

**Health and Safety Plan**  
for  
**Soil Sampling For Treatability Study**  
at  
**Operable Unit 2 (OU2)**  
at  
**Portsmouth Naval Shipyard**  
Kittery, Maine



**Engineering Field Activity Northeast**  
**Naval Facilities Engineering Command**

**Number N62472-03-D-0057**  
**Contract Task Order (CTO) 0015**

November 2004



TETRA TECH NUS, INC.

**HEALTH AND SAFETY PLAN**  
**FOR**  
**SOIL SAMPLING FOR TREATABILITY STUDY**  
**AT**  
**OPERABLE UNIT 2 (OU2)**  
**AT**  
**PORTSMOUTH NAVAL SHIPYARD**  
**KITTERY, MAINE**  
**COMPREHENSIVE LONG-TERM**  
**ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:**  
**Engineering Field Activity Northeast**  
**Environmental Branch, Code 18**  
**Naval Facilities Engineering Command**  
**10 Industrial Highway, Mail Stop No. 82**  
**Lester, Pennsylvania 19113-2090**

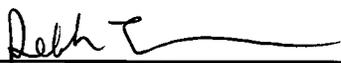
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**Contract Number N62472-03-D-0057**  
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## 1.0 INTRODUCTION

**Authorization:** This Health and Safety Plan (HASP) and the work described within are completed under the authorization of:

**Contract:** Comprehensive Long Term Environmental Action – Navy (CLEAN) – US Navy Engineering Field Activity Northeast (EFANE)

**Contract Number:** N62472-03-D-0057

**CTO:** 0015

**Proposed Work Dates:** Notice to Proceed October 2004 through December 2004 End of Field Activities.

**Application:** This Health and Safety Plan (HASP) encompass site activities that are to be conducted at the properties associated with Portsmouth Naval Shipyard (PNS), located in Kittery, Maine. Specifically, this HASP addresses the site assessment activities to be conducted at:

- Site 6 – the Defense Reutilization and Marketing Office (DRMO) Storage Yard;
- Site 29 – the Teepee Incinerator Site;

It is the intent and purpose of this HASP to provide project organization and responsibilities, as well as policy, procedures, safe work practices, and guidelines necessary to protect site workers, and the general population from chemical, physical, and biological hazards that may be associated with the planned site activities. It is through the execution of the elements defined within this HASP that efforts will be directed to minimize potential incidents and associated injury.

Site activities to be conducted at PNS under CTO 0015 include the following:

- Mobilization/demobilization
- Test Pit Excavation
- Subsurface Soil sampling (1-10 feet composite sampling)
- Equipment (Heavy and sampling) decontamination
- Investigation Derived Waste (IDW) handling and disposal

Additional information regarding these activities can be found in Section 4.0 of this HASP.

**Compliance:** The elements of this HASP are intended to be in compliance with the requirements established by:

- OSHA 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response" (HAZWOPER)
- Applicable sections of 29 CFR 1926 "Safety and Health Regulations For Construction."
- Tetra Tech NUS Health and Safety Program
- PNS Facility Requirements, where applicable.

This HASP must be accompanied by the Tetra Tech NUS, Inc. Health and Safety Guidance Manual (TtNUS HSGM). The Guidance Manual provides additional information on program support, standard operating procedures, and safe work practices.

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

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

- The TtNUS PM is responsible for the overall direction of health and safety for this project.
- The Project Health and Safety Officer (PHSO) is responsible for developing this HASP in accordance with internal (Tetra Tech NUS, Inc. Health and Safety Program) and external requirements (Federal and State Regulatory requirements) indicated above.
- The TtNUS Field Operations Leader (FOL) is responsible for implementation of the HASP with the assistance of an appointed Site Health and Safety Officer (SHSO). The FOL manages field activities, executes the work plan, and enforces safety procedures as applicable to the work plan.
- The SHSO supports site activities by advising the FOL on aspects of health and safety on site. These duties may include:
  - i. Coordinates health and safety activities with the FOL.

- ii. Selects, applies, inspects, and maintains personal protective equipment.
  - iii. Establishes work zones and control points in areas of operation.
  - iv. Implements air monitoring program for onsite activities.
  - v. Verifies training and medical clearance of onsite personnel status in relation to site activities.
  - vi. Implements Hazard Communication, Respiratory Protection Programs, and other associated health and safety programs as they may apply to site activities.
  - vii. Coordinates emergency services.
  - viii. Provides site-specific training for onsite personnel.
  - ix. Investigates accidents and injuries (see Attachment I – Illness/Injury Procedure and Report Form)
  - x. Provides input to the PHSO regarding the need to modify this HASP, or applicable health and safety associated documents as per site-specific requirements.
- Compliance with the requirements stipulated in this HASP is monitored by the SSO and coordinated through the TtNUS HSM.

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

## 1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

**Site Name:** Portsmouth Naval Shipyard  
Kittery, Maine

**Client Contact:** Marty Raymond  
**Phone Number:** (207) 438-2536

**U.S. Navy Remedial  
Project Manager (RPM):** Mr. Fred Evans

**Phone Number:** (610) 595-0567ext 159

### Project Team:

<b>TtNUS Personnel:</b>	<b>Discipline/Tasks Assigned:</b>	<b>Phone Number/E-mail</b>
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### Non-TtNUS Personnel Affiliation/Discipline/Tasks Assigned

TBD Excavation Contractor

Hazard Assessment (for purpose of 29 CFR 1910.132) for HASP preparation has been conducted by:  
Thomas M. Dickson, CSP / Donald J. Westerhoff, CSP (Revision 1)

## 2.0 EMERGENCY ACTION PLAN

### 2.1 INTRODUCTION

This section of the HASP is part of a planning effort to direct and guide field personnel in the event of an emergency. The first measure in accomplishing this objective is to define an emergency.

**An emergency as defined in 1910.120 as:**

*An occurrence or condition that can or has resulted in an uncontrolled release of a hazardous substance or potential safety hazard (i.e., fire, explosion, chemical exposure) associated with that release.*

**An incidental release as defined in 1910.120 as:**

*The releases of a hazardous substance that can be absorbed, neutralized, or otherwise controlled and will not result in potential safety hazard (i.e., fire, explosion, chemical exposure) are not considered emergency responses.*

Based these definitions, TtNUS will provide initial incident response measures for incidents such as:

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

Incidents and conditions above this level of participation are and will be considered emergencies. The FOL and/or the SHSO will make this determination if events are considered beyond the capabilities of field personnel and above available resources to provide emergency response safely. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders in the event of an emergency. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time.

This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(I)(1)(ii).

## 2.2 EMERGENCY PLANNING – RECOGNITION AND PREVENTION

As part of the planning effort, an initial hazard/risk assessment was conducted to identify potential emergency scenarios/conditions associated with planned site activities. Based on this hazard/risk assessment there is very minor potential for injury or illnesses resulting from exposure to chemical, physical, or other hazards, and subsequently little likelihood of emergency situations.

It is recognized that during subsurface investigative measures that the following conditions could result in an emergency situation:

**Potential Emergency:** Damaging an underground utility; contacting energized systems; struck by operating equipment; falling into an open excavation.

**Planned Control Measure:** To avoid contacting an underground utility as well as an energized system

**Utility location and clearance** - will be conducted in accordance with facility, Dig Safe System, Inc. (1-888-344-7233), and TtNUS Utility Locating and Excavation Clearance procedures.

**Avoiding overhead power lines** - Clearance (full swing radius of the boom) will be maintained from overhead power sources at least 20-feet unless the energy source is shielded or locked out. A reduced clearance distances may only be established with the approval of the PHSO and/or the HSM

**Emergency contacts for on-site maintenance facilities** - (plumbing, electric, communications, etc.) will be maintained at the site should an underground utility be accidentally encountered.

**Heavy equipment restriction** - To avoid snagging underground utilities, the bucket on the excavator will be equipped with a sand bar or have the teeth removed. Passive detection methods as stipulated in Attachment II will be conducted to the estimated frost line as the test pit proceeds. It is estimated that this depth will be 10 feet in depth.

**Struck by** - To avoid being struck by the excavator during the excavation, personnel will maintain a minimum distance of the fully extended boom plus 5-feet. This distance will be demarcated using pin flags or other visual indication. If persons step inside this boundary, the excavator operator is directed to stop digging until they remove themselves or are removed.

**Traffic Patterns in and around the dig areas** – Traffic for heavy equipment and pedestrians shall be separated by flow patterns. Heavy equipment (excavator, dump trucks, etc.) shall be routed in a singular direction to minimize backing, U-turns and other maneuvers that could result in an accident. A demarcation area shall be placed in plain view, so personnel recognize the extent of the swing pattern of the excavator and shall be directed to stand clear. No operation shall permit the swing of the bucket over persons, when engaged in loading or positioning of the equipment.

**Falling into the open excavation** – The following control measures shall be instituted to protect against the potential for persons or equipment to fall in an open excavation where equipment or structural supports have been removed. The control measures employed will be as follows:

- Excavation openings greater than 4-feet in depth, shall have physical barriers placed surrounding the opening when not physically blocked by equipment to protect persons from approaching closer than 2 feet to the opening.
- Traffic control blocks shall be placed to prevent trucks and other (than the excavator digging) heavy equipment from approaching closer than 5-feet to the open excavation.
- Excavations will be physically barricaded at times when left unattended or be covered. This shall include suitable railing or fence to control access; and posting or blinking emergency warning lights placed on the four sides.
- Close attention shall be paid surrounding the operating excavator for signs of excavation wall collapse. Indications shall include sloughing or undermining of the ground surrounding the point of operation; horizontal cracks that appear approximately  $\frac{3}{4}$  of the depth in the distance feet back from the edge will be an indication of this condition. Crane pads or suitable footing support will be used to minimize surface pressure of the working excavator, where necessary, if there is concern of excavation collapse. This condition will be most predominant when the excavation width is wider than the base of the excavator. The soils in this area are anticipated to qualify as Class C soils due to instability and pre-disposal to slide/slough. This condition also may be further impacted by the depth of the water table further affecting excavation stability.
- Entry into the excavations greater than 4-feet will be strictly prohibited without approval of a “Competent Person” and adequate shielding and/or sloping of the excavation.

**Unearthing an Unknown Drum/Container** – The possibility exists that an unidentified container could be unearthed during this process. Should a container be unearthed the following contingencies shall be instituted:

- Notify the PM, HSM, and the Facility Contact.
- Provide site security until directed by the Project Management
- Section 11.0 in the HSGM provides direction for gathering information from intact containers should field personnel be directed to do so.

Personnel are not to move and/or open intact containers. Provisions to do this would require this HASP to be modified.

**General Planned Control Measure - Site Surveys** - As part of early recognition the FOL and/or the SHSO will conduct the following activities:

- An initial site walk through will be conducted prior to the commitment of personnel or equipment. The purpose of this walk through will be to:
  - Examine the site for conditions that may predispose field personnel to potential hazards including:
    - The existence of overhead power sources near where the Excavator will operate.
    - Surface monuments indicating underground utilities in the area (manhole covers, valve boxes, etc.).
    - Areas that may require alterations of traffic patterns or scheduling when the work will be conducted.
    - Physical hazards within the work area.
- Periodic operations surveys – The FOL and/or the SHSO will conduct these surveys for the purpose of:
  - Ensuring field personnel are following protective measures specified within the HASP (specifically Table 5-1 and the Safe Work Permit).
  - Review the initial hazard assessments to insure they reflect the hazards as it may pertain to site specific conditions.

- Prepare for emergencies. This includes staging emergency equipment, adequate site control measures, identifying site personnel who will engage incidental response measures and reviewing what measures will be taken and when and prior to declaring an emergency. In addition, utility contacts will be readily available should a utility be accidentally contacted.

These surveys should be documented within the project logbook. The results of these surveys are not to be disciplinary in nature however identify areas of need improvement, where applicable. The results of these surveys are to be discussed with the field personnel. Results should also be forwarded to the PHSO with any recommendations from the field.

In addition, to further minimize or eliminate potential emergency situations, pre-emergency planning activities associated with this project shall be implemented. The FOL and/or the SHSO are responsible for:

- Establish and maintain information at the project staging area (support zone) for easy access in the event of an emergency. This information will include the following:
  - Chemical Inventory (of chemicals used onsite), with Material Safety Data Sheets.
  - Onsite personnel medical records (Medical Data Sheets).
  - A log book identifying personnel onsite each day.
  - Hospital route maps with directions (these should also be placed in each site vehicle).
  - Emergency Notification – phone numbers.
- Identifying a chain of command for emergency action. The chain of command is as follows:
  - For other emergencies the FOL/SHSO will serve as the Incident Commander until responding Emergency Services arrive.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible. This will be accomplished through:
  - Site-specific training reviewing the contents of the HASP and tasks to be conducted prior to the commencement of onsite activities.

- Periodic Safety Briefings to go over the contents of the Safe Work Permits and the results of the site and operational surveys.
- Providing the necessary equipment to safely accomplish identified tasks.

**Onsite personnel** - As part of this effort, site personnel will be responsible for reporting hazardous situations and/or conditions to the FOL/SHSO. Where potential hazards exist, TtNUS will initiate control measures to prevent adverse effects to human health and the environment.

For additional control measures regarding these physical hazards, see Section 6.2 Physical Hazards, Table 5-1 Test Pit Excavation, and Section 9.0 Site Control for identified control measures to minimize or eliminate these hazards.

## **2.3 SAFE DISTANCES AND PLACES OF REFUGE/EMERGENCY ALERTING**

In the event of an incident, personnel will engage identified resources necessary to prevent the condition/situation from becoming an emergency. Use the following Emergency Action Notification Procedures:

### **2.3.1 Utility Contact or Damage**

**Electrical** – If contact is made, it is important not to contact the ground surface and the excavator at the same time. If possible, extract the bucket and boom, cease operations, contact the electrical department, provide security surrounding the excavation until the power source can be de-energized and repaired.

**Gas** – Immediately shut down operations; eliminate ignition sources; Contact 911 and the plumbing department; move to designated assembly point; conduct a head count.

**Plumbing (Water/Sanitary/Storm); Communication** - Immediately shut down operations; Contact the plumbing department; provide perimeter security until the authorities arrive; move to designated assembly point; conduct a head count.

### **2.3.2 Fire and/or Spill**

If fire/spill situation is judged to be greater than just incidental, do not attempt any response other than immediate evacuation/notification of proper response authorities.

- Incidental spills <55 gallons. Incidental fires – apparent that can be extinguished with one portable fire extinguisher for incidental fires/spills, the following procedures are authorized.
- Engage defensive measures, employ fire extinguishers or spill containment, as appropriate to control the release and/or fire.
- Notify the FOL and/or the SHSO by verbal or radio communication regarding any incident or near incident.
- Using members of the field crew, establish site security measures to restrict access to the area.
- If the situation is controlled, the FOL and/or the SHSO will begin the Incident Investigation to determine cause and effect. Information will be gathered and incorporated on The Incident Report Form (Section 1.0 of the Health and Safety Guidance Manual) and provided to the HSM, PM, and the PHSO.

### **2.3.3 Injury**

Follow provisions specified in Section 2.8 of this HASP.

- If the injury requires more than basic first aid response, the FOL and/or SHSO will enact emergency notification procedures to secure additional assistance in the following manner:
- Dial (207) 438-2555 (or 2555 from a base phone) and provide
  - the location of the emergency
  - the type of emergency
  - the number of injured
  - brief description of the incident
- Stay on the phone and follow the instructions given by the emergency responder.
- If necessary, call other pertinent emergency contacts listed in Table 2-1

**Note:** Incidents and near incidents are to be reported to the PHSO, HSM, and PM. The PM will then notify the Facility Contact.

#### **2.3.4 Critical Operations**

There are no operations being conducted under this scope of work that are considered critical and would require an individual or individuals to staff during an emergency. Therefore in the event of an emergency personnel will cease operations and follow the instructions above.

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

Given the nature of site activities, chemical hazards or emergencies associated with exposure to chemical hazards are not anticipated. However, in the event of a site evacuation, appropriate decontamination procedures (removal of grossly contaminated coveralls or clothing) will be performed provided they do not further jeopardize the welfare of site workers.

#### **2.4.1 Medical Data Sheet**

In support of medical treatment, personnel will be required to complete a Medical Data Sheet. Information to be contained on this Medical Data Sheet shall include any pertinent information regarding allergies to medications, current medications or restrictions, or other special conditions. The intent of this sheet is to provide information to medical services personnel in the event the employee is incapacitated. This information will permit medical services personnel to render more timely and effective treatment. A copy of the Medical Data Sheet may be found in Section 1.8.6 of the Health and Safety Guidance Manual and is also available within Attachment III.

#### **2.4.2 Non-Life Threatening Medical Incident (Bruises, Cuts, Scrapes, Etc.)**

For non-life threatening medical incidents, site workers will use general first aid measures concurrent with the level of training that has been received. Injuries requiring a greater degree of medical attention will be handled by on-site emergency services or will be referred to nearby hospitals/medical centers (Portsmouth Regional Hospital).

#### **2.4.3 Life Threatening Injuries**

It has been determined that life-threatening injuries will be best handled by on-site emergency services (Portsmouth Naval Shipyard police, fire, and ambulance) services.

### **First Aid Procedures:**

- Engage Emergency Notification Sequence, Notify off-site response agencies.
- If it will not endanger the injured individual (i.e., spinal cord injury, etc.) remove any outer PPE or clothing containing gross contamination. Removal may require the use of bandage scissors to remove the outer garments. If back or head injuries are suspected, do not move injured person, notify on-site emergency services.
- Begin life saving techniques as appropriate [first aid, Cardio Pulmonary Resuscitation (CPR), cooling or warming regimens, etc.].
- Wrap the injured in a blanket for transport to the hospital.
- Follow instructions provided in Section 1.9.1 of the Health and Safety Guidance Manual.

**Note:** When feasible, one person from the field team will accompany the injured to the hospital with the medical data sheet, MSDSs (if chemical contamination), a copy of this HASP, and incident forms (see Section 2.6). This person will collect the information required and pass it along to the HSM, PM, and Work Care (see Incident Response Protocol in Attachment I and Emergency Response Protocol in Figure 2-1). These items may also be found in Sections 1.9.1 and Section 1.9.2 of the Health and Safety Guidance Manual. Other personnel will engage site control/site security measures.

#### **2.4.4 Emergency Medical Treatment Protective Measures**

TtNUS and subcontractor personnel will not provide emergency response support beyond the capabilities of onsite personnel. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. The following protective measures will apply when providing First-Aid:

Emergency medical treatment will be provided using universal precautions and other safe work practices consistent with Bloodborne Pathogen training as stipulated in 29 CFR 1910.1030.

Site workers will take necessary precautions to prevent direct contact with the injured person's body fluids. This may be accomplished through the employment of the following measures:

- Use surgeons gloves when handling cuts, abrasions, bites, punctures, etc. or any part of the injured person. The use of safety glasses and surgeons masks maybe necessary if there is the potential for uncontrolled spread of body fluids. The PHSO will be immediately notified in event that personnel providing emergency first-aid has come into contact with body fluids or other potentially infectious tissues.
- Should CPR be required, use a CPR Micro-Shield mouthpiece or a resuscitation bag when administering CPR to prevent contact with the injured person's body fluids.

In order to engage these protective measures the FOL and/or shall ensure that these items are part of their first-aid kit.

#### **2.4.5 PPE and Emergency Equipment**

**First-Aid Kit** – The SHSO will determine the minimum number of units necessary to insure the units are immediately available for personnel. The first aid kits will meet the requirements of ANSI 308 for a standard Industrial First Aid Kit (it will indicate it meets this requirement on the kit). As indicated in Section 2.4.3 the first aid kit will also have:

- Surgeons Gloves
- Surgeons Mask
- Safety Glasses
- CPR Pocket mask

**Eye Wash Units** – Portable eye wash units with eyewash solution will be readily (immediately) available to personnel handling sample containers with preservative, containers of natural attenuation reagents, and during well construction activities.

**Fire Extinguisher** - Fire extinguishers ABC Combination units will be maintained during any refueling operation or handling of flammable liquids, and hot work operations. The units must be readily available for use in the event of an emergency.

## **2.5 EMERGENCY CONTACTS**

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

- PNS Point of Contact Marty Raymond, as well as the PM and HSM will be notified anytime outside response agencies are contacted.

## **2.6 INJURY/ILLNESS REPORTING**

Figure 2-1 will permit the immediate medical management of non-serious and serious events concerning potential overexposure to chemical contaminants and injury and illnesses that occur in the performance of one's duties. In addition to this protocol, the TtNUS "Injury/Illness Procedure" (Attachment I) must also be completed. Following this procedure is necessary for documenting the information obtained at the time of the incident. The form (AR-1) must be completed within 24-hours of medical treatment and submitted to Matt Soltis and Marilyn Duffy documenting the treatment protocol. Failure to do so may result in complications and/or delays in receiving workers compensation and/or compensation for costs accumulated for prescription medicine.

**TABLE 2-1  
EMERGENCY REFERENCE  
PORTSMOUTH NAVAL SHIPYARD**

AGENCY	TELEPHONE NUMBER
Police (Shipyards)	(207) 438-2444*
Fire Department (Shipyards)	(207) 438-2333*
Ambulance (Shipyards)	(207) 438-2555*
Hospital: Portsmouth Regional Hospital Emergency Department	(603) 433-4042
Poison Control Center:	(800) 222-1222
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8202
Dig Safe (Maine and New Hampshire)	(888) 344-7233
Base Contact: Marty Raymond	(207) 438-2536
TtNUS Project Manager Deborah Cohen, PE	(412) 921-7118
TtNUS Task Manager J.P. Pradeep Kumar, PE	(412) 921-8825
TtNUS Project Health and Safety Officer Tom Dickson	(412) 921-8457
CLEAN Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912

\*Phone calls from Base phones use last 4 digits.

## 2.7 EMERGENCY ROUTE TO HOSPITAL

Full Route



Destination



- 1) Exit the Shipyard through Gate No. 1, continue straight until road ends at Route 1 Bypass.
- 2) Enter underpass rotary on left side. Go under Route 1 Bypass and loop onto Route 1 Bypass South.
- 3) Cross bridge and continue straight to traffic circle. At traffic circle, go around to the right 270 degrees, 3/4 circle from entrance to traffic circle. Exit right.
- 4) At second set of traffic lights, turn right onto Borthwick Ave. Ext. proceed 1/2 to 1 mile.

## FIGURE 2-1 EMERGENCY RESPONSE PROTOCOL

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

In the event of a personnel injury or accident:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems – breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this HASP by suitable and appropriate conveyance (i.e. ambulance for serious events)
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- If the injured person is a Tetra Tech NUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. WorkCare physicians will monitor the care of the victim. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 enter Extension 109, or follow the voice prompt for after hours and weekend notification, 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) at 1-800-245-2730.

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

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

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

**FIGURE 2-1 (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**

PNS is a military facility with restricted access located on an island in the Piscataqua River. PNS is referred to on National Oceanic and Atmospheric Administration (NOAA) nautical charts as Seavey Island, with the eastern tip given the name Jamaica Island. Attached by a rock causeway is Clark's Island. The Piscataqua River is a tidal estuary that forms the southern boundary between Maine and New Hampshire. PNS is located in Kittery, Maine, north of Portsmouth, New Hampshire, at the mouth of the Great Bay Estuary (commonly referred to as Portsmouth Harbor).

PNS is engaged in the conversion, overhaul, and repair of submarines for the Navy. The long history of shipbuilding in Portsmouth Harbor dates back to 1690, when the first warship launched in North America, the Falkland, was built. PNS was established as a government facility in 1800, and it served as a repair and building facility for ships during the Civil War. The first government-built submarine was designed and constructed at PNS during World War I. A large number of submarines have been designed, constructed, and repaired at this facility since 1917. PNS continues to service submarines as its primary military focus.

Years of shipbuilding and submarine repair work at PNS have resulted in the release of hazardous constituents into the soils, groundwater, surface water, and sediment on and around Seavey Island. As a result, investigations and remedial activities have been performed under the Department of Defense (DOD) Installation Restoration Program (IRP). The IRP is designed to identify contamination of DOD facilities and lands resulting from past operations, to investigate the extent and severity of contamination, and to institute corrective measures. The IR Program parallels CERCLA and is further discussed in the Site Management Plan (SMP) for PNS.

#### **3.1 OU2 DESCRIPTION AND HISTORY**

OU2 consists of Site 6 Defense Reutilization Marketing Office (DRMO) and Site 29 (former Teepee Incinerator). The DRMO Impact Area, in which Quarters S, N, and 68 are located, is also included in OU2 because this area was thought to be impacted by particulate deposition from the DRMO. OU2 is located in the south central portion of PNS.

##### **3.1.1 Site 6 - DRMO**

The DRMO was established in 1920. It was originally known as Henderson's Point, named after a portion of land that protruded 350 feet into the Piscataqua River. The point was excavated in 1905 to widen the

channel to allow naval vessels access to the Shipyard. The excavated fill was deposited along the shore of the Shipyard, adjacent to the point. This area has been referred to as Henderson's Point ever since.

The DRMO is approximately 2 acres and has served multiple purposes from a stone crusher facility to its current use as a temporary storage area for refuse prior to off-site recycling or disposal. The DRMO has been used for temporary storage since approximately 1960. Most of the DRMO is situated on filled land. Previous visual inspection indicated ponding of precipitation in some areas and direct runoff to the Piscataqua River in other areas. The practices, such as open storage of batteries, which could cause contaminants to be leached or otherwise released by pathways such as infiltration or runoff, were terminated approximately in 1983.

Most of the DRMO is situated on filled land on the southern side of Seavey Island directly bordering the Piscataqua River. Site 6 is relatively flat, not varying from an average elevation of 110 feet. Interim corrective measures in 1993 corrected previous problems with ponding of precipitation in some areas and direct runoff to the Piscataqua River in other areas. Most of the fenced surface area of the DRMO is now covered by asphalt or a clay/concrete cap. Sources of contaminants, such as open storage of batteries, which could cause contaminants to be leached or otherwise released by pathways such as infiltration or runoff, were terminated in approximately 1983. The area is still used as a DRMO, responsible for the reuse, transfer, donation, sale, or disposal of excess and surplus DOD property in New England. No onsite treatment, storage, or disposal of hazardous materials occurs at the DRMO.

In 1993, interim corrective measures were conducted at the DRMO. The interim measures included the capping and paving of sections of the DRMO, installation of storm water controls, and installation of a new concrete curb. The cap consists of 12 inches of compacted, crushed stone aggregate stabilized with Portland cement, two layers of 16-ounce non-woven needled-punched geotextile, and a geocomposite clay liner (GCL). An area on the northwest side of the DRMO was paved with two inches of asphalt.

Periodic shoreline inspections were conducted at the DRMO and in the summer of 1999, erosion was discovered along the shoreline of the Piscataqua River adjacent to the DRMO. The existing embankment rock had sloughed, exposing lead contaminated soil from the DRMO and so in July 1999, eight surface soil samples of the eroding soil were collected. In October 1999, the exposed soil was covered with hydromulch as an interim erosion control measure until the slope stabilization could be conducted. An emergency removal action under CERCLA was implemented to protect human health and the environment from a release of lead contamination. Keel blocks and other materials from the shoreline slope were removed and the bank was regraded with existing rock. Pea gravel was placed over existing soil and a geotextile liner was placed over this. The geotextile was covered with a layer of coarser stone then a layer of armor stone for wave action protection. A curb and fence were also installed.

### **3.1.2 Site 29 - Teepee Incinerator**

The area described as the Teepee Incinerator was at one time considered part of the DRMO. The site encompasses the area of a former open burning area and a former industrial incinerator (Teepee Incinerator) and ash disposal area. The first reported activity at Site 29 began in 1918 with open burning of shipyard refuse during interruptions of the shipyard crematory. The open burning area was reportedly used for the purpose of burning shipyard solid waste and a dumping area for residual waste (i.e., paper, wood, and rubbish). Open burning continued at Site 29 until the construction of the Teepee Incinerator at the site in 1965. Approximately 75,000 cubic yards of refuse were burned annually in open fires prior to construction of the incinerator.

The incinerator was a teepee-type steel frame with a metal-covered refuse burner, complete with top catwalk, access ladder, steel inner liner, entrance and clean-out doors, forced draft blowers and piping, stainless-steel fire screen and foundation, and bucket slip rails. It was located near the boundary of fill and natural material in the vicinity of Building 314. It had a diameter of approximately 67.5 feet and a height of approximately 72.5 feet. The Teepee Incinerator was used primarily for disposal of wood, paper, and rubbish with occasional burning of cans of paint and solvents. In 1971 it was reported that approximately 1,150 cubic yards of combustible waste were burned a week at the incinerator. Ash from the incinerator was deposited south of the incinerator until 1971 when the residue began to be landfilled in the Jamaica Island Landfill (Site 8) and the Kittery municipal landfill. The incinerator ceased operations in 1975.

Site 29 includes the area surrounding Buildings 310 and 314 along the southern shoreline of PNS. The site slopes gently south to the Piscataqua River from the base of a steep bedrock outcrop, which has approximately 20 to 30 feet of relief, to the north and east of the site. Two buildings, 310 and 314, were located on the site. The former pesticide handling building (Building 314) was a modern facility constructed in 1982 and operated by two State of Maine certified pest control personnel. Operations ceased at Building 314 in March 1995 when pesticide control services were contracted out by the Shipyard. Between 1982 and March 1995, Building 314 was used to store small quantities of pesticides prior to mixing for use at the Shipyard. Any expired or unusable pesticides and herbicides were disposed of through the Shipyard's hazardous waste facility. No waste was stored in this building. There were no floor drains within the building; however, there was a lavatory within the building which was connected to the sanitary sewer. There was also a catch basin equipped with a "flap valve", located in the apron outside the building to the garage that was used as a containment basin in the event there was a spill. There is no record of any spills at or near Building 314. The building was demolished in December 1998. The area around the buildings is grassy and asphalt pavement exists from Buildings 310 and 314 and Building 298, west of the site.

## 4.0 SCOPE OF WORK

This section describes the project tasks that will be performed at PNS as part of this scope. Additionally, each task has been evaluated and the associated hazards and recommended control measures are listed in Table 5-1 of this HASP.

The following is a list of activities that are covered in this HASP for the contamination assessment to be conducted under CTO 0015.

- Mobilization/demobilization
- Test pitting activity – five test pits are to be dug as part of this investigation.
- Decontamination of sampling and heavy equipment
- IDW management

Any tasks to be conducted outside of the elements listed here will be considered a change in scope requiring modification of this document. The PM or a designated representative will submit the requested modifications to this document to the HSM.

## 5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES SUMMARY

This section of the HASP is intended to provide hazard assessment and hazard control information derived as it pertains to the tasks to be performed.

Table 5-1 is intended to provide a one page/task summary to permit quick referencing of information as it pertains to the task-specific hazards and identified control measures.

Safe Work Permits will be issued for site activities (See Section 9.4). Table 5-1 will be employed as the Safe Work Permit's primary reference. The FOL and/or the SHSO completing the Safe Work Permit will add additional site-specific information.

The following information represents the hazard assessment (identifying the potential hazard) of the tasks to be conducted as part of this field effort. See Table 5-1 for the recommended control measures as they may pertain to these hazards.

### 5.1 MOBILIZATION/DEMOBILIZATION

This task includes, but not limited to, the following:

- The procurement and shipping/unpacking of equipment, and materials for the field investigation.
- Review of project planning documents (i.e., HASP, Sampling and Analysis Plan, Work Plan, Quality Assurance Plan, etc.)
- Site reconnaissance to include site characterization, site preparation, the layout of sampling locations and to secure the necessary utility clearances and isolate physical hazards.
- Secure, construct, and equip decontamination and IDW storage facilities.

**Physical Hazards** – These hazards are considered the primary site hazards – Lifting, strains/sprains, lacerations achieved during unpacking of equipment and during site preparation (i.e., cutting open boxes, lifting equipment, locating sample points).

**Chemical Hazards** - It is not anticipated that personnel will be exposed to chemical contamination as part of this task. However, certain chemicals will be brought on-site to support field activities. These hazards will be addressed through the implementation of a Site-specific Hazard Communication Program (See Section 5.0 of the HSGM).

**Natural Hazards** – These hazards are considered low to moderate as the areas of investigation are considered light industrial areas that area regularly maintained (grass cut, regular traffic, paved/concrete areas, etc.) as indicated by the FOL.

## 5.2 EXCAVATING TEST PITS

The excavation of the test pits will proceed in the following manner:

- The test pits will be excavated in 2-foot deep increments to a total depth of 10-feet. The spoils from each 2-foot interval will be mixed using the excavator bucket and placed in a pile (on plastic) separated from the other depth increments.
- From these five separate piles, an excavator bucket of soils from each pile will then be placed in a composite pile from which a composite/analytical sample (estimated 5-gallons) will be collected to be used in the treatability study.
- Once steps 1 and 2 are completed, the spoils will be returned to the test pit within each spoil interval returned to the depth from which they were excavated. As the intervals are returned they will be compacted using the excavator bucket to reduce settling. See Section 9.1 concerning site restoration.

**Physical hazards** associated with this activity - See Section 2.2 Pre-Planning Emergency Recognition and Prevention of this HASP.

**Chemical hazards** associated with this activity – The predominant chemical contamination is particulate form or will adhere to particulates. Air monitoring, area wetting as necessary, PPE, and good work hygiene practices will serve as the primary mechanisms to prevent exposure through inhalation, ingestion, and contact.

**Natural hazards** associated with this activity – See Section 5.3 Composite/Analytical Soil Sampling.

### 5.3 COMPOSITE/ANALYTICAL SOIL SAMPLING

It is anticipated that composite/analytical soil sampling will occur during the test pitting activity. Soil sampling plan is as follows:

- A bucket from each depth interval will be added to a sixth composite pile and mixed. Once mixing is complete, the bucket will be placed on the ground, and the controls of the excavator disengaged.
- The sampler will move up to the composite pile and collect the composite and analytical sample within a 5-gallon bucket.

**Physical hazards** associated with this activity - See Section 2.2 Pre-Planning Emergency Recognition and Prevention of this HASP.

**Chemical hazards** associated with this activity – The predominant chemical contamination is particulate form or will adhere to particulates. Air monitoring, area wetting as necessary, PPE, and good work hygiene practices will serve as the primary mechanisms to prevent exposure through inhalation, ingestion, and contact.

**Natural hazards** associated with this activity – This is a light industrial and residential area. There are a number of factors supporting a reduced threat of natural hazards, these include:

- Based on the time of the year (autumn/winter – nesting and hibernation periods),
- The areas are regularly maintained and the activity level is fairly high (grasses cut, etc.) Because of the regular disruptions and activity levels, conditions such as this are not suitable for nesting in this area.

Therefore, no natural hazards such as insects, spiders, snakes, mosquitoes, ticks, etc. are anticipated.

### 5.4 DECONTAMINATION

The equipment involved in the field activities for test pit excavation and sampling will be decontaminated prior to, during and after the completion of on-site activities.

#### 5.4.1 Heavy Equipment

Heavy equipment decontamination will be accomplished using a pressure washer and/or steam cleaner within an established temporary decontamination pad. Procedural steps are as follows:

- Remove gross (visible) materials using scrapers, shovels as necessary (soils, etc.)
- Use the pressure washer/steam cleaner remove remaining visible debris.
- As necessary, follow up with scrub brushes with Alconox or Liquinox detergent wash.
- Potable water rinse using pressure washer/steam cleaner as necessary
- Visual examination to insure cleanliness.

#### 5.4.2 Sampling Equipment

Non-dedicated sampling equipment (i.e. stainless-steel hand augers, trowels, bowls, split spoons, etc.) will be decontaminated prior to the initiation of field sampling, between sample locations, and at the completion of the field activities. The following decontamination steps will be taken:

- Remove heavy materials (soils, etc.)
- Alconox or Liquinox detergent wash
- Potable water rinse
- Solvent rinse (Isopropanol)
- DI water rinse
- Air dry
- Scan/screen articles using the PID to ensure removal of contaminants and decontamination solvents.

Dedicated sampling and PPE equipment will be rinse to remove gross contamination and then disposed of as general refuse.

**Physical Hazards** associated with this activity include:

- Water cuts/lacerations/burns – This is the primary and most severe hazard associated with this activity. Pressure washers operating at 3000 psi are sufficient to cause water lacerations of unprotected skin. Steam cleaners operating at much lower temperatures, not only has the capabilities of causing water lacerations but also burns due to the high water temperatures. Two years ago an individual using a steam cleaner place the tip of the cleaning wand on the top of his boot and accidentally engaged the trigger. The elevated temperatures in conjunction with the operating water

pressure cut through the top of the individuals work boot resulting in severe burns. This single split second action cut through a leather work boot.

- Noise – Operating level of the pressure washer/steam cleaners typically operate at 94-97 dBA when engaged.

**Chemical Hazards** associated with this activity include:

- Exposure to contaminated media
- Exposure to decontamination solvents

**Natural hazards** associated with this activity - None anticipated.

## 5.5 WASTE MANAGEMENT

This task includes the containerization, labeling, staging, monitoring, and final deposition of investigative derived wastes. These are as follows:

- Containerization – Materials generated will include decontamination fluids shall be collected and containerized in 55-gallon drums and staged in a centralized location.
- Labeling –Containers will be labeled as to their contents. The labels will include the following information:
  - Site
  - Job Number
  - Location (Operable Unit or Site)
  - Date – To be completed once filling the container begins
  - Drum # - Assign an inventory number to be added to a comprehensive log
  - Contents – Description
  - Volume – Final volume
  - Contact – This person should be available on base. To this end an up-dated inventory should be provided at the close of each shift to this person.
  - Emergency Number – Contact person provided above

- Staging –Drums will be staged on pallets (4 to a pallet) with lid retention ring bolt accessible on the outside as well as the label. Pallet rows will maintain a minimum of 4 feet between rows for access and monitoring for leaks. Containers will be separated according to media and site.
- Monitoring – During staging site personnel will examine containers to ensure they are not leaking.
- Final Deposition – Waste materials will be separated as determined through sampling and disposed of through pre-determined routes.

**Physical Hazards** associated with this Waste Management activity include:

- Caught between pinches and compressions. This occurs primarily when moving containers to transport vehicles and when staging the drums on pallets. The prevalent hazard is recognized when moving the drums and hands get caught between drums.
- Lifting – Drums of water can weigh upwards of 475 lbs. Drums of wet soil can weigh up to 750 lbs.

**Chemical Hazards** associated with this activity are considered negligible unless there is a spill from these closed containers.

**Natural hazards** associated with this activity:

None anticipated.

For more detailed description of the associated tasks, refer to the Work Plan (WP) and/or the Quality Assurance Plan (QAP). The above listing represents a summarization of the tasks as they apply to the scope and application of this HASP.

## **5.6 GENERAL SAFE WORK PRACTICES**

In addition to the task-specific work practices identified on Table 5-1, the follow these safe work practices when conducting work involving known and unknown site hazards. These safe work practices establish a pattern of general precautions and measures for reducing risks associated with hazardous site operations.

- Eating, drinking, chewing gum or tobacco, taking medication, or smoking in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists is prohibited.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. A thorough shower and washing must be conducted as soon as possible if excessive skin contamination occurs.
- 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.
- Remove beards or facial hair that interfere with a satisfactory qualitative respirator fit test or routine pre-entry positive and negative pressure checks.
- Be familiar with and adhere to instructions in the 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” whenever respiratory protection equipment is in use. Establish hand signals or other means of emergency communication in case two-way radio failure.
- 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 Site Health and Safety Officer (SHSO).
- Matches and lighters are restricted from entering in the Exclusion Zone or Contamination Reduction Zone.
- 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.

## **5.7 EXCAVATION – GENERAL SAFE WORK PRACTICES**

### **5.7.1 Before Excavation Activities**

- Identify underground utilities and buried structures before the commencement of any excavation activities. The procedure is as follows:
  - A request is submitted for location clearance to Ms. Marty Raymond (207) 438-2536. She shall arrange for Dig Safe System, Inc. (888) 344-7233 or the selected contractor/facility group to perform the utility clearance.
  - Provide any drawings/maps to illustrate the areas that will be subjected to the investigation. Often times intersections, building numbers, or other location identifiers can be provided. It is best to provide as much assistance as possible.
  - Provisions to accommodate the clearance procedure are provided in the Tetra Tech NUS, Inc. Utility Locating and Excavation Clearance Standard Operating Procedure provided in Attachment II.
  - Typical timeline for marking and providing clearances for commercial one call is 48-hrs. A ticket or ticket number will be provided referring to your clearance. This will have a timeline, generally 14-days. Problems sometime arise when site personnel allow tickets to expire, then accidentally encounter a utility. Tickets must be maintained valid by requesting a re-issue or extension, prior to expiration. Facility provided timelines vary from 10 to 14 days to confirm clearance.

- The FOL is responsible for ensuring that utility locations/marks on the ground are maintained so they remain visible (repaint, pin flags, etc.), and to annotate maps with these locations so they may be incorporated into the EGIS system.
- When marks are placed on the ground and are cleared, there is only a limited leeway (2-feet) to deviate from the marked locations.
- Utility clearance also provides for overhead clearance. This includes an evaluation of the intended swing patterns of excavators. This ensures they are not nearing any overhead power lines. A minimum clearance of 20 feet at any point of the swing must be maintained from overhead power lines unless positive control of the energy source is obtained. See Attachment II for additional information.
- Excavation boundaries will be demarcated with appropriated signage warning of construction activities in progress. Signs shall be used also for informational purposes as well to direct personnel, to indicate PPE requirements.
- Heavy equipment will be subjected to an equipment inspection, upon arrival on-site and prior to leaving. This inspection will be recorded on the Equipment Inspection Checklist provided in Attachment IV of this HASP.
- Establish traffic patterns for foot and small vehicular traffic out of the pattern for heavy equipment.
- Traffic patterns for heavy equipment will be constructed to maintain traffic flow a minimum of 10-feet from unsupported walls (excavation boundaries)
  - **Note:** The OSHA Standard (29 CFR 1926 Subpart P) stipulates 2 feet distance from unsupported walls for resource staging. However, a maintenance distance of 10-feet will be maintained to facilitate staging of the spoils as well as monitoring the excavation for potential collapse. This distance has been selected based on the intended depth of the excavation.
- Ground personnel will be provided with reflective vests to increase visibility and air horns to signal heavy equipment during operation.
- The swing radius of a fully extended boom plus 5-feet will be demarcated using Pin flags or some other visual indicator so personnel are aware of the restricted area.

### **5.7.2 During Excavation Activities**

- Ground activities shall be supported with the use of a designated ground spotter control the actions of the heavy equipment. The operators will be instructed, they are to follow only the instructions provided by the ground spotter, unless another party is otherwise authorized.
- It is not anticipated that personnel will enter any excavation as part of this scope. However, should there be a necessity to enter an excavation greater than four feet in total depth, this plan will require modification to address OSHA 29 CFR 1926 Subpart P requirements.
- Access to excavations deeper than four feet or trenches shall be denied unless approved by a Competent Person in accordance with OSHA 29 CFR 1926 Subpart P requirements.
- Support functions (sampling and screening stations) will be maintained a minimum distance from the excavator and swing pattern of the fully extended boom plus 5-feet.
- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of test pitting.
- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone. Site visitors will be escorted.
- Maintain a ladder on-site during excavation activities should there be a need to extract someone who has fallen into the excavation.

### **5.7.3 After Excavation Activities**

- Control points for excavations to be left open and unattended shall be secured in the off hours. Low intensity blinking lights shall demarcate the boundaries of the excavation after dark.
- For excavations greater than four feet in depth at least two means of exiting shall be provided (ladders, earthen ramps, etc.) in the event that someone mistakenly or intentionally bypasses the control restrictions.
- Equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the FOL and/or the SHSO to determined cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.

- Areas subjected to subsurface investigative methods will be restored to equal or better condition than original to remove any contamination brought to the surface and to remove any physical hazards. In situations where these hazards cannot be removed these areas will be barricaded to minimize the impact on field crews working in the area.

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES**

Task/Operation/ Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Types and Action Levels	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SHSO 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 identified site contaminants are not anticipated during this task. However, potential exposure to chemicals brought on-site should be considered.</p> <p><b>Physical hazards:</b></p> <p>2) Lifting (strain/muscle pulls) 3) Cuts and lacerations 4) Pinches and compressions/Struck by 5) Slips, trips, and falls 6) Heavy equipment hazards (swinging booms, hydraulic lines, etc.) 7) Vehicular and foot traffic</p> <p><b>Natural hazards:</b></p> <p>8) Ambient temperature extremes (heat/cold stress) 9) Inclement weather</p>	<p><b>Chemical hazards:</b></p> <p>1) The on-site Hazard Communication Program (Section 5.0 TtNUS Health and Safety Guidance Manual) will be followed. Chemicals brought onto the site by Tetra Tech NUS 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>• Accurate Chemical Inventory List (Entries will match chemicals brought on-site, as the names appear on the MSDS and the label) This list, which also includes quantities and storage locations will be maintained in a centralized location and made available upon request.</li> <li>• MSDS's will be maintained in a central location, accessible to personnel.</li> <li>• Containers will have labels specifying the following information: <ul style="list-style-type: none"> <li>- Chemical Identity (As it appears on the label, MSDS, and Chemical Inventory List)</li> <li>- Appropriate Warning (i.e., Eye and skin irritation, flammable, etc.)</li> <li>- Manufacturer's Name Address and Phone Number</li> </ul> </li> </ul> <p>Personnel will be required to review the appropriate MSDS's if they are not familiar with the hazards of the chemicals to be used, prior to the use of a specified chemical substance. Information on hazards and PPE will be communicated on the Safe Work Permit for this task. Any specific provisions recommended by the MSDS shall be in place (i.e., eye wash, fire extinguisher, specified PPE, etc.) prior to using the chemical substance.</p> <p><b>Physical hazards:</b></p> <p>2) Lifting Hazards – During mobilization/demobilization personnel are required to handle equipment, supplies, and resources in preparation for site activities. This hazard becomes more predominant in the early morning hours (prior to muscles becoming limber) and later in the day (as a result of fatigue). The following provisions shall be instituted in order to minimize hazards of this nature:</p> <ul style="list-style-type: none"> <li>• Use machinery or multiple personnel for heavy lifts, where possible.</li> <li>• Use proper lifting techniques <ul style="list-style-type: none"> <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> </ul> </li> </ul> <p>Other considerations associated with lifting injuries and muscle strains include</p> <ul style="list-style-type: none"> <li>• Area available to maneuver the lift.</li> <li>• Area of the lift – Work place clutter, slippery surfaces</li> <li>• Your overall physical condition</li> </ul> <p>3) Cuts and lacerations – To prevent cuts and lacerations associated with unpacking or packing equipment and supplies, during site preparation activities, the following provisions are required:</p> <ul style="list-style-type: none"> <li>- Always cut away from yourself and others, then, if a knife slips, you will not impale yourself or others.</li> <li>- Do not place items to be cut in your hand or on your knee.</li> <li>- Change out blades as necessary to maintain a sharp cutting edge. Many accidents result from struggling with dull cutting attachments.</li> <li>- Insure handles are of good construction (no cracks, splinters, loose heads/cutting apparatus).</li> <li>- When/where possible wear a cut resistant glove on your non-knife hand.</li> <li>- See the Section 4.13 of the HSGM for additional Safe Work Practices as it pertains to cuts/lacerations.</li> </ul> <p>4) Pinches/Compressions/Struck By - Do not modify tooling without manufacturer's expressed permission.</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 distance between guards and point of operation.</li> <li>- When staging equipment, insure stacked loads, shelving, are adequately secure to avoid creating a hazard from falling objects.</li> </ul> <p>5) Preview work locations for unstable/uneven terrain. Cover, guard and barricade open pits, ditches, and catch basins.</p> <ul style="list-style-type: none"> <li>- Ruts, roots, tools, and other tripping hazards should be eliminated to minimize/eliminate trips and falls.</li> <li>- Maintain a clutter free work area.</li> </ul> <p>6) Heavy Equipment Hazards - equipment will be</p> <ul style="list-style-type: none"> <li>- Inspected in accordance with OSHA and manufacturer's design.</li> <li>- Equipment inspection will be documented on a Equipment Inspection Checklist as provided in (See Attachment IV).</li> <li>- Operated by knowledgeable operators and ground crew.</li> </ul> <p>7) Vehicular and Foot Traffic Hazards - As part of site preparation activities and zone construction, when preparing traffic and equipment considerations are to include the following:</p> <ul style="list-style-type: none"> <li>- Establish safe zones of approach (i.e. Boom + 5 feet).</li> <li>- Foot and vehicular traffic routes shall be well defined. 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. Diligence in this measure applies to the most populated areas where investigation/construction activities are ongoing.</li> <li>- Heavy equipment patterns shall be isolated using fences or other suitable barricades from pedestrian pathways.</li> <li>- Self-propelled heavy equipment with restricted view moving backwards shall be equipped with back up warning systems.</li> <li>- The FOL and/or the SHSO as a precautionary measure to remove or demarcate physical hazards shall preview traffic routes (foot and vehicular) before the commitment of personnel and resources.</li> </ul> <p><b>Natural hazards:</b></p> <p>8) Ambient Temperature Extremes - 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 TtNUS Health and Safety Guidance Manual.</p> <p>9) Inclement Weather - Suspend or terminate operations until directed otherwise by SHSO.</p> <p>See Section 4.0 of the TtNUS Health and Safety Guidance Manual for additional information concerning natural hazards.</p>	<p>Visual observation of work practices by the FOL and/or the SHSO to minimize potential physical hazards (i.e., improper lifting, unsecured loads, cutting practices, etc.). Monitoring for chemical hazards are not required during this activity.</p>	<p><i>(Items in italics are deemed optional as conditions or the FOL or SHSO dictate.)</i></p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (Sleeved shirt; long pants)</li> <li>- Safety shoes (Steel toe/shank)</li> <li>- Safety glasses</li> <li>- Hardhat <i>(when overhead hazards exists, or identified as a operation requirement)</i></li> <li>- Reflective vest <i>for high traffic areas</i></li> <li>- Hearing protection <i>for high noise areas (At the direction of the FOL and/or the SHSO).</i></li> <li>- Work gloves</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> <li>- Emergency route to hospital (For each site vehicle).</li> <li>- Emergency contact information (For each site vehicle).</li> </ul> <p><b>Note:</b> The FOL and/or the SHSO 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>Site Preparation – A structured decontamination is not required for this activity.</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES**

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring Type/Action Levels	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SHSO require.)</i>	Decontamination Procedures
<p>Excavation of test pits; mixing soils; backfilling/compacting pits</p>	<p><b>Chemical hazards:</b></p> <p>1) Analytical data from previous site investigations indicated the presence of metals (particularly lead and antimony), Semivolatile Organic Compounds (SVOCs), Polychlorinated Biphenyls (PCBs), and Dioxin/furans. Many of these contaminants were infrequently detected or detected at low concentrations that are unlikely to present an exposure hazard to site personnel. From an occupational exposure concern standpoint, lead is the only contaminant of concern.</p> <p>The greatest potential for exposure is anticipated to occur through inhalation of airborne dusts or incidental ingestion of contaminated media. The following provides the maximum concentrations of lead previously detected at each site:</p> <p><b>Site 6 DRMO Soils:</b></p> <p>Lead 255,000 mg/kg (surface soils, Sample DS-3) (Ranges of detections 44.4 to 255,000 mg/kg)</p> <p><b>Site 29 Former TeePee Incinerator – Soils:</b></p> <p>Lead 116,000 mg/kg (surface soils, Sample TPI-SB04-0507) (Ranges of detections 5.3 to 116,000 mg/kg)</p> <p>See Section 6.1 and Table 6-1 for more information concerning this contaminant.</p> <p>It is recommended that exposure (via ingestion due to hand to mouth contact) be minimized due to bio-accumulative properties of many of the potential contaminants of concern.</p> <p>2) Transfer of contamination into clean areas or onto persons.</p> <p><b>Physical hazards:</b></p> <p>3) Heavy equipment/machinery hazards (moving equipment, struck by hazards, etc.)</p> <p>4) Collapse of the excavation</p> <p>5) Energized systems (contact with underground or overhead utilities)</p> <p>6) Noise in excess of 85 dBA</p> <p>7) Vehicular and equipment traffic</p> <p>8) Strain from heavy lifting</p> <p>9) Slips, trips, and falls</p> <p>10) Ambient temperature extremes (heat/cold stress)</p> <p>11) Drum/Container Management</p> <p><b>Natural hazards:</b></p> <p>12) Inclement weather</p>	<p><b>Chemical hazards:</b></p> <p>1) Monitoring instruments, PPE, decontamination, and good work hygiene practices will be employed to monitor and control potential exposure. As the materials in question are solids and/or bound to particulates, dust/particulate suppression will also be employed to minimize potential exposure. If concentrations exceed 0.1 mg/m<sup>3</sup> use area wetting methods to reduce dust. 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 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. In addition, the excavator shall dig from an up wind position. Support personnel will also position themselves, sample stations, support equipment upwind during the excavation and backfilling activities.</p> <p>2) Restrict the cross use of equipment and supplies between what is considered clean and dirty work without first going through a suitable decontamination. Work practices including</p> <ul style="list-style-type: none"> <li>- A rigid decontamination procedure will ensure materials are not carried and deposited in unaffected areas.</li> <li>- Restriction of non-essential vehicles will be employed to minimize the spread of this material during transportation into unaffected areas.</li> </ul> <p><b>Physical hazards:</b></p> <p>3) Equipment to be used will be:</p> <ul style="list-style-type: none"> <li>- Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600,601,.602), and manufacturer's design, and documented using Equipment Inspection Checklist (Attachment IV). Complete the Equipment Inspection Checklist for each piece of equipment used at the site. Equipment operation will be:</li> <li>- Conducted by knowledgeable operators and coordinated by experienced ground crew, as applicable.</li> <li>- The swing pattern of a fully extended boom and bucket will be laid out with pin flags or some other visual indicator. This will serve as the swing demarcation. If personnel remain outside this boundary during excavation operations they will avoid being struck. The operator will be instructed to terminate operations should someone step inside this boundary.</li> <li>- Follow provisions stipulated in Item 7 of this table and Sections 2.2 and 5.7 for additional safe work practices to minimize these hazards.</li> </ul> <p>4) Excavations shall be in conformance with requirements established under 29 CFR 1926.650 - .652 concerning sloping, shoring, storage, and movement on and over and around trenches and excavations. This of course applies to excavations greater than 4 feet in depth.</p> <ul style="list-style-type: none"> <li>- <b>No personnel associated with this field effort will enter any excavations greater than 4-feet in depth.</b></li> <li>- Where possible supplies, clean fill, vehicular traffic will be maintained at a minimum distance of 5 feet from the excavation until soil classification can be determined or side-wall restraining device is employed.</li> <li>- Site control during excavation will be accomplished through the use of barricade tape and weighted poles and signs indicating excavation in progress.</li> <li>- Follow provisions stipulated in Sections 2.2 and 5.7 for additional safe work practices to minimize this hazard potentials.</li> </ul> <p>5) Utility clearances shall be obtained prior to any excavation activities. Excavation 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. See Section 5.2 for more information. TtNUS personnel will follow applicable passive methods for utility avoidance regardless of utility clearance for an area. This will provide for redundant controls. Excavations shall proceed with extreme caution and proceed using cable and piping locators and other geophysical detection methods (soil probes, etc.) to avoid utility damage. In addition, the bucket of the excavator will be equipped with a sand bar or have the teeth removed. This will lessen the likelihood of potentially snagging a utility.</p> <p>6) Hearing protection will be used during subsurface activities using the excavator when noise levels are &gt; 85 dBA. (during operation). Boundaries will be established to limit noise hazard. Length of the boom + 5 feet or a minimum of 25 feet whichever is greater. The general rule of thumb is</p> <p><i>Excessive noise levels are being approach when you have to raise your voice to talk to someone within 2 feet of your location.</i></p> <p>7) Traffic and equipment considerations are to include the following:</p> <ul style="list-style-type: none"> <li>- Establish safe zones of approach (i.e., Boom + 5 feet).</li> <li>- Equipment shall be equipped with movement warning systems.</li> <li>- Employ safety belts and follow the site traffic rules.</li> </ul> <p>See Section 5.7 of this HASP for associated Safe Work Practices concerning excavation activities.</p> <p>8) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. See mobilization/demobilization for lifting recommendations.</p> <p>9) Preview work locations for unstable/uneven terrain. Avoid working/walking too close to excavation and other areas of unsure footing.</p> <ul style="list-style-type: none"> <li>- Personnel will maintain a minimum of 2-feet from the excavation sidewall.</li> <li>- A ladder will be maintained during excavation activities as a means of emergency extraction should someone fall into the excavation.</li> </ul> <p>10) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat/cold stress concerns is provided in Section 4.0 of the TtNUS Health and Safety Guidance Manual.</p> <p>11) Should intact drums or containers be encountered during the excavation activities, the following provisions will be invoked</p> <p>Stop activity, notify the PM, HSM, and the Facility Contact.</p> <p>Use the provisions stipulated in Section 11.0 of the HSGM to gather additional information.</p> <p>12) Suspend or terminate operations until directed otherwise by SHSO</p>	<p>Air monitoring will be conducted as follows:</p> <p><b>Dusts/Particulates</b></p> <p>Airborne concentrations of dusts/particulates will be monitored during all excavation operations. The air monitoring will focus of worker breathing zones (particularly those that are closest to the point of generation – i.e., the operator of the excavator). Readings will be collected continuously and any observations of airborne dust concentrations exceeding the action level of 0.1 mg/m<sup>3</sup> will require additional control measure to be implemented.</p> <p>Mini-Ram Particulate Meter</p> <p>&gt;0.1 mg/m<sup>3</sup> – Employ dust suppression (area wetting) methods. This will reduce dust emissions when handling dry materials which have a tendency to become airborne much more easily than wet or moist materials. This action level should control potential overexposure to the primary contaminants of concern.</p> <p>If dust suppression methods are unable to control airborne dust concentrations within worker breathing zones below 0.1 mg/m<sup>3</sup>, discontinue site operations and contact the PHSO.</p> <p>NOTE: This action level has been established based on calculations to determine when the lead action level is approached based on existing data indicating the maximum concentration of lead detected during previous investigations.</p>	<p>Excavation operations will be performed in Level D protection, including the following articles:</p> <p><b>Operator</b></p> <ul style="list-style-type: none"> <li>- Standard field dress (long pants, Sleeved shirts)</li> <li>- Steel toe safety shoes or work boots</li> <li>- Hard hat (not necessary in an enclosed cab)</li> <li>- Safety Glasses (not necessary in an enclosed cab)</li> <li>- Hearing Protection (May not be necessary in an enclosed cab)</li> <li>- <i>Tyvek or washable cotton coveralls</i></li> </ul> <p><b>Support personnel (Spotters, samplers, etc.)</b></p> <ul style="list-style-type: none"> <li>- Standard field dress (long pants, Sleeved shirts)</li> <li>- Steel toe safety shoes or work boots</li> <li>- Hard hat</li> <li>- Hearing Protection</li> <li>- Boot covers when working in the spoils deposition area</li> <li>- Nitrile surgeons gloves for sampling</li> <li>- Safety Glasses when inside the demarcation area</li> <li>- <i>Tyvek or washable cotton coveralls</i></li> </ul> <p>Personnel must closely inspect PPE prior to beginning any on-site activities.</p> <p><b>Note:</b> The Safe Work Permit(s) for this task (see Attachment V) will be issued to address the tasks to be conducted. 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>As site conditions may change, the following equipment will be maintained during on-site activities</p> <ul style="list-style-type: none"> <li>- Fire Extinguishers</li> <li>- First-aid Kit</li> </ul>	<p><b>Personnel Decontamination</b> – This decontamination procedure for <b>Level D</b> protection will consist of</p> <ul style="list-style-type: none"> <li>- Soap/water wash and rinse of outer gloves, boots as applicable</li> <li>- Removal of PPE in the following order: Boot covers, Outer gloves, coveralls, and inner gloves</li> <li>- Wash hands and face, leave contamination reduction zone</li> </ul> <p><b>Equipment Decontamination</b> –</p> <p>Heavy equipment decontamination will take place at a centralized decontamination pad utilizing a steam cleaner or pressure washer. Site vehicles will have restricted access to exclusion zones, and 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>During excavation activities the primary concern with contamination is the bucket and boom, wheels and tires (due to direct contact with contaminants).</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES**

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring Type/Action Levels	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SHSO require.)</i>	Decontamination Procedures
<p>Collection of analytical and composite samples during the excavation activities. This activity will proceed as follows:</p> <ol style="list-style-type: none"> <li>1. The excavator will remove soils in 2-foot increments.</li> <li>2. Mix the soils for that increment using the bucket.</li> <li>3. Each 2-foot increment will be placed in it's own pile to a depth of 10-feet.</li> <li>4. Once, this is complete the excavator will grab a bucket from each pile to form a sixth pile.</li> <li>5. This material will also be mixed using the excavator bucket and will be used for the composite/analytical sample pile.</li> </ol>	<p><b>Chemical hazards:</b></p> <p>1) Analytical data from previous site investigations indicated the presence of metals (particularly lead and antimony), Semivolatile Organic Compounds (SVOCs), Polychlorinated Biphenyls (PCBs), and Dioxin/furans. Many of these contaminants were infrequently detected or detected at low concentrations that are unlikely to present an exposure hazard to site personnel. From an occupational exposure concern standpoint, lead is the only contaminant of concern.</p> <p>The greatest potential for exposure is anticipated to occur through inhalation of airborne dusts or incidental ingestion of contaminated media. The following provides the maximum concentrations of lead previously detected at each site:</p> <p><b>Site 6 DRMO Soils:</b></p> <p>Lead 255,000 mg/kg (surface soils, Sample DS-3) (Ranges of detections 44.4 to 255,000 mg/kg)</p> <p><b>Site 29 Former TeePee Incinerator – Soils:</b></p> <p>Lead 116,000 mg/kg (surface soils, Sample TPI-SB04-0507) (Ranges of detections 5.3 to 116,000 mg/kg)</p> <p>See Section 6.1 and Table 6-1 for more information concerning this contaminant.</p> <p>It is recommended that exposure (via ingestion due to hand to mouth contact) be minimized due to bio-accumulative properties of many of the potential contaminants of concern.</p> <p>2) Transfer of contamination into clean areas or onto persons.</p> <p><b>Physical hazards:</b></p> <ol style="list-style-type: none"> <li>3) Struck by</li> <li>4) Excavation collapse</li> <li>5) Lifting</li> <li>6) Intact Drums and/or containers</li> </ol>	<ol style="list-style-type: none"> <li>1) The primary contaminant of concern (Lead) is a solid. Total/respirable dust will be measured using a Particulate meter. When action levels are achieved area wetting will be employed to airborne emissions and potential contaminant inhalation. Incidental ingestion exposure will be controlled through the use of PPE, decontamination procedures, and the application of good work hygiene procedures (No hand to mouth activities, use drop clothes to keep equipment and supplies off of contaminated media, etc.).</li> <li>2) Restrict the cross use of equipment and supplies between what is considered clean and dirty work without first going through a suitable decontamination. Work practices including <ul style="list-style-type: none"> <li>- A rigid decontamination procedure will ensure materials are not carried and deposited in unaffected areas.</li> <li>- Restriction of non-essential vehicles will be employed to minimize the spread of this material during transportation into unaffected areas.</li> </ul> </li> </ol> <p><b>Physical hazards:</b></p> <ol style="list-style-type: none"> <li>3) <b>Struck by</b> - equipment to be employed will be: <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, and documented as such using Equipment Inspection Checklist provided as Attachment IV. Complete the Equipment Inspection Checklist for each piece of equipment used at the site. Equipment operation will be: <ul style="list-style-type: none"> <li>- Conducted by knowledgeable operators and coordinated by experienced ground crew, as applicable.</li> <li>- The swing pattern of a fully extended boom and bucket will be laid out with pin flags or some other visual indicator. This will serve as the swing demarcation. If personnel remain outside this boundary during excavation operations they will avoid being struck. The operator will be instructed to terminate operations should someone step inside this boundary.</li> <li>- Follow provisions stipulated in Item 7 of this table and Sections 2.2 and 5.7 for additional safe work practices to minimize these hazards.</li> </ul> </li> </ul> </li> <li>4) <b>Excavation collapse</b> - excavations shall be in conformance with requirements established under 29 CFR 1926.650 - .652 concerning sloping, shoring, storage, and movement on and over and around trenches and excavations. This of course applies to excavations greater than 4 feet in depth. <ul style="list-style-type: none"> <li>- <b>No personnel associated with this field effort will enter any excavations greater than 4-feet in depth.</b></li> <li>- Where possible supplies, clean fill, vehicular traffic will be maintained at a minimum distance of 5 feet from the excavation until soil classification can be determined or side-wall restraining device is employed.</li> <li>- Site control during excavation will be accomplished through the use of barricade tape and weighted poles and signs indicating excavation in progress.</li> <li>- Follow provisions stipulated in Sections 2.2 and 5.7 for additional safe work practices to minimize this hazard potential.</li> <li>- Personnel will maintain a minimum of 2-feet from the excavation sidewall.</li> <li>- A ladder will be maintained during excavation activities as a means of emergency extraction should someone fall into the excavation.</li> </ul> </li> <li>5) <b>Lifting</b> – Follow provisions for safe lifting as specified in Table 5-1 Mobilization/Demobilization</li> <li>6) <b>Intact Drums and/or containers</b> - Should intact drums or containers be encountered during the excavation activities, the following provisions will be invoked <ul style="list-style-type: none"> <li>- Stop activity, notify the PM, HSM, and the Facility Contact.</li> <li>- Use the provisions stipulated in Section 11.0 of the HSGM to gather additional information.</li> </ul> </li> </ol>	<p>Monitoring will be conducted as follows:</p> <p><b>Dusts/Particulates</b></p> <p>Airborne concentrations of dusts/particulates will be monitored during all excavation/sampling operations. The air monitoring will focus of worker breathing zones (particularly those that are closest to the point of generation – i.e., the operator of the excavator or the sampler). Readings will be collected continuously and any observations of airborne dust concentrations exceeding the action level of 0.1 mg/m<sup>3</sup> will require additional control measure to be implemented.</p> <p>Mini-Ram Particulate Meter</p> <p>&gt;0.1 mg/m<sup>3</sup> – Employ dust suppression (area wetting) methods. This will reduce dust emissions when handling dry materials which have a tendency to become airborne much more easily than wet or moist materials. This action level should control potential overexposure to the primary contaminants of concern.</p> <p>If dust suppression methods are unable to control airborne dust concentrations within worker breathing zones below 0.1 mg/m<sup>3</sup>, discontinue site operations and contact the PHSO.</p> <p>NOTE: This action level has been established based on calculations to determine when the lead action level is approached based on existing data indicating the maximum concentration of lead detected during previous investigations.</p>	<p>Level D Site activities are anticipated to be performed in Level D protection.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (Sleeved shirt; long pants)</li> <li>- Safety shoes or boots (Steel toe) with boot covers</li> <li>- Hard hat</li> <li>- Safety glasses</li> <li>- Tyvek or equivalent coveralls</li> <li>- An Impermeable type such as PVC coated Tyvek or a Rain suit may be worn if saturation of work clothes and coveralls becomes a problem. On primary concern is heat and/or colds stress due to the use of impermeable garments.</li> <li>- Nitrile surgeon-style gloves (layered if necessary). A clean pair is to be used for each sample location).</li> </ul>	<p><b>Personnel decontamination:</b></p> <ol style="list-style-type: none"> <li>1) Once the equipment has been washed, rinsed</li> <li>2) Equipment drop-off</li> <li>3) Wash and rinse outer gloves</li> <li>4) Remove and dispose of disposable PPE</li> <li>5) Wash hands and face, and leave work area.</li> </ol> <p><b>Equipment decontamination:</b></p> <p>See Equipment Decontamination Table 5-1.</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES**

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items In Italics are deemed optional as conditions or the FOL or SHSO require.)</i>	Decontamination Procedures
<p>Decontamination of Heavy Equipment</p> <p>Generally the decontamination process of the Excavator will proceed as follows:</p> <ul style="list-style-type: none"> <li>- The bucket and boom will be placed over the decontamination pad.</li> <li>- Shovels or scrapers will be used to remove caked on materials.</li> <li>- A pressure washer will be used to remove any residual soils.</li> <li>- If necessary soap and water wash and rinse will be conducted using scrub brushes to remove any visible soils. It may also be necessary to use a solvent to remove some materials.</li> <li>- Rinse with clean water</li> </ul>	<p><b>Chemical Hazards:</b></p> <p>1) The potential exposure concern during this task is primarily contact. During decontamination the lead contaminated soils are washed/rinsed and captured within the temporary decontamination pad. The potential for airborne dusts are negligible. The primary concern is contact with lead laden water and soils (splashes etc.). Exposure then occurs via hand to mouth contact.</p> <p>See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Decontamination fluids - Liquinox (detergent) isopropanol</p> <p><b>Physical Hazards:</b></p> <p>3) Noise in excess of 85 dBA 4) Flying projectiles 5) Slips, trips, and falls</p> <p><b>Natural Hazards:</b></p> <p>6) Inclement weather</p>	<p><b>Chemical Hazards:</b></p> <p>1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. If necessary, obtain manufacturer's MSDS for any decontamination fluids used onsite. The typical application is Liquinox and water. Use appropriate PPE as identified in this HASP. Chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication section of the Health and Safety Guidance Manual (Section 5). For more information on the decontamination detergents, review MSDS prior to chemical use. Chemicals unless otherwise directed must be used in well-ventilated areas, such as outdoors.</p> <p><b>Physical Hazards:</b></p> <p>3) Wear hearing protection when operating pressure washer/steam cleaner. 4) Use eye and face protective equipment when operating the pressure washer/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 25° Fan Tip will be used on pressurized systems over 3,000 psi. This will reduce the possibility of lacerations.</li> <li>- Thermostat control to regulate the temperature levels.</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>5) 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><b>Natural Hazards:</b></p> <p>8) Suspend or terminate operations until directed otherwise by SHSO.</p>	<p>Use visual examination to ensure equipment has been properly cleaned of contaminated soils and dried.</p>	<p>For Heavy Equipment This applies to high pressure soap/water, steam cleaning wash and rinse procedures.</p> <p>Level D Minimum requirements -</p> <ul style="list-style-type: none"> <li>- Standard field attire (Long sleeve shirt; long pants)</li> <li>- Safety shoes (Steel toe/shank)</li> <li>- Hard Hat</li> <li>- Chemical resistant boot covers</li> <li>- Nitrile outer gloves</li> <li>- Safety glasses underneath a splash shield</li> <li>- Hearing protection (plugs or muffs)</li> <li>- <i>PVC Rainsuits or PE or PVC coated Tyvek</i></li> </ul> <p>For sampling equipment (trowels, MacroCore Samplers, bailers, etc.), the following PPE is required</p> <p>Note: Consult MSDS for 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>- Safety shoes (Steel toe/shank)</li> <li>- Nitrile outer gloves</li> <li>- Safety glasses</li> </ul> <p>In the event of overspray of chemical decontamination fluids employ PVC Rainsuits or PE or PVC coated Tyvek as necessary.</p>	<p><b>Personnel Decontamination</b> will consist</p> <p>Soap/water wash and rinse of outer protective equipment (boots, gloves, PVC splash suits, as applicable).</p> <p>The decon function will take place at an area adjacent to the site activities.</p> <p>This procedure will consist of:</p> <ul style="list-style-type: none"> <li>- Equipment wash and stage</li> <li>- Soap/water wash and rinse of outer boots and gloves, as applicable</li> <li>- Soap/water wash and rinse of the outer splash suit, as applicable</li> <li>- Disposable PPE will be removed and bagged.</li> </ul> <p>The FOL or the SHSO will be responsible for evaluating equipment arriving on-site and leaving the site and between locations to insure that it has been adequately decontaminated. No equipment will be authorized access, exit, or movement to the next location without this evaluation.</p> <p>Decontamination wash water will be containerized in 55 gallon drums, labeled and staged pending disposal. Labels will contain the following information:</p> <ul style="list-style-type: none"> <li>- Waste Identification (SWMU #, Decon Water, etc)</li> <li>- Date filling began</li> <li>- Emergency contact</li> </ul> <p>See IDW Management for more information.</p>

**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES**

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items In Italics are deemed optional as conditions or the FOL or SHSO require.)</i>	Decontamination Procedures
<p>IDW Management</p> <p>This activity includes the following tasks:</p> <ul style="list-style-type: none"> <li>- Containerization</li> <li>- Labelling</li> <li>- Staging</li> <li>- Monitoring of IDW generated in support of site activities.</li> </ul>	<p><b>Chemical Hazards:</b></p> <ol style="list-style-type: none"> <li>1) Exposure to site contaminants during this task is unlikely given that IDW drums are sealed.</li> <li>2) Transfer of contamination into clean areas</li> </ol> <p><b>Physical Hazards:</b></p> <ol style="list-style-type: none"> <li>3) Lifting (strain/muscle pulls)</li> <li>4) Pinches and compressions</li> <li>5) Slip, trips, and falls</li> </ol>	<p><b>Chemical Hazards:</b></p> <ol style="list-style-type: none"> <li>1) IDW containers staged should have the outside of the container clearly labeled. Also, identify PPE to control exposures to potentially contaminated media (e.g. air, water, soils). Exposure to the contaminated media is not anticipated as the containers are sealed. Exposure potential would be considered only in a spill situation. If this occurs engage the Spill Containment Program, Section 10.0.</li> <li>2) Transfer into clean areas is only anticipated in a spill situation. See Item 1.</li> <li>3) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques as described in Table 5-1 for Mobilization/Demobilization.</li> </ol> <p>Material handling devices shall be used for moving drums within the satellite storage area. This includes drum dollies with pneumatic tires, drum grapplers, etc. to handle drums of IDW. These pieces of equipment are engineered to allow placement of these containers while removing hands from the point of operation.</p> <p><b>Reminder:</b> The drums you are attempting to move, lift and/or relocate weigh on the average of</p> <ul style="list-style-type: none"> <li>- 55-Gallon container of purge or decontamination waters = 475 lbs. (including the container)</li> <li>- 55-Gallon container of soils (moist) = 750 lbs. (including the container)</li> </ul> <p>Satellite Storage Area – Emphasis has been placed on the physical surroundings and how they can influence the potential hazards associated with material handling aspects of this task. To further reduce material handling hazards, support spill containment and control, and sampling when necessary, the IDW storage area should be structured as follows:</p> <ul style="list-style-type: none"> <li>- 4-drums to a pallet with retaining ring bolt and label on the outside for easy access/reference.</li> <li>- Maintain a minimum of 6-feet between each row of pallets. This is the minimum distance necessary to wheel drums on a drum dolly</li> <li>- If the site is not secured, the satellite storage area shall be fenced and signs placed indicating the following:             <ol style="list-style-type: none"> <li>a. Primary Point of Contact (Preferably someone at the Base, and make sure they know they been identified as the Primary Point of Contact).</li> <li>b. Phone Number</li> <li>c. Emergency Contact (If different from the Primary)</li> </ol> </li> <li>- Provide a Drum/Container Inventory to the Primary Point of Contact and to Emergency Services, if they deem it necessary. The inventory should contain:             <ol style="list-style-type: none"> <li>a. Each drum shall be assigned a unique identification number. This number shall be placed on the label and drum shell using a paint marker (Note: Do not paint the number on the lid as these have a tendency to get exchanged from time to time.)</li> <li>b. Types of waste materials (Subsurface soils, drill cuttings; purge/development waters, etc.)</li> <li>c. Volumes (Full or level associated with the container after completion of the project location)</li> <li>d. Where it was derived from (IDW should be separated by SWMU and media)</li> <li>e. Dates (For filled containers and at the completion of work for that area or SWMU)</li> <li>f. Contact – For more information</li> </ol> </li> </ul> <p>Note: Drums should be labeled with the same information.</p> <p><b>4) Compressions</b> – Another hazard frequently associated with this task is the compression of hands and fingers when placing the containers on pallets. This typically occurs when rolling and lowering the container in its place. To combat this hazard, the following provision shall be employed:</p> <ol style="list-style-type: none"> <li>5) Preview travel paths where the drums will be moved. Remove any trip hazards, obstructions, or articles that would impede the movement of the container.</li> </ol>	<p>None anticipated unless there is a spill.</p>	<p>Level D protection will be utilized for the initiation of IDW management activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (long sleeve shirt; long pants)</li> <li>- Nitrile or cotton/leather work gloves (if opening containers and if there is a possibility of contacting wet media use surgical style inner gloves)</li> <li>- Safety shoes (steel toe/shank)</li> <li>- Safety glasses</li> <li>- <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i></li> <li>- <i>Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists.</i></li> <li>- <i>Hearing protection for high noise areas, or as directed on an operation by operation scenario.</i></li> </ul>	<p>Not required, unless the implementation of the Spill Containment Program is required due to a spill and/or release. At that point the decontamination procedures for those activities such as soil borings and/or well installation. The reference reflects the tasks conducted when the materials were generated.</p>

## 6.0 HAZARD ASSESSMENT

The following section provides information regarding the chemical, physical, and natural hazards anticipated to be present during the activities to be conducted. Table 6-1 provides information related to chemical constituents that have been identified as present at OU 2 and are conservatively assumed to be present in media to be sampled during this project. Specifically, toxicological information, exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data are discussed in the table.

### 6.1 CHEMICAL HAZARDS

Analytical data from previous site investigations indicated the presence of metals (particularly lead and antimony), Semivolatile Organic Compounds (SVOCs), Polychlorinated Biphenyls (PCBs), and Dioxin/furans . Many of these contaminants were infrequently detected or detected at low concentrations in media that are unlikely to present an exposure hazard to site personnel. From an occupational exposure concern standpoint, Lead is the only contaminant of concern.

Lead is an inhalation, ingestion and contact hazard. Symptoms from a single acute exposure are unusual but may include a gastrointestinal reaction including colic, pain in the extremities, muscle weakness, paresthesias, tremors, coma and possibly death. These symptoms may follow within 1-2 days following exposure. One of the problems associated with lead exposure is that its development of a chronic response may be insidious, building over time. These signs and symptoms may include anorexia, metallic taste in the mouth, constipation, severe abdominal cramps and sometimes rigidity of the abdominal wall.

It should be noted that secondary level contaminants are also present including SVOCs, PCBs, and trace dioxins. However, none of these contaminants were in sufficient concentrations to present an occupational exposure threat through inhalation.

It should however be noted that occupational exposure to lead and these secondary components are not solely dependent on contaminant concentrations but also work and personal hygiene habits. Therefore, personnel will limit hand to mouth activity, be diligent regarding decontamination procedures, and employ recommended PPE. Exposure control methods to minimize the potential for exposure to lead will be sufficient at protecting site personnel from other site contaminants that were detected less frequently or at lower concentrations than lead.

## 6.2 PHYSICAL HAZARDS

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

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

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

## 6.3 NATURAL HAZARDS

### 6.3.1 Insect/Animal Bites and Stings

Natural hazards such as those discussed in the following text are not anticipated to be significant due to the time of the year however, cannot be ruled out completely. The following is provided for informational purposes. During warm months (spring through early fall), tick-borne Lyme Disease may pose a potential health hazard. 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. Provide control measure or location where it may be found

Contact with poisonous plants and bites or stings from poisonous insects are other natural hazards, which must be considered. Long pants (tucked into boots), and avoiding potential nesting areas will minimize the hazards of exposure. 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 notified.

## **West Nile Virus**

West Nile virus can spread to people and animals through the bite of an infected mosquito. Mosquitoes acquire the virus from infected birds. Infected mosquitoes then transmit the West Nile virus to humans and animals when biting (or taking a blood-meal).

Symptoms of West Nile virus include fever, headache, and body aches, often with skin rash and swollen lymph glands. The vast majority of people who are bitten by an infected mosquito will develop only mild symptoms, if any. The incubation period of West Nile encephalitis is usually 3 to 12 days. There is no specific therapy or vaccine against West Nile encephalitis.

### Precautions

- Limit outdoor activities during peak mosquito times – at dusk and dawn.
- Avoid standing water
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Apply insect repellent according to manufacturers instruction to exposed skin. An effective repellent will contain 20% to 30% DEET (N,N-diethyl-meta-toluamide). Avoid products containing more than 30% DEET.
- Spray clothing with repellents containing permethrin or DEET, mosquitoes may bite through thin clothing.

### **6.3.2 Incident Weather**

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

**TABLE 6-1  
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA  
PORTSMOUTH NAVAL SHIPYARD**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Lead	7439-92-1	Particulate form - Unable to be detected by either PID or FID.	Air sample using a mixed cellulose ester filter; or HNO <sub>3</sub> or H <sub>2</sub> O <sub>2</sub> desorption; or Atomic absorption detection. NIOSH Method #7082 or #7300.	OSHA: 0.05 mg/m <sup>3</sup>  ACGIH: 0.05 mg/m <sup>3</sup>  NIOSH: 0.10 mg/m <sup>3</sup>  IDLH: 100 mg/m <sup>3</sup> as lead	The use of an air purifying, full-face respirator with high efficiency particulate air filter for up to 2.5 mg/m <sup>3</sup> .  <b>Recommended gloves:</b> This is in the particulate form. Therefore any glove suitable to prevent skin contact (Nitrile has been the one most widely used for the other substances).	<b>Boiling Pt:</b> 3164°F; 1740°C <b>Melting Pt:</b> 621°F; 327°C <b>Solubility:</b> Insoluble <b>Flash Pt:</b> Not applicable (Airborne dust may burn or explode when exposed to heat, flame, or incompatible chemicals) <b>LEL/LFL:</b> Not applicable <b>UEL/UFL:</b> Not applicable <b>Vapor Density:</b> Not available <b>Vapor Pressure:</b> 0 mmHg <b>Specific Gravity:</b> 11.34 <b>Incompatibilities:</b> Strong oxidizers, peroxides, sodium acetylide, zirconium, and acids <b>Appearance and Odor:</b> Metal: A heavy ductile, soft gray solid.	Overexposure to this substance via ingestion or inhalation may result in metallic taste in the mouth, dry throat, thirst, Gastrointestinal disorders (burning stomach pain, nausea, vomiting, possible diarrhea sometimes bloody or black, accompanied by severe bouts of colic), CNS effects (muscular weakness, pain, cramps, headaches, insomnia, depression, partial paralysis possibly coma and death. Extended exposure may result in damage to the kidneys, gingival lead line, brain, and anemia.

## 7.0 HAZARD MONITORING

Hazard monitoring at OU2 will incorporate real time air monitoring to monitor airborne emission of lead associated with the excavation activities.

### 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 Particulate Meter

A particulate meter will be employed to monitor airborne emissions during the excavation activities. Total dust measurements will be recorded during the excavation activities. An action level of 0.1 mg/m<sup>3</sup> has been selected to control potential exposure.

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

It should be noted that occupational exposure to lead is not only dependent on lead concentration within the workplace but also personal and work hygiene practices. Therefore, visual observations will be made by the FOL and/or the SHSO to insure personnel are adhering to the control measures specified within this HASP.

#### 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 SHSO may decide to increase these frequencies based on instrument responses and site observations. The frequency at which monitoring is performed will not be reduced without the prior consent of the PHSO or HSM.

### 7.2 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the TtNUS SHSO. Operational checks and field calibration will be performed on the instruments each day prior to their use.

Field calibration will be performed on instruments according to manufacturer's recommendations (for example, some instruments 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, and the manufacturer's recommendations. Calibration efforts must be documented. Figure 7-1 is provided for documenting the calibration efforts of real time monitoring instrumentation. 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 no., 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 Tetra Tech NUS and subcontractor personnel participating in on-site activities.

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

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

- Completed 40 hours of introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120(e).
- Completed 8-Hour Refresher Training, if the identified persons had introductory training more than 12 months, prior to this site work.
- Completed 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 SHSO shall be responsible for insuring training qualifications through review of training documentation and for monitoring the status of on-site personnel to insure during the course of this project site personnel do not cycle outside of their training compliance status. Documentation supporting training compliance and status shall be maintained at the project site and be made available, upon request.

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

Tetra Tech NUS (SHSO) will provide site-specific training to Tetra Tech NUS employees and subcontractor personnel who will perform work on this project.

Figure 8-1 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities. 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 may be held daily to discuss operations planned for that day as well as, a short meeting may be held at the end of the day 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 9.10) and/or documented in the Project Logbook.

### **8.3 MEDICAL SURVEILLANCE**

#### **8.3.1 Medical Surveillance Requirements for Tetra Tech NUS and Subcontractor Personnel**

Tetra Tech NUS and subcontractor personnel participating in project field activities will have had a physical examination that includes lead monitoring in the exam protocol. 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. It is not anticipated that biological monitoring (zinc protoporphyrin levels) will be necessary since site workers are unlikely to be exposed to lead above the action level ( $30 \mu\text{g}/\text{m}^3$ ). Reducing airborne dust concentrations below  $0.1 \text{ mg}/\text{m}^3$  (the action level identified within this HASP) in workers breathing zone will prevent potential exposure above the action level.

Documentation for medical clearances will be maintained at the job site and made available, as necessary. A letter from an officer of the company or a medical clearance authorized by the physician can be used as documentation. Documentation must indicate that clearance provided are in accordance with medical surveillance as determined by 29 CFR 1910.120 (f).

The SHSO shall be responsible for insuring 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 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.

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 III of this HASP. This shall be provided to the SHSO, 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 Health and Safety Manager.**

#### **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.



## 9.0 SITE CONTROL

This section outlines the means by which TtNUS will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is anticipated that a three-zone approach will be used during work at this site: exclusion zone, contamination reduction zone, and support zone. It is also anticipated that this control measure will be used to control access to site work areas. Use of such controls will restrict the general public, minimize the potential 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 or unless contaminants are brought to the surface by intrusive activities such as test pit 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. Therefore, the exclusion zones for this project will be limited to those areas of the site where active work is being performed plus so many feet surrounding the point of operation. Exclusion zones will be delineated using barrier tape, cones and /or drive poles, and postings to inform and direct facility personnel.

#### 9.1.1 Exclusion Zone Boundaries

Exclusion zone boundaries are as follows:

- Test Pit Excavations – The length of a fully extended boom plus 5 feet or 25 feet, whichever is greater. This swing pattern will be demarcated using pin flags or some other visual indicator. The operator will be instructed to cease operation if anyone steps inside this boundary. This boundary demarcation has been selected based on removal of personnel from hazards associated with this operation. In this case the primary concerns are physical hazards, primarily struck by hazards and noise. Excavation operation, sampling stations and support function will be conducted from an upwind position.
- Excavation edges – Personnel will maintain a minimum distance of 2-feet from the edge of the excavation while conducting utility clearance passive detection methods. The excavator operator will

place the spoils piles at least 5 to 7-feet from the edge of the excavation on plastic to facilitate mixing and providing the samplers room to work. This distance has also been selected to monitor potential sidewall distress.

- Surface/subsurface soils – Non-essential personnel will remain outside of the excavation boundary during sampling.
  
- When the composite/analytical sample is collected the following will occur:
  - The Excavator Operator will mix buckets of soil from the different depth intervals. Once mixing is complete the operator will swing the bucket at least 5-feet from the sample collection point, place it on the ground, and disengage the controls.
  
  - The samplers will move up to the composite pile and collect the sample (5-gallon bucket).
  
- Decontamination (heavy equipment – steam/pressure washers) – 35 feet surrounding the point of operation. Equipment decontamination will take place at a centralized location.

### **Site Restoration**

**Asphalt/Sub-base Areas** - Test pits will be dug at 5 locations. The majority of these locations will be dug through asphalt/sub-base material. The increments will be backfilled in the interval from which they were removed. As the backfilling takes place, the materials will be compacted using the bucket. In those areas where asphalt/sub-base material were removed they will be replaced as the final cover.

**Grassy/Soil Covered Areas** - In areas where there exists grasses and soil cover the contaminated backfilled will be placed/compacted as indicated above. However, the last one foot of cover will be filled in using clean fill and regarded or reseeded as applicable.

### **Capped Area:**

At locations where an interim cap (consisting of geotextile, GCL, and cement-choked rock) is present, the surface of the fill will be well compacted to create a firm subgrade for the restored cap after the test pit fill is replaced to the approximate original fill elevation. Adjacent strips of cemented rock cover will be removed a minimum of 12 inches beyond each side of the test pit to allow a minimum 12-inch overlap of GCL. New GCL (manufactured with geotextile on both sides) will be laid over the compacted fill and the adjacent exposed old GCL. Following placement of the GCL, a 12-inch layer of crushed rock choked with cement will be placed.

## **9.2 CONTAMINATION REDUCTION ZONE**

The contamination reduction zone will be split to represent two separate functions. The first function will be a control and 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 Handy 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 if the location is remotely located from the operational 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 illustrated in Figure 9-1. Partially completed permits for the work to be performed are included in Attachment V. The daily meetings conducted at the site will further support these work permits. This

effort will ensure that site-specific considerations and changing conditions are incorporated into the planning effort, and give personnel an opportunity to ask questions and make suggestions. Permits will require the signature of the FOL or SHSO.

Use of these permits will provide the line of communication 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 will be given to the FOL and/or the SHSO.

## **9.5 SITE VISITORS**

For the purpose of this document, site visitors are identified as representing the following groups of individuals:

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

It is not anticipated that this operation will result in a large number of site visitors. However, because 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 are required for Navy personnel) and medical surveillance, as stipulated in Section 8.3 of this document. 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.

**NOTE: Site visitors will be escorted while at the site.**

Following this, the site visitor 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. Visitors not meeting the requirements stipulated in this plan for site clearance will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause on-site activities to be terminated until that visitor can be removed. Removal of unauthorized visitors will be accomplished with support from the Base Contact, if necessary. At a minimum, the Navy on-site representative will be notified of any unauthorized visitors.

## **9.6 SITE SECURITY**

Site security will be accomplished using TtNUS field personnel. TtNUS will retain complete control over active operational areas. Because this activity takes place at a United States Navy facility that is open to public access and located along public highways, the first line of security will take place using traffic permit restrictions, exclusion zone barriers, and any existing barriers at the sites to restrict the general public. The second line of security will take place at the work site by 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 the 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 SHSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of the 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**

Because personnel will be working in proximity to one another during field activities, a supported means of communication between field crews members will not be necessary. External communication will be accomplished by using the telephones at predetermined and approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities, the FOL will determine and arrange for telephone communications.

## **9.11 SANITATION AND BREAK AREAS**

This section will address the following items:

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

### **9.11.1 Toilets**

One toilet will be provided for every 20 people. Toilets will be unisex and will have locking doors. The provided toilet will either be a chemical toilet and service provider or the flush toilet readily accessible at a predetermined approved location. It has been past practices to use the bathroom facility at Building 238.

### **9.11.2 Potable Water**

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

- Containers will be clean and replenished daily.
- Containers will clearly marked as to their contents (potable water – drinking water only; Gatorade, etc.).

- Dispensing locations will be placed in identified break areas within the support zone. The most likely location will be a break trailer. This will serve as an area for cooling or warming, as well as an identified food and drink consumption area.
- If large containers are used, dispensing cups will be provided.
- The coolers used for storage of potable drinks and cups will be stored in plastic bags away from potentially contaminating materials when not in use.

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

#### **9.11.3 Showers and Change Rooms**

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

#### **9.11.4 Break Areas**

Given the size of the project and nature of the tasks to be conducted, structured suitable locations for work breaks and warming or cooling regimens will not be necessary. These activities, when necessary, can take place at the vehicles in the support zone.

### Figure 9-1 Example Safe Work Permit

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

**SECTION I: General Job Scope**

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

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

- 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 of Exposure/Hazard: \_\_\_\_\_  
\_\_\_\_\_

(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 – Nitrile)..... <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, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

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

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

## **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. However, as the job progresses, the potential may exist for accumulating (IDW) such as decontamination fluids and soil cuttings in a central staging area. It is also anticipated that such spillage of Investigative Derived Wastes (IDW) would constitute a danger to human health or the environment. Therefore, this Spill Containment Program will be put in place to minimize the potential effects of such spillage.

Once these fluids and other materials have been characterized, they can be removed from this area and properly disposed.

### **10.2 POTENTIAL SPILL AREAS**

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

- Resource deployment
- Waste transfer
- Central staging

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

### **10.3 LEAK AND SPILL DETECTION**

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

It is not anticipated that any cylinders or containers will be unearthed during site activities. Should a cylinder or container be uncovered, however, work will immediately be stopped and personnel will retreat

to a safe area until directed by the FOL or SHSO. The PM, HSM, and the Facility Contact will be notified immediately. This HASP will require modification if site personnel are required to open and/or sample unknown containers.

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

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

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

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

- Sand, clean fill, vermiculite, or other non combustible absorbent (Oil-dry)
- Drums (55-gallon U.S. DOT 17-E or 17-H; UN 1A2)
- Shovels, rakes, and brooms

##### **10.5.1 PPE for Spill Control**

Minimal PPE for spill control will be employed as needed. These materials may include:

- Nitrile work and inner gloves
- Tyvek coveralls
- Hard Hat
- Steel toed shoes with neoprene boot covers

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

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

1. Notify the SHSO or FOL immediately upon detection of a leak or spill. Activate emergency alerting procedures for that area to remove non-essential personnel.

2. Employ the personal protective equipment stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.
3. Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.
4. Re-containerize spills, including top cover impacted by the spill. Await test results for treatment or disposal options.

It is not anticipated that a spill will occur that the field crew cannot handle. Should this occur, notification of the appropriate Emergency Response agencies will be carried out by the FOL or SHSO 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, and
- 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); and
- Is not designed for continuous employee occupancy.

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

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

For further information on confined space, consult the Health and Safety Guidance Manual (Section 8.0) 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 (multiple copies)
- Material Safety Data Sheets for chemicals brought on site, including decon solutions, fuels, lime, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (See Attachment VI)
- Training/Medical Surveillance Documentation Form (Blank) (multiple copies)
- Emergency Reference Information (Section 2.0, extra copy for posting)

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

The following documentation is to be posted or maintained at the site for quick reference purposes. In situations where posting of these documents is not feasible (such as no office trailer), these documents should be filed in a transportable file container and immediately accessible. The file should remain in the FOL's possession.

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

**Material Safety Data Sheets (MSDSs) (maintained)** - The MSDSs should also be in a central area accessible to site personnel. These documents should match the listings on the chemical inventory list

for substances employed on site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.

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

**Site Clearance (maintained)** - This is found within the training section of the HASP (See Figure 8-1). This list identifies site personnel, dates of training (including site-specific training), and medical surveillance and indicates not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

**Emergency Phone Numbers and Directions to the Hospital(s) (maintained)** - This list of emergency numbers and hospital 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 onsite personnel and filed in a central location. The Medical Data Sheet will accompany any injury or illness requiring medical attention to the medical facility. A copy of this sheet or a wallet card will be given to personnel to be carried on their person.

**Investigative Derived Waste Inventory Log (maintained)** – The FOL and/or the SHSO shall log collected containers of IDW. An updated inventory will be submitted to the Base POC at the termination of each shift.

## 13.0 GLOSSARY

ACGIH	American Conference of Governmental Industrial Hygienists
CFR	Code of Federal Regulations
CNS	Central Nervous System
CRZ	Contamination Reduction Zone
CTO	Contract Task Order
DOD	Department of Defense
EPA	Environmental Protection Agency
eV	electron Volts
FID	Flame Ionization Detector
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
IDW	Investigative Derived Waste
MSDS	Material Safety Data Sheet
N/A	Not Available
NIOSH	National Institute Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PCB	Polychlorinated Byphenyls
PE	Professional Engineer
PEL	Permissible Exposure Limit
PHSO	Project Health and Safety Officer
PID	Photoionization Detector
PM	Project Manager
PNS	Portsmouth Naval Shipyard
PPE	Personal Protective Equipment
PVC	Poly Vinyl Chloride
SOP	Standard Operating Procedure
SHSO	Site Health and Safety Officer
STEL	Short Term Exposure Limit
SVOC	Semivolatile Organic Compounds
TBD	To Be Determined
TPH	Total Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
TWA	Time Weighted Average

UV

Ultraviolet

# **ATTACHMENT I**

## **INJURY/ILLNESS PROCEDURE AND REPORT FORM**

## TETRA TECHNUS, INC.

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

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#### 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.tetratech.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: \_\_\_\_\_

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

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

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

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

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

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

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

**Information Regarding Injured or Ill Employee**

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

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

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

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

\_\_\_\_\_

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

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

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

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

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

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

**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**

<b>Alabama</b> Alabama One-Call 1-800-292-8525	<b>Iowa</b> Iowa One-Call 1-800-292-8989	<b>New Jersey</b> New Jersey One Call 1-800-272-1000
<b>Alaska</b> Locate Call Center of Alaska, Inc. 1-800-478-3121	<b>Kansas</b> Kansas One-Call System, Inc. 1-800-344-7233	<b>New Mexico</b> New Mexico One Call System, Inc. 1-800-321-2537 Las Cruces- Dona Ana Blue Stakes 1-888-526-0400
<b>Arizona</b> Arizona Blue Stake 1-800-782-5348	<b>Kentucky</b> Kentucky Underground Protection Inc. 1-800-752-6007	<b>New York</b> Dig Safely New York 1-800-862-7962 New York City- Long Island One Call Center 1-800-272-4480
<b>Arkansas</b> Arkansas One Call System, Inc. 1-800-482-8998	<b>Louisiana</b> Louisiana One Call System, Inc. 1-800-272-3020	<b>North Carolina</b> The North Carolina One-Call Center, Inc. 1-800-632-4949
<b>California</b> Underground Service Alert North 1-800-227-2600 Underground Service Alert of Southern California 1-800-227-2600	<b>Maine</b> Dig Safe System, Inc. 1-888-344-7233	<b>North Dakota</b> North Dakota One-Call 1-800-795-0555
<b>Colorado</b> Utility Notification Center of Colorado 1-800-922-1987	<b>Maryland</b> Miss Utility 1-800-257-7777 Miss Utility of Delmarva 1-800-282-8555	<b>Ohio</b> Ohio Utilities Protection Service 1-800-362-2764 Oil & Gas Producers Underground Protect'n Svc 1-800-925-0988
<b>Connecticut</b> Call Before You Dig 1-800-922-4455	<b>Massachusetts</b> Dig Safe System, Inc. 1-888-344-7233	<b>Oklahoma</b> Call Okie 1-800-522-6543
<b>Delaware</b> Miss Utility of Delmarva 1-800-282-8555	<b>Michigan</b> Miss Dig System, Inc. 1-800-482-7171	<b>Oregon</b> Oregon Utility Notification Center/One Call Concepts 1-800-332-2344
<b>Florida</b> Sunshine State One-Call of Florida, Inc. 1-800-432-4770	<b>Minnesota</b> Gopher State One Call 1-800-252-1168	<b>Pennsylvania</b> Pennsylvania One Call System, Inc. 1-800-242-1776
<b>Georgia</b> Underground Protection Center, Inc. 1-800-282-7411	<b>Mississippi</b> Mississippi One-Call System, Inc 1-800-227-6477	<b>Rhode Island</b> Dig Safe System, Inc. 1-888-344-7233
<b>Hawaii</b> Underground Service Alert North 1-800-227-2600	<b>Missouri</b> Missouri One-Call System, Inc. 1-800-344-7483	<b>South Carolina</b> Palmetto Utility Protection Service Inc. 1-888-721-7877
<b>Idaho</b> Dig Line Inc. 1-800-342-1585 Kootenai County One-Call 1-800-428-4950 Shoshone - Benewah One-Call 1-800-398-3285	<b>Montana</b> Utilities Underground Protection Center 1-800-424-5555 Montana One Call Center 1-800-551-8344	<b>South Dakota</b> South Dakota One Call 1-800-781-7474
<b>Illinois</b> JULIE, Inc. 1-800-892-0123 Digger (Chicago Utility Alert Network) 312-744-7000	<b>Nebraska</b> Diggers Hotline of Nebraska 1-800-331-5666	<b>Tennessee</b> Tennessee One-Call System, Inc. 1-800-351-1111
<b>Indiana</b> Indiana Underground Plant Protection Service 1-800-382-5544	<b>Nevada</b> Underground Service Alert North 1-800-227-2600	
	<b>New Hampshire</b> Dig Safe System, Inc. 1-888-344-7233	

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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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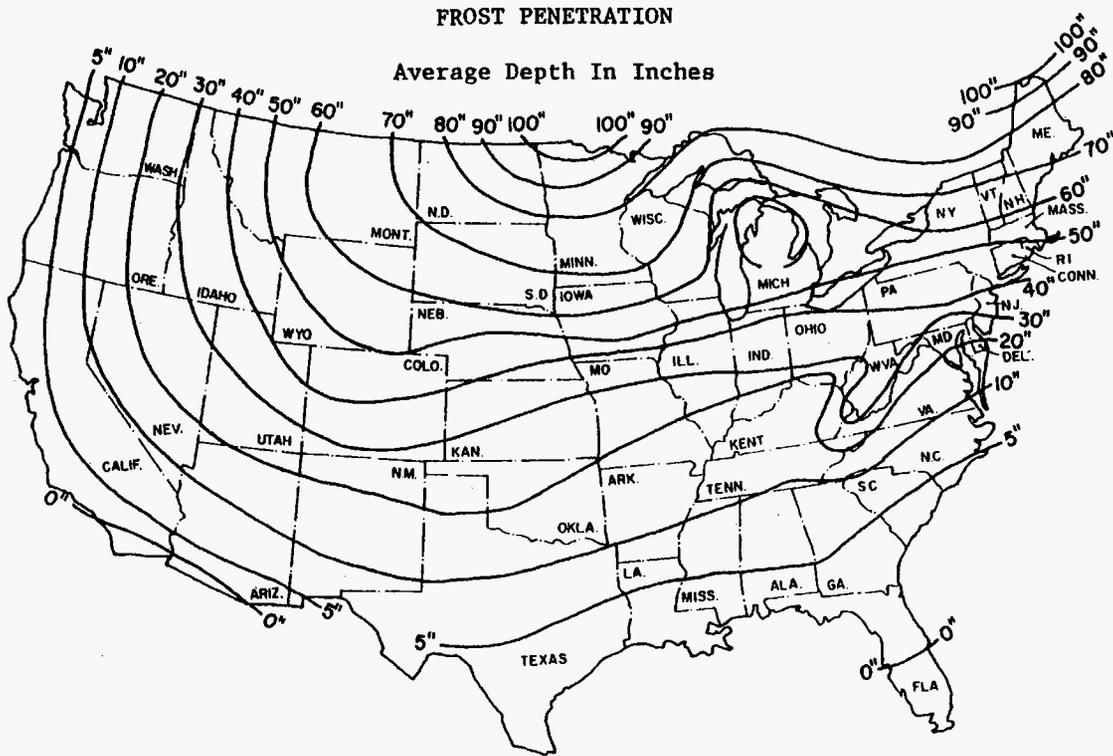
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### ATTACHMENT 2

### FROST LINE PENETRATION DEPTHS BY GEOGRAPHIC LOCATION



Courtesy U.S. Department Of Commerce

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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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#### ATTACHMENT 4 (Continued)

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**  
**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 Portsmouth Naval Shipyard

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

Address \_\_\_\_\_

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

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

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

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

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

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

\_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## **ATTACHMENT IV**

# **EQUIPMENT INSPECTION CHECKLISTS**

**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? \_\_\_\_\_

**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: <input type="checkbox"/> Yes <input type="checkbox"/> No |                          |                          |

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

**ATTACHMENT V**

**SAFE WORK PERMITS**

**SAFE WORK PERMIT  
DECONTAMINATION ACTIVITIES  
PORTSMOUTH NAVAL SHIPYARD**

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

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Decontamination of heavy equipment (i.e., excavator/backhoe, etc.). Pressure washers or steam cleaning units may be used.
- II. Required Monitoring Instrument(s): None
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted  Yes  No Initials of Inspector TtNUS

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

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

Modifications/Exceptions: When using pressure washers or steam cleaners, field crews will wear hearing protection, and face shields under safety glasses.

- |                         |                      |                               |
|-------------------------|----------------------|-------------------------------|
| V. Chemicals of Concern | Action Level(s)      | Response Measures             |
| <u>Lead</u>             | <u>None Required</u> | <u>Repeat decon procedure</u> |

- |  |   |  |
|--|---|--|
| VI. 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..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                   |
| Splash Shield.....                         | <input type="checkbox"/> Yes <input 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 - Nitrile)..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe work shoes or boots.....         | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No       |
| Chemical Resistant Boot Covers .....       | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Impermeable apron..... <input type="checkbox"/> Yes <input type="checkbox"/> No                  |

Modifications/Exceptions: If necessary, PVC rain suits or PE or PVC coated Tyvek for protection against splashes and overspray. Chemical resistant boot covers if excessive liquids are generated. Hearing protection and face shield when operating the steam cleaner or pressure washer. Impermeable aprons are acceptable when cleaning sampling equipment instead of a splash suit.

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

- |  |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|
| 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 Cleared and Established..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Barricaded and Isolated .....               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged .....                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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

- X. Special instructions, precautions: For pressure washers or steam cleaners in excess of 3,000 psi a fan tip of 25° or greater will be used to control potential for water cuts or lacerations. All hoses and fittings will be inspected to insure structural integrity prior to use. Decontamination Pad construction - sloped a sufficient degree to allow collection at a sump away from the work area.

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

**SAFE WORK PERMIT  
MOBILIZATION AND DEMOBILIZATION ACTIVITIES  
PORTSMOUTH NAVAL SHIPYARD**

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

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Mobilization and demobilization activities.
- II. Required Monitoring Instruments: None
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted  Yes  No Initials of Inspector TtNUS

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

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

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, or coveralls, safety glasses and safety footwear. Hard hats and hearing protection will be worn when working near operating equipment

V. Chemicals of Concern	Action Level(s)	Response Measures
<u>None anticipated</u>	_____	_____
_____	_____	_____

- VI. 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 ..... <input type="checkbox"/> Yes <input checked="" 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 - )..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    |
| Steel toe work shoes or boots..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  |

Modifications/Exceptions: Pant legs taped to work boots if in an area of heavy vegetation. If necessary, Tyvek coverall may also be used to protect against natural hazards. If working near operating equipment of areas where overhead hazards exist – use hard hat. If working around eye hazards (flying projectiles) use safety glasses.

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

- |  |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|
| 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 Cleared and Established..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Barricaded and Isolated .....               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged .....                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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

- X. Special instructions, precautions: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.). Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather. Employ proper lifting techniques as described on Table 5-1 for this task.

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

**SAFE WORK PERMIT  
TEST PIT EXCAVATION  
PORTSMOUTH NAVAL SHIPYARD**

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

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Excavation of Test Pits.
- II. Required Monitoring Instruments: Mini-Ram Particulate Meter
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted  Yes  No Initials of Inspector TtNUS

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

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

Modifications/Exceptions: Minimum requirements stated below.

- |                         |  |                                      |
|-------------------------|--|--------------------------------------|
| V. Chemicals of Concern | Action Level(s)                                | Response Measures                    |
| <u>Lead</u>             | <u>Airborne dusts &gt;0.1 mg/m<sup>3</sup></u> | <u>Use area wetting methods</u>      |
| _____                   | <u>in worker breathing zones</u>               | <u>Suspend site activities if</u>    |
| _____                   | _____  | <u>airborne concentrations above</u> |
| _____                   | _____  | <u>the action level persist.</u>     |

- |   |   |
|---|---|
| VI. 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 type="checkbox"/> No                       |
| Chemical/splash goggles..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No        | Radio..... <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 checked="" type="checkbox"/> No         | Gloves (Type - Nitrile)..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No        |
| Steel toe work shoes or boots..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | Work/rest regimen..... <input type="checkbox"/> Yes <input type="checkbox"/> No                         |
| Chemical Resistant Boot Covers..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Impermeable apron..... <input type="checkbox"/> Yes <input type="checkbox"/> No                         |

Modifications/Exceptions: Tyvek coverall if there is a potential for soiling work clothes. PVC or PE coated Tyvek, if saturation or work clothes may occur. Equipment operator may not be required to wear hard hat, safety glasses or hearing protection if inside an enclosed cab.

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

- |  |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|
| 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 Cleared and Established..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Barricaded and Isolated.....                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged.....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- IX. Additional Permits required (Utility Locating and Excavation Clearance – Attachment II). ....  Yes  No  
If yes, complete permit required or contact Health Sciences, Pittsburgh Office

- X. Special instructions, precautions: Follow the safe work practices for excavation specified in Section 5.0 of this HASP. Use proper lifting techniques defined in Table 5-1 for mobilization/demobilization. Complete an Equipment Inspection Checklist for the heavy equipment upon arrival to the site or after major repairs. Test all emergency stop devices initially then periodically to ensure operational status. Decontamination of equipment will consist of soap and water wash and rinse with the use of a pressure washer until visibly clean.

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

**SAFE WORK PERMIT  
SOIL SAMPLING  
PORTSMOUTH NAVAL SHIPYARD**

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

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Collection of analytical and composite samples during the excavation activities.
- II. Required Monitoring Instruments: Mini-Ram Particulate Meter
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted  Yes  No Initials of Inspector TtNUS

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

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

Modifications/Exceptions: Minimum requirements stated below.

V. Chemicals of Concern	Action Level(s)	Response Measures
<u>Lead</u>	<u>Airborne dusts &gt;0.1 mg/m<sup>3</sup></u>	<u>Use area wetting methods</u>
_____	<u>in worker breathing zones</u>	<u>Suspend site activities if</u>
_____	_____	<u>airborne concentrations above</u>
_____	_____	<u>the action level persist.</u>

- |  |   |   |
|--|---|---|
| VI. 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 type="checkbox"/> No                       |
| Chemical/splash goggles.....               | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio..... <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 checked="" type="checkbox"/> No | Gloves (Type - Nitrile)..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No        |
| Steel toe work shoes or boots.....         | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen..... <input type="checkbox"/> Yes <input type="checkbox"/> No                         |
| Chemical Resistant Boot Covers.....        | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Impermeable apron..... <input type="checkbox"/> Yes <input type="checkbox"/> No                         |

Modifications/Exceptions: Tyvek coverall if there is a potential for soiling work clothes. PVC or PE coated Tyvek, if saturation or work clothes may occur. Equipment operator may not be required to wear hard hat, safety glasses or hearing protection if inside an enclosed cab.

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

- |  |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|
| 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 Cleared and Established..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Barricaded and Isolated.....                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged.....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- IX. Additional Permits required (Utility Locating and Excavation Clearance – Attachment II). ....  Yes  No  
If yes, complete permit required or contact Health Sciences, Pittsburgh Office
- X. Special instructions, precautions: Follow the general safe work practices specified in Section 5.0 of this HASP. Use proper lifting techniques defined in Table 5-1 for mobilization/demobilization.

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

**SAFE WORK PERMIT  
IDW MANAGEMENT  
PORTSMOUTH NAVAL SHIPYARD**

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

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Containerization, labeling, staging, and monitoring of IDW
- II. Required Monitoring Instruments: none
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted  Yes  No Initials of Inspector TtNUS

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

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

Modifications/Exceptions: Minimum requirements stated below.

V. Chemicals of Concern	Action Level(s)	Response Measures
<u>Lead</u>	<u>none required</u>	
_____	_____	_____
_____	_____	_____
_____	_____	_____

- VI. Additional Safety Equipment/Procedures
- |  |  |
|--|--|
| Hard-hat..... <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Safety Glasses ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br>Chemical/splash goggles..... <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Splash Shield..... <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Splash suits/coveralls ..... <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Steel toe work shoes or boots ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br>Chemical resistant boot covers..... <input type="checkbox"/> Yes <input type="checkbox"/> No | Hearing protection (plugs/muffs) ... <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Safety belt/harness ..... <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Radio..... <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Barricades..... <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Gloves (Type – nitrile/cotton) ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br>Work/rest regimen ..... <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Impermeable apron ..... <input type="checkbox"/> Yes <input type="checkbox"/> No |
|--|--|

Modifications/Exceptions: Tyvek coverall if there is a potential for soiling work clothes. PVC or PE coated Tyvek, if saturation or work clothes may occur.

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

- |  |           |
|--|-----------|
| VIII. Site Preparation<br>Utility Locating and Excavation Clearance Completed ..... <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/><br>Vehicle and Foot Traffic Routes Cleared and Established..... <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/><br>Physical Hazards Barricaded and Isolated ..... <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/><br>Emergency Equipment Staged..... <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Yes No NA |
|--|-----------|

- IX. Additional Permits required (Utility Locating and Excavation Clearance – Attachment II). ....  Yes  No  
 If yes, complete permit required or contact Health Sciences, Pittsburgh Office

- X. Special instructions, precautions: Follow the general safe work practices specified in Section 5.0 of this HASP. Use proper lifting techniques defined in Table 5-1 for mobilization/demobilization.

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

**ATTACHMENT VI**

**OSHA JOB POSTER**

# You Have a Right to a Safe and Healthful Workplace. IT'S THE LAW!

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



The *Occupational Safety and Health Act of 1970 (OSH Act)*, P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act*. The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9860 • Chicago (312) 353-2220 • Dallas (214) 767-4731 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 337-2378 • Philadelphia (215) 861-4900 • San Francisco (415) 975-4310 • Seattle (206) 553-5930. Teletypewriter (TTY) number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website at [www.osha.gov](http://www.osha.gov). If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

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