or anticipated snake infestation. In the event of a snake bite:

- Wash the area of the bite
- Apply a pressure wrap (starting 2-4 inches above the bite) over the bite area to immobilize the wound.  
Keep the victim calm
- If possible, keep the bite area below the level of the heart
- Get immediate medical help

All site personnel who are allergic to stinging insects such as bees, wasps, and hornets must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be listed on the Medical Data Sheet and the FOL and SSO notified.

There are various areas throughout the U.S. where Lyme Disease is endemic. Fortunately, Florida is not one of these areas. Nonetheless, personnel should be aware of the hazards of tick bites and Lyme Disease. The longer a disease carrying tick remains attached to the body, the greater the potential for contracting the disease. Wearing long sleeved shirts and long pants (tucked into boots), as well as performing frequent body checks will prevent long term attachment. Site first aid kits should be equipped with medical forceps and rubbing alcohol to assist in tick removal. For information regarding tick removal procedures, and symptoms of exposure consult Section 4.0 of the Health and Safety Guidance Manual.

An Office of Natural Resources or similar entity on NAS Pensacola should be contacted for further direction on the hazards and precautions of naturally occurring wildlife and insects.

**6.3.2 Inclement Weather**

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

**TABLE 6-1  
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA  
NAVAL AIR STATION, PENSACOLA, FL**

Substance	CAS No.	Air Monitoring/Sampling Information			Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Waste Oil	N.E. 8012-95-1 for mineral oil	Varies between fractions, however, waste oils tend to be less volatile.  The FID tends to detect the longer chained aliphatic hydrocarbons more efficiently than its PID counterpart and therefore would be the instrument of choice.	Sampling and analytical protocol shall be in accordance with NIOSH Method #5026 ( the recommended method for mineral and oil mist).		<b>OSHA</b> - 5 mg/m <sup>3</sup>  <b>NIOSH</b> - 10 mg/m <sup>3</sup> <b>STEL</b>  <b>ACGIH</b> - 5 mg/m <sup>3</sup> <b>(oil mists)</b>  <b>Air Force</b> 8 hr - 200 ppm	Non-volatile substance, therefore no respiratory protection is required. In an aerosol form, dust and mist respirators would be considered acceptable up to 500 mg/m <sup>3</sup>  <b>Recommended gloves:</b> Nitrile	<b>Boiling Pt:</b> 680°F <b>Melting Pt:</b> Not available <b>Solubility:</b> Insoluble <b>Flash Pt:</b> -275 to 500°F (depending on distillation fraction) <b>LEL/LFL:</b> Not available <b>UEL/UFL:</b> Not available <b>Vapor Density:</b> Not available <b>Vapor Pressure:</b> 0.5 mmHg <b>Specific Gravity:</b> 0.90 <b>Incompatibilities:</b> None reported <b>Appearance and odor:</b> Colorless, oily, with an odor of burned lubricating oil	Based on the constituents of waste oil, it can be surmised that irritation to the eyes and respiratory tract are possible.  Direct contact may result in mild irritation with a possible drying and defatting of the skin
Naphthalene	91-20-3	PID: I.P. 8.12 eV, relative response ratio unknown.  No information was found as to the relative response for the FID, however it is certain that naphthalene is detectable at a high response.		Air sample using charcoal tube and carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with OSHA Method #35 or NIOSH Method #1501.	10 ppm OSHA 10 ppm ACGIH 10 ppm NIOSH  IDLH: 250 ppm  NIOSH/ACGIH – have established an STEL of 15 ppm.	Odor threshold is 0.038 ppm (adequate). May use air purifying respirator with organic vapors and dusts/mists cartridges for concentrations up to 250 ppm.  <b>Recommended gloves:</b> Nitrile >6.00 hrs; neoprene > 6.00 hrs.	<b>Boiling Pt:</b> 424°F <b>Melting Pt:</b> 176°F <b>Solubility:</b> 0.003% <b>Flash Pt:</b> 174°F <b>LEL/LFL:</b> 0.9% <b>UEL/UFL:</b> 5.9% <b>Vapor Density:</b> Not available <b>Vapor Pressure:</b> 1mmHg <b>Specific Gravity:</b> 1.15 <b>Incompatibilities:</b> Strong oxidizers, chromic anhydride <b>Appearance and Odor:</b> Colorless to brown solid with an odor of mothballs	Overexposure may result in irritation to the eyes, nose, throat, and respiratory system. CNS effects include giddiness, confusion and headaches. Additional effects may include nausea, vomiting, abdominal pain, bladder irritation, profuse sweating, jaundice, blood in the urine, renal and kidney shutdown and dermatitis. Long duration exposures may result in optical neuritis and corneal damage. Targets the eyes, blood, kidneys, skin, red blood cells and CNS.
Ethylbenzene	100-41-4	I.P 8.76, High response with PID and 10.2 eV lamp	100% response with FID	Air sample using charcoal tube and carbon disulfide desorption, OSHA 07	100 ppm TWA 125 ppm STEL OSHA, ACGIH, & NIOSH	Adequate - Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm  <b>Recommended gloves:</b> Neoprene or nitrile w/ silver shield when potential for saturation	<b>Boiling Pt:</b> 277°F <b>Melting Pt:</b> -139°F <b>Solubility:</b> 0.01% <b>Flash Pt:</b> 55°F <b>LEL/LFL:</b> 1.0% <b>UEL/UFL:</b> 6.7% <b>Vapor Density:</b> 3.66 <b>Vapor Pressure:</b> 10 mmhg @ 79°F <b>Specific Gravity:</b> 0.87 <b>Incompatibilities:</b> Strong oxidizers <b>Appearance and odor:</b> Colorless liquid with an aromatic odor. Odor Threshold of 0.092-0.60.	Regulated primarily because of its potential to irritate the eyes and respiratory system. In addition, effects of overexposure may include headaches, narcotic effects, CNS changes (i.e. coordination impairment, impaired reflexes, tremoring) difficulty in breathing, possible chemical pneumonia, and potentially respiratory failure

**TABLE 6-1  
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA  
NAVAL AIR STATION, PENSACOLA, FL  
PAGE 2**

Substance	CAS No.	Air Monitoring/Sampling Information			Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Toluene	108-88-3	I.P 8.82 eV, High response with PID and 10.2 eV lamp	110% response with FID	Air sample using charcoal tube and carbon disulfide desorption, OSHA 07	100 ppm TWA OSHA 150 ppm STEL OSHA 50 ppm TWA ACGIH	Adequate - Can use air-purifying respirator with organic vapor cartridge up to 500 ppm <b>Recommended gloves:</b> Butyl rubber, Viton, neoprene or nitrile	<b>Boiling Pt:</b> 232°F <b>Melting Pt:</b> -139°F <b>Solubility:</b> 0.05% (61°F) <b>Flash Pt:</b> 40°F <b>LEL/LFL:</b> 1.2% <b>UEL/UFL:</b> 7.1% <b>Vapor Density:</b> 3.14 <b>Vapor Pressure:</b> 20 mmhg @ 65°F <b>Specific Gravity:</b> 0.87 <b>Incompatibilities:</b> Strong oxidizers <b>Appearance and odor:</b> Colorless liquid with a sweet pungent aromatic odor. Odor Threshold of 0.16-37 ppm.	Overexposure to this substance may result in mild to moderate irritation at all points of contact, CNS changes. At 200-500 ppm exposure has resulted in headaches, nausea, eye irritation, loss of appetite, bad taste, impaired coordination, fatigue, and weariness
Xylene All isomers o-,m-, p-	1330-20-7	I.P. 8.56 eV, High response with PID and 10.2 eV lamp	110% response with FID	Air sample using charcoal tube and carbon disulfide desorption, OSHA 07	100 ppm TWA 150 ppm STEL OSHA, ACGIH, & NIOSH	Adequate - Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm <b>Recommended gloves:</b> Viton, Silver shield, nitrile, or neoprene	<b>Boiling Pt:</b> 269-281°F <b>Melting Pt:</b> -13/-54/56°F <b>Solubility:</b> Insoluble <b>Flash Pt:</b> 63-81°F <b>LEL/LFL:</b> 1.0% <b>UEL/UFL:</b> 7.0% <b>Vapor Density:</b> 3.66 <b>Vapor Pressure:</b> 7-9 mmhg @ 70° F <b>Specific Gravity:</b> 0.86-0.88 <b>Incompatibilities:</b> Strong oxidizers <b>Appearance and odor:</b> Colorless liquid with an aromatic odor. Odor Threshold of 20 ppm.	Regulated primarily because of its potential to irritate the eyes and respiratory system. In addition, effects may include CNS changes (i.e. dizziness, excitement, drowsiness, incoherent, staggering gait), difficulty in breathing, pulmonary edema, and possibly respiratory failure.

## 7.0 AIR MONITORING

Direct reading instruments will be used at the site to detect and evaluate the presence of site contaminants and other potentially hazardous conditions. As a result, specific air monitoring measures and requirements are established in Table 5-1 pertaining to the specific hazards and tasks of an identified operation. Additionally, the Health and Safety Guidance Manual, Section 1.0, contains detailed information regarding direct reading instrumentation, as well as general calibration procedures of various instruments.

### 7.1 INSTRUMENT AND USE

A direct reading instrument will be used primarily to monitor source points and worker breathing zone areas, while observing instrument action levels. Action levels are discussed in Table 5-1 as they may apply to a specific task or location.

#### 7.1.1 Photoionization Detector/Flame ionization Detector

In order to accurately monitor for any substances that may present an exposure potential to site personnel, a Photoionization Detector (PID) using a lamp energy of 10.6 eV or higher will be used. This instrument will be used to monitor potential source areas and to screen the breathing zones of employees during site activities. The PID with this lamp strength has been selected because it is capable of detecting the organic vapors of concern. A Flameionization detector (FID) may also be used to screen source areas and breathing zones of workers during sampling and other intrusive activities. The FID is capable of detecting long chain hydrocarbons more effectively than the PID.

Prior to the commencement of any field activities, the background levels of the site must be determined and noted. Daily background readings will be taken away from any areas of potential contamination. These readings, any influencing conditions (i.e., weather, temperature, humidity) and site location must be documented in the field operations logbook or other site documentation (e.g., sample log sheet).

#### 7.1.2 Hazard Monitoring Frequency

Table 5-1 presents the frequencies that hazard monitoring will be performed as well as the action levels that will initiate the use of elevated levels of protection. The SSO may decide to increase these frequencies based on instrument responses and site observations. The frequency at which monitoring is performed will not be reduced without the prior consent of the PHSO or HSM.

## 7.2 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the TtNUS Equipment Manager. Operational checks and field calibration will be performed on all instruments each day prior to and after their use. Field calibration will be performed on instruments according to manufacturer's recommendations (for example, the PID must be field calibrated daily and an additional field calibration must be performed at the end of each day to determine any significant instrument drift). 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 standard operating procedure (copies of which can be found in the Health & Safety Guidance Manual which will be maintained on-site for reference). All calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook, provided that all of the information specified in Figure 7-1 is recorded. This required information includes the following:

- Date calibration was performed
- 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 no., 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 both TtNUS and subcontractor personnel participating in site activities.

#### **8.1.1 Requirements for TtNUS Personnel**

All TtNUS personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at the NAS Pensacola facility. Additionally, TtNUS personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training in the past 12 months before being cleared for site work. In addition, 8-hour supervisory training in accordance with 29 CFR 1910.120 (e)(4) will be required for site supervisory personnel.

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

#### **8.1.2 Requirements for Subcontractors**

All TtNUS subcontractor personnel must have completed introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120 (e). Additionally, personnel who have had the introductory training more than 12 months ago, are required to have 8 hours of refresher training meeting the requirements of 29 CFR 1910.120 (e)(8) prior to performing field work at the NAS Pensacola facility if required. TtNUS subcontractors must certify that each employee has had such training by sending TtNUS a letter, on company letterhead, containing the information in the example letter provided as in Figure 8-1 and by providing copies of certificates for all subcontractor personnel participating in site activities.

**FIGURE 8-1  
TRAINING LETTER**

The following statements must be typed on company letterhead and signed by an officer of the company and accompanied by copies of personnel training certificates:

LOGO  
XYZ CORPORATION  
555 E. 5th Street  
Nowheresville, Kansas 55555

Month, day, year

Mr. Gerald Walker, P.G.  
Tetra Tech NUS, Inc.  
Task Order Manager  
1401 Oven Park Road, Suite 102  
Tallahassee, Florida, 32308

Subject: HAZWOPER Training for NAS Pensacola, Pensacola, Florida

Dear Mr. Walker:

As an officer of XYZ Corporation, I hereby state that I am aware of the potential hazardous nature of the subject project. I also understand that it is our responsibility to comply with all applicable occupational safety and health regulations, including those stipulated in Title 29 of the Code of Federal Regulations (CFR), Parts 1900 through 1910 and Part 1926.

I also understand that Title 29 CFR 1910.120, entitled "Hazardous Waste Operations and Emergency Response," requires appropriate level of training for certain employees engaged in hazardous waste operations. In this regard, I hereby state that the following employees have had 40 hours of introductory hazardous waste site training or equivalent work experience as requested by 29 CFR 1910.120(e) and have had 8 hour of refresher training as applicable and as required by 29 CFR 1910.120(e)(8) and that site supervisory personnel have had training in accordance with 29 CFR 1910.120(e)(4).

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555

Sincerely,

(Name and Title of Company Officer)

Enclosed: Training Certificates

## **8.2 SITE-SPECIFIC TRAINING**

TtNUS will provide site-specific training to all TtNUS employees and subcontractor personnel who will perform work on this project. Site-specific training will also be provided to all personnel (U.S. Department of Defense, EPA, etc.) who may enter the site to perform functions that may or may not be directly related to site operations. Site-Specific training will include:

- 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
- Contents of the Health and Safety Plan
- Use and application of Safe Work Permits
- Emergency action procedures (evacuation and assembly points)
- Incipient response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Review of Hearing Conservation Standard (29 CFR 1910.95)
- Injury and Illness Reporting
- Hazard Communication Program
- Employees Rights, Roles and Responsibilities
- US DOT shipping requirements

Site-specific documentation will be established through the use of Figure 8-2. All site personnel and visitors must sign this document upon receiving site-specific training.

## **8.3 MEDICAL SURVEILLANCE**

### **8.3.1 Medical Surveillance Requirements for TtNUS Personnel**

All TtNUS personnel participating in project field activities will have had a physical examination meeting the requirements of TtNUS's medical surveillance program and will be medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained in the TtNUS Tallahassee office and made available, as necessary.



### **8.3.2 Medical Surveillance Requirements for Subcontractors**

Subcontractors are required to obtain a certificate of their ability to perform hazardous waste site work and to wear respiratory protection. The "Subcontractor Medical Approval Form" provided in Figure 8-3 shall be used to satisfy this requirement, providing it is properly completed and signed by a licensed physician.

Subcontractors who have a company medical surveillance program meeting the requirements of paragraph (f) of OSHA 29 CFR 1910.120 can substitute "Subcontractor Medical Approval Form" (See Figure 8-3) with a letter, on company letterhead, containing all of the information in the example letter presented in Figure 8-4 of this HASP.

### **8.3.3 Requirements for All Field Personnel**

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

## **8.4 SUBCONTRACTOR EXCEPTIONS**

Subcontractors who will not enter the exclusion zone during intrusive operations, and whose activities involve no potential for exposure to site contaminants, will not be required to meet the requirements for training/medical surveillance other than those stated for site-specific training (See Section 8.2).

**FIGURE 8-3**  
**SUBCONTRACTOR MEDICAL APPROVAL FORM**

For employees of \_\_\_\_\_  
Company Name

Participant Name: \_\_\_\_\_ Date of Exam: \_\_\_\_\_

**Part A**

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA Standard 29 CFR 1910.120, paragraph (f) and found to be medically -

- qualified to perform work at the NAS Pensacola, work site
- not qualified to perform work at the NAS Pensacola, work site

and,

2. Undergone a physical examination as per OSHA 29 CFR 1910.134(b)(10) and found to be medically -

- qualified to wear respiratory protection
- not qualified to wear respiratory protection

My evaluation has been based on the following information, as provided to me by the employer.

- A copy of OSHA Standard 29 CFR 1910.120 and appendices.
- A description of the employee's duties as they relate to the employee's exposures.
- A list of known/suspected contaminants and their concentrations (if known).
- A description of any personal protective equipment used or to be used.
- Information from previous medical examinations of the employee which is not readily available to the examining physician.

**Part B**

I, \_\_\_\_\_, have examined \_\_\_\_\_  
Physician's Name (print) Participant's Name (print)  
and have determined the following information:

**FIGURE 8-3  
SUBCONTRACTOR MEDICAL APPROVAL FORM  
PAGE TWO**

1. Results of the medical examination and tests (excluding finding or diagnoses unrelated to occupational exposure):

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

2. Any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health:

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

3. Recommended limitations upon the employee's assigned work:

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

I have informed this participant of the results of this medical examination and any medical conditions which require further examination or treatment.

Based on the information provided to me, and in view of the activities and hazard potentials involved at the NAS Pensacola work site, this participant

- may  
 may not

perform his/her assigned task.

Physician's Signature \_\_\_\_\_

Address \_\_\_\_\_

Phone Number \_\_\_\_\_

NOTE: Copies of test results are maintained and available at:

\_\_\_\_\_  
Address

**FIGURE 8-4**  
**MEDICAL SURVEILLANCE LETTER**

The following statements must be typed on company letterhead and signed by an officer of the company:

LOGO  
XYZ CORPORATION  
555 E. 5th Street  
Nowheresville, Kansas 55555

Month, day, year

Mr. Gerald Walker P.G.  
Tetra Tech NUS, Inc.  
Task Order Manager  
1401 Oven Park Drive Suite 102  
Tallahassee, Florida, 32308

Subject: Medical Surveillance for NAS Pensacola, Pensacola, Florida

Dear Mr. Walker:

As an officer of XYZ Corporation, I hereby state that the persons listed below participate in a medical surveillance program meeting the requirements contained in paragraph (f) of Title 29 of the Code of Federal Regulations (CFR) Part 1910.120, entitled "Hazardous Waste Operations and Emergency Response. I further state that the persons listed below have had physical examinations under this program within the past 12 months and that they have been cleared, by a license physician, to perform hazardous waste site work and to wear positive- and negative-pressure respiratory protection. I also state that, to my knowledge, no person listed below has any medical restriction that would preclude him/her from working at the NAS Pensacola facility.

LIST OF FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555

Sincerely,

(Name and Title of Company Officer)

## **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: Exclusion Zone, Contamination Reduction Zone, and Support Zone. It is also anticipated that this control measure will be used to control access to site work areas. Use of such controls will restrict the general public, minimize potentials for the spread of contaminants and to protect individuals who are not cleared to enter the work areas.

### **9.1 EXCLUSION ZONE**

The Exclusion Zone will be considered those areas of the site of known or suspected contamination. The Exclusion Zone for groundwater sampling is considered to be 5 ft. surrounding the point of sample acquisition. For drilling operations the area should be the length of the mast plus five feet or twenty-five feet which ever is greater. When decontamination operations are in progress the area should be 35 feet surrounding the point of operation.

### **9.2 CONTAMINATION REDUCTION ZONE**

The Contamination Reduction Zone (CRZ) will be a buffer area between the Exclusion Zone and any area of the site where contamination is not suspected. This area will also serve as a focal point in supporting Exclusion Zone activities. This area may be delineated using barrier tape, cones, and postings to inform and direct facility personnel. Decontamination will be conducted at a central location. All equipment potentially contaminated will be bagged and taken to that location for decontamination.

### **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. In all cases, the Support Zones will be established at areas of the site where exposure to site contaminants would not be expected during normal working conditions or foreseeable emergencies.

### **9.4 SAFE WORK PERMITS**

All Exclusion Zone work conducted in support of this project will be performed using Safe Work Permits to guide and direct field crews on a task by task basis. An example of the Safe Work Permit to be used is

illustrated in Figure 9-1. A partially completed Permit for the work to be performed is included in Attachment IV. The daily meetings conducted at the site will further support these work permits. This effort will ensure all site-specific considerations and changing conditions are incorporated into the planning effort. All permits will require the signature of the FOL and/or the SSO.

Use of these permits will provide the communication line for reviewing protective measures and hazards associated with each operation. This HASP will be used as the primary reference for selecting levels of protection and control measures. The work permit will take precedence over the HASP when more conservative measures are required based on specific site conditions.

All permits will be turned into the FOL and/or the SSO upon reaching their termination period or upon completion of the task for which the permit was issued.

**FIGURE 9-1  
SAFE WORK PERMIT**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope** (To be filled in by person performing work)

I. Work limited to the following (description, area, equipment used): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

II. Names: \_\_\_\_\_  
 \_\_\_\_\_

III. Onsite Inspection conducted  Yes  No Initials of Inspector \_\_\_\_\_  
TtNUS                      NAS Pensacola

**SECTION II: General Safety Requirements** (To be filled in by permit issuer)

IV. Protective equipment required	Respiratory equipment required
Level D <input type="checkbox"/> Level B <input type="checkbox"/>	Full face APR <input type="checkbox"/> Escape Pack <input type="checkbox"/>
Level C <input type="checkbox"/> Level A <input type="checkbox"/>	Half face APR <input type="checkbox"/> SCBA <input type="checkbox"/>
Detailed on Reverse	SKA-PAC SAR <input type="checkbox"/> Bottle Trailer <input type="checkbox"/>
	Skid Rig <input type="checkbox"/> None <input type="checkbox"/>

Modifications/Exceptions: \_\_\_\_\_  
 \_\_\_\_\_

V. Chemicals of Concern	Action Level(s)	Response Measures
_____	_____	_____
_____	_____	_____

VI. Additional Safety Equipment/Procedures	
Hardhat..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses ..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness <input type="checkbox"/> Yes <input type="checkbox"/> No
Chemical/splash goggles .... <input type="checkbox"/> Yes <input type="checkbox"/> No	Radio <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash Shield..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Barricades <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash suits/coveralls ..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type) <input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe/shank Workboots... <input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen <input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: \_\_\_\_\_  
 \_\_\_\_\_

VII. Procedure review with permit acceptors	Yes	NA	
Safety shower/eyewash (Location & Use)..... <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency alarms..... <input type="checkbox"/> <input type="checkbox"/>
Procedure for safe job completion..... <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evacuation routes..... <input type="checkbox"/> <input type="checkbox"/>
Contractor tools/equipment inspected..... <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Assembly points..... <input type="checkbox"/> <input type="checkbox"/>

VIII. Equipment Preparation	Yes	NA
Equipment drained/depressured..... <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment purged/cleaned..... <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Isolation checklist completed..... <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical lockout required/field switch tested..... <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blinds/misalignments/blocks & bleeds in place..... <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hazardous materials on walls/behind liners considered..... <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... Yes  No  
*If yes, fill out appropriate section(s) on safety work permit addendum*

X. Special instructions, precautions: \_\_\_\_\_  
 \_\_\_\_\_

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_  
 Job Completed by: \_\_\_\_\_ Date: \_\_\_\_\_

## 9.5 SITE VISITORS

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

- Personnel invited to observe or participate in operations by TtNUS
- Regulatory personnel (DOD, OSHA, etc.)
- Southern Division Navy Personnel
- Other authorized visitors

It is not anticipated that this operation will result in a large number of site visitors. However, as some visitors can reasonably be expected, the following requirements will be enforced:

- All site visitors will be routed to the FOL, who will sign them in to the field logbook. Information to be recorded in the logbook will include the individual's name (proper identification required), who they represent, and purpose for the visit.
- All site visitors will be required to produce the necessary information supporting clearance onto the site. This includes information attesting to applicable training (40-hours of HAZWOPER training required for all Southern Division Navy personnel) and medical surveillance, as stipulated in Section 8 of this document. In addition, to enter the site's operational zones during planned activities, all visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this document.

**NOTE: All site visitors will be escorted at all times while at the site.**

Following this, the site visitor will be permitted to enter the site and applicable operational areas. All visitors are required to observe the protective equipment and site restrictions in effect at the area of their visit. Any and all visitors not meeting the requirements as stipulated in this plan for site clearance will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause all onsite activities to be terminated until that visitor can be removed. Removal of unauthorized visitors will be accomplished with support from the Base Contact, if necessary. At a minimum, the Navy On-site Representative will be notified of any unauthorized visitors.

## **9.6 SITE SECURITY**

Site security will be accomplished using TtNUS field personnel. TtNUS will retain complete control over active operational areas. As this activity takes place at a U.S. Navy facility open to public access, and along public highways, the first line of security will take place using traffic permit restrictions, Exclusion Zone barriers, and any existing barriers at the site to restrict the general public. The second line of security will take place at the work site referring interested parties to the FOL or designee. The FOL will serve as a focal point for all non-project interested parties, and serve as the final line of security and the primary enforcement contact.

## **9.7 SITE MAP**

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

## **9.8 BUDDY SYSTEM**

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

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

TtNUS and subcontractor personnel will provide MSDSs for all chemicals brought on-site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on-site. A chemical inventory of all chemicals used at the site will be developed using the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request.

## **9.10 COMMUNICATION**

As personnel will be working in proximity to one another during field activities, a supported means of communication between field crew's members will not be necessary. External communication will be accomplished by using the telephones at 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, the FOL will determine and arrange for 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 handled at any given time as part of this scope of work. It is also not anticipated that such spillage would constitute a danger to human health or the environment. However, as the job progresses, the potential may exist for accumulating Investigative Derived Wastes (IDW) such as decontamination fluids, soil cuttings, and purge and well development waters, in a central staging area. Once these fluids and other materials have been characterized, they can be removed from this area and properly disposed.

### **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 all 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.

### **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 or in the Resource Deployment area will be conducted during working hours to visually determine that storage vessels are not leaking. If a 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. All inspections will be documented in the project logbook.

#### **10.4 PERSONNEL TRAINING AND SPILL PREVENTION**

All personnel will be instructed in the procedures for initial 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.

#### **10.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT**

The following represents the minimum equipment that may be maintained (depending on anticipated need) at the staging areas at all times for the purpose of supporting this Spill Prevention/Containment Program.

- Sand, clean fill, vermiculite, or other non combustible absorbent (Oil-dry)
- Drums (55-gallon U.N 1A2)
- Shovels, rakes, and brooms
- Container labels

#### **10.6 SPILL CONTROL PLAN**

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

1. Notify the SSO or FOL immediately upon detection of a leak or spill. Activate emergency alerting procedures for that area to remove all non-essential personnel.
2. Employ the personal protective equipment 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.
3. Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.
4. Recontainerize spills, including 2-inch of top cover 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 any 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, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

A Permit-Required Confined Space is one that:

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

For further information on confined space, consult the 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 FOL 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
- Material Safety Data Sheets for all chemicals brought on-site, including decon solution, fuels, sample preservations, calibration gases, etc.
- A full size OSHA Job Safety and Health Poster
- Training/Medical Surveillance Documentation Form (blank)
- Emergency Reference Form (Section 2.0, extra copy for posting)

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

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

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

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

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

**Site Clearance (maintained)** - This list is found within the training section of the HASP (See Figure 8-1). This list identifies all 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 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 all 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 all personnel to be carried on their person.

**Hearing Conservation Standard (29 CFR 1910.95) (posted)** - this standard will be posted anytime hearing protection or other noise abatement procedures are employed.

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

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

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

## 13.0 GLOSSARY

ACGIH	American Conference of Governmental Industrial Hygienists
APR	Air Purifying Respirator
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long-term Environmental Action - Navy
CNS	Central Nervous System
CSP	Certified Safety Professional
CTO	Contract Task Order
CRZ	Contamination Reduction Zone
dBA	Decibels
DOD	United States Department of Defense
DPT	Direct Push Technology
eV	electron Volts
FID	Flame Ionization Detector
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSA	Hollow Stem Auger
HSM	Health and Safety Manager
I P	Ionization Potential
IDW	Investigative-Derived Wastes
JP	Jet Propellant
LEL/LFL	Lower Explosive Limit / Lower Flammable Limit
MSDS	Material Safety Data Sheets
N/A	Not Available
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PEL	Permissible Exposure Limit
PG	Professional Geologist.
PHSO	Project Health and Safety Officer
PID	Photoionization Detector

PPE	Personal Protective Equipment
SAP	Sampling and Analyses Plan
SOPs	Standard Operating Procedures
SSO	Site Safety Officer
STEL	Short Term Exposure Limit
TBD	To be determined
TLV	Threshold Limit Value
TOM	Task Order Manager
TtNUS	Tetra Tech NUS, Inc.
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile Organic Compound

**ATTACHMENT I**

**INJURY/ILLNESS PROCEDURE  
AND REPORT FORM**



## TETRA TECH NUS, INC.

### INJURY/ILLNESS PROCEDURE WORKER'S COMPENSATION PROGRAM

---

#### WHAT YOU SHOULD DO IF YOU ARE INJURED OR DEVELOP AN ILLNESS AS A RESULT OF YOUR EMPLOYMENT:

- If injury is minor, obtain appropriate first aid treatment.
- If injury or illness is severe or life threatening, obtain professional medical treatment at the nearest hospital emergency room.
- If incident involves a chemical exposure on a project work site, follow instructions in the Health & Safety Plan.
- Immediately report any injury or illness to your supervisor or office manager. In addition, you must contact your Human Resources representative, Marilyn Diethorn at (412) 921-8475, and the Corporate Health and Safety Manager, Matt Soltis at (412) 921-8912 within 24 hours. You will be required to complete an Injury/Illness Report (attached). You may also be required to participate in a more detailed investigation from the Health Sciences Department.
- If further medical treatment is needed, The Hartford Network Referral Unit will furnish a list of network providers customized to the location of the injured employee. These providers are to be used for treatment of Worker's Compensation injuries subject to the laws of the state in which you work. Please call Marilyn Diethorn at (412) 921-8475 for the number of the Referral Unit.

#### ADDITIONAL QUESTIONS REGARDING WORKER'S COMPENSATION:

Contact your local human resources representative, corporate health and safety coordinator, or Corporate Administration in Pasadena, California, at (626) 351-4664.

Worker's compensation is a state-mandated program that provides medical and disability benefits to employees who become disabled due to job related injury or illness. Tetra Tech, Inc. and its subsidiaries (Tetra Tech or Company) pay premiums on behalf of their employees. The type of injuries or illnesses covered and the amount of benefits paid are regulated by the state worker's compensation boards and vary from state to state. Corporate Administration in Pasadena is responsible for administering the Company's worker's compensation program. The following is a general explanation of worker's compensation provided in the event that you become injured or develop an illness as a result of your employment with Tetra Tech or any of its subsidiaries. Please be aware that the term used for worker's compensation varies from state to state.



## **WHO IS COVERED:**

All employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits. All employees must follow the above injury/illness reporting procedures. Consultants, independent contractors, and employees of subcontractors are not covered by Tetra Tech's Worker's Compensation plan.

## **WHAT IS COVERED:**

If you are injured or develop an illness caused by your employment, worker's compensation benefits are available to you subject to the laws of the state you work in. Injuries do not have to be serious; even injuries treated by first aid practices are covered and must be reported. Please note that if you are working out-of-state and away from your home office, you are still eligible for worker's compensation benefits.



CASE NO. \_\_\_\_\_

**TETRA TECH NUS, INC.  
INJURY/ILLNESS PROCEDURE  
WORKER'S COMPENSATION PROGRAM**

To: Corporate Health and Safety Manager  
Human Resource Administrator

Prepared by: \_\_\_\_\_

Position: \_\_\_\_\_

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

Office: \_\_\_\_\_

Project No. \_\_\_\_\_

Telephone: \_\_\_\_\_

**Information Regarding Injured or Ill Employee:**

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

Office: \_\_\_\_\_

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

Gender: M  F  No. of dependents: \_\_\_\_\_

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

Marital status: \_\_\_\_\_

Occupation (regular job title): \_\_\_\_\_

Date of birth: \_\_\_\_\_

Department: \_\_\_\_\_

Social Security No.: \_\_\_\_\_

Date of Accident: \_\_\_\_\_

Time of Accident: \_\_\_\_\_

Location of Accident Was place of accident or exposure on employer's premises Yes  No

Street address: \_\_\_\_\_

City, state, and zip code: \_\_\_\_\_

County: \_\_\_\_\_

**Narrative Description of How Accident Occurred:** (Be specific. Explain what the employee was doing and how the accident occurred.)



CASE NO. \_\_\_\_\_

**TETRA TECH NUS, INC.  
INJURY/ILLNESS PROCEDURE  
WORKER'S COMPENSATION PROGRAM**

Did employee die? Yes  No

Was employee performing regular job duties? Yes  No

Was safety equipment provided? Yes  No

Was safety equipment used? Yes  No

Note: Attach any police reports or related diagrams to this accident report.

**Witness(es):**

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

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

**Describe the Illness or Injury and Part of Body Affected:**

\_\_\_\_\_

**Name the Object or Substance which Directly Injured the Employee:**

\_\_\_\_\_

**Medical Treatment Required:**

No  Yes  First Aid Only

Physician's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Hospital or Office Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone No.: \_\_\_\_\_

**Lost Work Days:**

No. of Lost Work Days \_\_\_\_\_

Last Date Worked \_\_\_\_\_

Time Employee Left Work \_\_\_\_\_

Date Employee Returned to Work \_\_\_\_\_

No. of Restricted Work Days \_\_\_\_\_

None



**Corrective Action(s) Taken by Unit Reporting the Accident:**

**Corrective Action Still to be Taken (by whom and when):** \_\_\_\_\_

**Name of Tetra Tech employee the injury or illness was first reported to:** \_\_\_\_\_

**Date of Report:** \_\_\_\_\_ **Time of Report:** \_\_\_\_\_

	Printed Name	Signature	Telephone No.	Date
Project or Office Manager				
Site Safety Coordinator				
Injured Employee				

**To be completed by Human Resources:**

Date of hire: \_\_\_\_\_ Hire date in current job: \_\_\_\_\_

Wage information: \$ \_\_\_\_\_ per \_\_\_\_\_ (hour, day, week, or month)

Position at time of hire: \_\_\_\_\_

Shift hours: \_\_\_\_\_

State in which employee was hired: \_\_\_\_\_

Status:  Full-time  Part-time Hours per week: \_\_\_\_\_ Days per week: \_\_\_\_\_

Temporary job end date: \_\_\_\_\_

**To be completed during report to workers' compensation insurance carrier:**

Date reported: \_\_\_\_\_ Reported by: \_\_\_\_\_

TeleClaim phone number: \_\_\_\_\_

TeleClaim account number: \_\_\_\_\_

Location code: \_\_\_\_\_

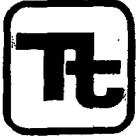
Confirmation number: \_\_\_\_\_

Name of contact: \_\_\_\_\_

Field office of claims adjuster: \_\_\_\_\_

**ATTACHMENT II**

**STANDARD OPERATING PROCEDURE  
FOR  
UTILITY LOCATING AND EXCAVATION  
CLEARANCE**



# STANDARD OPERATING PROCEDURES

TETRA TECH NUS, INC.

Number	HS-1.0	Page	1 of 11
Effective	03/00	Date	Revision 1
Applicability	Tetra Tech NUS, Inc.		
Prepared	Health & Safety		
Approved	D. Senovich <i>DS</i>		

Subject  
UTILITY LOCATING AND EXCAVATION CLEARANCE

## TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 PURPOSE .....	2
2.0 SCOPE .....	2
3.0 GLOSSARY .....	2
4.0 RESPONSIBILITIES.....	2
5.0 PROCEDURES.....	3
5.1 BURIED UTILITIES .....	3
5.2 OVERHEAD POWER LINES .....	4
6.0 UNDERGROUND LOCATING TECHNIQUES.....	5
6.1 GEOPHYSICAL METHODS.....	5
6.2 PASSIVE DETECTION SURVEYS .....	6
6.3 INTRUSIVE DETECTION SURVEYS.....	6
7.0 INTRUSIVE ACTIVITIES SUMMARY .....	7
8.0 REFERENCES .....	7

## ATTACHMENTS

1	Listing of Underground Utility Clearance Resources .....	8
2	Frost Line Penetration Depths by Geographic Location .....	10
3	Utility Clearance Form .....	11

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 2 of 11
	Revision 1	Effective Date 03/00

## 1.0 PURPOSE

Utilities such as electric service lines, natural or propane gas lines, water and sewage lines, telecommunications, and steam lines are very often in the immediate vicinity of work locations. Contact with underground or overhead utilities can have serious consequences including employee injury/fatality, property and equipment damage, substantial financial impacts, and loss of utility service to users.

The purpose of this procedure is to provide minimum requirements and technical guidelines regarding the appropriate procedures to be followed when performing subsurface and overhead utility locating services. It is the policy of Tetra Tech NUS, Inc. (TtNUS) to provide a safe and healthful work environment for the protection of our employees. The purpose of this Standard Operating Procedure (SOP) is to aid in achieving the objectives of the TtNUS Utility Locating and Clearance Policy. The TtNUS Utility Locating and Clearance Policy must be reviewed by anyone potentially involved with underground or overhead utility services.

## 2.0 SCOPE

This procedure applies to all TtNUS field activities where there may be potential contact with underground or overhead utilities. This procedure provides a description of the principles of operation, instrumentation, applicability, and implementability of typical methods used to determine the presence or absence of utility services. This procedure is intended to assist with work planning and scheduling, resource planning, field implementation, and subcontractor procurement. Utility locating and excavation clearance requires site-specific information prior to the development of detailed operating procedures. This guidance is not intended to provide a detailed description of methodology and instrument operation. Specialized expertise during both planning and execution of several of the geophysical methods may also be required.

## 3.0 GLOSSARY

Electromagnetic Induction (EMI) Survey - A geophysical exploration method whereby electromagnetic fields are induced in the ground and the resultant secondary electromagnetic fields are detected as a measure of ground conductivity.

Magnetometer - A device used for precise and sensitive measurements of magnetic fields.

Magnetic Survey - A geophysical survey method that depends on detection of magnetic anomalies caused by the presence of buried ferromagnetic objects.

Metal Detection - A geophysical survey method that is based on electromagnetic coupling caused by underground conductive objects.

Vertical Gradiometer - A magnetometer equipped with two sensors that are vertically separated by a fixed distance. It is best suited to map near surface features and is less susceptible to deep geologic features.

Ground Penetrating Radar - Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture.

## 4.0 RESPONSIBILITIES

Project Manager (PM)/Task Order Manager (TOM) - Responsible for ensuring that all field activities are conducted in accordance with this procedure and the TtNUS Utility Locating and Clearance Policy.

Subject <b>UTILITY LOCATING AND EXCAVATION CLEARANCE</b>	Number HS-1.0	Page 3 of 11
	Revision 1	Effective Date 03/00

Site Manager (SM)/Field Operations Leader (FOL) - Responsible for the onsite verification that all field activities are performed in compliance with approved SOPs or as otherwise directed by the approved project plan(s).

Site Health & Safety Officer (SHSO) – Responsible to provide technical assistance and verify full compliance with this SOP and the TtNUS Utility Locating and Clearance Policy. The SHSO is also responsible for reporting any deficiencies to the Corporate Health and Safety Manager (HSM) and to the PM/TOM.

Health & Safety Manager (HSM) – Responsible for preparing, implementing, and modifying corporate health and safety policy.

Site Personnel – Responsible for understanding and implementing this SOP and the TtNUS Utility Locating and Clearance Policy.

## 5.0 PROCEDURES

This procedure addresses the requirements and technical procedures that must be performed to minimize the potential for contact with underground and overhead utility services. These procedures are addressed individually from a buried and overhead standpoint.

### 5.1 Buried Utilities

Buried utilities present a heightened concern because their location is not typically obvious by visual observation, and it is common that their presence and/or location is unknown or incorrectly known on client properties. The following procedure must be followed prior to beginning any excavation that might potentially be in the vicinity of underground utility services. In addition, the Utility Clearance Form (Attachment 3) must be completed for every location or cluster of locations where intrusive activities will occur.

Where the positive identification and de-energizing of underground utilities cannot be obtained and confirmed using the following steps, the PM/TOM is responsible for arranging for the procurement of a qualified, experienced, utility locating subcontractor who will accomplish the utility location and demarcation duties specified herein.

1. A comprehensive review must be made of any available property maps, blue lines, or as-builts prior to site activities. Interviews with local personnel familiar with the area should be performed to provide additional information concerning the location of potential underground utilities. Information regarding utility locations shall be added to project maps upon completion of this exercise.
- 2., A visual site inspection must be performed to compare the site plan information to actual field conditions. Any findings must be documented and the site plan/maps revised. The area(s) of proposed excavation or other subsurface activities must be marked at the site in white paint or pin flags to identify those locations of the proposed intrusive activities. The site inspection should focus on locating surface indications of potential underground utilities. Items of interest include the presence of nearby area lights, telephone service, drainage grates, fire hydrants, electrical service vaults/panels, asphalt/concrete scars and patches, and topographical depressions. Note the location of any emergency shut off switches. Any additional information regarding utility locations shall be added to project maps upon completion of this exercise and returned to the PM/TOM.

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number  HS-1.0	Page  4 of 11
	Revision  1	Effective Date  03/00

3. If the planned work is to be conducted on private property (e.g., military installations, manufacturing facilities, etc.) the FOL must identify and contact appropriate facility personnel (e.g., public works or facility engineering) before any intrusive work begins to inquire about (and comply with) property owner requirements. It is important to note that private property owners may require several days to several weeks advance notice prior to locating utilities.
4. If the work location is on public property, the state agency that performs utility clearances must be notified (see Attachment 1). State "one-call" services must be notified prior to commencing fieldwork per their requirements. Most one-call services require, by law, 48- to 72-hour advance notice prior to beginning any excavation. Such services typically assign a "ticket" number to the particular site. This ticket number must be recorded for future reference and is valid for a specific period of time, but may be extended by contacting the service again. The utility service will notify utility representatives who then mark their respective lines within the specified time frame. It should be noted that most military installations own their own utilities but may lease service and maintenance from area providers. Given this situation, "one call" systems may still be required to provide location services on military installations.
5. Utilities must be identified and their locations plainly marked using pin flags, spray paint, or other accepted means. The location of all utilities must be noted on a field sketch for future inclusion on project maps. Utility locations are to be identified using the following industry-standard color code scheme, unless the property owner or utility locator service uses a different color code:

white	excavation/subsurface investigation location
red	electrical
yellow	gas, oil, steam
orange	telephone, communications
blue	water, irrigation, slurry
green	sewer, drain

6. Where utility locations are not confirmed with a high degree of confidence through drawings, schematics, location services, etc., the work area must be thoroughly investigated prior to beginning the excavation. In these situations, utilities must be identified using such methods as passive and intrusive surveys, physical probing, or hand augering. Each method has advantages and disadvantages including complexity, applicability, and price. It also should be noted that in many states, initial excavation is required by hand to a specified depth.
7. At each location where trenching or excavating will occur using a backhoe or other heavy equipment, and where utility identifications and locations cannot be confirmed prior to groundbreaking, the soil must be probed with a hand auger or pole (tile probe) made of non-conductive material. If these efforts are not successful in clearing the excavation area of suspect utilities, hand shoveling must be performed for the perimeter of the intended excavation.
8. All utilities uncovered or undermined during excavation must be structurally supported to prevent potential damage. Unless necessary as an emergency corrective measure, TTNUS shall not make any repairs or modifications to existing utility lines without prior permission of the utility owner, property owner, and Corporate HSM. All repairs require that the line be locked-out/tagged-out prior to work.

## 5.2 Overhead Power Lines

If it is necessary to work within the minimum clearance distance of an overhead power line, the overhead line must be de-energized and grounded, or re-routed by the utility company or a registered electrician. If protective measures such as guarding, isolating, or insulating are provided, these precautions must be

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 5 of 11
	Revision 1	Effective Date 03/00

adequate to prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

The following table provides the required minimum clearances for working in proximity to overhead power lines.

<u>Nominal Voltage</u>	<u>Minimum Clearance</u>
0 -50 kV	10 feet, or one mast length; whichever is greater
50+ kV	10 feet plus 4 inches for every 10 kV over 50 kV or 1.5 mast lengths; whichever is greater

## 6.0 UNDERGROUND LOCATING TECHNIQUES

### 6.1 Geophysical Methods

Geophysical methods include electromagnetic induction, magnetics, and ground penetrating radar. Additional details concerning the design and implementation of electromagnetic induction, magnetics, and ground penetrating radar surveys can be found in one or more of the TtNUS SOPs included in the References (Section 8.0).

#### **Electromagnetic Induction**

Electromagnetic Induction (EMI) line locators operate either by locating a background signal or by locating a signal introduced into the utility line using a transmitter. A utility line acts like a radio antenna, producing electrons, which can be picked up with a radiofrequency receiver. Electrical current carrying conductors have a 60HZ signal associated with them. This signal occurs in all power lines regardless of voltage. Utilities in close proximity to power lines or used as grounds may also have a 60HZ signal, which can be picked up with an EM receiver. A typical example of this type of geophysical equipment is an EM-61.

EMI locators specifically designed for utility locating use a special signal that is either indirectly induced onto a utility line by placing the transmitter above the line or directly induced using an induction clamp. The clamp induces a signal on the specific utility and is the preferred method of tracing since there is little chance of the resulting signals being interfered with. A good example of this type of equipment is the Schonstedt® MAC-51B locator. The MAC-51B performs inductively traced surveys, simple magnetic locating, and traced nonmetallic surveys.

When access can be gained inside a conduit to be traced, a flexible insulated trace wire can be used. This is very useful for non-metallic conduits but is limited by the availability of gaining access inside the pipe.

#### **Magnetics**

Magnetic locators operate by detecting the relative amounts of buried ferrous metal. They are incapable of locating or identifying nonferrous utility lines but can be very useful for locating underground storage tanks (UST's), steel utility lines, and buried electrical lines. A typical example of this type of equipment is the Schonstedt® GA-52Cx locator. The GA-52Cx is capable of locating 4-inch steel pipe up to 8 feet deep.

Non-ferrous lines are often located by using a typical plumbing tool (snake) fed through the line. A signal is then introduced to the snake that is then traced.

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number  HS-1.0	Page  6 of 11
	Revision  1	Effective Date  03/00

## Ground Penetrating Radar

Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture. In general, an object which is harder than the surrounding soil will reflect a stronger signal. Utilities, tunnels, UST's, and footings will reflect a stronger signal than the surrounding soil. Although this surface detection method may determine the location of a utility, this method does not specifically identify utilities (i.e., water vs. gas, electrical vs. telephone); hence, verification may be necessary using other methods. This method is somewhat limited when used in areas with clay soil types or with a high water table.

### 6.2 Passive Detection Surveys

#### Acoustic Surveys

Acoustic location methods are generally most applicable to waterlines or gas lines. A highly sensitive Acoustic Receiver listens for background sounds of water flowing (at joints, leaks, etc.) or to sounds introduced into the water main using a transducer. Acoustics may also be applicable to determine the location of plastic gas lines.

#### Thermal Imaging

Thermal (i.e., infrared) imaging is a passive method for detecting the heat emitted by an object. Electronics in the infrared camera convert subtle heat differentials into a visual image on the viewfinder or a monitor. The operator does not look for an exact temperature; rather they look for heat anomalies (either elevated or suppressed temperatures) characteristic of a potential utility line.

The thermal fingerprint of underground utilities results from differences in temperature between the atmosphere and the fluid present in a pipe or the heat generated by electrical resistance. In addition, infrared scanners may be capable of detecting differences in the compaction, temperature and moisture content of underground utility trenches. High-performance thermal imagery can detect temperature differences to hundredths of a degree.

### 6.3 Intrusive Detection Surveys

#### Vacuum Excavation

Vacuum excavation is used to physically expose utility services. The process involves removing the surface material over approximately a 1' x 1' area at the site location. The air-vacuum process proceeds with the simultaneous action of compressed air-jets to loosen soil and vacuum extraction of the resulting debris. This process ensures the integrity of the utility line during the excavation process, as no hammers, blades, or heavy mechanical equipment comes into contact with the utility line, eliminating the risk of damage to utilities. The process continues until the utility is uncovered. Vacuum excavation can be used at the proposed site location to excavate below the "utility window" which is usually 8 feet.

#### Hand-auger Surveys

When the identification and location of underground utilities cannot be positively confirmed through document reviews and/or other methods, borings must be hand-augered for all locations where there is a potential to impact buried utilities. The minimum hand-auger depth that must be reached is to be determined considering the geographical location of the work site. This approach recognizes that the

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 7 of 11
	Revision 1	Effective Date 03/00

placement of buried utilities is influenced by frost line depths that vary by geographical region. Attachment 2 presents frost line depths for the regions of the contiguous United States. At a minimum, hand-auger depths must be at least to the frost line depth plus two (2) feet, but never less than 4 feet below ground surface (bgs). For augering, the hole must be reamed by hand to at least the diameter of the drill rig auger or bit prior to drilling. For soil gas surveys, the survey probe shall be placed as close as possible to the cleared hand-auger. It is important to note that a post-hole digger must not be used in place of a hand-auger.

#### **Tile Probe Surveys**

For some soil types, site conditions, and excavation requirements, tile probes may be used instead of or in addition to hand-augers. Tile probes must be performed to the same depth requirements as hand-augers. Depending upon the site conditions and intended probe usage, tile probes should be made of non-conductive material such as fiberglass.

### **7.0 INTRUSIVE ACTIVITIES SUMMARY**

The following list summarizes the activities that must be performed prior to beginning subsurface activities:

1. Map and mark all subsurface locations and excavation boundaries using white paint or markers specified by the client or property owner.
2. Notify the property owner and/or client that the locations are marked. At this point, drawings of locations or excavation boundaries shall be provided to the property owner and/or client so they may initiate (if applicable) utility clearance.

Note: Drawings with confirmed locations should be provided to the property owner and/or client as soon as possible to reduce potential time delays.

3. Notify "One Call" service. If possible, arrange for an appointment to show the One Call representative the subsurface locations or excavation boundaries in person. This will provide a better location designation to the utilities they represent. You should have additional drawings should you need to provide plot plans to the One Call service.
4. Complete Attachment 3, Utility Clearance Form. This form should be completed for each excavation location. In situations where multiple subsurface locations exist within the close proximity of one another, one form may be used for multiple locations provided those locations are noted on the Utility Clearance Form. Upon completion, the Utility Clearance Form and revised/annotated utility location map becomes part of the project file.

### **8.0 REFERENCES**

TINUS Utility Locating and Clearance Policy  
 TINUS SOP GH-3.1; Resistivity and Electromagnetic Induction  
 TINUS SOP GH-3.2; Magnetic and Metal Detection Surveys  
 TINUS SOP GH-3.4; Ground-penetrating Radar Surveys

Subject  <b>UTILITY LOCATING AND EXCAVATION CLEARANCE</b>	Number  HS-1.0	Page  8 of 11
	Revision  1	Effective Date  03/00

**ATTACHMENT 1  
LISTING OF UNDERGROUND UTILITY CLEARANCE RESOURCES**

<b>ALABAMA</b> Alabama Line Location (800) 292-8525 Tucson Blue Stake Center (800) 782-5348	<b>Maine</b> Dig Safe – Maine (800) 225-4977
<b>Alaska</b> Locate Call Center of Alaska Inc. (800) 478-3121	<b>Maryland</b> Miss Utility (800) 257-777 Miss Utility of Delmarva (800) 282-8555
<b>Arizona</b> Arizona Blue Stake Inc. (800) 782-5348	<b>Massachusetts</b> Dig Safe – Massachusetts (800) 322-4844
<b>Arkansas</b> Arkansas One Call System Inc. (800) 482-8998	<b>Michigan</b> Miss Dig System (800) 482-7171
<b>California</b> Underground Service Alert North (800) 227-2600 Underground Service Alert South (800) 227-2600	<b>Minnesota</b> Gopher State One Call (800) 252-1166
<b>Colorado</b> Utility Notification Center of Colorado (800) 922-1987	<b>Mississippi</b> Mississippi One-Call System Inc. (800) 227-6477
<b>Connecticut</b> Call Before You Dig (800) 922-4455	<b>Missouri</b> Missouri One Call System Inc. (800) 344-7483
<b>Delaware</b> Miss Utility of Delmarva (800) 282-8555	<b>Montana</b> Utilities Underground Location Center (800) 424-5555 Montana One Call Center (800) 551-8344
<b>District of Columbia</b> Miss Utility (800) 257-7777	<b>Nebraska</b> Diggers Hotline of Nebraska (800) 331-5666
<b>Florida</b> Call Sunshine (800) 432-4770	<b>Nevada</b> Underground Service Alert North (800) 227-2600
<b>Georgia</b> Utilities Protection Center Inc. (800) 282-7411	<b>New Hampshire</b> Dig Safe – New Hampshire (800) 225-4977
<b>Idaho</b> Palouse Empire Underground Coordinating Council (800) 882-1974 Utilities Underground Location Center (800) 424-5555 Kootenai Country Utility Coordinating Council (800) 428-4950 Shoshone County One Call (800) 398-3285 Dig Line (800) 342-1585 One Call Concepts (800) 626-4950	<b>New Jersey</b> New Jersey One Call (800) 272-1000
<b>Illinois</b> Julie Inc. (800) 892-0123 Digger (Chicago Utility Alert Network) (312) 744-7000	<b>New Mexico</b> New Mexico One Call System Inc. (800) 321-ALERT Las Cruces-Dona Utility Council (505) 526-0400
<b>Indiana</b> Indiana Underground Plant Protection Services (800) 382-5544	<b>New York</b> Underground Facilities Protection Organization (800) 962-7962 New York City: Long Island One Call Center (800) 272-4480
<b>Iowa</b> Underground Plant Location Service Inc. (800) 292-8989	<b>North Carolina</b> The North Carolina One-Call Center Inc. (800) 632-4949
<b>Kansas</b> Kansas One-Call Center (800) 344-7233	<b>North Dakota</b> Utilities Underground Location Center (800) 795-0555
<b>Kentucky</b> Kentucky Underground Protection Inc. (800) 752-6007	<b>Ohio</b> Ohio Utilities Protection Service (800) 362-2764 Oil & Gas Producers Underground Protection Service (800) 925-0988
<b>Louisiana</b> Louisiana One Call (800) 272-3020	<b>Oklahoma</b> Call Okie (800) 522-6543

Subject <b>UTILITY LOCATING AND EXCAVATION CLEARANCE</b>	Number HS-1.0	Page 9 of 11
	Revision 1	Effective Date 03/00

**Oregon**  
Utilities Underground Location Center  
(800) 424-5555  
Douglas Utilities Coordinating Council  
(503) 673-6676  
Josephine Utilities Coordinating Council  
(503) 476-6676  
Rogue Basin Utility Coordinating Council  
(503) 779-6676  
Utilities Notification Center  
(800) 332-2344

**Pennsylvania**  
Pennsylvania One Call System Inc.  
(800) 242-1776

**Rhode Island**  
Dig Safe – Rhode Island (800) 225-4977

**South Carolina**  
Palmetto Utility Protection Service Inc.  
(800) 922-0983

**South Dakota**  
South Dakota One Call (800) 781-7474

**Tennessee**  
Tennessee One-Call System (800) 351-1111

**Texas**  
Texas One Call System (800) 245-4545  
Texas Excavation Safety System (800) 344-8377  
Lone Star Notification Center (800) 669-8344

**Utah**  
Blue Stakes Location Center (800) 662-4111

**Vermont**  
Dig Safe – Vermont (800) 225-4977

**Virginia**  
Miss Utility of Virginia (800) 552-7001  
Miss Utility (800) 257-7777  
Miss Utility of Delmarva (800) 441-8355

**Washington**  
Utilities Underground Location Center  
(800) 424-5555  
Grays Harbor & Pacific County  
Utility Coordinating Council  
(206) 535-3550  
Utilities County of Cowlitz County  
(360) 425-2506  
Chelan-Douglas Utilities Coordinating Council  
(509) 663-6111  
Upper Yakima County  
Underground Utilities Council  
(800) 553-4344  
Inland Empire Utility Coordinating Council  
(509) 456-8000  
Palouse Empire Utilities Coordinating Council  
(800) 822-1974  
Utilities Notification Center (800) 332-2344

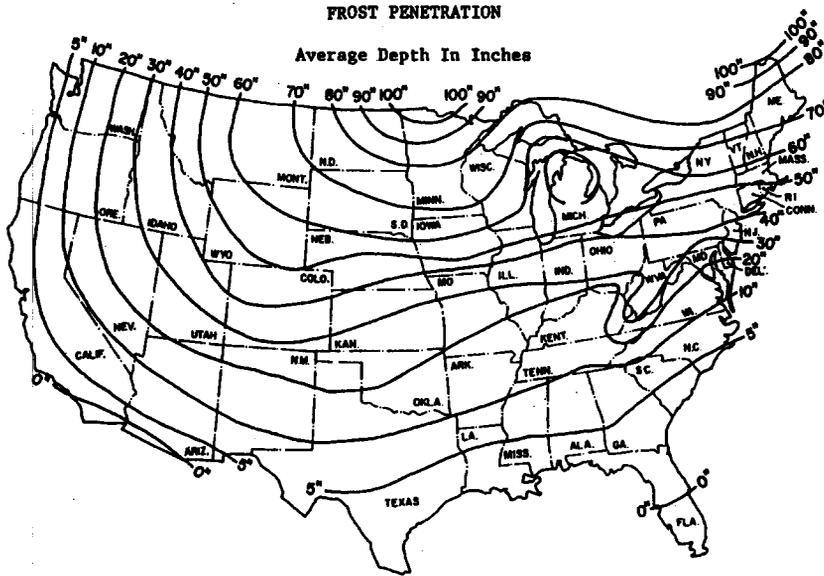
**West Virginia**  
Miss Utility of West Virginia Inc. (800) 245-4848

**Wisconsin**  
Diggers Hotline Inc. (800) 242-8511

**Wyoming**  
West Park Utility Coordinating Council  
(307) 587-4800  
Call-in Dig-In Safety Council (800) 300-9811  
Fremont County Utility Coordinating Council  
(800) 489-8023  
Central Wyoming Utilities Coordinating Council  
(800) 759-8035  
Southwest Wyoming One Call (307) 362-8888  
Carbon County Utility  
Utility Coordinating Council (307) 324-6666  
Albany County Utility Coordinating Council  
(307) 742-3615  
Southeast Wyoming Utilities Coordinating Council  
(307) 638-6666  
Wyoming One-Call  
(800) 348-1030  
Utilities Underground Location Center  
(800) 454-5555  
Converse County Utility Coordination Council  
(800) 562-5561

ATTACHMENT 2

FROST LINE PENETRATION DEPTHS BY GEOGRAPHIC LOCATION



Courtesy U.S. Department Of Commerce

Subject <b>UTILITY LOCATING AND EXCAVATION CLEARANCE</b>	Number HS-1.0	Page 11 of 11
	Revision 1	Effective Date 03/00

**ATTACHMENT 3  
UTILITY CLEARANCE FORM**

Client: \_\_\_\_\_ Project Name: \_\_\_\_\_  
 Project No.: \_\_\_\_\_ Completed By: \_\_\_\_\_  
 Location Name: \_\_\_\_\_ Work Date: \_\_\_\_\_  
 Excavation Method/Overhead Equipment: \_\_\_\_\_

1. **Underground Utilities** Circle One
- a) Review of existing maps? yes no N/A
  - b) Interview local personnel? yes no N/A
  - c) Site visit and inspection? yes no N/A
  - d) Excavation areas marked in the field? yes no N/A
  - e) Utilities located in the field? yes no N/A
  - f) Located utilities marked/added to site maps? yes no N/A
  - g) Client contact notified yes no N/A  
 Name \_\_\_\_\_ Telephone: \_\_\_\_\_ Date: \_\_\_\_\_
  - g) State One-Call agency called? yes no N/A  
 Caller: \_\_\_\_\_  
 Ticket Number: \_\_\_\_\_ Date: \_\_\_\_\_
  - h) Geophysical survey performed? yes no N/A  
 Survey performed by: \_\_\_\_\_  
 Method: \_\_\_\_\_ Date: \_\_\_\_\_
  - i) Hand augering performed? yes no N/A  
 Augering completed by: \_\_\_\_\_  
 Total depth: \_\_\_\_\_ feet Date: \_\_\_\_\_
  - j) Trench/excavation probed? yes no N/A  
 Probing completed by: \_\_\_\_\_  
 Depth/frequency: \_\_\_\_\_ Date: \_\_\_\_\_

2. **Overhead Utilities** Present Absent
- a) Determination of nominal voltage yes no N/A
  - b) Marked on site maps yes no N/A
  - c) Necessary to lockout/insulate/re-route yes no N/A
  - d) Document procedures used to lockout/insulate/re-route yes no N/A
  - e) Minimum acceptable clearance (SOP Section 5.2): \_\_\_\_\_

3. **Notes:**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Approval: \_\_\_\_\_  
 Site Manager/Field Operations Leader Date

c: PM/Project File  
 Program File

**ATTACHMENT III**

**EQUIPMENT INSPECTION CHECKLIST**

## EQUIPMENT INSPECTION

**COMPANY:** \_\_\_\_\_ **UNIT NO.** \_\_\_\_\_

**FREQUENCY:** Inspect daily, document prior to use and as repairs are needed.

Inspection Date: \_\_\_/\_\_\_/\_\_\_ Time: \_\_\_\_\_ Equipment Type: \_\_\_\_\_

(e.g., bulldozer)

Good    Need Repair    N/

Tires or tracks	<input type="checkbox"/>	<input type="checkbox"/>	C
Hoses and belts	<input type="checkbox"/>	<input type="checkbox"/>	C
Cab, mirrors, safety glass	<input type="checkbox"/>	<input type="checkbox"/>	C
- Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use?	<input type="checkbox"/>	<input type="checkbox"/>	C
- Is the equipment equipped with audible back-up alarms and back-up lights?	<input type="checkbox"/>	<input type="checkbox"/>	C
Horn and gauges	<input type="checkbox"/>	<input type="checkbox"/>	C
Brake condition (dynamic, park, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	C
Fire extinguisher (Type/Rating - _____)	<input type="checkbox"/>	<input type="checkbox"/>	C
<b>Fluid Levels:</b>			
- Engine oil	<input type="checkbox"/>	<input type="checkbox"/>	C
- Transmission fluid	<input type="checkbox"/>	<input type="checkbox"/>	C
- Brake fluid	<input type="checkbox"/>	<input type="checkbox"/>	C
- Cooling system fluid	<input type="checkbox"/>	<input type="checkbox"/>	C
- Windshield wipers	<input type="checkbox"/>	<input type="checkbox"/>	C
- Hydraulic oil	<input type="checkbox"/>	<input type="checkbox"/>	C
Oil leak/lube	<input type="checkbox"/>	<input type="checkbox"/>	C
Coupling devices and connectors	<input type="checkbox"/>	<input type="checkbox"/>	C
Exhaust system	<input type="checkbox"/>	<input type="checkbox"/>	C
Blade/boom/ripper condition	<input type="checkbox"/>	<input type="checkbox"/>	C
Accessways: Frame, hand holds, ladders, walkways (non-slip surfaces), guardrails?	<input type="checkbox"/>	<input type="checkbox"/>	C
Power cable and/or hoist cable	<input type="checkbox"/>	<input type="checkbox"/>	C
Steering (standard and emergency)	<input type="checkbox"/>	<input type="checkbox"/>	C

**Safety Guards:**

**Yes    No**

- Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Hot pipes and surfaces exposed to accidental contact? _____	<input type="checkbox"/>	<input type="checkbox"/>
- All emergency shut offs have been identified and communicated to the field crew? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Have emergency shutoffs been field tested? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Results? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Are any structural members bent, rusted, or otherwise show signs of damage? _____	<input type="checkbox"/>	<input type="checkbox"/>

- Are fueling cans used with this equipment approved type safety cans? \_\_\_\_\_
- Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? \_\_\_\_\_

**Portable Power Tools:**

- Tools and Equipment in Safe Condition? \_\_\_\_\_
- Saw blades, grinding wheels free from recognizable defects (grinding wheels have been sounded)? \_\_\_\_\_
- Portable electric tools properly grounded? \_\_\_\_\_
- Damage to electrical power cords? \_\_\_\_\_
- Blade guards in place? \_\_\_\_\_
- Components adjusted as per manufacturers recommendation? \_\_\_\_\_

**Cleanliness:**

- Overall condition (is the decontamination performed prior to arrival on-site considered acceptable)? \_\_\_\_\_
- Where was this equipment used prior to its arrival on site? \_\_\_\_\_
- Site Contaminants of concern at the previous site? \_\_\_\_\_
- Inside debris (coffee cups, soda cans, tools and equipment) blocking free access to foot controls? \_\_\_\_\_

**Operator Qualifications (as applicable for all heavy equipment):**

- Does the operator have proper licensing where applicable, (e.g., CDL)? \_\_\_\_\_
- Does the operator, understand the equipments operating instructions? \_\_\_\_\_
- Is the operator experienced with this equipment? \_\_\_\_\_
- Does the operator have emotional and/or physical limitations which would prevent him/her from performing this task in a safe manner? \_\_\_\_\_
- Is the operator 21 years of age or more? \_\_\_\_\_

**Identification:**

- Is a tagging system available, for positive identification, for tools removed from service? \_\_\_\_\_

**Additional Inspection Required Prior to Use On-Site**

- |   | Yes                      | No                       |
|---|--------------------------|--------------------------|
| - Does equipment emit noise levels above 90 decibels?         | <input type="checkbox"/> | <input type="checkbox"/> |
| - If so, has an 8-hour noise dosimetry test been performed?   | <input type="checkbox"/> | <input type="checkbox"/> |
| - Results of noise dosimetry: _____                           |                          |                          |
| - Defects and repairs needed: _____                           |                          |                          |
| - General Safety Condition: _____                             |                          |                          |
| - Operator or mechanic signature: _____                       |                          | approved for             |
| Use: <input type="checkbox"/> Yes <input type="checkbox"/> No |                          |                          |

\_\_\_\_\_  
Site Safety Officer Signature

**ATTACHMENT IV**

**SAFE WORK PERMITS**

**SAFE WORK PERMIT  
NAVAL AIR STATION, PENSACOLA, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Geographical surveys
- II. Required Monitoring Instruments: \_\_\_\_\_
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted Yes  No  Initials of Inspector \_\_\_\_\_

TINUS

**SECTION II: General Safety Requirements (To be filled in by permit issuer)**

- |                                  |                          |                                |                          |                |                          |
|----------------------------------|--------------------------|--------------------------------|--------------------------|----------------|--------------------------|
| V. Protective equipment required |                          | Respiratory equipment required |                          | Escape Pack    | <input type="checkbox"/> |
| Level D                          | <input type="checkbox"/> | Level B                        | <input type="checkbox"/> | SCBA           | <input type="checkbox"/> |
| Level C                          | <input type="checkbox"/> | Level A                        | <input type="checkbox"/> | Bottle Trailer | <input type="checkbox"/> |
| Detailed on Reverse              |                          | Skid Rig                       | <input type="checkbox"/> | None           | <input type="checkbox"/> |

Modifications/Exceptions \_\_\_\_\_

VI. Chemicals of Concern	Action Level(s)	Response Measures
_____	_____	_____
_____	_____	_____

**VII. Additional Safety Equipment/Procedures**

- |                               |  |                                  |  |
|-------------------------------|--|----------------------------------|--|
| Hard-hat.....                 | <input type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses .....          | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness              | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Chemical/splash goggles.....  | <input type="checkbox"/> Yes <input type="checkbox"/> No | Radio                            | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Shield.....            | <input type="checkbox"/> Yes <input type="checkbox"/> No | Barricades                       | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash suits/coveralls .....  | <input type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type - _____)            | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots | <input type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen                | <input type="checkbox"/> Yes <input type="checkbox"/> No |

Modifications/Exceptions \_\_\_\_\_

- |   |                          |                          |                         |                          |                          |
|---|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|
| VIII. Procedure review with permit acceptors  | Yes                      | NA                       | Emergency alarms .....  | Yes                      | NA                       |
| Safety shower/eyewash (Location & Use) .....  | <input type="checkbox"/> | <input type="checkbox"/> | Evacuation routes ..... | <input type="checkbox"/> | <input type="checkbox"/> |
| Procedure for safe job completion .....       | <input type="checkbox"/> | <input type="checkbox"/> | Assembly points.....    | <input type="checkbox"/> | <input type="checkbox"/> |
| Contractor tools/equipment/PPE inspected..... | <input type="checkbox"/> | <input type="checkbox"/> |                         |                          |                          |

- |   |                          |                          |
|---|--------------------------|--------------------------|
| IX. Equipment Preparation                                   | Yes                      | NA                       |
| Equipment drained/depressurized.....                        | <input type="checkbox"/> | <input type="checkbox"/> |
| Equipment purged/cleaned .....                              | <input type="checkbox"/> | <input type="checkbox"/> |
| Isolation checklist completed .....                         | <input type="checkbox"/> | <input type="checkbox"/> |
| Electrical lockout required/field switch tested.....        | <input type="checkbox"/> | <input type="checkbox"/> |
| Blinds/misalignments/blocks & bleeds in place .....         | <input type="checkbox"/> | <input type="checkbox"/> |
| Hazardous materials on walls/behind liners considered ..... | <input type="checkbox"/> | <input type="checkbox"/> |

- X. Additional Permits required (Hot work, confined space entry, excavation etc.).....  Yes  No  
*If yes, complete permit required or contact Health Sciences, Pittsburgh Office*

XI. Special Instructions \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**ATTACHMENT V**  
**MEDICAL DATA SHEET**

**MEDICAL DATA SHEET**

This Medical Data Sheet must be completed by all 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 \_\_\_\_\_

Name of Next Kin \_\_\_\_\_

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

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

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

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals \_\_\_\_\_

\_\_\_\_\_

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

\_\_\_\_\_

Do you have any medical restrictions? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

I am the individual described above. I have read and understand this HASP.

\_\_\_\_\_

Signature

\_\_\_\_\_

Date