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NAS WHITING FIELD  
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HEALTH AND SAFETY PLAN FOR SITE ASSESSMENT ACTIVITIES AT SITE 2894 NAS  
WHITING FIELD FL  
3/1/2005  
TETRA TECH NUS

**Health and Safety Plan**  
for  
**Site Assessment Activities**  
at  
**Site 2894**

**Naval Air Station Whiting Field**  
Milton, Florida



**Southern Division**  
**Naval Facilities Engineering Command**  
**Contract Number N62467-94-D-0888**  
**Contract Task Order 0373**

March 2005

**HEALTH AND SAFETY PLAN  
FOR  
SITE ASSESSMENT ACTIVITIES  
AT  
SITE 2894**

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

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

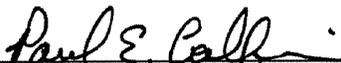
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Tetra Tech NUS, Inc.  
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**CONTRACT NUMBER N62467-94-D-0888  
CONTRACT TASK ORDER 0373**

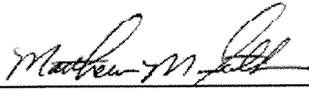
**March 2005**

**PREPARED UNDER THE SUPERVISION OF:**

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## 1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been developed to provide practices and procedures for Tetra Tech NUS, INC. (TtNUS) and subcontractor personnel engaged in investigation activities at Site 2894 of the Naval Air Station (NAS) Whiting Field, Milton, Florida as part of Contract Task Order (CTO) 0373. The CTO directing this investigation is part of an overall effort conducted under the Comprehensive Long-Term Environmental Action Navy (CLEAN) III administered through the United States Navy Southern Division, Naval Facilities Engineering Command (NAVFAC EFD SOUTH) as defined under CLEAN III Contract Number N62467-94D-0888. Site activities include taking soil borings, conducting cone penetrometer tests, installing groundwater monitoring wells, and sampling multi-media to characterize Site 2894. This HASP must be used in conjunction with the TtNUS Health and Safety Guidance Manual. Both of these documents 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 applicable TtNUS Standard Operating Procedures (SOPs). This HASP and the contents of the Guidance Manual were developed to comply with the requirements stipulated in 29 Code of Federal Regulations (CFR) 1910.120 [Occupational Safety and Health Administration's (OSHA's) Hazardous Waste Operations and Emergency Response Standard].

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. Changes to the HASP will be made with the approval of the TtNUS Task Order Manager (TOM). The TOM will notify affected personnel of changes. A Site Safety Follow-up Report must be completed to document changes to the HASP.

### 1.1 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibility for site safety and health for TtNUS employees and subcontractor personnel engaged in onsite activities. These persons will be the primary point of contact for questions regarding safety and health procedures and the selected control measures addressed in this HASP.

- The TtNUS TOM is responsible for the overall direction and implementation of this HASP.
- The Field Operations Leader (FOL) manages field activities, executes the work plan, and enforces safety procedures as applicable to the work plan.

- The Project Health and Safety Officer (PHSO) is responsible for developing this HASP in accordance with applicable OSHA regulations. Specific responsibilities include:
  - Providing information regarding site contaminants and physical hazards.
  - Establishing air monitoring and decontamination procedures.
  - Assigning personal protective equipment based on task and potential hazards.
  - Determining emergency response procedures and emergency contacts.
  - Stipulating training requirements and reviewing appropriate training and medical surveillance certificates.
  - Providing standard work practices to minimize potential injuries and exposures associated with hazardous waste site work.
  - Modify this HASP when necessary.
  
- The Site Safety Officer (SSO) supports site activities by advising the TOM on the aspects of health and safety on site. These duties may include the following:
  - Coordinate health and safety activities with the FOL.
  - Select, inspect, implement, and maintain personal protective equipment.
  - Establish work zones and control points.
  - Implements air monitoring program for onsite activities.
  - Verify training and medical status of onsite personnel status in relation to site activities.
  - Implements hazard communication, respiratory protection, and other associated safety and health programs as necessary.
  - Coordinates emergency services.
  - Provides site specific training for onsite personnel.
  - Investigates accidents and injuries (see Attachment I Illness/Injury Procedure and Report Form).
  - Provides input to the PHSO regarding the need to modify, this HASP, or other applicable health and safety associated documents as per site-specific requirements.
  
- Compliance with the requirements of this HASP are monitored by the SSO and coordinated through the TiNUS CLEAN Health and Safety Manager (HSM).

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

## 1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

**Site Name:** NAS Whiting Field **Address:** 7151 Wasp Street  
Milton, Florida 32570-6159

**NAS Whiting Field (POC):** Mr. Jim Holland **Phone Number:** (850) 623-7181 Ext. 149

**U.S. Navy Remedial Project Manager:** Ms. Beverly Washington (Code ES24)

**Address:** 2155 Eagle Drive **Phone Number:** (843) 820-5581  
North Charleston, South Carolina 29406 **Fax Number:** (843) 820-7465

**Purpose of Site Visit:** This field investigation will include multiple tasks and activities (see Section 4.0), including installation of soil borings using hollow stem auger (HSA) and direct push technology (DPT); cone penetrometer technology (CPT); soil and groundwater sampling, and installation of monitoring wells.

**Proposed Dates of Work:** March 2005 until completed

### **Project Team:**

<b>Tetra Tech NUS Personnel:</b>	<b>Discipline/Tasks Assigned:</b>	<b>Phone Number</b>
<u>Paul Calligan, P.G.</u>	<u>Task Order Manager</u>	<u>(850) 385-9899</u>
<u>Matthew M. Soltis, CIH, CSP</u>	<u>CLEAN Health and Safety Manager</u>	<u>(412) 921-8912</u>
<u>James K. Laffey</u>	<u>Project Health and Safety Officer</u>	<u>(412) 921-8678</u>
<u>TBD</u>	<u>Field Operations Leader</u>	<u></u>
<u>TBD</u>	<u>Site Safety Officer</u>	<u></u>
<u>Tom Patton</u>	<u>Equipment Manager</u>	<u>(412) 859-4670</u>
<b>Non-Tetra Tech NUS Personnel</b>	<b>Affiliation/Discipline/Tasks Assigned</b>	<b>Phone Number</b>
<u>TBD</u>	<u>Analytical Laboratory</u>	<u></u>
<u>TBD</u>	<u>Surveyor (Geographical)</u>	<u></u>
<u>TBD</u>	<u>Drilling Subcontractor</u>	<u></u>
<u>FedEx</u>	<u>Sample/Parcel Delivery</u>	<u>(800) 463-3339</u>

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

James K. Laffey

## 2.0 EMERGENCY ACTION PLAN

### 2.1 INTRODUCTION

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an emergency. In the event of an emergency that cannot be handled by onsite personnel, site personnel will be evacuated to a safe place of refuge, and the appropriate emergency response agencies will be notified. It has been determined that the majority of potential emergency situations would be better supported by outside emergency responders. Therefore, TtNUS will not provide emergency response support for significant emergency events beyond the capabilities of onsite response. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided such transport does not aggravate or further endanger the welfare of the injured/ill person. The emergency response agencies listed in this plan are capable of providing the most effective response and, as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of operations, a factor which ensures adequate emergency response time. This emergency action plan conforms to the requirements of OSHA Standard 29 CFR 1910.38(a), as allowed in OSHA 29 CFR 1910.120(l)(1)(ii).

TtNUS personnel will, through necessary services, include initial response measures for incidents such as:

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

### 2.2 EMERGENCY PLANNING

From the initial site hazard/risk assessment, injury/illness resulting from exposure to chemical or physical hazards and fire are the most probable emergencies that could occur during site activities. To minimize or eliminate these potential emergency situations, emergency planning activities will include the following (which are the responsibility of the SSO and/or the FOL):

- Coordinating response actions with NAS Whiting Field 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 will include the following:
  - Chemical Inventory (for substances used onsite), with Material Safety Data Sheets (MSDSs).
  - Onsite personnel medical records (Medical Data Sheets).
  - A logbook identifying personnel onsite each day.
  - Emergency notification phone numbers in 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 worker observation or through air monitoring equipment readings. Through site-specific training, site personnel will have knowledge regarding the signs and symptoms of overexposure to contaminants of concern. This knowledge will assist site personnel in identifying potential emergency situations and to alert personnel of potential hazards. Many of the potential hazards and recommended control measures are discussed in Sections 5.0 and 6.0 of this document. Additionally, early recognition will be supported by periodic site surveys to eliminate conditions that may predispose site personnel or property to an emergency. Site surveys will be conducted at least once a week during the initiation of this effort.

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 the situation. However, if the FOL and/or the SSO determine that an incident has progressed to a serious situation, TtNUS will withdraw and notify appropriate response agencies.

### **2.3.2 Prevention**

TtNUS will minimize the potential for emergencies by following the Health and Safety Guidance Manual and ensuring compliance with the HASP and applicable OSHA regulations. In the event that an activity or operation is covered by more than one of these documents, the most stringent requirement shall apply.

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

In the event that the site must be evacuated, personnel will immediately stop activities and report to the TtNUS FOL at the safe refuge area. 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 FOL or the on-site Incident Commander of the Emergency Response Team. The FOL or the SSO will take a head count at this location to confirm the location of site personnel. The site logbook will be used to take and record the head count. Ideally, the places of refuge should offer a point for communication.

## **2.5 EVACUATION ROUTES AND PROCEDURES**

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety, or welfare of site workers or when acceptable entry conditions within the fiber optic vault are compromised. 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 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.

Evacuation procedures will be discussed prior to the initiation of 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, multiple assembly points will be selected at NAS Whiting Field 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 personnel will be working in close proximity of each other, hand signals, voice commands, air horns, and line of site communication will comprise the mechanisms to alert site personnel of an emergency. If an emergency incident occurs, site personnel will initiate the following procedures:

- Initiate incident alerting procedures (if needed) via hand signals, voice commands, or vehicle horns.

- Describe to the FOL (who will serve as the Incident Commander) what has occurred and as many details as possible. Once personnel are evacuated, incipient response procedures will be enacted to control the situation.

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

- Call 911 and report the emergency. \*
- Give the emergency operator the location of the emergency and a brief description of the incident.
- Stay on the phone and follow the instructions given by the operator.
- The appropriate agency will be notified and dispatched.

\* Cellular telephones are routed through either Santa Rosa or Escambia County Dispatch. If Escambia County Dispatch receives your cell phone request for emergency services ask to be transferred to Santa Rosa County Emergency Dispatch. Immediately tell them that you are calling from the NAS Whiting Field facility. They will notify the Base that an ambulance is in route and be permitted access.

If an incident occurs at NAS Whiting Field 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.
- Proceed to the assembly points as directed by NAS Whiting Field personnel.

## **2.7 EMERGENCY CONTACTS**

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

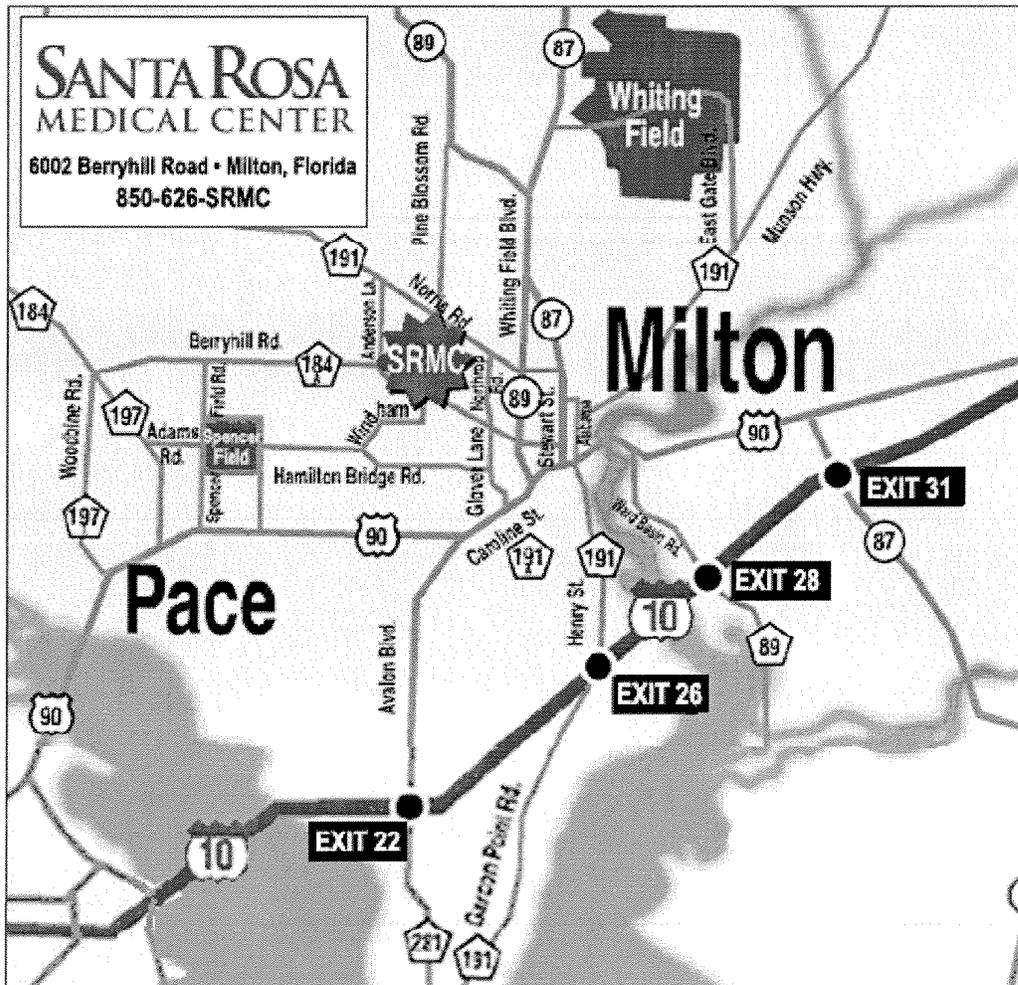
**TABLE 2-1  
 EMERGENCY REFERENCE  
 NAVAL AIR STATION WHITING FIELD  
 MILTON, FLORIDA**

CONTACT	PHONE NUMBER
<b>EMERGENCY            (Milton Police, Fire, and Ambulance Services)</b>	<b>911</b>
Santa Rose Medical Center	(850) 626-7762
Santa Rosa County Emergency Management	911 (850) 983-5360
Navy On-site Representative at NAS Whiting Field, Jim Holland	(850) 623-7181 ext. 149
Chemtrec National Response Center	(800) 424-9300 (800) 424-8802
TOM, Paul Calligan, P.G.	(850) 385-9899
Site Safety Officer, TBD	-
FOL, TBD	-
TtNUS Tallahassee Office	(850) 385-9899
TtNUS, Pittsburgh Office	(412) 921-7090
HSM , Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer, James K. Laffey	(412) 921-8678

## 2.8 ROUTE TO HOSPITAL

Santa Rosa Medical Center  
6002 Berryhill Road  
Milton, Florida, 32570  
Telephone: (850) 626-7762  
Fax: (850) 623-5083

Directions to Santa Rose Medical Center travel 1 mile West of the Base on Highway 87.  
Turn left drive 5.5 miles South on Highway 87/89 to Berry Hill Road, turn right.  
Travel 1.7 miles and the hospital is on the right.



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

During a site evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. Given the anticipated concentrations of site contaminants, it is unlikely that extensive decontamination efforts would be required prior to receiving emergency medical treatment. Personal decontamination will not be performed if the action that initiates an evacuation would further endanger the lives of workers. If the emergency involves suspected exposure, follow the steps provided in Figure 2-1.

## **2.10 INJURY/ILLNESS REPORTING**

If TtNUS personnel are injured or develop an illness as a result of working on site, the TtNUS "Injury/Illness Procedure" (Attachment I) must be followed. Following this procedure is necessary for documenting the information obtained at the time of the incident. Also, as soon as possible the Navy Contact must be informed of incidents or accidents that require medical attention.

It will be the responsibility of the SSO to ensure that enough fire extinguishers are available to support on-site operations in the vulnerable locations stated above.

## FIGURE 2-1 EMERGENCY RESPONSE PROTOCOL

The purpose of this protocol is to provide guidance for the medical management during injury situations. In the event of a personnel injury or accident:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this HASP by suitable and appropriate conveyance (i.e., ambulance for serious events).
- Obtain as much exposure history as possible (a Potential Exposure report is attached)
- If the injured person is a Tetra Tech NUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. WorkCare physicians will monitor the care of the victim. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 and enter Extension 109, or follow the voice prompt after hours and on weekends and be prepared to provide:
  - Any known information about the nature of the injury.
  - As much of the exposure history as was feasible to determine in the time allowed.
  - Name and phone number of the medical facility to which the victim(s) has/have been taken.
  - Name(s) of the involved Tetra Tech NUS, Inc. employee(s).
  - Name and phone number of an informed site officer who will be responsible for further investigations.
  - Fax appropriate information to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety Department (Matt Soltis) and Human Resources Marilyn Duffy at 1-800-245-2730. This number is accessible from 0800 through 1700 Monday through Friday.

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

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

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

**FIGURE 2-1 (continued)**  
**POTENTIAL EXPOSURE REPORT**

Name: \_\_\_\_\_ Date of Exposure: \_\_\_\_\_  
Social Security No.: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_  
Client Contact: \_\_\_\_\_ Phone No.: \_\_\_\_\_  
Company Name: \_\_\_\_\_

**I. Exposing Agent**

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

Characteristics (if the name is not known)

Solid            Liquid            Gas            Fume            Mist            Vapor

**II. Dose Determinants**

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

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

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

Was there skin contact? \_\_\_\_\_

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

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

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

**Immediately With Exposure:**

Burning of eyes, nose, or throat  
Tearing  
Headache  
Cough  
Shortness of Breath

Chest Tightness / Pressure  
Nausea / Vomiting  
Dizziness  
Weakness

**Delayed Symptoms:**

Weakness  
Nausea / Vomiting  
Shortness of Breath  
Cough

Loss of Appetite  
Abdominal Pain  
Headache  
Numbness / Tingling

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

Burning of eyes, nose, or throat  
Tearing  
Headache  
Cough  
Shortness of Breath  
Chest Tightness / Pressure  
Cyanosis

Nausea / Vomiting  
Dizziness  
Weakness  
Loss of Appetite  
Abdominal Pain  
Numbness / Tingling

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

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

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

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

### **3.0 SITE BACKGROUND AND DESCRIPTION**

#### **3.1 SITE INFORMATION**

NAS Whiting Field is located in Santa Rosa County, approximately 20 miles northeast of Pensacola, in Milton, Florida. The Air Station, which is divided into two areas, provides support and facilities for flight and academic training. The North Field is used for fixed wing training, while the South Field is used for helicopter flight instruction.

#### **3.2 SITE BACKGROUND**

Site 2894 is a bulk fuel storage facility which includes Building 2894 (pumphouse), two above ground storage tanks 2891/2892, a truck fill stand, and associated active and abandoned product transfer lines. Site 2894 is located in the northeastern portion of NAS Whiting Field, at the eastern end of USS Wasp Street. Fueling operations have been conducted at the site since the 1960's. A railroad line was used to deliver fuel to the system until the 1970's. At that time, the railroad line was removed, and the associated transfer piping was abandoned in place. Since the 1970's, fuel has been delivered to the site by tanker truck. In 1991, a release was detected from an underground fuel transfer line. The underground fuel transfer line was abandoned in place and replaced with an aboveground pipeline still in use.

## 4.0 SCOPE OF WORK

The following is a list of activities that are covered in this HASP for additional site assessment activities at Site 2894:

- Mobilization/demobilization.
- Soil boring using HSA and DPT.
- CPT with membrane interface probe (MIP) sensing equipment.
- Installation of permanent monitoring wells using HSA.
- Soil and groundwater sampling.
- Decontamination of sampling and heavy equipment.
- Investigation derived waste (IDW) management.
- Geographic land survey.

The above listing represents an overview of the tasks associated with the scope of work and the application of this HASP. For more detailed description of the associated tasks, refer to the Sampling and Analysis Plan. Any tasks to be conducted outside of the elements listed here will be considered a change in scope requiring modification of this document. The TOM or a designated representative will submit requested modifications to this document to the HSM.

## 5.0 TASKS/HAZARDS AND ASSOCIATED CONTROL MEASURES

Table 5-1 of this section summarizes the potential hazards, by task, and their associated control measures for the work addressed by this site specific HASP. This table is intended to assist project personnel in the recognition of hazards and recommended procedures necessary to minimize potential exposure or injuries related to those hazards. The table also assists field team members in determining which personal protective equipment (PPE) and decontamination procedures to be used, as well as, appropriate air monitoring techniques and other requirements/restrictions. The evaluation of each task provides detailed information including anticipated hazards, recommended control measures, air monitoring recommendations, required PPE, and decontamination measures. This table will be updated if the scope of work, contaminants of concern, or pertinent conditions change.

This HASP, including Table 5-1, is meant to be used in conjunction with the TtNUS Health and Safety Guidance Manual. This manual is designed to further explain supporting elements for any site-specific operations as required by OSHA 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 TtNUS's SOPs are also provided in the Guidance Manual.

Safe Work Permits will be issued (See Section 9.2). The FOL and/or the SSO will use the elements defined in Table 5-1 as the primary reference. The Safe Work Permit is used to 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.

### 5.1 GENERAL SAFE WORK PRACTICES

These safe work practices establish a pattern of general precautions and measures for reducing risks associated with hazardous site operations.

- Refrain from eating, drinking, chewing gum or tobacco, taking medication, or smoking in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. This is especially critical between breaks and prior to lunch and associated hand to mouth activities.

- Avoid contact with potentially contaminated substances by walking around puddles, pools, mud, or other such areas. Avoid, whenever possible, kneeling on the ground or leaning or sitting on equipment. Do not place monitoring equipment on potentially contaminated surfaces.
- Be familiar with and adhere to instructions provided within this site-specific HASP.
- Be aware of the location of the nearest telephone and emergency telephone numbers. See Section 2.0, Table 2-1.
- Attend briefings on anticipated hazards, equipment requirements, Safe Work Permits, emergency procedures, and communication methods before going on site.
- Plan and mark entrance, exit, and emergency escape routes. See Section 2.0.
- Rehearse unfamiliar operations prior to implementation.
- Use the "buddy system."
- Maintain visual contact with each other and with other on-site team members by remaining in close proximity in order to assist each other in case of emergency.
- Establish appropriate Safety Zones including Support, Contamination Reduction, and Exclusion Zones.
- Minimize the number of personnel and equipment in contaminated areas (such as the Exclusion Zone). Non-essential vehicles and equipment should remain within the Support Zone.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report injuries, illnesses, and unsafe conditions, practices, and equipment to the SSO.
- Observe coworkers for signs of toxic exposure and heat or cold stress.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

## 5.2 DRILLING (HSA/DPT) SAFE WORK PRACTICES

The following Safe Work Practices are to be followed when working near operating DPT or HSA drilling equipment.

### 5.2.1 Before Drilling

- Identify underground utilities, buried structures, and aboveground utility lines before drilling. This service is provided by the NAS Whiting Field and Sunshine State One Call of Florida. In addition, TtNUS personnel will use the Utility Locating and Excavation Clearance SOP provided in Attachment II.
- Drill rigs will be inspected by the SSO or designee prior to the acceptance of the equipment at the site and prior to the use of the equipment. Needed repairs or identified deficiencies will be corrected prior to use. The inspection will be accomplished using the Equipment Inspection Checklist provided in Attachment III. Additional inspections will be performed at least once every 10-day shift or following repairs.
- Check operation of the Emergency Stop Switch (initially, then periodically thereafter).
- Ensure that machine guarding is in place and properly adjusted.
- Block drill rig and use out riggers/levelers to prevent movement of the drill.
- The work area around the point of operation will be graded to the extent possible to remove any trip hazards near or surrounding operating equipment.
- The driller's helper will establish an equipment staging and lay down plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards. Mechanisms to secure heavy objects such as drill flights will be provided to avoid the collapse of stacked equipment.
- Potentially contaminated tooling will be wrapped in polyethylene sheeting for storage and transport to the centrally located equipment decontamination unit.
- Prior to each instance of engaging the HSA drill rig, the driller will look to ensure that the drilling area is clear of personnel and obstructions and verbally alert everyone in the area that the rig is about to be engaged.

- Prior to the start of boring operations, one individual will be designated as the person responsible for immediate activation of the emergency stop device (if applicable) in the event of an emergency. This individual will be made known to the field crew and will be responsible for visually checking the work area and verbally alerting everyone of boring operations prior to engaging the equipment.

#### **5.2.2 During Drilling**

- The driller will ensure that an individual is constantly stationed at a location where the drill rig emergency stop switch can be immediately engaged.
- Minimize contact to the extent possible with contaminated tooling and environmental media.
- Support functions (sampling and screening stations) will be maintained a minimum distance from the drill rig of the height of the mast plus 5 feet, 35 feet for HSA, or 25 feet for DPT operations, whichever is greater to remove these activities from within physical hazard boundaries.
- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the drill rig.
- During maintenance, use only manufacturer provided/approved equipment (i.e., auger flight connectors, etc.)
- In order to minimize contact with potentially contaminated tooling and media and to minimize lifting hazards, multiple personnel should move auger flights and other heavy tooling.
- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone.

#### **5.2.3 After Drilling**

- Equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the SSO to determine cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.
- Motorized equipment will be fueled prior to the commencement of the day's activities. During fueling operations equipment will be shutdown and bonded to the fuel source.
- When not in use, drill rigs will be shutdown, emergency brakes set, and wheels will be chocked to prevent movement.

- Areas subjected to subsurface investigative methods will be restored to equal or better than original condition. Any contamination that was brought to the surface by drilling or DPT operations will be removed and containerized. Physical hazards (debris, uneven surfaces, ruts, etc.) will be removed, repaired, or otherwise corrected. In situations where these hazards cannot be removed, these areas will be barricaded to minimize the impact on field crews working in the area.

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**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAS WHITING FIELD,  
MILTON, FLORIDA**

Task/Operation/ Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Types and Action Levels	PPE <i>(Items in italics are deemed optional as conditions or the FOL or SSO require)</i>	Decontamination Procedures
<p>Mobilization/ Demobilization</p> <p>This activity includes, but not limited to:</p> <ul style="list-style-type: none"> <li>- Equipment Preparation and Inspection</li> <li>- Resource acquisition and unpacking of supplies</li> <li>- Site clearance and preparation – Utility clearances, etc.</li> <li>- Construct decontamination and IDW operation and storage facilities, as applicable.</li> </ul>	<p><b>Chemical hazards:</b></p> <p>1) Exposure to potential contaminants is not anticipated. However, potential exposure to chemicals brought on-site should be considered.</p> <p><b>Physical hazards:</b></p> <p>2) Lifting (strain/muscle pulls)</p> <p>3) Pinches and compressions</p> <p>4) Slips, trips, and falls</p> <p>5) Vehicular and foot traffic</p> <p><b>Natural hazards:</b></p> <p>6) Ambient temperature extremes (heat/cold stress)</p> <p>7) Insect and animal bites</p> <p>8) Inclement weather</p>	<p>1) The on-site Hazard Communication Program (Section 5.0 TiNUS Health and Safety Guidance Manual) will be followed. Chemicals brought onto the site by TiNUS and subcontractor personnel will be inventoried with each applicable chemical having an MSDS on site, on file. This effort shall include:</p> <ul style="list-style-type: none"> <li>- A Chemical Inventory list is generated for chemicals brought on site (Complete Section 5.0 of the TiNUS Health &amp; Safety Guidance Manual).</li> <li>- MSDSs must be available for chemicals brought on site.</li> <li>- Materials are stored in accordance with recommended practices and according to compatibility (see MSDS for storage and compatibility recommendations). The FOL and/or the SSO will preview work locations in an effort to identify, barricade, and/or remove physical and biological hazards prior to the commitment of any personnel, equipment or other resources.</li> </ul> <p>2) Use machinery or multiple personnel for heavy lifts, where possible.</p> <ul style="list-style-type: none"> <li>- Use proper lifting techniques.</li> <li>- Lift with your legs not your back, bend your knees, move as close to the load as possible, and ensure good hand holds are obtainable.</li> <li>- Minimize the horizontal distance to the center of the lift to your center of gravity.</li> <li>- Minimize turning and twisting when lifting as the lower back is especially vulnerable at this time.</li> <li>- Break lifts into steps if the vertical distance (from the start point to the placement of the lift) is excessive.</li> <li>- Plan your lifts. Place heavy items on shelves between the waist and chest; lighter items on higher shelves.</li> <li>- Periods of high frequency lifts or extended duration lifts should provide sufficient breaks to guard against fatigue and injury.</li> <li>- Area available to maneuver the lift.</li> <li>- Area of the lift – work place clutter, slippery surfaces, etc.</li> </ul> <p>3) Only modify tools according to manufacturer's instruction.</p> <ul style="list-style-type: none"> <li>- Keep any machine guarding in place, avoid moving parts.</li> <li>- Use tools or equipment where necessary to avoid placing hands in areas vulnerable to pinch points.</li> <li>- Adjust machine guarding as necessary to minimize access into the machine.</li> <li>- When staging equipment, ensure stacked loads and shelving are adequately secure to avoid creating a hazard from falling objects.</li> </ul> <p>4) Preview work locations for unstable/uneven terrain.</p> <ul style="list-style-type: none"> <li>- Cover, guard, and barricade open pits, ditches, and floor openings as necessary.</li> <li>- Ruts, roots, tools, and other tripping hazards should be eliminated to minimize trips and falls.</li> <li>- Maintain a clutter free work area.</li> <li>- As part of site control efforts, construct fences or other means of demarcation (i.e., signs and postings) to control and isolate traffic in the work area. Means of demarcation shall also be constructed isolating resource and/or staging areas.</li> </ul> <p>5) Establish safe zones of approach (i.e. Boom or mast + 5 feet). See Table 5-1, Soil Boring/Monitoring Well Installation for recommended distances.</p> <ul style="list-style-type: none"> <li>- The mast will be lowered when moving the rig.</li> <li>- Foot and vehicular traffic routes shall be well defined.</li> <li>- Heavy equipment patterns shall be isolated using fences or other suitable barricades from pedestrian pathways.</li> <li>- Bumpers or other suitable traffic stops shall be placed in areas where it is desired that traffic approaching an drop offs or unprotected banks.</li> <li>- Self-propelled equipment with restricted vision moving backwards shall be equipped with back up warning systems.</li> <li>- As a precautionary measure to remove or demarcate physical hazards, the FOL and/or the SSO shall preview traffic routes (foot and vehicular) before the commitment of personnel and resources.</li> </ul> <p>6) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat and cold stress is provided in Section 4.0 of the TiNUS Health and Safety Guidance Manual.</p> <p>7) This is not considered a predominant hazard as these activities are to be conducted in a well maintained area. To combat the potential impact of natural hazards, the following actions are recommended:</p> <ul style="list-style-type: none"> <li>- Wear light color clothes and, if necessary, tape pant legs to work boots to block direct access.</li> <li>- Use repellents. Permanone should be applied liberally to the clothing, but not the skin as it may cause irritation. Follow manufacturer's recommendations for use.</li> </ul> <p>8) Suspend or terminate operations until directed otherwise by SSO. See Section 4.0 of the TiNUS Health and Safety Guidance Manual for additional information concerning natural hazards.</p>	<p>Visual observation of work practices by the FOL and/or the SSO to minimize potential physical hazards (i.e., improper lifting, unsecured loads, cutting practices, etc.).</p> <p>Monitoring for chemical hazards are not required during this activity.</p>	<p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (sleeved shirt, long pants).</li> <li>- Steel toe safety shoes or boots.</li> <li>- <i>Safety glasses.</i></li> <li>- <i>Hardhat (when overhead hazards exists or identified as a operation requirement).</i></li> <li>- <i>Reflective vest for high traffic areas.</i></li> <li>- <i>Hearing protection for high noise areas (at the direction of the FOL and/or the SSO).</i></li> </ul> <p>As site conditions may change, the following equipment will be maintained during on-site activities as prescribed in Section 2.0 of this HASP</p> <ul style="list-style-type: none"> <li>- Fire extinguishers.</li> <li>- First-aid kit.</li> </ul> <p><b>Note:</b> The FOL and/or the SSO will determine the number of fire extinguishers and first-aid kits to be made available based on the number of operations to be conducted at any given time.</p>	<p>Not required.</p> <p>Good personal hygiene practices should be employed prior to breaks lunch or other period when hand to mouth contact occurs. This will minimize potential ingestion exposures.</p> <p>Personnel should inspect themselves and one another for the presence of ticks when exiting wooded areas, grassy fields, etc. This action will be employed to assist in stopping the transfer of these insects into vehicles, homes, and offices.</p> <p>In a review of a number of tick bites reported over the past few years, the ticks that went undetected were located on the back and in the shoulder areas. Have your buddy examine this area carefully.</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAS WHITING FIELD, MILTON, FLORIDA**

Task/Operation/Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	PPE <i>(Items in italics are deemed optional as conditions or the FOL or SSO require )</i>	Decontamination Procedures
<p>Soil borings using DPT CPT with MIP Monitoring Well Installation - using Hollow Stem Augers</p>	<p><b>Chemical hazards:</b></p> <p>1) Previous analytical data identified the following as the primary contaminants of concern: JP-4 or JP-5 jet fuel with the volatile organic compound (VOC) benzene, toluene, ethylbenzene, and xylene (BTEX) and the polynuclear aromatic hydrocarbon (PAH) methylanththalene.</p> <p>Further information on these contaminants are presented in Section 6.1, and Table 6-1.</p> <p>2) Transfer of contamination into clean areas or onto persons</p> <p><b>Physical hazards:</b></p> <p>3) Heavy equipment hazards (pinch/compressions points, rotating equipment, hydraulic lines, etc.)</p> <p>4) Noise in excess of 85 dBA</p> <p>5) Energized systems (contact with underground or overhead utilities)</p> <p>6) Lifting (strain/muscle pulls)</p> <p>7) Slips, trips, and falls</p> <p>8) Cuts and lacerations</p> <p>9) Vehicular and foot traffic</p> <p><b>Natural hazards:</b></p> <p>10) Inclement weather</p> <p>11) Insect bites</p>	<p>1) Use of direct reading air monitoring instruments and the use of the established action levels for VOCs. Avoid contact with contaminated media (air, water, soils, etc.) through proper use and application of PPE. In addition, good work and personal hygiene measures will be used to control exposure through ingestion. Avoid hand to mouth contact, wash hands and face, or use hygienic wipes to remove potential contaminants prior to breaks or lunch or other hand to mouth activities.</p> <p>2) Restrict the cross use of equipment and supplies between locations and activities without first going through a suitable decontamination. Work practices including establishing a rigid decontamination procedure will be employed for equipment between locations and between clean and potentially dirty work. This provision along with dedicated sampling equipment will insure materials are not carried and deposited in unaffected areas.</p> <p>3) Equipment will be:</p> <ul style="list-style-type: none"> <li>- Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600.601.602), and manufacturer's design, as applicable. Inspections will be documented using the Equipment Inspection - Checklist (for Drill Rigs) found in (See Attachment III) of this HASP.</li> <li>- Operated and supported by knowledgeable operators and ground crew.</li> <li>- Personnel not directly supporting this operation will remain at least 35 feet for HSA Rigs and 25 feet for DPT rigs from the point of operation or the height of the mast plus 5 feet, whichever is greater.</li> <li>- Personnel will be instructed in the location and operations of the emergency shut-off device(s). This device will be tested initially (and then daily) to ensure its operational status.</li> <li>- One person will be designated as the Emergency Shut Off Device Operator. Prior to engaging the augers, the driller will announce, loud enough for all to hear, that he is engaging the augers. He will visually confirm that personnel are removed from the rotating equipment then engage the augers.</li> <li>- Areas will be inspected prior to the movement of the DPT rig and support vehicles to eliminate any physical hazards. This will be the responsibility of the FOL and/or SSO.</li> <li>- See additional safe work procedures for drilling in Section 5.9 of this HASP as well as in Section 4.0 of the Health &amp; Safety Guidance Manual.</li> </ul> <p>4) Excessive noise levels will be mitigated through the use of hearing protection. Any piece of equipment or operation that has the potential to generate excessive noise levels (i.e., you must raise your voice to speak to someone within 2 feet of where you are standing) will require hearing protection until sound level measurements and/or noise dosimetry may be conducted to quantify the associated noise levels.</p> <p>5) Drilling activities will proceed in accordance with the Utility Locating and Excavation Clearance SOP in Attachment II of this HASP. Utility clearances will be obtained in writing and locations identified and marked prior to activities.</p> <p>6) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques as described in Table 5-1, Mobilization/Demobilization. Drill stems, auger flights, and well construction supplies are some of the common material that are handled and, because of their weight, will present a lifting strain hazard associated with this activity.</p> <p>7) Preview work locations and site lines for uneven/unstable terrain. Clear necessary vegetation and establish temporary means for traversing hazardous terrain (e.g., rope ladders).</p> <p>8) Use the knife and acetate tube retention tub recommended by Geoprobe (Geoprobe Sampling Kit) to prevent potential cuts and lacerations when accessing samples within MacroCore acetate liners.</p> <ul style="list-style-type: none"> <li>- Always cut away from yourself and others.</li> <li>- Do not place items to be cut in your hand or on your knee.</li> <li>- Maintain a sharp cutting edge.</li> <li>- Wear cut-resistant gloves (leather or heavy cotton).</li> <li>- Use traffic-warning signs, flag persons, and high visibility vests as determined by the SSO when work infringes traffic thoroughfares. Use physical barricades when working within or altering normal traffic flow patterns/traffic lanes.</li> </ul> <p>10) Wear appropriate clothing for weather conditions. Follow the provisions as specified in Section 4.0 of the TtNUS Health and Safety Guidance Manual regarding the identification and evaluation of heat/cold stress related conditions.</p> <p>11) Wear appropriate clothing and PPE. Avoid potential nesting areas and suspicious vegetation. When feasible and necessary, use commercially available insect repellants. Report potential hazards to the SSO. Inspect clothing and persons for ticks and other vectors during and after work activities in wooded areas.</p>	<p>It is not anticipated that potential contaminant concentrations at outdoor sample locations will present an inhalation hazard.</p> <p>A direct reading photoionization detector (PID) with a 10.6 eV lamp or higher, or a flameionization detector (FID), will be used to screen samples and to detect the presence of any potential volatile organics. Source monitoring of the borehole will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <ul style="list-style-type: none"> <li>- Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (greater than 1 minute in duration) above 10 ppm in the breathing zone areas of the at-risk employees requires site activities to be suspended and site personnel to retreat to an unaffected area.</li> <li>- Work may only resume if airborne readings in worker breathing zone areas return to below daily-established background levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection.</li> </ul>	<p>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 dress (long pants, sleeved shirts).</li> <li>- Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential exists of soiling work attire.</li> <li>- Surgical style nitrile gloves.</li> <li>- Steel toe shoes or boots.</li> <li>- Disposable nitrile gloves.</li> <li>- Safety glasses.</li> <li>- Hardhat (when approaching the drill rig).</li> <li>- <i>Reflective vest for high traffic areas.</i></li> <li>- <i>Hearing protection for high noise areas as directed by the SSO.</i></li> </ul> <p>Note: The Safe Work Permit for this task (see Attachment IV) will be issued at the beginning of the task to address planned activities. Additional PPE may be assigned to reflect site-specific conditions or special considerations.</p>	<p><b>Personnel Decontamination</b> – This function will take place at an area adjacent to the work operations.</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 outer coveralls, gloves, and boots, if applicable.</li> <li>- Outer coverall and outer glove removal.</li> <li>- Disposal of non-reusable PPE in doubly-lined bags and then into an industrial dumpster.</li> <li>- Wash hands and face, leave contamination reduction zone.</li> </ul> <p><b>Equipment Decontamination</b> – See Decontamination of heavy equipment. Heavy equipment decontamination will take place at a centralized decontamination pad utilizing steam or pressure washers. Heavy equipment, such as drill rigs, will have the wheels or tracks cleaned along with any loose debris removed prior to transporting to the central decontamination area. Site vehicles will have restricted access to exclusion zones and will also have their wheels/tires sprayed off as not to track mud onto the roadways servicing this installation. Roadways shall be cleared of any debris resulting from the on-site activity.</p> <p>Equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site.</p> <p>The FOL or the SSO will be responsible for evaluating equipment arriving on site and leaving the site. No equipment will be authorized access or exit without this authorization.</p> <p>Soil cuttings shall be containerized in 55-gallon drums, labeled, and staged pending disposal characterization.</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAS WHITING FIELD, MILTON, FLORIDA**

Task/Operation/Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	PPE <i>(Items in italics are deemed optional as conditions or the FOL or SSO require)</i>	Decontamination Procedures
<p>Multi-media sampling, including</p> <ul style="list-style-type: none"> <li>- Monitoring Well Development</li> <li>- Groundwater and subsurface soil sampling</li> </ul>	<p><b>Chemical hazards:</b></p> <p>1) Previous analytical data identified the following as the primary contaminants of concern: JP-4 or JP-5 jet fuel with the VOC BTEX and the PAH methylnaphthalene.</p> <p>Further information on these contaminants are presented in Section 6.1, and Table 6-1.</p> <p>2) Transfer of contamination into clean areas.</p> <p><b>Physical hazards:</b></p> <p>3) Slip, trip, and fall hazards</p> <p>4) Strain/muscle pulls from manual lifting</p> <p>5) Ambient temperature extremes (heat/cold stress)</p> <p><b>Natural hazards:</b></p> <p>6) Animal and insect bites and encounters</p> <p>7) Inclement weather</p>	<p>1) Use of direct reading air monitoring instruments and the use of the established action levels for VOCs. Avoid contact with contaminated media (air, water, soils, etc.) through proper use and application of PPE. In addition, good work and personal hygiene measures will be employed to control exposure through ingestion. Avoid hand to mouth contact to the extent possible and wash hands and face or use hygienic wipes to remove potential contaminants from hands and face prior to breaks or lunch or other hand to mouth activities. It should be noted that exposure during DPT/HSA in an open air environment is not anticipated. During the execution of these two activities, limited surface area is being disturbed thereby minimizing the potential to mechanically agitate a sufficient amount of material to become airborne. This minimizes potential exposure. In addition, as these activities are conducted outside where general wind patterns may knock down and disperse airborne dust.</p> <p>When sampling groundwater wells, exposure potential is the greatest when opening a well that has been sealed and that gases have built up inside.</p> <p>2) Decontaminate equipment and supplies between sampling locations and prior to leaving the site. See decontamination of heavy and sampling equipment for direction regarding this task. In addition, the bulk of sampling equipment such as tubing and trowels are disposable and, therefore, dedicated. This will aid in preventing cross contamination.</p> <p>3) Preview work locations and site lines for uneven/unstable terrain. Clear necessary vegetation and establish temporary means for traversing hazardous terrain (e.g., rope ladders).</p> <p>4) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques (see Lifting Mobilization/Demobilization of this table).</p> <p>5) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat/cold stress is provided in Section 4.0 of the Health and Safety Guidance Manual. Care should be exercised when working outdoors due to harmful affects of the sun.</p> <p>6) Wear light color clothes. - When opening existing well heads, be cautious of bees and spiders as these are preferred nesting locations. - Use repellents. Permethrin should be applied liberally to the clothing, but not the skin as it may cause irritation. Concentrate on areas where ticks and other insects may access your body such as pant cuffs, shirt to pants, and collars. Products containing DEET can be applied directly to the skin. As always, follow manufacturer's recommendations for use.</p> <p>See Section 4.0 of the Health and Safety Guidance Manual Section 4.0 for more information concerning these natural hazards.</p> <p>7) Suspend or terminate operations during electrical storms. Return to work when directed by the FOL and/or the SSO.</p>	<p>It is not anticipated that potential contaminant concentrations at outdoor sample locations will present an inhalation hazard.</p> <p>A direct reading PID with a 10.6 eV lamp or higher, or a FID, will be used to screen samples and to detect the presence of any potential volatile organics. Source monitoring of the borehole will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <ul style="list-style-type: none"> <li>- Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (greater than 1 minute in duration) above 10 ppm in the breathing zone areas of the at-risk employees requires site activities to be suspended and site personnel to retreat to an unaffected area.</li> <li>- Work may only resume if airborne readings in worker breathing zone areas return to below daily-established background levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection.</li> </ul>	<p>Level D protection constitutes the following for sampling activities</p> <p>Standard field dress (long pants, sleeved shirts) Steel toe safety shoes or boots Safety glasses Nitrile surgeon style inner gloves for sampling <i>Hard Hats</i> <i>Hearing protection</i> <i>Impermeable boot covers</i> <i>Reflective vest for traffic areas</i></p> <p>Protective Measures as specified for drilling and soil boring will be employed for subsurface soil sampling at the drill rig.</p> <p><b>Note:</b> 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><b>Personnel Decontamination</b></p> <p>Upon completion of the sampling:</p> <ul style="list-style-type: none"> <li>- Dedicated trowels, tubing, and PPE will be rinsed and bagged for disposal.</li> <li>- Handi-Wipes or similar product will be used to clean hands prior to moving to the next location.</li> </ul> <p><b>Equipment Decontamination</b></p> <p>Decontamination of equipment (sampling and hand tools) will proceed as indicated in Table 5-1 of this HASP and/or the work plan.</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAS WHITING FIELD, MILTON, FLORIDA**

Tasks/Operation/Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	PPE (Items in italics are deemed optional as conditions or the FOL or SSO require)	Decontamination Procedures
<p>Decontamination of heavy equipment using pressure washers or steam cleaners</p> <p>Decontamination of sampling equipment using 5-gallon buckets/scrub brushes, etc.</p> <p>It is anticipated that this activity will take place at a temporary centralized location.</p>	<p><b>Chemical hazards:</b></p> <p>1) Previous analytical data identified the following as the primary contaminants of concern: JP-4 or JP-5 jet fuel with the VOC BTEX and the PAH methylnaphthalene.</p> <p>Further information on these contaminants are presented in Section 6.1, and Table 6-1.</p> <p>2) Decontamination fluids - Liquinox (detergent); isopropanol (decontamination solvent)</p> <p><b>Physical hazards:</b></p> <p>3) Lifting (strain/muscle pulls) 4) Noise in excess of 85 dBA 5) Flying projectiles 6) Falling hazards 7) Slips, trips, and falls</p> <p><b>Natural hazards:</b></p> <p>8) Inclement weather</p>	<p>1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Control potential non-occupational exposures through good work hygiene practices (i.e., avoid hand to mouth contact, wash hands and face before breaks and lunch, minimize contact with contaminated media). Obtain and familiarize yourself with manufacturer's MSDS for any decontamination fluids used on-site. Solvents may only be used in well-ventilated areas, such as outdoors. Use appropriate PPE as identified on MSDS or within this HASP. Chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication Program provided in Section 5.0 of the TtNUS Health and Safety Guidance Manual.</p> <p>3) Use multiple persons where necessary for lifting and handling heavy equipment for decontamination purposes.</p> <ul style="list-style-type: none"> <li>- Employ proper lifting techniques as described in Table 5-1, Mobilization/Demobilization.</li> </ul> <p>4) Wear hearing protection when operating the pressure washer and/or steam cleaner. Sound pressure levels measured during the operation of similar pieces of equipment indicate a range of 87 to 93 dBA.</p> <p>5) Use eye and face protective equipment when operating the pressure washer and/or steam cleaner due to flying projectiles. Other personnel must be restricted from the area. In addition to minimize hazards (flying projectiles, water lacerations and burns) associated with this operation, the following controls will be implemented</p> <ul style="list-style-type: none"> <li>- A Fan Tip 25° or greater will be used on pressurized systems over 3,000 psi. This will reduce the possibility of water lacerations or punctures.</li> <li>- Do not point the wand at persons or place against any part of your body.</li> <li>- Thermostat control will be in place and operational to control the temperature levels of the water where applicable.</li> <li>- Visual evaluations of hoses and fittings for structural defects.</li> <li>- Construct deflection screens as necessary to control overspray and to guard against dispersion of contaminants driven off by the spray.</li> </ul> <p>6) Ensure wash and drying racks are of suitable construction to prevent heavier items such as auger flights and drill rods from falling and striking someone during the decontamination process.</p> <p>7) The decontamination pad should be constructed to contain wash waters generated during decontamination procedures. Temporary decontamination pads are usually 10-30 mil polyethylene or polyvinyl chloride tarp construction. Although these items when used as a liner offer containment, they also present a slipping hazard. When these temporary liners are employed, it is recommended that a light coating of sand be spread over the walking surface to provide traction.</p> <ul style="list-style-type: none"> <li>- In addition, adequate slope should be provided to the pad to permit drainage away from the object being cleaned. The collection point for wash waters should be of adequate distance that the decontamination workers do not have to walk through the wash waters while completing their tasks.</li> <li>- Hoses should be gathered when not in use to eliminate potential tripping hazards.</li> </ul> <p>8) Suspend or terminate operations until directed otherwise by SSO.</p>	<p>Use visual observation and real-time monitoring instrumentation to ensure equipment has been properly cleaned of contamination and dried.</p>	<p><b>For Heavy Equipment</b></p> <p>This applies to pressure washing and/or steam cleaning operations and soap/water wash and rinse procedures.</p> <p>Level D Minimum requirements:</p> <ul style="list-style-type: none"> <li>- Hard hat with splash shield.</li> <li>- Standard field attire (long sleeve shirt, long pants).</li> <li>- Steel toe safety shoes or boots.</li> <li>- Chemical resistant boot covers.</li> <li>- Nitrile outer gloves over nitrile inner gloves.</li> <li>- Safety glasses underneath a splash shield.</li> <li>- Hearing protection (plugs or muffs).</li> <li>- <i>Hooded PVC Rainsuits or PE or polyvinyl chloride (PVC) coated Tyvek</i>. Impermeable aprons may be used instead of coveralls if they offer adequate protection against overspray and back splash.</li> </ul> <p><b>For sampling equipment</b> (trowels, split spoons, etc.), the following PPE is required:</p> <p><b>Note:</b> Consult MSDS for additional PPE guidance. Otherwise, observe the following.</p> <p>Level D Minimum requirements -</p> <ul style="list-style-type: none"> <li>- Standard field attire (long sleeve shirt, long pants)</li> <li>- Steel toe safety shoes or boots</li> <li>- Nitrile outer gloves over nitrile inner gloves</li> <li>- Safety glasses</li> <li>- <i>Impermeable apron</i></li> </ul> <p><b>Note:</b> 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><b>Personnel Decontamination</b> will consist of a soap/water wash and rinse for reusable and non-reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable).</p> <p>The sequential procedure is as follows: Stage 1: Equipment drop, remove outer protective wrapping; personnel will wash hand tools and pass hand equipment through as necessary. Stage 2: Soap/water wash and rinse of outer boots and gloves. Stage 3: Soap/water wash and rinse of the outer splash suit or apron as applicable. Stage 4: Disposable PPE will be removed and bagged. Stage 5: Wash face and hands.</p> <p><b>Equipment Decontamination</b></p> <ul style="list-style-type: none"> <li>-Gross contamination will be removed to the extent possible at the site. Contaminated tools then will be wrapped in polyethylene sheeting for transport to the centralized location for a full decontamination and evaluation.</li> <li>- Heavy equipment decontamination will take place at the centralized decontamination pad utilizing a steam cleaner or pressure washer.</li> <li>- Remove gross (visible) materials using scrapers, shovels as necessary (soils, etc.).</li> <li>- Use the pressure washer/steam cleaner remove remaining visible debris.</li> <li>- As necessary, follow up with scrub brushes with Alconox or Liquinox detergent wash.</li> <li>- Potable water rinse using pressure washer/steam cleaner as necessary.</li> <li>- DI water rinse.</li> <li>- Air dry.</li> </ul> <p>Heavy equipment will have the wheels and tires cleaned along with any loose debris removed, prior to transporting to the central decontamination area.</p> <p><b>Sampling Equipment Decontamination</b></p> <ul style="list-style-type: none"> <li>- Remove heavy materials (soils, etc.)</li> <li>- Alconox or Liquinox detergent wash</li> <li>- Potable water rinse</li> <li>- Solvent rinse (Isopropanol)</li> <li>- DI water rinse</li> <li>- Air dry</li> </ul> <p>Equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site.</p> <p>The FOL or the SSO will be responsible for evaluating equipment arriving on-site, leaving the site, and between locations. No equipment will be authorized access, exit, or movement to another location without this evaluation.</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAS WHITING FIELD, MILTON, FLORIDA**

Tasks/Operation/Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type And Action Levels	PPE <i>(Items in italics are deemed optional as conditions or the FOL or SSO require)</i>	Decontamination Procedures
<p>IDW Management/Moving IDW drums to a storage area</p>	<p><b>Chemical hazards:</b></p> <p>1) Previous analytical data identified the following as the primary contaminants of concern: JP-4 or JP-5 jet fuel with the VOC BTEX and the PAH methylnaphthalene.</p> <p>Further information on these contaminants is presented in Section 6.1 and Table 6-1.</p> <p>2) Transfer of contamination into clean areas or onto persons</p> <p><b>Physical hazards:</b></p> <p>3) Lifting (strain/muscle pulls)</p> <p>4) Heavy equipment hazards (pinch/compression points).</p> <p>5) Noise in excess of 85 dBA</p> <p>6) Slip, trip, and fall hazards (uneven or unstable terrain)</p> <p>7) Vehicular and foot traffic</p> <p><b>Natural hazards:</b></p> <p>8) Inclement weather</p>	<p>1) Staged IDW containers should be clearly labeled. Contact with the container's contents should be avoided whenever possible. Identify PPE to control exposures to potentially contaminated media prior to drum movement.</p> <p>2) Decontaminate equipment and supplies if they have become contaminated.</p> <p>3) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. See Table 5-1, Mobilization/Demobilization.</p> <p>4) Keep hands and fingers free of drum pinch/compression points. Use tools or equipment to avoid contacting pinch points. Whenever possible, use drum dollies to transport drums. Drums shall be staged as follows: - Sealed with rings, bolts, and gaskets. - Four drums to a pallet; labels must face outward. - Stationed with a minimum of 4 feet between rows. - Inventory must be available.</p> <p>5) Excessive noise levels will be mitigated through the use of hearing protection. Any piece of equipment or operation that has the potential to generate excessive noise levels (i.e., you must raise your voice to speak to someone within 2 feet of where you are standing) will require hearing protection until sound level measurements and/or noise dosimetry may be conducted to quantify the associated noise levels.</p> <p>6) Preview work locations for uneven/unstable terrain.</p> <p>7) Establishing safe zones of approach. - Checking that equipment is equipped with movement warning systems. - Ensuring personnel working in high equipment traffic areas are wearing reflective vests for high visibility. - Following traffic rules and requirements established by NAS Whiting Field. - Traffic patterns will be determined in support of on-site activities.</p> <p>8) In the event of inclement weather suspend or terminate operations until directed by the SSO.</p>	<p>None required unless spill containment provisions are invoked. Then monitoring will proceed as described in the activity associated with the task when the materials were generated such as soil boring or well installation.</p>	<p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (sleeved shirt, long pants)</li> <li>- Steel toe safety shoes or boots</li> <li>- Leather or canvas work gloves</li> <li>- <i>Safety glasses (when utilizing cables or slings to move the containers)</i></li> <li>- <i>Hardhat (when overhead hazards exists or identified as a operation requirement)</i></li> </ul> <p>PPE changes may be made with the implementation of the Spill Containment Program. This represents the only anticipated modification to this level of protection.</p>	<p><b>Personnel – Decontamination – This</b> function will take place at an area adjacent to the site activities.</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 outer gloves and outer boots, as applicable</li> <li>- Soap/water wash and rinse of the outer splash suit, as applicable</li> <li>- Bag disposable PPE</li> <li>- Wash hands and face, leave contamination reduction zone</li> </ul>
<p>Geographical Land Surveying</p>	<p><b>Chemical hazards:</b></p> <p>1) Exposure to potential site contaminants during surveying activities is unlikely given the nature of surveying work and the limited contact with potentially contaminated media (i.e., soils, etc.)</p> <p>Refer to Section 6.0 for a list of potential and representative site contaminants. See individual Safe Work Permits contained in Attachment III for specific contaminants of concern associated with particular sites and site activities.</p> <p><b>Physical hazards:</b></p> <p>2) Slip, trip, and fall hazards (uneven or unstable terrain)</p> <p>3) Vehicular and foot traffic</p> <p><b>Natural hazards:</b></p> <p>4) Insect/animal bites or stings, poisonous plants, etc.</p> <p>5) Inclement weather</p>	<p>1) To further reduce the potential for exposure, personnel performing surveying activities will minimize contact with potentially contaminated media and will avoid areas where chemical hazards may exist.</p> <p>2) Preview work locations and site lines for uneven/unstable terrain. Clear necessary vegetation and establish temporary means for traversing hazardous terrain (e.g., rope ladders).</p> <p>3) Establishing safe zones of approach. - Checking that equipment is equipped with movement warning systems. - Ensuring personnel working in high equipment traffic areas are wearing reflective vests for high visibility. - Following traffic rules and requirements established by NAS Whiting Field. - Traffic patterns will be determined in support of on-site activities.</p> <p>4) Wear appropriate clothing and PPE. Avoid potential nesting areas and suspicious vegetation (poison oak and ivy, etc.). When feasible and necessary, use commercially available insect repellants. Report potential hazards to the SSO. Inspect clothing and persons for ticks and other vectors during and after work activities in wooded areas.</p> <p>5) Operations will be temporarily suspended during electrical storms.</p>	<p>Air monitoring is not required given the unlikelihood that airborne contaminants will be present. The potential for exposure to site contaminants during this activity is considered minimal.</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 sleeved shirt and long pants.</li> <li>- Shoes rugged lug sole for traction.</li> <li>- Work gloves shall be worn when clearing brush.</li> <li>- <i>Safety glasses, hard hats (if working near machinery, overhead hazards, or clearing brush).</i></li> <li>- <i>Snake chaps for heavily wooded area where encounters are likely.</i></li> <li>- <i>Tyvek coveralls may be worn to provide additional protection against poisonous plants and insects, particularly ticks.</i></li> <li>- <i>Reflective or blaze orange vests should be worn when working along traffic thoroughfares.</i></li> </ul> <p><b>Note:</b> 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><b>Personnel Decontamination</b> - 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. In addition, early detection shall provide for early removal.</p>

## 6.0 HAZARD ASSESSMENT

The following section provides information regarding the chemical, physical, and natural hazards associated with the sites to be investigated and the activities that are to be conducted as part of the scope of work. Section 6.1 provides general information regarding predominant contaminants that may be present at the site.

### 6.1 CHEMICAL HAZARDS

The potential health hazards associated with work to be conducted at NAS Whiting Field include inhalation, ingestion, and dermal contact of various contaminants that may be present in shallow and deep soils and groundwater. Based on the site histories and prior sampling efforts, the types of contaminants anticipated include non-aqueous phase liquid (NAPL) and associated compounds. Laboratory analytical results of the NAPL appeared to be either JP-4 or JP-5 jet fuel. The following have been identified as the primary contaminants:

- VOCs including low concentrations of aromatic hydrocarbons from JP 4 or 5 such as BTEX.
- PAHs represented by methylnaphthalene

Table 6-1 provides information on the individual substances likely to be present at the sites of concern. Included is information on the toxicological, chemical, and physical properties of these substances. It is anticipated that the greatest potential for exposure to site contaminants is during intrusive activities (drilling, sampling, etc.). Exposure to these compounds is most likely to occur through ingestion and inhalation 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. Inhalation exposure will be avoided by using appropriate PPE and engineering controls where necessary.

**TABLE 6-1  
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA  
NAVAL AIR STATION WHITING FIELD, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
JP-4	N/A	Components of this substance will be detected readily, however, no documentation exists as to the relative response ratio of either the PID or FID.	Air sample using charcoal tube and carbon disulfide desorption. Sampling and analytical protocol shall proceed in accordance with NIOSH Method #1501.	USAF 8 hr - 200 ppm	Kerosene odor threshold ~ 800 ppm Rating - Poor to Adequate  <b>Recommended Air Purifying cartridges:</b> Organic vapor  <b>Recommended gloves:</b> Nitrile	<b>Boiling Pt:</b> <290-470°F; 143-243°C <b>Melting Pt:</b> Not available <b>Solubility:</b> Negligible <b>Flash Pt:</b> -10 to -50°F; -23 to -45°C <b>LEL/LFL:</b> <1% <b>UEL/UFL:</b> 8% <b>Vapor Density:</b> >1 <b>Vapor Pressure:</b> 75 mmHg; 70°F; 21°C <b>Specific Gravity:</b> 0.78 <b>Incompatibilities:</b> strong oxidizers <b>Appearance and odor:</b> Colorless to amber with a kerosene odor	Based on the constituents of jet fuels, it can be surmised that JP-4 is irritating to the eyes, skin, and respiratory tract.  <b>Direct contact</b> may result in mild irritation with a possible drying and defatting of the skin  <b>Ingestion</b> may result in gastrointestinal irritation, nausea, and vomiting and may be harmful or even fatal. <b>Inhalation</b> of vapors or mists of JP-4 may result in headache, nausea, confusion, narcotic effect, and drowsiness.  Chronic inhalation of jet fuel vapors may produce symptoms such as fatigue, anxiety, mood changes, liver and kidney damage, and memory difficulties in exposed workers.
Benzene	71-43-2	<b>PID:</b> I.P 9.24 eV, 100% response with PID and 10.2 eV lamp.  <b>FID:</b> 150% relative response ratio with FID.	Air sample using 2 mil Tedlar sample bags or charcoal tube with carbon disulfide desorption. Sampling and analytical protocol in accordance with NIOSH Method # 3700 or #1500 and OSHA 07.	<b>OSHA:</b> 1 ppm 5 ppm (STEL) <i>See 29 CFR 1910.1028</i>  <b>ACGIH:</b> 0.5 ppm STEL: 2.5  <b>NIOSH:</b> 0.1 ppm STEL: 1.0  <b>IDLH:</b> 500 ppm	Inadequate - Odor threshold 1.4-120 ppm. The use of half-face air-purifying respirators with organic vapor cartridge up to 10 ppm is acceptable despite the inadequate warning properties, providing cartridges are changed at the beginning of each shift.  <b>Recommended gloves:</b> Butyl/neoprene blend - >8.00 hrs; Silver shield as a liner - >8.00 hrs; Viton - >8.00 hrs	<b>Boiling Pt:</b> 176°F; 80°C <b>Melting Pt:</b> 42°F; 5.5°C <b>Solubility:</b> 0.07% <b>Flash Pt:</b> 12°F; -11°C <b>LEL/LFL:</b> 1.2% <b>UEL/UFL:</b> 7.8% <b>Vapor Density:</b> 2.77 <b>Vapor Pressure:</b> 75 mmHg <b>Specific Gravity:</b> 0.88 <b>Incompatibilities:</b> Strong oxidizers, fluorides, perchlorates, and acids <b>Appearance and Odor:</b> Colorless to a light yellow liquid with an aromatic odor	Overexposure may result in irritation to the eyes, nose, throat, and respiratory system. CNS effects include giddiness, lightheadedness, headaches, staggered gait, fatigue, and lassitude and depression. Additional effects may include nausea, difficulty breathing, and intoxication. Long duration exposures may result in respiratory collapse. May cause damage to the blood forming organs and may cause a form of cancer called leukemia.  The ACGIH, IARC, and OSHA list benzene as a carcinogen.

**TABLE 6-1  
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA  
NAVAL AIR STATION WHITING FIELD, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
Ethylbenzene	100-41-4	PID: I.P 8.76, High response with PID and 10.2 eV lamp.  FID: 100% response with FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with OSHA Method #07 or NIOSH Method #1501 Aromatic Hydrocarbon.	ACGIH; NIOSH: 100 ppm; STEL: 125 ppm  OSHA: 100 ppm  IDLH: 800 ppm	Adequate - Can use air-purifying respirator with organic vapor cartridge up to 800 ppm.  <b>Recommended gloves:</b> Neoprene or nitrile w/ silver shield when potential for saturation; Teflon >3.00 hrs	<b>Boiling Pt:</b> 277°F; 136°C <b>Melting Pt:</b> -139°F; -95°C <b>Solubility:</b> 0.01% <b>Flash Pt:</b> 55°F; 13°C <b>LEL/LFL:</b> 1.0% <b>UEL/UFL:</b> 6.7% <b>Vapor Density:</b> 3.63 <b>Vapor Pressure:</b> 10 mmHg @ 79°F; 26°C <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 or coma.
Toluene	108-88-3	PID: I.P 8.82 eV, High response with PID and 10.2 eV lamp.  FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption. Sampling and analytical protocol shall proceed in accordance with OSHA Method #07, or NIOSH Method #1500.	OSHA: 200 ppm Ceiling: 300 ppm  ACGIH: 50 ppm (skin)  NIOSH: 100 ppm STEL: 150 ppm  IDLH: 500 ppm	Adequate - Odor threshold 1.6 ppm is considered good. Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm.  <b>Recommended gloves:</b> Teflon >15.00 hrs; Viton >16.00 hrs; silver shield >6.00 hrs; supported nitrile (Useable time limit 0.5 hr, complete submersion for the nitrile selection); PV alcohol >25.00 hrs	<b>Boiling Pt:</b> 232°F; 111°C <b>Melting Pt:</b> -139°F; -95°C <b>Solubility:</b> 0.05% (61°F; 16°C) <b>Flash Pt:</b> 40°F; 4°C <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; 18°C <b>Specific Gravity:</b> 0.87 <b>Incompatibilities:</b> Strong oxidizers <b>Appearance and odor:</b> Colorless liquid with a sweet pungent aromatic odor	Overexposure to this substance may result in mild to moderate irritation at all points of contact, and CNS changes including euphoria, confusion, nervousness, and possibly paresthesia characterized by an abnormal burning sensation, pricking, or numbness.  At 200-500 ppm exposure has resulted in headaches, nausea, eye irritation, loss of appetite, bad taste, impair coordination, fatigue, and weariness. Chronically, toluene overexposure may result in dermatitis, liver, and kidney damage.

**TABLE 6-1  
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA  
NAVAL AIR STATION WHITING FIELD, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
Xylene All isomers o-,m-, p-	1330-20-7	PID: I.P. 8.56 eV, High response with PID and 10.2 eV lamp.  FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol shall proceed in accordance with OSHA 07, or NIOSH Method 1500.	ACGIH, & NIOSH: 100 ppm STEL: 150 ppm  OSHA: 100 ppm  IDLH: 900 ppm	Adequate - Odor thresholds for the following isomers: 0.6 m-; 5.4 p-; 20 o- ppm. Can use air- purifying respirator with organic vapor cartridge up to 1,000 ppm concentrations.  <b>Recommended gloves:</b> PV Alcohol >12.67 hrs; Viton >8.00 hrs; CPE >1.00 hr; Butyl 0.87 hrs; Nitrile is acceptable for limited operations and contact (>0.20 hrs)	<b>Boiling Pt:</b> 269-231°F; 132- 138°C <b>Melting Pt:</b> -130/-54m/56p°F; -25o/-48m/13p °C <b>Solubility:</b> 0.02 % <b>Flash Pt:</b> 81-90°F;27-32°C <b>LEL/LFL:</b> 0.9% <b>UEL/UFL:</b> 7.0% <b>Vapor Density:</b> 3.66 <b>Vapor Pressure:</b> 7-9 mmHg @ 70°F; 21°C <b>Specific Gravity:</b> 0.86-0.88 <b>Incompatibilities:</b> Strong oxidizers and strong acids <b>Appearance and odor:</b> Colorless liquid with an aromatic odor.	Effects may of overexposure include irritation at all points of contact, CNS changes (i.e., dizziness, excitement, drowsiness, incoherent, staggering gait), difficulty in breathing, pulmonary edema, and possibly respiratory failure.  Chronic effects may include dermatitis and cornea vacuolization.
General PAHs / Coal Tar Pitch Volatiles / Creosote / cresol (fluoranthene, pyrene, benzo(a) anthracene, benzo(a) pyrene, benzo(f)fluoranthene, benzo(k)fluoranthene), methylnaphthalene, etc.)	(CAS Numbers vary depending on specific compound)	PID: I.P. of 8.97 eV, relative response ratio unknown.  FID: Response factor unknown but given the substances flammability, detection by FID can be anticipated.	Refer to NIOSH methods for each specific compound for appropriate air sampling protocols.  Many PAHs can be sampled using NIOSH Method 5506 or 5515 - Teflon filter with support ring - High pressure liquid chromatography with UV detector.  For cresol (a major constituent of creosote) by silica gel or xad-7 sorbent tube; Acetone desorption and analysis by gas chromatography - flame ionization detector or high- pressure liquid chromatography. (NIOSH Method #2001, or OSHA Method #32)	General PAHs:  Most PAHs have no established exposure limits. Other Coal Tar Pitch Volatiles / PAHs such as chrysene and benzo(a)pyrene have an exposure limit of 0.2 mg/m3 (OSHA and ACGIH).  NIOSH: 0.1 mg/m3  Creosote / Cresol:  OSHA; ACGIH: 5 ppm  NIOSH: 2.3 ppm  IDLH: 80 mg/m3	Adequate - use a full-face air- purifying respirator with organic vapor / dust/mis: cartridge up to 250 ppm. Cresol has an Odor Threshold of 0.00005-0.0079 ppm.  <b>Recommended gloves:</b> Viton >96.00 hrs; butyl rubber >90.00 hrs; neoprene >4.50 hrs	Properties of various PAHs/Coal Tar Pitch Volatiles vary depending upon the specific compound.  For Creosote/Cresol: <b>Boiling Pt:</b> 376-397°F; 191- 203°C <b>Melting Pt:</b> 52-95°F; 10.9- 35.5°C <b>Solubility:</b> Insoluble <b>Flash Pt:</b> 178°F; 81°C <b>LEL/LFL:</b> Not available <b>UEL/UFL:</b> Not available <b>Vapor Density:</b> 3.72 <b>Vapor Pressure:</b> 1 mmHg @ 100-127°F; 38-53°C <b>Specific Gravity:</b> 1.030-1.038 <b>Incompatibilities:</b> Nitric acid, oleum, chlorosulfonic acid, oxidizers <b>Appearance and Odor:</b> Yellowish or colorless, flammable, oily liquid (often brownish because of impurities or oxidation)	Regulated based on effects on respiratory tract and skin irritation Other effects may include eye irritation and central nervous system, disturbances. Acute exposures may result in difficulty breathing, respiratory failure and skin and eye irritation and burns. Chronic exposure may damage the liver, kidneys, lungs and skin and cause photosensitivity.  IARC, NTP, NIOSH, ACGIH, and the EPA list some PAHs such as benzo(a)pyrene as a potential carcinogen (ARC 2A, NTP-2, ACGIH TLV-A2, NIOSH-X, EPA-B2).

## 6.2 PHYSICAL HAZARDS

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

- Heavy equipment hazards (pinch/compression points, rotating equipment, etc.).
- Slips, trips, and falls
- Energized systems (contact with underground or overhead utilities)
- Lifting (strain/muscle pulls)
- Noise in excess of 85 decibels (dBA)
- Inclement weather
- Flying projectiles
- Ambient temperature extremes (heat stress)
- Pinches and compressions
- 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. Specific discussions on some of these hazards are presented below.

### 6.2.1 Heavy Equipment Hazards (Pinch/Compression Points, Rotating Equipment, etc.)

Often the hazards associated with drilling operations are the most dangerous to be encountered during site activities. The SSO will thoroughly discuss safe drilling procedures during the pre-activities training session. The following rules will apply to drilling operations:

- Each rig must be equipped with emergency stop devices which will be tested daily to ensure that they are operational.
- Long handled shovels or equivalent shall be used to clear cuttings from the borehole and rotating equipment.
- The driller may not leave the controls when the augers are rotating.

### 6.2.2 Energized Systems (Contact with Underground or Overhead Utilities)

Underground utilities such as pressurized lines, water lines, telephone lines, buried utility lines, and high voltage power lines are known to be present throughout the facility. Clearance of underground and overhead

utilities for each sample location will be coordinated with NAS Whiting Field personnel. Jim Holland is the point-of-contact for utilities clearance and can be reached at (850) 623-7181, extension 149. Additionally, drilling operations will be conducted at a safe distance (>20 feet) from overhead power lines. Whenever underground utilities are suspected to be close to subsurface sampling locations, the borehole will be advanced to a minimum of 5 feet with a hand auger prior to drilling. As-built drawings may also be utilized for additional clarification. In certain cases, Base personnel may need to de-energize electrical cables using facility lockout/tagout procedures to insure electrical hazards are eliminated.

### **6.2.3 Ambient Temperature Extremes**

Overexposure to high ambient temperatures (heat stress) may exist during performance of this work depending on the project schedule. Extremely cold temperatures are not expected to be encountered due to project location. Work performed when ambient temperatures exceed 70°F may result in varying levels of heat stress (heat rash, heat cramps, heat exhaustion, and/or heat stroke) depending on variables such as wind speed, humidity, and percent sunshine, as well as physiological factors such as metabolic rate and skin moisture content. Additionally, workload and level of protective equipment will affect the degree of exposure. Site personnel will be encouraged to drink plenty of fluids to replace those lost through perspiration. Additional information such as Work-Rest Regimens and personnel monitoring may be found in Section 4.0 of the Guidance Manual. The SSO will recommend additional heat stress control measures as they are deemed necessary as per American Conference of Governmental Industrial Hygienists (ACGIH) guidelines.

## **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. In general, avoidance of areas of known infestation or growth will be the preferred exposure control for insects/animals and poisonous plants. Specific discussion on principle hazards of concern follows.

### **6.3.1 Insect/Animal Bites and Stings**

Various insects and animals may be present and should be considered. For example, fire ants present a unique situation when working outdoors in Florida. Their aggressive behavior and ability to sting repeatedly can pose a unique health threat. The sting injects venom 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 2 feet or more in height and diameter. When disturbed, they defend the nest 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 and other insects. 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. 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 United States 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.

### **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.

## 7.0 HAZARD 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 INSTRUMENTS AND USE

Instruments 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 or Flame Ionization Detector

In order to accurately monitor for any substances which may present an exposure potential to site personnel, a 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 has been selected because it is capable of detecting the organic vapors of concern (NOTE: A FID may be used as an alternative to 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, and 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 which 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 TiNUS Equipment Manager. Operational checks and field calibration will be performed on instruments each day prior to 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 employees health and safety training, the manufacturer's recommendations, and with the applicable manufacturer SOP (copies of which can be found in the Health and Safety Guidance Manual, which will be maintained on site for reference). 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 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 number, source concentration, supplier).
- Any relevant comments or remarks.



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

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

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

#### **8.1.1 Requirements for Field Personnel**

TtNUS and subcontractor personnel who will engage in field associated activities as described in this HASP must have completed the following:

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

Documentation of introductory training or equivalent work experience, supervisory, and refresher training as well as site-specific training will be maintained at the site. Copies of certificates or other official documentation will be used to fulfill this requirement and to track site personnel's training status. The SSO shall be responsible for insuring training qualifications through review of training documentation and for monitoring the status of on-site personnel to ensure during the course of this project site personnel do not cycle outside of their training compliance status. Documentation supporting training compliance and status shall be maintained at the project site and be made available, upon request.

Subcontractors may submit a letter similar to the one provided in Figure 8-1 along with copies of training certificates as proof of training.

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

TtNUS will provide site-specific training to TtNUS employees and subcontractor personnel who will perform work on this project.

Figure 8-2 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities. This training documentation will be employed to identify personnel who, through record review and attendance of the site-specific training, are cleared for participation in site activities. This document shall be posted to maintain an active list of cleared site personnel.

TtNUS will conduct a pre-activities training session prior to initiating site work. Additionally, a brief meeting will be held daily to discuss operations planned for that day. At the end of the workday, a short meeting may be held to discuss the operations completed and any problems encountered. This activity will be supported through the use of a Safe Work Permit System (see Section 10.10) and documented in the Project Logbook.

### **8.3 MEDICAL SURVEILLANCE**

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

TtNUS and subcontractor personnel participating in project field activities will have had a physical examination. Physical examinations shall meet the minimum requirements of paragraph (f) of OSHA 29 CFR 1910.120. The physical examinations will be performed to ensure personnel are medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained at the job site and made available, as necessary. Subcontractor personnel may use an alternative documentation for this purpose. The "Subcontractor Medical Approval Form" (see Figure 8-3) can be used to satisfy this requirement, or a letter from an officer of the company (see Figure 8-4).

The SSO shall be responsible for ensuring personnel participating in this project provide documentation regarding their medical qualifications. Personnel associated with this project will maintain a current status regarding medical surveillance as determined by OSHA 29 CFR 1910.120 (f) or the prescribed interval as determined by the Licensed Occupational Health Care Provider. Documentation supporting medical surveillance compliance and status shall be made available, upon request.

#### **8.3.2 Other Requirements 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 the Medical Data Sheet also supplied to eligible subcontractors as part of the Bid Specifications Package and is available in Attachment V of this HASP. This shall be provided to the SSO, prior to participating in site activities. The purpose of this document is to provide site

personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

#### **8.4 SUBCONTRACTOR EXCEPTION**

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

#### **8.5 SITE VISITORS**

Site visitor qualifications for access to the site while engaged in planned activities is addressed in Section 9.8 of this document. Site visitors must be escorted when in/near any TtNUS work site. Ensuring that proper escorting is accomplished is the FOL's responsibility. See section 9.5 for more information regarding site visitors.

**FIGURE 8-1**

**TRAINING LETTER**

The following statements must be typed on company letterhead, 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. Paul Calligan  
Task Order Manager  
Tetra Tech NUS, Inc.  
5421 Beaumont Center Boulevard  
Suite 660  
Tampa, Florida 33634

Subject: HAZWOPER Training for NAS Whiting Field, Milton, Florida

Dear Mr. Calligan:

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 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 an 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 hours 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)



**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 was found to be medically -  
  
 qualified to perform work at the NAS Whiting Field, Milton, Florida work site  
 Not qualified to perform work at the NAS Whiting Field, Milton, Florida work site and,
  
2. Undergone a physical examination in accordance with OSHA 29 CFR 1910.134(b)(10) and was 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 that 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 that 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 that 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 Whiting Field, Milton, Florida 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. Paul Calligan  
Task Order Manager  
Tetra Tech NUS, Inc.  
5421 Beaumont Center Boulevard  
Suite 660  
Tampa, Florida 33634

Subject: Medical Surveillance for NAS Whiting Field, Milton, Florida

Dear Mr. Calligan:

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: Final Rule." 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 licensed 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 Whiting Field, Milton, Florida site.

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)

## 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 the following 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 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. It is not anticipated that significant amounts of surface contamination are in the proposed work areas of this site. It is anticipated that this will remain so until/unless contaminants are brought to the surface by intrusive activities such as drilling and/or DPT operations. Furthermore, once such activities have been completed and surface contamination has been removed, the potential for exposure is again diminished and the area can then be reclassified as part of the Contamination Reduction Zone or support zone. Therefore, the Exclusion Zones for this project will be limited to those areas if the site where active work is being performed plus so many feet surrounding the point of operation. Exclusion Zones will be delineated in some manner. This manner may include using barrier tape, cones and /or drive poles, and postings to inform and direct facility personnel.

#### 9.1.1 Exclusion Zone Clearance

Exclusion zone boundaries are as follows:

HSA operations – the height of the mast plus 5 feet

DPT operations – the height of the fully extended mast plus 5 feet or 25 feet, whichever is greater

Groundwater sampling – 10 feet surrounding the well and discharge receptacle container

Soil sampling – 5 feet surrounding the point of operation

Decontamination – 15 feet surrounding the constructed pad

Decontamination with pressure washers/steam cleaners – 25 feet surrounding the point of operation

### 9.2 CONTAMINATION REDUCTION ZONE

The contamination reduction zone will be split to represent two separate functions. The first function will be a control/supply point for supporting exclusion zone activities. The second function, which may take place a sufficient distance from the exclusion zone, is the decontamination of personnel and heavy equipment.

In order to move from the exclusion zone to a separate location the following activities will be used:

- As samplers move from location to location during sampling activities, dedicated sampling devices and PPE will be removed, separated, and bagged. Personnel will use hygienic wipes, such as Handi-Wipes, as necessary to clean hands and face until they can access soap and water.
- Muddy over-boots and gloves may be required to go through a gross contamination wash at the exclusion zone or be bagged until they can be cleaned at a central decontamination location.
- Potentially contaminated tooling will be wrapped, when necessary, for transport to the decontamination area.
- Upon completion of the assigned tasks personnel will move through the central decontamination area to clean reusable PPE and field equipment.

### **9.3 SUPPORT ZONE**

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

### **9.4 SAFE WORK PERMITS**

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 provided in Figure 9-1. Partially completed permits for the work to be performed are included in Attachment IV. The daily meetings conducted at the site will further support these work permits. This effort will ensure site-specific considerations and changing conditions are incorporated into the planning effort, as well as, give personnel an opportunity to ask questions and make suggestions. Permits will require the signature of the FOL or 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.

Upon completion of the tasks for which the permit was assigned, the permit shall be turned into the FOL and/or the SSO.

**FIGURE 9-1  
SAFE WORK PERMIT**

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

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

**II. Primary Hazards:** Potential hazards associated with this task: \_\_\_\_\_

**III. Field Crew:** \_\_\_\_\_

**IV. On-site Inspection conducted**  Yes  No Initials of Inspector \_\_\_\_\_ TtNUS  
**Equipment Inspection required**  Yes  No Initials of Inspector \_\_\_\_\_ TtNUS

**V. Protective equipment required** **Respiratory equipment required**  
 Level D  Level B  Yes  Specify on the reverse  
 Level C  Level A  No   
 Modifications/Exceptions: \_\_\_\_\_

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

**Primary Route(s) of Exposure/Hazard:** \_\_\_\_\_

**(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)**

**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/Cellular Phone ..... <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 – Work ) ..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron ..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe work shoes or boots... <input type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers ..... <input type="checkbox"/> Yes <input type="checkbox"/> No
High Visibility vest ..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent ..... <input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher ..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Other ..... <input type="checkbox"/> Yes <input type="checkbox"/> No

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

**VIII. Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**IX. Additional Permits required** (Hot work, confined space entry, excavation etc.).....  Yes  No  
 If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

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

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

## 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 (Department of Defense, OSHA, Environmental Protection Agency, Florida Department of Environmental Protection, etc.).
- NAVFAC EFD SOUTH 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:

- 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.
- 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 NAVFAC EFD SOUTH personnel) and medical surveillance, as stipulated in Section 8.0 of this document, if they wish to enter operational zones during on-going activities. In addition, to enter the site's operational zones during planned activities, visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this document.

Site visitors will be permitted to enter the site and applicable operational areas. Visitors are required to observe the protective equipment and site restrictions in effect at the area of their visit. Incidences of unauthorized site visitation will cause on-site activities to be terminated until the visitor is 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 unauthorized visitors.

### 9.5.1 **Base Pass and Security**

TtNUS visitor and subcontractor access will be facilitated through the following mechanism. Persons requesting access to NAS Whiting Field will be required to submit the following information to the TOM, who will in turn pass the information to the NAS Whiting Field Point of Contact:

- Name: First, Middle, and Last
- Date of Birth
- Place of Birth
- Social Security Number
- Driver License Number

Mr. Jim Holland will notify the Base Access and Security personnel regarding the TtNUS personnel that will be working at the base. Upon arrival, visitor and/or subcontractor access to NAS Whiting Field will be facilitated through Base Pass and Security (near Main Gate).

If necessary, One-Day Visitor Passes or Contractor Decals will be issued at Base Pass and Security. The following information is required:

- Current Valid Vehicle Registration or Rental Agreement
- Valid Proof of Insurance or Rental Agreement
- Current Valid Drivers License

Failure to have these items available for review will result in denied access to NAS Whiting Field.

### 9.6 **SITE SECURITY**

Site security will be accomplished using TtNUS field personnel. TtNUS will retain complete control over active operational areas. As these activities will take place at a United States Naval facility, the first line of security will take place at the Main Gate. The second line of security will take place at the exclusion zone using exclusion zone barriers, signs, and other indicators to restrict direct the general public. The final 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 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 practice the "buddy system" to ensure the safety of personnel involved in this operation.

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

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

Based on the defined scope of work, it is anticipated that personnel will be working in close proximity to one another during field activities and a supported means of communication between field crew members, such as hand held radios, will not be necessary. External communication will be accomplished by using the telephones at predetermined and approved locations or through cellular phones.

## **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 IDW, such as decontamination fluids, soil cuttings, and purge and well development waters, in a central staging area. As needed, 55 gallon drums will be used to contain purge water, decontamination fluids, and soil cuttings generated during field activities. Once fluids and other materials have been characterized, they can be removed from this area and properly disposed. Because these fluids and soils remained uncharacterized while in the staging area, a spill containment program will be developed and instituted as part of this HASP.

### **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. It is anticipated that IDW generated as a result of this scope of work will be containerized, labeled, and staged to await further analyses. The results of this analysis 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 staging area will be conducted during working hours to visually determine that storage vessels are not leaking. If a liquid leak is detected, the contents will be transferred, using a hand pump, into a new vessel. The leak will be collected and contained using absorbents such as Oil-Dry, vermiculite, or sand, which are stored at the vulnerable areas in a conspicuously marked drum. Leaks of solid substances will be shoveled into an appropriate container. These materials will be containerized and secured for disposal pending analysis. Inspections will be documented in the project logbook.

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

Personnel will be instructed in the procedures for 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 will be maintained at the staging areas for the purpose of supporting this Spill Prevention/Containment Program.

- Sand, clean fill, vermiculite, or other non combustible absorbent (Oil-dry)
- Drums [55 gallon United States Department of Transportation (DOT) 17-E or 17-H]
- Shovels, rakes, and brooms
- Container labels

## **10.6 SPILL CONTROL PLAN**

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

- Notify the FOL or SSO immediately upon detection of a leak or spill.
- 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.
- 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.
- Re-containerize 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, however, notification of the appropriate Emergency Response agencies will be carried out by the FOL or SSO in accordance with the procedures discussed in Section 2.0 of this HASP.

## 11.0 CONFINED SPACE ENTRY

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

### **A confined space means a space that:**

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

### **A Permit-Required Confined Space is a confined space that:**

- 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.
- MSDSs for chemicals brought on-site, including decontamination solution(s), fuels, sample preservations, calibration gases, etc.
- A full size OSHA Job Safety and Health Poster (See Attachment XI).
- Training/Medical Surveillance Documentation Form (blank).
- Emergency Reference Form (Section 2.0, extra copies 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 chemicals brought on-site, including decontamination solutions, sample preservations, fuel, etc. This list should be posted in a central area. Copies are to be provided to the Base Contact upon request.

**MSDS (maintained)** - The MSDSs should also be in a central area accessible to site personnel. These documents should match the listings on the chemical inventory list for the substances brought 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 and 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. Reproductions or facsimiles of the poster are permitted as long as they are at least 8 1/2 by 14 inches with 10 point type.

**Site Clearance (maintained)** - This list is found within the training section of the HASP (see Figure 8-2). This list identifies site personnel, dates of training (including site-specific training), and medical surveillance. The list indicates not only clearance, but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities. In addition, TtNUS personnel will be required to be indicated on a Site Clearance Letter attesting to the training and medical surveillance status.

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

**Medical Data Sheets/Cards (maintained)** - Medical Data Sheets will be filled out by on site personnel and filed in a central location. The Medical Data Sheet (see Attachment IX) will accompany any injury or illness requiring medical attention to the medical facility.

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

**Placards and Labels (maintained)** - Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using 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
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
°C	Degrees Centigrade or Celsius
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-term Environmental Action Navy
CNS	Central Nervous System
CPT	Cone Penetrometer Technology
CTO	Contract Task Order
dBA	Decibel A-weighted scale
DOT	Department of Transportation
DPT	Direct Push Technology
eV	Electron Volts
°F	Degrees Fahrenheit
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
IDLH	Immediate Dangerous to Life or Health
IDW	Investigative Derived Waste
LEL/LFL	Lower Explosive Limit/Lower Flammable Limit
MIP	Membrane Interface Probe
MSDS	Material Safety Data Sheet
NAPL	Non-Aqueous Phase Liquid
NAS	Naval Air Station
NAVFAC EFD SOUTH	Southern Division, Naval Facilities Engineering Command
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicity Program
OSHA	Occupational Safety and Health Administration
PAHs	Polynuclear Aromatic Hydrocarbons
PEL	Permissible Exposure Limit
PHSO	Project Health and Safety Officer

PID	Photoionization Detector
ppm	Parts per Million
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
SOPs	Standard Operating Procedures
SSO	Site Health and Safety Officer
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TtNUS	Tetra Tech NUS, Inc.
TOM	Task Order Manager
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:**

- Stop work as needed to ensure no further harm is done.
- 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. Check with your office location or project health and safety plan for specific instructions.
- If incident involves an injury, illness, or 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 Duffy at (412) 921-8475, and the Corporate Health and Safety Manager, Matt Soltis at (412) 921-8912 within 24 hours of the injury. You will be required to complete an Injury/Illness Report. You may also be required to participate in a more detailed investigation with the Health Sciences Department.
- In the event of a serious near-miss incident, a "Serious Near Miss Report" (Form AR-2, available online at <https://go2.tetrattech.com> under "Departments", "Health and Safety", "Accident Reporting Procedures", hyperlink for "Serious Near Miss Report") must be completed and faxed to the Corporate Health and Safety Manager within 48 hours.
- If further medical treatment is needed, our insurance carrier, ACE, will provide information on the authorized providers customized to the location of the injured employee. You can find this information by accessing the website of ACE's claims handler, ESIS, at : [www.esis.com](http://www.esis.com). These providers are to be used for treatment of Worker's Compensation injuries subject to the laws of the state in which you work.

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

Contact your local Human Resources representative (Marilyn Duffy), Corporate Health and Safety Manager (Matt Soltis), 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 pay premiums on behalf of their employees. This program is based on a no-fault system, and benefits are provided for covered events as an exclusive remedy to the injured employee regardless of fault. The types 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 from the first day of work. All employees must follow the above injury/illness reporting procedures. If you are working out-of-state and away from your home office, you are still eligible for worker's compensation benefits.

Consultants, independent contractors, and employees of subcontractors and employees from temporary employment agencies 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.



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT

To: \_\_\_\_\_  
Subsidiary Health and Safety Representative

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

cc: \_\_\_\_\_  
Workers Compensation Administrator

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

Project name: \_\_\_\_\_

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

Project number: \_\_\_\_\_

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

Fax number: \_\_\_\_\_

**Information Regarding Injured or Ill Employee**

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

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

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

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

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

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

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

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

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

Social security number: \_\_\_\_\_

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

Time of Accident: \_\_\_\_\_ a.m.  p.m.

Time Employee Began Work: \_\_\_\_\_

Check if time cannot be determined

**Location of Incident**

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

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

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

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

**Information About the Incident**

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

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

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



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

**Information About the Incident (Continued)**

**What was the injury or illness?** Describe the part(s) of the body affected and how it was affected. Be more specific than "hurt," "pain," or "sore." Examples "Strained back"; "Chemical burn, right hand"; "Carpal tunnel syndrome, left wrist"

**Describe the Object or Substance that Directly Harmed the Employee:** Examples: "Concrete floor"; "Chlorine"; "Radial arm saw." If this question does not apply to the incident, write "Not applicable."

Did the employee die? Yes  No  Date of death: \_\_\_\_\_

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 report.**

**Witness** (Attach additional sheets for other witnesses.)

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

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

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

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

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

**Medical Treatment Required?**  Yes  No  First aid only

Name of physician or health care professional: \_\_\_\_\_

If treatment was provided away from the work site, provide the information below.

Facility name: \_\_\_\_\_

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

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

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

Was the employee treated in an emergency room?  Yes  No

Was the employee hospitalized over night as an in-patient?  Yes  No

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



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

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: \_\_\_\_\_

I have reviewed this investigation report and agree, to the best of my recollection, with its contents.

Printed Name of Injured Employee

Telephone Number

Signature of Injured Employee

Date

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

Title	Printed Name	Signature	Telephone Number	Date
Office Manager				
Project Manager				
Site Safety Coordinator or Office Health and Safety Representative				

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



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

To Be Completed by the Subsidiary Health and Safety Representative

Classification of Incident:

Injury  Illness

Result of Incident:

- First aid only
 Days away from work
 Remained at work but incident resulted in job transfer or work restriction
 Incident involved days away and job transfer or work restriction
 Medical treatment only

No. of days away from work \_\_\_\_\_

Date employee left work \_\_\_\_\_

Date employee returned to work \_\_\_\_\_

No. of days placed on restriction or job transfer: \_\_\_\_\_

OSHA Recordable Case Number \_\_\_\_\_

To Be Completed by Human Resources

Social security number: \_\_\_\_\_

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

Wage information: \$ \_\_\_\_\_ per  Hour  Day  Week  Month

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

Current position: \_\_\_\_\_ 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 Carrier

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

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

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

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

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

## **ATTACHMENT II**

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



TETRA TECH NUS, INC.

# STANDARD OPERATING PROCEDURES

Number	HS-1.0	Page	1 of 15
Effective Date	12/03	Revision	2
Applicability	Tetra Tech NUS, Inc.		
Prepared	Health & Safety		
Approved	D. Senovich <i>[Signature]</i>		

Subject  
UTILITY LOCATING AND EXCAVATION CLEARANCE

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## 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 this policy, to present the acceptable procedures pertaining to utility locating and excavation clearance activities, and to present requirements and restrictions relevant to these types of activities. This SOP must be reviewed by any employee potentially involved with underground or overhead utility locating and avoidance activities.

## 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 and avoidance of contact with 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 initiation of any such activities on a specific project. This SOP is not intended to provide a detailed description of methodology and instrument operation. Specialized expertise during both planning and execution of several of the methods presented 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.

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#### 4.0 RESPONSIBILITIES

Project Manager (PM)/Task Order Manager (TOM) - Responsible for ensuring that all field activities are conducted in accordance with this procedure.

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. 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 and this SOP.

Site Personnel – Responsible for performing their work activities in accordance with this SOP and the TtNUS Health and Safety 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. This procedure must be followed prior to beginning any subsurface probing or 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

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locations shall be added to project maps upon completion of this exercise and returned to the PM/TOM.

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 safe and effective methods such as passive and intrusive surveys, or the use of non-conductive hand tools. Also, in situations where such hand tools are used, they should always be used in conjunction with suitable detection equipment, such as the items described in Section 6.0 of this SOP. Each method has advantages and disadvantages including complexity, applicability, and price. It also should be noted that in some 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 using a device such as a tile probe which is made of non-conductive material such as fiberglass. 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.

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## 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 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

A variety of supplemental utility locating approaches are available and can be applied when additional assurance is needed. The selection of the appropriate method(s) to employ is site-specific and should be tailored to the anticipated conditions, site and project constraints, and personnel capabilities.

### 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.

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## **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.

## **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

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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 Excavation**

When the identification and location of underground utilities cannot be positively confirmed through document reviews and/or other methods, borings and excavations may be cleared via the use of non-conductive hand tools. This should always be done in conjunction with the use of detection equipment. This would be required for all locations where there is a potential to impact buried utilities. The minimum hand-excavation depth that must be reached is to be determined considering the geographical location of the work site. This approach recognizes that the 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 excavation depths must be at least to the frost line depth (see Attachment 2) plus two (2) feet, but never less than 4 feet below ground surface (bgs). For hand excavation, the hole created must be reamed large enough to be 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 excavation. It is important to note that a post-hole digger must not be used in this type of hand excavation activity.

### **Tile Probe Surveys**

For some soil types, site conditions, and excavation requirements, non-conductive tile probes may be used. A tile probe is a "T"-handled rod of varying lengths that can be pushed into the soil to determine if any obstructions exist at that location. Tile probes constructed of fiberglass or other nonconductive material are readily-available from numerous vendors. Tile probes must be performed to the same depth requirements as previously specified. As with other types of hand excavating activities, the use of a non-conductive tile probe, should always be in conjunction with suitable utility locating detection equipment.

## **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 surface 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. Implement supplemental utility detection techniques as necessary and appropriate to conform utility locations or the absence thereof.

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5. 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

OSHA Letter of Interpretation, Mr. Joseph Caldwell, Attachment 4  
 OSHA 29 CFR 1926(b)(2)  
 OSHA 29 CFR 1926(b)(3)  
 TtNUS Utility Locating and Clearance Policy  
 TtNUS SOP GH-3.1; Resistivity and Electromagnetic Induction  
 TtNUS SOP GH-3.2; Magnetic and Metal Detection Surveys  
 TtNUS SOP GH-3.4; Ground-penetrating Radar Surveys

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



**American Public Works Association**  
2345 Grand Boulevard, Suite 500, Kansas City, MO 64108-2625  
Phone (816) 472-6100 • Fax (816) 472-1610  
Web www.apwa.net • E-mail apwa@apwa.net

**ONE-CALL SYSTEMS INTERNATIONAL  
CONDENSED DIRECTORY**

- |  |   |  |
|--|---|--|
| <p><b>Alabama</b><br/>Alabama One-Call<br/>1-800-292-8525</p> <p><b>Alaska</b><br/>Locate Call Center of Alaska, Inc.<br/>1-800-478-3121</p> <p><b>Arizona</b><br/>Arizona Blue Stake<br/>1-800-762-5348</p> <p><b>Arkansas</b><br/>Arkansas One Call System, Inc.<br/>1-800-482-8998</p> <p><b>California</b><br/>Underground Service Alert North<br/>1-800-227-2600<br/>Underground Service Alert of Southern<br/>California<br/>1-800-227-2600</p> <p><b>Colorado</b><br/>Utility Notification Center of Colorado<br/>1-800-922-1987</p> <p><b>Connecticut</b><br/>Call Before You Dig<br/>1-800-922-4456</p> <p><b>Delaware</b><br/>Miss Utility of Delmarva<br/>1-800-282-8555</p> <p><b>Florida</b><br/>Sunshine State One-Call of Florida, Inc.<br/>1-800-432-4770</p> <p><b>Georgia</b><br/>Underground Protection Center, Inc.<br/>1-800-282-7411</p> <p><b>Hawaii</b><br/>Underground Service Alert North<br/>1-800-227-2600</p> <p><b>Idaho</b><br/>Dig Line Inc.<br/>1-800-342-1585<br/>Kootenai County One-Call<br/>1-800-428-4950<br/>Shoshone - Benewah One-Call<br/>1-800-398-3285</p> <p><b>Illinois</b><br/>JULIE, Inc.<br/>1-800-892-0123<br/>Digger (Chicago Utility Alert Network)<br/>312-744-7000</p> <p><b>Indiana</b><br/>Indiana Underground Plant Protection<br/>Service<br/>1-800-382-5544</p> | <p><b>Iowa</b><br/>Iowa One-Call<br/>1-800-292-8989</p> <p><b>Kansas</b><br/>Kansas One-Call System, Inc.<br/>1-800-344-7233</p> <p><b>Kentucky</b><br/>Kentucky Underground Protection Inc.<br/>1-800-752-6007</p> <p><b>Louisiana</b><br/>Louisiana One Call System, Inc.<br/>1-800-272-3020</p> <p><b>Maine</b><br/>Dig Safe System, Inc.<br/>1-888-344-7233</p> <p><b>Maryland</b><br/>Miss Utility<br/>1-800-257-7777<br/>Miss Utility of Delmarva<br/>1-800-282-8555</p> <p><b>Massachusetts</b><br/>Dig Safe System, Inc.<br/>1-888-344-7233</p> <p><b>Michigan</b><br/>Miss Dig System, Inc.<br/>1-800-482-7171</p> <p><b>Minnesota</b><br/>Gopher State One Call<br/>1-800-252-1168</p> <p><b>Mississippi</b><br/>Mississippi One-Call System, Inc.<br/>1-800-227-6477</p> <p><b>Missouri</b><br/>Missouri One-Call System, Inc.<br/>1-800-344-7483</p> <p><b>Montana</b><br/>Utilities Underground Protection Center<br/>1-800-424-5555<br/>Montana One Call Center<br/>1-800-551-8344</p> <p><b>Nebraska</b><br/>Diggers Hotline of Nebraska<br/>1-800-331-5668</p> <p><b>Nevada</b><br/>Underground Service Alert North<br/>1-800-227-2600</p> <p><b>New Hampshire</b><br/>Dig Safe System, Inc.<br/>1-888-344-7233</p> | <p><b>New Jersey</b><br/>New Jersey One Call<br/>1-800-272-1000</p> <p><b>New Mexico</b><br/>New Mexico One Call System, Inc.<br/>1-800-321-2537<br/>Las Cruces- Dona Ana Blue Stakes<br/>1-888-526-0400</p> <p><b>New York</b><br/>Dig Safely New York<br/>1-800-862-7962<br/>New York City- Long Island One Call<br/>Center<br/>1-800-272-4480</p> <p><b>North Carolina</b><br/>The North Carolina One-Call Center,<br/>Inc.<br/>1-800-632-4949</p> <p><b>North Dakota</b><br/>North Dakota One-Call<br/>1-800-795-0555</p> <p><b>Ohio</b><br/>Ohio Utilities Protection Service<br/>1-800-362-2764<br/>Oil &amp; Gas Producers Underground<br/>Protect'n Svc<br/>1-800-925-0988</p> <p><b>Oklahoma</b><br/>Call Okie<br/>1-800-522-6543</p> <p><b>Oregon</b><br/>Oregon Utility Notification Center/One<br/>Call Concepts<br/>1-800-332-2344</p> <p><b>Pennsylvania</b><br/>Pennsylvania One Call System, Inc.<br/>1-800-242-1776</p> <p><b>Rhode Island</b><br/>Dig Safe System, Inc.<br/>1-888-344-7233</p> <p><b>South Carolina</b><br/>Palmetto Utility Protection Service Inc.<br/>1-888-721-7877</p> <p><b>South Dakota</b><br/>South Dakota One Call<br/>1-800-781-7474</p> <p><b>Tennessee</b><br/>Tennessee One-Call System, Inc.<br/>1-800-351-1111</p> |
|--|---|--|

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**ATTACHMENT 1 (Continued)**

**Texas**  
Texas One Call System  
1-800-245-4545  
Texas Excavation Safety System, Inc.  
1-800-344-8377  
Lone Star Notification Center  
1-800-669-8344

**Utah**  
Blue Stakes of Utah  
1-800-662-4111

**Vermont**  
Dig Safe System, Inc.  
1-888-344-7233

**Virginia**  
Miss Utility of Virginia  
1-800-552-7001  
Miss Utility (Northern Virginia)  
1-800-257-7777

**Washington**  
Utilities Underground Location Center  
1-800-424-5555  
Northwest Utility Notification Center  
1-800-553-4344  
Inland Empire Utility Coordinating  
Council  
509-456-8000

**West Virginia**  
Miss Utility of West Virginia, Inc.  
1-800-245-4848

**Wisconsin**  
Diggers Hotline, Inc.  
1-800-242-8511

**Wyoming**  
Wyoming One-Call System, Inc.  
1-800-348-1030  
Call Before You Dig of Wyoming  
1-800-849-2476

**District of Columbia**  
Miss Utility  
1-800-257-7777

**Alberta**  
Alberta One-Call Corporation  
1-800-242-3447

**British Columbia**  
BC One Call  
1-800-474-6886

**Ontario**  
Ontario One-Call System  
1-800-400-2255

**Quebec**  
Info-Excavation  
1-800-663-9228



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**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 excavation performed (with concurrent use of utility  
 detection device)? yes no N/A  
 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

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**ATTACHMENT 4  
OSHA LETTER OF INTERPRETATION**

Mr. Joseph Caldwell  
Consultant  
Governmental Liaison  
Pipeline Safety Regulations  
211 Wilson Boulevard  
Suite 700  
Arlington, Virginia 22201

Re: Use of hydro-vacuum or non-conductive hand tools to locate underground utilities.

Dear Mr. Caldwell:

In a letter dated July 7, 2003, we responded to your inquiry of September 18, 2002, regarding the use of hydro-vacuum equipment to locate underground utilities by excavation. After our letter to you was posted on the OSHA website, we received numerous inquiries that make it apparent that aspects of our July 7 letter are being misunderstood. In addition, a number of industry stakeholders, including the National Utility Contractors Association (NUCA), have provided new information regarding equipment that is available for this work.

To clarify these issues, we are withdrawing our July 7 letter and issuing this replacement response to your inquiry.

*Question: Section 1926.651 contains several requirements that relate to the safety of employees engaged in excavation work. Specifically, paragraphs (b)(2) and (b)(3) relate in part to the safety of the means used to locate underground utility installations that, if damaged during an uncovering operation, could pose serious hazards to employees.*

*Under these provisions, what constitutes an acceptable method of uncovering underground utility lines, and further, would the use of hydro-vacuum excavation be acceptable under the standard?*

**Answer**

Background

Two sections of 29 CFR 1926 Subpart P (Excavations), 1926.651(Specific excavation requirements), govern methods for uncovering underground utility installations. Specifically, paragraph (b)(2) states:

When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours \* \* \* or cannot establish the exact location of these installations, the employer may proceed, provided the employer does so with caution, and provided detection equipment or other acceptable means to locate utility installations are used. (emphasis added).

Paragraph (b)(3) provides:

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When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means. (emphasis added).

Therefore, "acceptable means" must be used where the location of the underground utilities have not been identified by the utility companies and detection equipment is not used.

Subpart P does not contain a definition of either "other acceptable means" or "safe and acceptable means." The preambles to both the proposed rule and the final rule discussed the rationale behind the wording at issue. For example, the preamble to the proposed rule, 52 Fed. Reg. 12301 (April 15, 1987), noted that a 1972 version of this standard contained language that specified "careful probing or hand digging" as the means to uncover utilities. The preamble then noted that an amendment to the 1972 standard later deleted that language "to allow other, *equally effective means* of locating such installations." The preamble continued that in the 1987 proposed rule, OSHA again proposed using language in section (b)(3) that would provide another example of an acceptable method of uncovering utilities that could be used where the utilities have not been marked and detection equipment is not being used – "probing with hand-held tools." This method was rejected in the final version of 29 CFR 1926. As OSHA explained in the preamble to the final rule, 54 Fed. Reg. 45916 (October 31, 1989):

OSHA received two comments \* \* \* and input from ACCSH [OSHA's Advisory Committee on Construction Safety and Health] \* \* \* on this provision. All commenters recommended dropping 'such as probing with hand-held tools' from the proposed provision, because this could create a hazard to employees by damaging the installation or its insulation.

In other words, the commenters objected to the use of hand tools being used unless detection equipment was used in conjunction with them. OSHA then concluded its discussion relative to this provision by agreeing with the commentators and ultimately not including any examples of "acceptable means" in the final provision.

Non-conductive hand tools are permitted

This raises the question of whether the standard permits the use of hand tools alone -- without also using detection equipment. NUCA and other industry stakeholders have recently informed us that non-conductive hand tools that are appropriate to be used to locate underground utilities are now commonly available.

Such tools, such as a "shooter" (which has a non-conductive handle and a snub nose) and non-conductive or insulated probes were not discussed in the rulemaking. Since they were not considered at that time, they were not part of the class of equipment that was thought to be unsafe for this purpose. Therefore, we conclude that the use of these types of hand tools, when used with appropriate caution, is an "acceptable means" for locating underground utilities.

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**ATTACHMENT 4 (Continued)**

Hydro-vacuum excavation

It is our understanding that some hydro-vacuum excavation equipment can be adjusted to use a minimum amount of water and suction pressure. When appropriately adjusted so that the equipment will not damage underground utilities (especially utilities that are particularly vulnerable to damage, such as electrical lines), use of such equipment would be considered a "acceptable means" of locating underground utilities. However, if the equipment cannot be sufficiently adjusted, then this method would not be acceptable under the standard.

Other technologies

We are not suggesting that these are the only devices that would be "acceptable means" under the standard. Industry stakeholders have informed us that there are other types of special excavation equipment designed for safely locating utilities as well.

We apologize for any confusion our July 7 letter may have caused. If you have further concerns or questions, please feel free to contact us again by fax at: U.S. Department of Labor, OSHA, Directorate of Construction, Office of Construction Standards and Compliance Assistance, fax # 202-693-1689. You can also contact us by mail at the above office, Room N3468, 200 Constitution Avenue, N.W., Washington, D.C. 20210, although there will be a delay in our receiving correspondence by mail.

Sincerely,

Russell B. Swanson, Director  
Directorate of Construction

*NOTE:* OSHA requirements are set by statute, standards and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA's interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at <http://www.osha.gov>.

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

**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? _____	<input type="checkbox"/>	<input type="checkbox"/>
_____		
- Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? _____	<input type="checkbox"/>	<input type="checkbox"/>
_____		

**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**

- |   | <b>Yes</b>               | <b>No</b>                |
|---|--------------------------|--------------------------|
| - 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:     Yes             No \_\_\_\_\_

Site Safety Officer Signature

## **ATTACHMENT IV**

## **SAFE WORK PERMITS**

**SAFE WORK PERMIT**  
**MOBILIZATION AND DEMOBILIZATION**  
**NAVAL AIR STATION WHITING FIELD,**  
**MILTON, FLORIDA**

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

- I. **Work limited to the following (description, area, equipment used):** Mob/Demob
- II. **Primary Hazards:** Potential hazards associated with this task: lifting; pinches and compressions; slip, trip and falls; vehicular and foot traffic; ambient temperature extremes; insect and animal bites, and inclement weather
- III. **Field Crew:** \_\_\_\_\_
- IV. **On-site Inspection conducted**  Yes  No Initials of Inspector TtNUS  
**Equipment Inspection required**  Yes  No Initials of Inspector TtNUS

- V. **Protective equipment required** **Respiratory equipment required**
- Level D  Level B  Yes  Specify on the reverse  
Level C  Level A  No
- Modifications/Exceptions: \_\_\_\_\_

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
<u>None expected during this task</u>	_____	_____	_____
_____	_____	_____	_____

Primary Route(s) of Exposure/Hazard: NA

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

- 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 checked="" type="checkbox"/> No |
| Chemical/splash goggles .....     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio/Cellular Phone .....            | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| Splash shield .....               | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades .....                      | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash suits/coveralls .....      | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Gloves (Type – Work ) .....           | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| Impermeable apron .....           | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Work/rest regimen.....                | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| Steel toe work shoes or boots ... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Chemical resistant boot covers .....  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| High visibility vest .....        | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Tape up/use insect repellent .....    | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| First Aid Kit .....               | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Fire extinguisher .....               | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| Safety Shower/Eyewash.....        | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Other .....                           | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
- Modifications/Exceptions: \_\_\_\_\_

- VIII. **Site Preparation**
- |  | Yes                      | No                       | NA                       |
|--|--------------------------|--------------------------|--------------------------|
| Utility Locating and Excavation Clearance completed.....                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place .... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Identified and Isolated (Splash and containment barriers) .....           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.).....  Yes  No  
*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

- X. **Special instructions, precautions:** Use safe lifting/carrying techniques. Use additional PPE based on the hazards that are associated with each task. Use work gloves when cutting boxes or handling sharp tools/cutting devices. Safety glasses will be required whenever eye hazards are present. Reflective vests will be used when working near roadways or areas of operating vehicles/equipment. Identify/remove potential physical hazards and mark areas or hazards that cannot be removed. Keep work area free of ground clutter.

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

**SAFE WORK PERMIT**  
**SOIL BORING; MONITORING WELL INSTALLATION AND CPT WITH MIP**  
**NAVAL AIR STATION WHITING FIELD,**  
**MILTON, FLORIDA**

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

I. **Work limited to the following (description, area, equipment used):** Soil Boring; Monitoring Well installation and Cone Penetrometer Technology (CPT) with MIP

II. **Primary Hazards:** Potential hazards associated with this task: chemical exposure; transfer of contamination; heavy equipment hazards; noise; energized systems; lifting; slip, trip and fall; cuts and lacerations; vehicular and foot traffic; insect/animal bites, inclement weather

III. **Field Crew:** \_\_\_\_\_

IV. **On-site Inspection conducted**  Yes  No Initials of Inspector TtNUS  
**Equipment Inspection required**  Yes  No Initials of Inspector TtNUS

V. **Protective equipment required**

Level D  Level B   
 Level C  Level A

**Respiratory equipment required**

Yes  Specify on the reverse  
 No

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

VI. **Chemicals of Concern**

VOCs (BETX) JP-4 or 5  
PAH methylnaphthalene

**Hazard Monitoring**

PID w/ 10.6 eV lamp or  
FID

**Action Level(s)**

sustained readings(> 1 minute)  
above 10ppm

**Response Measures**

evacuate area until  
readings return to  
background

Primary Route(s) of Exposure/Hazard: inhalation

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat.....  Yes  No  
 Safety Glasses .....  Yes  No  
 Chemical/splash goggles .....  Yes  No  
 Splash shield .....  Yes  No  
 Splash suits/coveralls .....  Yes  No  
 Impermeable apron .....  Yes  No  
 Steel toe work shoes or boots ...  Yes  No  
 High visibility vest .....  Yes  No  
 First Aid Kit .....  Yes  No  
 Safety Shower/Eyewash.....  Yes  No

Hearing Protection (Plugs/Muffs).....  Yes  No  
 Safety belt/harness.....  Yes  No  
 Radio/Cellular Phone .....  Yes  No  
 Barricades .....  Yes  No  
 Gloves (Type – nitrile/work ).....  Yes  No  
 Work/rest regimen.....  Yes  No  
 Chemical resistant boot covers .....  Yes  No  
 Tape up/use insect repellent .....  Yes  No  
 Fire extinguisher.....  Yes  No  
 Other .....  Yes  No

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

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place ....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.) .....  Yes  No  
*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

X. **Special instructions, precautions:** Use safe lifting/carrying techniques. Inspect equipment prior to use. Ensure emergency stop devices are functional and test daily.

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

**SAFE WORK PERMIT**  
**MULTI MEDIA SAMPLING AND WELL DEVELOPMENT**  
**NAVAL AIR STATION WHITING FIELD,**  
**MILTON, FLORIDA**

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

I. **Work limited to the following (description, area, equipment used):** Multimedia sampling including soils, groundwater and IDW

II. **Primary Hazards:** Potential hazards associated with this task: chemicals; transfer of contamination; slips, trips and falls; lifting; strains and muscle pulls from manual lifting; animal and insect bites, and inclement weather

III. **Field Crew:** \_\_\_\_\_

IV. **On-site Inspection conducted**  Yes  No Initials of Inspector TtNUS  
**Equipment Inspection required**  Yes  No Initials of Inspector TtNUS

V. **Protective equipment required** **Respiratory equipment required**  
 Level D  Level B  Yes  Specify on the reverse  
 Level C  Level A  No   
 Modifications/Exceptions: \_\_\_\_\_

<b>VI. Chemicals of Concern</b>	<b>Hazard Monitoring</b>	<b>Action Level(s)</b>	<b>Response Measures</b>
<u>VOCs (BETX) JP-4 or 5</u>	<u>PID w/ 10.6 eV lamp or</u>	<u>Sustained readings(&gt; 1 minute)</u>	<u>evacuate area until</u>
<u>PAH methylanthalene</u>	<u>FID</u>	<u>above 10 ppm</u>	<u>readings return to background</u>

**Primary Route(s) of Exposure/Hazard:** absorption

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

**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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Safety Belt/Harness..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/Splash Goggles ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Radio/Cellular Phone ..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash Shield..... <input type="checkbox"/> Yes <input checked="" 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 – Nitrile)..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable Apron ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Work/rest regimen..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Steel Toe Work Shoes or Boots <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
High Visibility Vest..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Tape/Insect Repellent ..... <input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit ..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Other ..... <input type="checkbox"/> Yes <input type="checkbox"/> No

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

**VIII. Site Preparation**

Utility Locating and Excavation Clearance completed.....	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place ....	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers) .....	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input type="checkbox"/>

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.) .....  Yes  No  
*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

X. **Special instructions, precautions:** Use safe lifting/carrying techniques. Assume all media is contaminated and avoid contact through the use of safe work practices, PPE and decontamination.

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

**SAFE WORK PERMIT  
DECONTAMINATION  
NAVAL AIR STATION WHITING FIELD,  
MILTON, FLORIDA**

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

I. **Work limited to the following (description, area, equipment used):** Decontamination of the sampling and heavy equipment

II. **Primary Hazards:** Potential hazards associated with this task: chemical exposure including decon fluids; lifting; noise; flying projectiles; vehicle and foot traffic; falling hazards; slip, trip and fall; and inclement weather

III. **Field Crew:** \_\_\_\_\_

IV. **On-site Inspection conducted**  Yes  No Initials of Inspector TtNUS  
**Equipment Inspection required**  Yes  No Initials of Inspector TtNUS

V. **Protective equipment required**  Level D  Level B   
 Level C  Level A   
**Respiratory equipment required** Yes  Specify on the reverse  
No   
Modifications/Exceptions: \_\_\_\_\_

<b>VI. Chemicals of Concern</b>	<b>Hazard Monitoring</b>	<b>Action Level(s)</b>	<b>Response Measures</b>
<u>VOCs (BETX) JP-4 or 5</u>	<u>PID w/ 10.6 eV lamp or</u>	<u>Sustained readings(&gt; 1 minute)</u>	<u>evacuate area until</u>
<u>PAH methylnaphthalene</u>	<u>FID</u>	<u>above 10 ppm</u>	<u>readings return to background</u>

**Primary Route(s) of Exposure/Hazard:** absorption

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-Hat ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs)..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Safety Belt/Harness..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/Splash Goggles ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Radio/Cellular Phone ..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash Shield..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Barricades ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash Suits/Coveralls..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type – Nitrile)..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron ..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest Regimen ..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Steel Toe Work Shoes or Boots ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
High Visibility Vest..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Tape/Insect Repellent ..... <input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit ..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Other ..... <input type="checkbox"/> Yes <input type="checkbox"/> No

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

VIII. **Site Preparation**

Utility Locating and Excavation Clearance completed.....	Yes	No	NA
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place ....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.) .....  Yes  No  
*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

X. **Special instructions, precautions:** Review and follow the instructions on the MSDS for the decontamination fluids. Follow guidance in Table 5-1 for PPE for different decontamination tasks.

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

**SAFE WORK PERMIT**  
**GEOGRAPHIC LAND SURVEYING**  
**NAVAL AIR STATION WHITING FIELD,**  
**MILTON, FLORIDA**

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

I. Work limited to the following (description, area, equipment used): Geographic Land Survey

II. Primary Hazards: Potential hazards associated with this task: slip, trip and fall; vehicular and foot traffic hazards inclement weather; insect /animal bites or stings, poisonous plants, etc.

III. Field Crew: \_\_\_\_\_

IV. On-site Inspection conducted  Yes  No Initials of Inspector TtNUS  
 Equipment Inspection required  Yes  No Initials of Inspector TtNUS

V. Protective equipment required  Level D  Level B   
 Level C  Level A   
 Respiratory equipment required Yes  Specify on the reverse  
 No   
 Modifications/Exceptions: \_\_\_\_\_

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
<u>None expected during this task</u>	_____	_____	_____
_____	_____	_____	_____

Primary Route(s) of Exposure/Hazard: NA

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

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

Modifications/Exceptions: Snake chaps in high brush areas

VIII. Site Preparation

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place ....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.) .....  Yes  No  
 If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

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

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

**SAFE WORK PERMIT  
IDW MANAGEMENT  
NAVAL AIR STATION WHITING FIELD,  
MILTON, FLORIDA**

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

I. **Work limited to the following (description, area, equipment used):** IDW management, moving and storage

II. **Primary Hazards:** Potential hazards associated with this task: slip, trip and fall; vehicular and foot traffic; insect/animal bites or stings, poisonous plants; and inclement weather.

III. **Field Crew:** \_\_\_\_\_

IV. **On-site inspection conducted**  Yes  No Initials of Inspector TtNUS  
**Equipment inspection required**  Yes  No Initials of Inspector TtNUS

V. **Protective equipment required**  
 Level D  Level B   
 Level C  Level A

**Respiratory equipment required**  
 Yes  Specify on the reverse  
 No

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

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
<u>None expected during this task</u>	_____	_____	_____
_____	_____	_____	_____

Primary Route(s) of Exposure/Hazard: NA

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

**VII. Additional Safety Equipment/Procedures**

- |                                     |   |                                       |   |
|-------------------------------------|---|---------------------------------------|---|
| Hard-hat.....                       | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Hearing Protection (Plugs/Muffs)..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Safety Glasses .....                | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Safety belt/harness.....              | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles .....       | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio/Cellular Phone .....            | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| Splash Shield.....                  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades .....                      | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash suits/coveralls.....         | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Gloves (Type – work ) .....           | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Impermeable apron .....             | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Work/rest regimen.....                | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| Steel toe work shoes or boots ..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Chemical Resistant Boot Covers .....  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| High Visibility vest.....           | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Tape up/use insect repellent .....    | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| First Aid Kit .....                 | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Fire Extinguisher.....                | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Safety Shower/Eyewash.....          | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Other .....                           | <input type="checkbox"/> Yes <input type="checkbox"/> No            |

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

**VIII. Site Preparation**

- |  | Yes                      | No                       | NA                       |
|--|--------------------------|--------------------------|--------------------------|
| Utility Locating and Excavation Clearance completed.....                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place .... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Identified and Isolated (Splash and containment barriers) .....           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.).....  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.) .....  Yes  No  
*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

X. **Special instructions, precautions:** Inspect roll off boxes and drums used to store IDW prior to use. Cover IDW containers and roll off boxes to prevent unauthorized entry and filling with rain water. Do not over load. Disperse IDW evenly. Use proper lifting practices and obtain assistance when handling heavy drums.

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 a central location during the execution of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project **NAS – Whiting Field** \_\_\_\_\_

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