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HEALTH AND SAFETY PLAN FOR BUILDING 324 INVESTIGATION AND DRUM SAMPLING
AT BUILDING 312 NAS CECIL FIELD FL
12/1/2003
TETRA TECH NUS INC

**Health and Safety Plan
For
Building 324 Investigation
and
Drum Sampling
At Building 312
at**

Naval Air Station Cecil Field
Jacksonville, Florida



**Southern Division
Naval Facilities Engineering Command
Contract No. N62467-94-D-0888
Contract Task Order 0078**

December 2003

**HEALTH AND SAFETY PLAN
for the
REMEDIAL INVESTIGATION
at
BUILDING 324 INVESTIGATION
AND
DRUM SAMPLING
AT BUILDING 312
at
Naval Air Station Cecil Field
Jacksonville, Florida**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY CONTRACT**

**Submitted to:
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**Submitted by:
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**CONTRACT NO. N62467-94-D-0888
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1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been developed to provide the minimum safety and health practices and procedures for Tetra Tech NUS, Inc. (TtNUS) personnel conducting debris pile soil sampling activities at Naval Air Station Cecil Field (NAS Cecil Field), Jacksonville, Florida.

This HASP has been designed to be used in conjunction with the TtNUS Health and Safety Guidance Manual. The Guidance Manual provides detailed information pertaining to procedures to be performed on site as directed by the HASP, as well as TtNUS standard operating procedures. This HASP and the contents of the Guidance Manual were developed to comply with the requirements stipulated in OSHA 29 CFR 1910.120 the Hazardous Waste Operations and Emergency Response Standard. All of these documents must be present at the site to satisfy these requirements.

This HASP has been written to support proposed tasks and techniques associated with the scope of work as presented in Section 4.0. It has been developed using the latest available information regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work. Should the proposed work site conditions and/or suspected hazards change, or if new information becomes available, this document will be modified. All changes to the HASP will be made with the approval of the TtNUS Site Safety Officer (SSO) and the TtNUS Health and Safety Manager (HSM). Requests for modifications to the HASP will be directed to the SSO who will determine whether to make the changes. The SSO will notify the Task Order Manager (TOM), who will notify all affected personnel of changes.

1.1 AUTHORITY

This work is authorized under the Comprehensive Long - Term Environmental Action Navy (CLEAN) contract, administered through the U.S. Navy Southern Division Naval Facilities Engineering Command, as defined under Contract No. N62467-94-D-0888; Contract Task Order Number 0078.

1.2 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibilities for site safety and health for TtNUS and subcontractor employees conducting environmental sampling and other field activities. Personnel assigned to these positions shall exercise the primary responsibility for all on site health and safety. These persons will be the primary points of contact for any questions regarding the safety and health procedures and the selected control measures.

The TtNUS TOM is responsible for the overall direction and implementation of health and safety for this work.

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

- Verify training and medical status of on-site personnel in relation to site activities.
- Coordinate emergency response actions and identify a chain of command
- Provide elements of site-specific training for all site personnel.

The TtNUS Site Safety Officer (SSO) or their representative supports the FOL concerning all aspects of health and safety including, but not limited to:

- Reviews each specific task, ensuring that all planned tasks and sites are discussed.
- Coordinating all health and safety activities
- Selecting, applying, inspecting, and maintaining personal protective equipment
- Establishing work zones and control points
- Implementing air monitoring procedures
- Implementing hazard communication, respiratory protection, and other associated safety and health programs
- Coordinating emergency services
- Providing elements of site-specific training
- Compliance with these requirements is monitored by the Project Health and Safety Officer (PHSO) and is coordinated through the (HSM).

The TtNUS/identified subcontractor employer are responsible for:

- Following tenants described in this HASP and identified sections of the TtNUS Health and Safety Guidance Manual.
- Follow the directions of the FOL/SSO or designated representatives.
- Report unsafe conditions or practices.

1.3 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Naval Air Station - Cecil Field Remedial Project Manager: Mr. Mark Davidson
Jacksonville, Florida
Site Contact: Mr. Dave Kruzicki Phone Number: (803) 820-5526
Phone Number: (904) 778-5620

Purpose of Site Visit: This activity is multi-task operation (see Section 4.0), for the investigation at Building 324 and sampling of 11 unidentified 55 gallon drums located near Building 312.

Proposed Dates of Work: November to December 2004

Project Team:

TtNUS Personnel:	Discipline/Tasks Assigned:	Phone Number:
<u>Mark Speranza, P.E.</u>	<u>Task Order Manager (TOM)</u>	<u>(412) 921-8916</u>
<u>TBD</u>	<u>Field Operations Leader (FOL)</u>	<u>()</u>
<u>TBD</u>	<u>Site Safety Officer (SSO)</u>	<u>()</u>
<u>Matthew M. Soltis, CIH, CSP</u>	<u>CLEAN Health and Safety Manager (HSM)</u>	<u>(412) 921-8912</u>
<u>Clyde J. Snyder</u>	<u>Project Health and Safety Officer (PHSO)</u>	<u>(412) 921-8904</u>
<u>TBD</u>	<u>Field Geologist</u>	<u>()</u>
<u>_____</u>	<u>_____</u>	<u>()</u>

Non-TtNUS Personnel:	Affiliation/Discipline/Tasks Assigned:	Phone Number
<u>_____</u>	<u>_____</u>	<u>_____</u>
<u>_____</u>	<u>_____</u>	<u>_____</u>

Hazard Assessment (for the purposes of 29 CFR 1910.132) for HASP preparation has been conducted by:

Clyde J. Snyder

2.0 EMERGENCY ACTION PLAN

2.1 INTRODUCTION

This section has been developed as part of a preplanning effort to direct and guide field personnel in the event of an emergency. However, given the nature of the work planned significant emergencies are not anticipated. Also, since a majority of potential emergency situations will require assistance from outside emergency responders, TtNUS personnel will not provide emergency response support for emergency events beyond the capabilities of on site personnel. In the event of emergencies that cannot be handled by personnel, an evacuation will be initiated. In an evacuation, site personnel will move to a safe place of refuge and the appropriate emergency response agencies will be notified. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of operations, which ensures adequate emergency response time. This emergency action plan conforms to the requirements of OSHA Standard 29 CFR 1910.38(a), as allowed in OSHA 29 CFR 1910.120(I) (1) (ii).

TtNUS personnel will, through the necessary actions, provide incidental response measures for incidents such as:

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

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, there is very minor potential for injury or illnesses resulting from exposure to chemical, physical, or other hazards associated with planned site activities. However to further minimize or eliminate potential emergency situations, the following emergency planning activities shall be implemented. The FOL is responsible for:

- Coordinating response actions with City of Jacksonville Emergency Services personnel to ensure that TtNUS emergency action activities are compatible with existing facility emergency response procedures.
- The FOL/SSO will serve as the Incident Commander until relieved and will interact as the primary contact with the City of Jacksonville in the event of an emergency.

- 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
 - Safe Work Permits
 - Safety (Tailgate) Meetings

2.3 EMERGENCY RECOGNITION AND PREVENTION

2.3.1 Recognition

Foreseeable emergency situations that may be encountered during site activities will generally be recognizable by visual observation. Visual observation will be the principal method of identifying any hazards that may be associated with the proposed scope of work. These potential hazards, the activities with which they have been associated, and the recommended control methods are discussed in detail in Sections 5.0 and 6.0 of this document.

2.3.2 Prevention

TtNUS personnel will minimize the potential for emergencies by ensuring compliance with the HASP the Health and Safety Guidance Manual, applicable OSHA regulations, and by following directions given by those persons responsible for the health and safety of personnel.

2.4 SAFE DISTANCES AND PLACES OF REFUGE

In the event that the site must be evacuated, all personnel will immediately stop activities and report to a pre-determined safe place of refuge. The safe place of refuge may also serve as the telephone communication point, as communication with emergency response agencies may be necessary. Telephone communication points and safe places of refuge will be determined prior to the commencement of site activities and will be conveyed to personnel as part pre-site training. Upon reporting to the refuge location, personnel will remain there until directed otherwise by the TtNUS FOL or the On-Scene Incident Commander. The FOL will take a head count at this location to confirm the presence of all site personnel. Emergency response agencies will be notified of any unaccounted for personnel.

2.5 EVACUATION ROUTES AND PROCEDURES

Once an evacuation is initiated, personnel will terminate site activities and proceed immediately to the designated place of refuge, unless doing so would further jeopardize the welfare of workers. In such an

event, personnel will proceed to a designated alternate location and remain there until further notification from the FOL. The use of these locations as assembly points provides communication and a direction point for emergency services, should they be needed.

2.6 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

TtNUS personnel will be working in close proximity to each other at NAS Cecil Field. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations.

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

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

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

Dial 911 and call other pertinent emergency contacts listed in Table 2-1 and report the incident. Give the emergency operator the location of the emergency, the type of emergency, the number of injured, and a brief description of the incident. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

2.7 EMERGENCY CONTACTS

Prior to performing work at the site, all personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an accident. As indicated earlier, Table 2-1 provides a list of emergency contacts and their corresponding telephone numbers. This table will be made readily available to all site personnel.

TABLE 2-1
EMERGENCY CONTACTS
NAS - CECIL FIELD, JACKSONVILLE, FLORIDA

CONTACT	PHONE NUMBER
EMERGENCY (Police, Fire, Ambulance Service)	911
St. Vincent Hospital	(904) 387-7300
Chemtrec National Response Center	(800) 424-9300 (800) 424-8802
NAS - Cecil Field (Point-of-Contact) Dave Kruzicki	(904) 778-5620
TtNUS, Pittsburgh Office	(412) 921-7090
TtNUS, Cecil Field Site Office	(904) 317-9199
Task Order Manager Mark Speranza, P.E.	(412) 921-8916
Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer Clyde J. Snyder	(412) 921-8904
Public Works (utilities, gas, water, sewage, telephone, fiber optics) Jacksonville Port Authority Portion Ken Melchior Bob Simpson City of Jacksonville Lt. Doug McCutchen	(904) 573-1604 (904) 573-1601 (904) 778-5440

2.8 EMERGENCY ROUTE TO HOSPITAL

Directions to St. Vincent's Hospital, 1800 Barrs Street, Jacksonville, Florida (904) 387-7300 are as follows:

1. From Cecil Field: Take SR 134 (Jacksonville Heights) approximately 10 miles to US 17.
2. Turn left and go north on US 17 approximately 2.5 miles to SR 128 (San Juan Ave.).
3. Turn right on San Juan. Go east approximately 1/4 mile to Herschell.
4. Turn left onto Herschell. Herschell will then turn into St. Johns Ave.
5. Follow St. Johns Ave. which will turn into Riverside.
6. Take Riverside approximately 1 mile to King St.
7. Turn right. Hospital will be on the corner of King Street and Barrs.

See Figure 2-2 on Page 2-8 for map of route to hospital.

2.9 DECONTAMINATION PROCEDURES/EMERGENCY MEDICAL TREATMENT

Given the limited scope and duration of site activities it is not anticipated that any decontamination efforts are necessary prior to evacuating the site or transporting site personnel to the hospital.

TtNUS personnel will perform removal of personnel from emergency situations and may provide initial medical support for injury/illnesses requiring only first-aid level support. Medical attention above that level will require assistance and support from the designated emergency response agencies. **If the emergency involves personnel exposures to chemicals, follow the steps provided in Figure 2-1.**

2.10 PPE AND EMERGENCY EQUIPMENT

A first-aid kit, eye wash units (or bottles of disposable eyewash solution) and fire extinguishers (strategically placed) will be maintained onsite and shall be immediately available for use in the event of an emergency. This equipment will be located in the field office as well as in each site vehicle. At least one first aid kit supplied with equipment to protect against bloodborne pathogens will also be available on site. Personnel identified within the field crew with bloodborne pathogen and first-aid training will be the only personnel permitted to offer first-aid assistance.

2.11 INJURY/ILLNESS REPORTING

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

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

FIGURE 2-1 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 and enter Extension 109, being prepared to provide:
 - Any known information about the nature of the injury.
 - As much of the exposure history as was feasible to determine in the time allowed.
 - Name and phone number of the medical facility to which the victim(s) has/have been taken.
 - Name(s) of the involved Tetra Tech NUS, Inc. employee(s).
 - Name and phone number of an informed site officer who will be responsible for further investigations.
 - Fax appropriate information to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety Department (Matt Soltis) at 1-800-245-2730.
- Contact the Human Resources Manager, (Marilyn Duffy) 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 all 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)
WORKCARE
POTENTIAL EXPOSURE REPORT

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

I. Exposing Agent

Name of Product or Chemicals (if known): _____

Characteristics (if the name is not known)

Solid Liquid Gas Fume Mist Vapor

II. Dose Determinants

What was individual doing? _____
How long did individual work in area before signs/symptoms developed? _____
Was protective gear being used? If yes, what was the PPE? _____
Was their skin contact? _____
Was the exposing agent inhaled? _____
Were other persons exposed? If yes, did they experience symptoms? _____

III. Signs and Symptoms (check off appropriate symptoms)

Immediately With Exposure:

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

Chest Tightness / Pressure
Nausea / Vomiting
Dizziness
Weakness

Delayed Symptoms:

Weakness
Nausea / Vomiting
Shortness of Breath
Cough

Loss of Appetite
Abdominal Pain
Headache
Numbness / Tingling

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

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

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

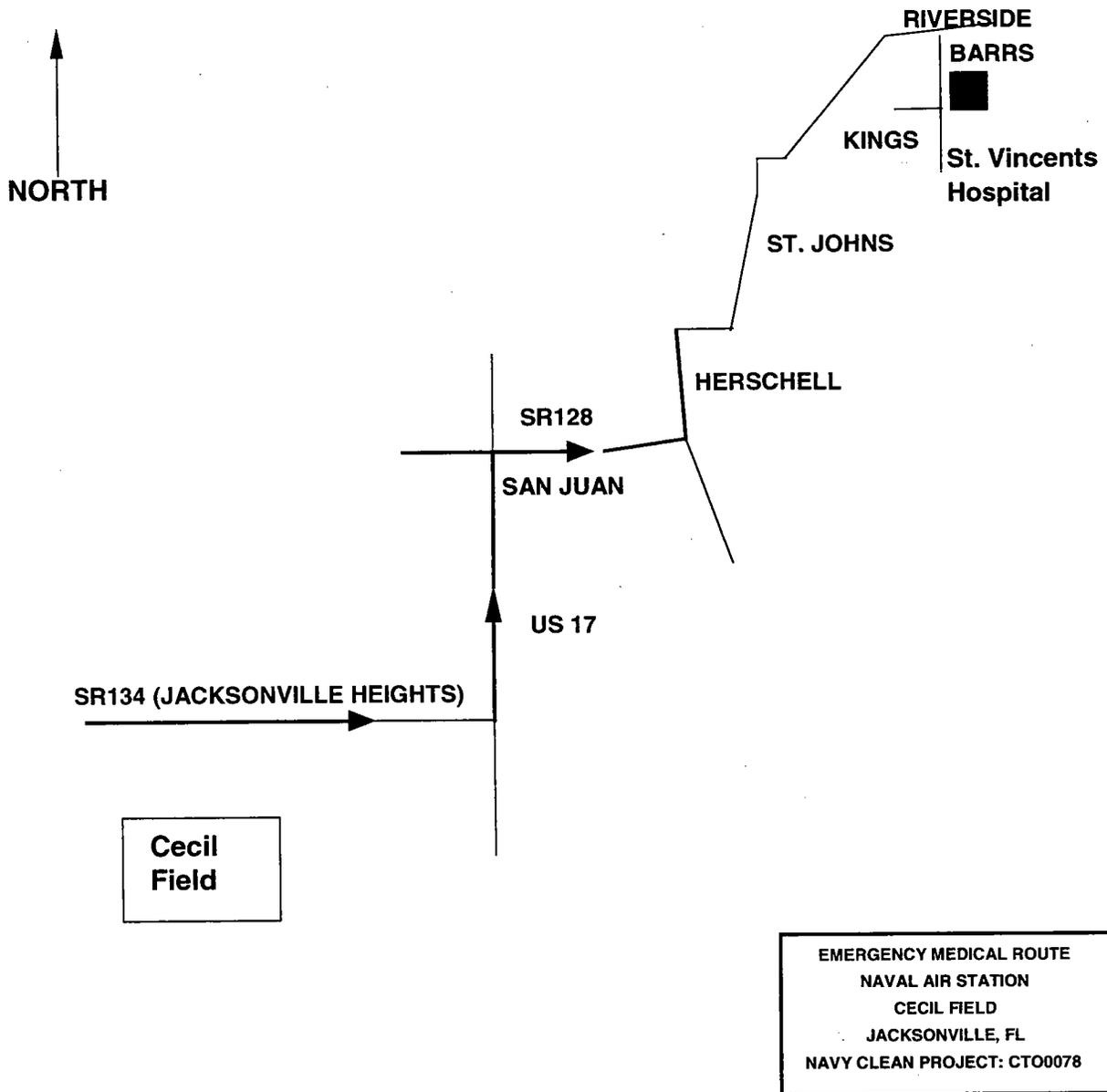
Have symptoms: (please check off appropriate response and give duration of symptoms)

Improved: _____ Worsened: _____ Remained Unchanged: _____

V. Treatment of Symptoms (check off appropriate response)

None: _____ Self-Medicated: _____ Physician Treated: _____

Figure 2-2
Map to St. Vincents' Hospital



3.0 SITE BACKGROUND

3.1 SITE HISTORY

NAS Cecil Field is located in western Duval County, Florida, within the limits of the City of Jacksonville. In 1989, NAS Cecil Field was placed on the United States Environmental Protection Agency's (EPA's) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL) as a result of pollution resulting from past waste disposal practices that predate CERCLA. In 1990, The United States Department of the Navy entered into a Federal Facilities Agreement (FFA) with EPA to define the overall extent of contamination. NAS Cecil Field has approximately 35 individual sites where hazardous wastes may have been handled, spilled, or buried. As a result, work at the various sites has been organized into eight Operable Units (OUs), as well as more than 100 other areas undergoing evaluation in the BRAC and Underground Storage Tank programs. This HASP addresses the approximately 30 BRAC sites anticipated to be investigated. Figures showing the location of these sites are included in the Sampling and Analysis Plan for each site.

3.2 CURRENT STATUS

NAS - Cecil Field is closed. While the Jacksonville Port Authority is planning on maintaining the air field, currently, there is little re-development activity occurring on the base.

3.3 SITE DESCRIPTION

Building 324

Building 324 was built in 1989 and used as the Engine Maintenance Shack primarily by a naval subcontractor. Past investigations at this site revealed no evidence of contamination. A recent due diligence investigation though revealed evidence of TCE and degradation products during a groundwater sampling event. For this reason monitoring wells will be installed and soil/groundwater sampling will be conducted to determine the extent of contamination.

Building 312

Building 312 is a one story concrete cinder block building constructed in 1957. This building is located off of (Former) Jet Road and 4th Street. Building 312 previously housed administrative offices and two paint booths. Associated structures included an abandoned hydraulic lift, an aircraft wash rack, an oil-water separator, and an underground storage tank (UST) used for waste oil storage.

11 unidentified drums were discovered by Jacksonville Airport Authority (JAA) personnel in the vicinity of Building 312. The drums are numbered and described by JAA as follows (Figure 3-1):

Figure 3-1

No.	JAA Description of Drum Contents*
1	1/4 full of old paint. [liquid]
2	Appears to be empty but may have a little material [liquid, probably a coating] in the bottom of the drum.
3	Desiccite 25 - dehumidifier [look like little pillows]. [Based on Desiccite 25 MSDS, material is bentonite clay. MSDS does not indicate any particular hazardous characteristics.]
4	Smells like lacquer. [full of liquid]
5	Looks and smell like water.
6	May be some kind of primer, 1/4 full. [liquid]
7	Same as 6 but 1/2 full. [liquid]
8	Looks like a combination of runway joint sealant, a little asphalt, trash, and tar in big plastic bags. [all solid material appears to be trash.]
9	Appears to be water.
10	Paint chips and dirt (full).
11	Floor epoxy? 1/4 full. [faded label says "floor epoxy", uncertain if liquid or paste.]

*NOTE: If any other contents other than what is described above is encountered, or if any drums other than these (11) are encountered, do not attempt to sample. Call the PHSO for further instruction.

4.0 SCOPE OF WORK

This section of the HASP addresses the proposed site activities that are to be conducted at NAS Cecil Field. The methods and activities to be conducted include, but may not be limited to:

Building 324

This investigation will involve determining the extent of TCE contamination at Building 324, by using the following methods:

- Mobilization/demobilization
- Groundwater and soil sample collection with DPT. Depths to 50 feet.
- Soil sampling using a hand auger/trowel.
- Monitoring Well installation using a Hollow Stem Auger (HSA) to a maximum depth of 50'.
- IDW management
- Decontamination of sampling equipment

Building 312

- Mobilization/demobilization
- Collect one soil sample for analysis from each of 11 identified drums located adjacent to Building 312. The 11 drums identified in the Sampling and Analysis Work Plan are the only drums covered by this HASP. Sampling or handling of any additional drums encountered is strictly prohibited, as this would require a modification to this plan and notification to the PSHO. See Drum Management Plan in Attachment VII of this HASP.
- Drum 3 will be sampled using the following procedure. Remove the top layers of Desiccite bags in order to observe the drum contents. The sampler will log the contents of the drum in the field logbook. The removed Desiccite bags will be placed in a large plastic bag and replaced back in the drum when the procedure is completed. In the event the sampler discovers materials other than the desiccite bags in the drum, the sampler will identify the contents to the best of their ability without removing or moving the contents. The sampler will be permitted to use their gloved hands within the drum to remove the Desiccite bags (See MSDS for Desiccite bags in Attachment VII of this HASP)

For more detailed description of the associated tasks, refer to the Sampling and Analysis Work Plan. Any tasks to be conducted outside of the elements listed here will be considered a change in scope requiring modification of this HASP. The TOM (or a designated representative) is responsible for notifying the PSHO if any such scope modifications issues are encountered.

5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES

This section presents an evaluation of the potential hazards that may be encountered for each of the planned tasks associated with the project scope of work, as well as the methods that will be taken to evaluate and monitor these potential hazards during the performance of the work, and the control measures that will be taken to protect personnel from these potential hazards. All of this information is summarized in Table 5-1, and in the task-specific Safe Work Permits contained in Attachment V.

The information in Table 5-1 (and in the corresponding Safe Work Permits) may be modified if new information becomes available or if additional tasks become necessary. For each of the planned tasks, Table 5-1 specifies the anticipated hazards, recommended control measures, air monitoring recommendations, required Personal Protective Equipment (PPE), and decontamination measures.

Through using this table and the Safe Work Permits, site personnel can determine which hazards are associated with each task, and what associated control measures are necessary to minimize potential exposure or injuries related to those hazards. The table and the permits also assists field team members in determining which PPE and decontamination procedures to use as well as proper air monitoring techniques.

As discussed earlier, a Health and Safety Guidance Manual accompanies this table and HASP. The manual has been designed to further explain supporting programs and elements for other site -specific aspects as required by 29 CFR 1910.120. The Guidance Manual should be referenced for additional information regarding decontamination activities, emergency response, hazard assessments, hazard communication and hearing conservation programs, medical surveillance, PPE, respiratory protection, site control measures, standard work practices, and training requirements. The Guidance Manual also presents information on topics that are not task-specific in nature such as heat stress, cold stress, and illnesses associated with insect bites. Many of Tetra Tech NUS' SOPs are also provided in the Guidance Manual.

Safe Work Permits are to be prepared and issued for all exclusion zone activities (See Section 9.2). These permits have been initially prepared using the information provided in Table 5-1. Certain sections of the task-specific Safe Work Permits could not be completed during HASP preparation, and these will need to be completed by the FOL/SSO prior to initiating each task, adding information such as the names of individuals who will perform the task, documenting the performance of pre-task inspections, and designating items of PPE that are identified in Table 5-1 as optional (i.e., at the discretion of the

FOL/SSO). These permits are to be reviewed by the SSO with all task participants during pre-task tailgate safety briefings.

5.1 GENERAL SAFE WORK PRACTICES

In addition to the task-specific work practices identified on Table 5-1, the following general safe work practices (SWP) are to be followed when conducting work on-site. These safe work practices address a pattern of general precautions and measures for reducing risks associated with site operations. This list is not all-inclusive and may be amended as necessary.

- Eating, drinking, chewing gum or tobacco, taking medication, or smoking is allowed in support zone only. Avoid these activities in all potentially contaminated areas or where the possibility for the transfer of contamination exists.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. A thorough shower and washing must be conducted as soon as possible if excessive skin contamination occurs.
- Avoid contact with potentially contaminated substances. Avoid puddles, pools, mud, or other such areas. Avoid, whenever possible, kneeling on the ground or leaning or sitting on equipment. Keep monitoring equipment away from potentially contaminated surfaces.
- Obey all instructions in the site-specific HASP. This plan and sampling procedure only covers the 11 drums specified in Section 3.3 of this plan. If additional drums are discovered no action will be permitted without approval of the PHSO and or the HSM.
- Contents other than what is addressed in Section 3.3 will require field personnel to notify the PHSO and or the HSM. All work will be discontinued until advised to proceed by the PHSO or HSM.
- Take note of the location of the nearest telephone and all 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.
- Buddies should maintain visual contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.
- Establish appropriate Safety Zones including Support, Contamination Reduction, and Exclusion Zones.
- Minimize the number of personnel and equipment in contaminated areas (such as the Exclusion Zone). Non-essential vehicles and equipment should remain within the Support Zone.
- Immediately report all injuries, illnesses, and unsafe conditions, practices, and equipment to the Site Safety Officer (SSO).
- Observe coworkers for signs of toxic exposure and heat or cold stress.

- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

5.2 DRILLING SAFE WORK PRACTICES

The following safe work practices are to be followed when working on or around drill rig operations.

Before Drilling

Identify all underground utilities and buried structures before drilling. Use the Utility Locating and Excavation Clearance SOP provided in Attachment VI.

- All drill rigs will be inspected by a Competent Person (the SSO or designee) prior to the acceptance of the equipment at the site and prior to the use of the equipment. All repairs or deficiencies identified will be corrected prior to use. The inspection will be accomplished using the Equipment Inspection Checklist provided in Attachment IV. Inspection frequencies will be once every shift (either 5 or 10 day) or following repairs.
- The work area around the point of operation will be graded to the extent possible to remove any trip hazards near or surrounding rotating equipment.
- The driller's helper will establish an equipment staging and lay down plan. The purpose of this is to keep the work area clear of clutter and slip, trip, and fall hazards. Mechanisms to secure heavy objects such as drill flights will be provided to avoid the collapse of stacked equipment.
- All potentially contaminated tooling will be wrapped in polyethylene sheeting for storage and transport to the centrally located decontamination unit.

During Drilling

- Secure frayed or loose clothing, hair, and jewelry when working with rotating equipment.
- Minimize contact to the greatest extent possible with contaminated tooling and environmental media.

- Support functions (sampling and screening stations) will be maintained a minimum distance from the drill rig of the height of the mast plus five feet to remove these activities from within physical hazard boundaries.
- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the drill rig.
- In order to minimize contact with potentially contaminated tooling and media and to minimize lifting hazards, multiple personnel should move auger flights and other heavy tooling.
- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone. Site visitors will be escorted at all times.

After Drilling

- All equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the SSO to determined cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.
- All motorized equipment will be fueled prior to the commencement of the days activities. During fueling operations all equipment will be shutdown and grounded to the fuel provider.
- When not in use all drill rigs will be shut down, emergency brakes set, and wheels chocked.
- All areas subjected to subsurface investigative methods will be restored to equal or better condition than original to remove any contamination brought to the surface and to remove any physical hazards. In situations where these hazards cannot be removed these areas will be barricaded to minimize the impact on field crews working in the area.

5.3 DRUM HANDLING SAFE WORK PRACTICES

The following safe work practices are to be followed when working with 55-gallon drums containing solids (e.g., drill cuttings) or liquids (e.g. groundwater, drilling mud).

- Check the work area and manage any slip, trip, and/or fall hazards.

- Visually inspect each drum for potential handling hazards, such as a loose lid, swelling, or rust-through.
- If the drum contents are known to be non hazardous, Level D PPE (sleeved shirt, long pants, steel-toed shoes or boots, eye protection) is appropriate and must be worn. If the contents are known to be hazardous or are unknown, then PPE requirements will increase to Level B or a level of protection determined by the SSO and/or the PHSO.
- Always wear hand protection (e.g. leather or leather palmed gloves) when handling drums.
- Always use equipment, manual or powered, to move or lift drums. NEVER attempt to lift a drum containing any amount of material without the appropriate equipment (i.e. lift gate, fork lift, etc.).
- Always use multiple workers to right a drum on its side, particularly when full. If possible, use equipment, such as a fork lift, to right the drum.
- When staging, leave open space around each drum to avoid creating pinch points.

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**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES FOR
BUILDING 312 DRUM SAMPLING
AT
NAVAL AIR STATION CECIL FIELD, JACKSONVILLE, FLORIDA**

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 SSO dictate.)</i>	Decontamination Procedures
Mobilization/ Demobilization	<p><i>Physical hazards:</i></p> <ol style="list-style-type: none"> 1) Lifting (strain/muscle pulls) 2) Slip, trips, and falls 3) Vehicular and foot traffic <p><i>Natural hazards:</i></p> <ol style="list-style-type: none"> 4) Insect/animal bites and stings, poisonous plants, etc. 	<ol style="list-style-type: none"> 1) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 2) Preview work locations for unstable/uneven terrain. 3) Traffic and equipment considerations are to include the following: <ul style="list-style-type: none"> - Establish safe zones of approach. - If working in the vicinity of roadways, runways or other traffic areas use high visibility vests. 4) Avoid nesting areas, use repellents. Report potential hazards to the SSO. Follow guidance presented in Section 4 of the Health and Safety Guidance Manual. 	Not required	Level D - (Minimum Requirements) - Standard field attire (Sleeved shirt; long pants) - Steel toe safety shoes - <i>Safety glasses</i> - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Reflective vest for high traffic areas</i> - <i>Hearing protection if working near operating equipment.</i>	Not required however good work hygiene practices are recommended. - Wash hands prior to leaving the site.
Decontamination of Sampling Equipment	<p><i>Chemical hazards:</i></p> <ol style="list-style-type: none"> 1) Contaminants of concern vary between the different drums initial investigation revealed the contents to be contain various materials including paint, lacquer, packing materials (Desiccite 25), asphalt, tar, trash and epoxy. The primary types of contaminants include VOCs and SVOC's. Refer to Section 6 of this HASP to identify what contaminants are present at each site which (if any) could pose an inhalation hazard potential. <p>It should be noted, that the contaminants of concern are not anticipated to be at elevated airborne concentrations in worker's breathing zone. It is recommended that exposure (via inhalation, ingestion, or skin contact) to these contaminants be minimized through the use of air monitoring methods, safe work practices, PPE use, and decontamination/personal hygiene practices.</p> <ol style="list-style-type: none"> 2) Decontamination fluids - Liquinox (detergent), acetone or isopropanol <p><i>Physical hazards:</i></p> <ol style="list-style-type: none"> 3) Lifting (strain/muscle pulls) 4) Vehicular and foot traffic 5) Slips, trips, and falls <p><i>Natural hazards:</i></p> <ol style="list-style-type: none"> 6) Inclement weather / Heat Stress 	<ol style="list-style-type: none"> 1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Obtain manufacturer's MSDS for any decontamination fluids used onsite. These must be used in well-ventilated areas, such as outdoors. Use appropriate PPE as identified on MSDS. All chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication section of the Health and Safety Guidance Manual (Section 5). 3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes. See hazard control measures identified for the Groundwater Sampling task of this Table. 4) Traffic and equipment considerations are to include the following: <ul style="list-style-type: none"> - Establish safe zones of approach. - All activities are to be conducted consistent with the Base requirements. - If working in the vicinity of roadways, runways or other traffic areas use high visibility vests. 5) Preview work locations for unstable/uneven terrain. 6) Suspend or terminate operations until directed otherwise by the SSO. For Heat stress prevention – replenish fluids lost through perspiration and if necessary take breaks in cool/shaded areas or air conditioned buildings. 	Use visual observation, and real-time monitoring instrumentation to ensure all equipment has been properly cleaned of contamination and dried. After decon is completed, screen equipment with a FID. If any elevated readings (i.e., above background) are observed, perform decon again and re-screen. Repeat until no elevated PID readings are noted.	<p>Note: Consult MSDS for PPE guidance. Otherwise, observe the following.</p> <p>Level D Minimum requirements -</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Safety shoes (Steel toe/shank) - Nitrile outer gloves - Safety glasses <p>In the event of overspray of chemical decontamination fluids employ PVC Rainsuits or PE or PVC coated Tyvek as necessary.</p> <p>Note: The Safe Work Permit(s) for this task (see Attachment V) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination will consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"> - Equipment drop - Soap/water wash and rinse of outer boots and gloves, as applicable - Soap/water wash and rinse of the outer splash suit, as applicable - Disposable PPE will be removed and bagged. <p>MSDS for any decon solutions (Alconox, isopropanol, etc.) will be obtained and used to determine proper handling / disposal methods and protective measures (PPE, first-aid, etc.).</p> <p>All equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site.</p> <p>The FOL or the SSO will be responsible for evaluating equipment arriving onsite and leaving the site. No equipment will be authorized access or exit without this evaluation.</p>

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES FOR
BUILDING 312 DRUM SAMPLING
AT
NAVAL AIR STATION CECIL FIELD, JACKSONVILLE, FLORIDA**

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 SSO dictate.)</i>	Decontamination Procedures
<p>Drum sampling. This task includes lid and bung removal.</p> <p>1) All drums will be opened outside on a temporary bermed area.</p> <p>2) Remove bung or lid using manual removal methods (i.e. bung wrench, socket/ratchet) Do not use electrical tools (cordless drills etc.)</p> <p>3) For liquids: - Insert drum thief remove sample volume leave drum thief in drum when sampling is completed.</p> <p>4) Document drum contents/label information</p> <p>5) Reseal and label</p> <p>6) Move to staging area if required.</p>	<p><i>Chemical hazards:</i></p> <p>1) Contaminants of concern vary between the different drums initial investigation revealed the contents to be contain various materials including paint, lacquer, packing materials (Desiccite 25), asphalt, tar, trash and epoxy. The primary types of contaminants include VOCs and SVOC's. Refer to Section 6 of this HASP to identify what contaminants are present at each site which (if any) could pose an inhalation hazard potential.</p> <p>It should be noted, that the contaminants of concern are not anticipated to be at elevated airborne concentrations in worker's breathing zone. It is recommended that exposure (via inhalation, ingestion, or skin contact) to these contaminants be minimized through the use of air monitoring methods, safe work practices, PPE use, and decontamination/personal hygiene practices.</p> <p>2) Transfer of contamination into clean areas</p> <p>3) Drum Opening</p> <p>4) Drum Sampling</p> <p><i>Physical hazards:</i></p> <p>5) Lifting (strain/muscle pulls)</p> <p>6) Slip, trips, and falls</p> <p>7) Vehicular and foot traffic</p> <p><i>Natural hazards:</i></p> <p>8) Insect/animal bites and stings, poisonous plants, etc.</p>	<p>1) Employ real-time monitoring instrumentation, action levels, and identify PPE to control exposures to potentially contaminated media (e.g. water, drum contents).</p> <p>2) Decontaminate all equipment and supplies, if they become contaminated, between locations and prior to leaving the site.</p> <p>3) and 4) Activities will proceed according to the Drum Management Plan found in Attachment VII of this HASP.</p> <p>5) Use machinery or multiple personnel and material handling equipment such as a drum dolly for heavy lifts. Use proper lifting techniques.</p> <p>6) Preview work locations for unstable/uneven terrain.</p> <p>7) Traffic and equipment considerations are to include the following: - Establish safe zones of approach. - If working in the vicinity of roadways, runways or other traffic areas use high visibility vests.</p> <p>8) Avoid nesting areas, use repellents. Report potential hazards to the SSO. Follow guidance presented in Section 4 of the Health and Safety Guidance Manual.</p>	<p>It is not anticipated that potential contaminant concentrations at outdoor work locations will present a significant inhalation hazard. However, a direct-reading monitor instrument identified below will be used to monitor source areas and worker breathing zones.</p> <p>A direct reading Photoionization detector (PID) with a 10.6 eV lamp source, will be used to screen drum openings and the breathing zone above the drum to detect the presence of any potential volatile organics (see Table 6-1). However, as a precautionary measure, source monitoring of the work area will be conducted continuously during the sampling operation. Positive sustained results in the breathing zone will require the following actions:</p> <ul style="list-style-type: none"> - Monitor the breathing zone of at-risk employees. Any sustained readings (greater than 1 minute in duration) above background in the breathing zone of the at-risk employees requires site activities to be suspended and site personnel to report to an unaffected area. - Approach the drums from upwind and screen the breathing zone. - Open bung, screen drum and breathing zone - Wait 20 minutes remove lid, screen breathing zone - Sample, while screening breathing zone <p>If elevated readings are noted in breathing zone during any of these activities:</p> <ul style="list-style-type: none"> - Retreat upwind - Reapproach, screen breathing zone - Resume sampling when background readings are re-obtained in Breathing zone - If elevated readings persist notify the PHSO to determine necessary actions and levels of protection. (For further information refer to Section 6.1). 	<p>Level D protection will be utilized for the initiation of all sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Heavy Nitrile or cotton/leather work gloves with surgical style inner gloves - Steel toe safety shoes - Safety glasses - <i>Reflective vest for high traffic areas</i> - <i>Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists.</i> - <i>Hearing protection for high noise areas, or as directed on an operation by operation scenario</i> - <i>Apron</i> - <i>Splash Shield</i> <p>Note: The Safe Work Permit(s) for this task (see Attachment V) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p> <p>Emergency Equipment</p> <ul style="list-style-type: none"> - Spill Kit - Fire Extinguisher - First Aid Kit 	<p>Personnel Decontamination will consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"> - Equipment drop - Soap/water wash and rinse of outer boots and gloves, as applicable - Soap/water wash and rinse of the apron, as applicable - Disposable PPE will be removed and bagged.

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES FOR
BUILDING 324
NAVAL AIR STATION – CECIL FIELD, JACKSONVILLE, FLORIDA**

Revision 01
December 2003

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment	Decontamination Procedures
<p>Soil borings using Direct-Push Technology (DPT, such as the Geoprobe®) or Hollow Stem Auger (HSA).</p>	<p><i>Chemical hazards:</i></p> <p>1) Primary contaminants of concern is Trichloroethylene (TCE). TCE however, is not anticipated to be present in significant concentrations to present an inhalation hazard. See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contamination into clean areas or onto persons.</p> <p><i>Physical hazards:</i></p> <p>3) Heavy equipment hazards (pinch/compression points, rotating equipment, hydraulic lines, etc.)</p> <p>4) Noise in excess of 85 dBA</p> <p>5) Energized systems (contact with underground or overhead utilities)</p> <p>6) Lifting (strain/muscle pulls)</p> <p>7) Slip, trips, and falls</p> <p>8) Vehicular and foot traffic</p> <p>9) Ambient temperature extremes (heat stress)</p> <p><i>Natural hazards:</i></p> <p>10) Insect/animal bites and stings</p> <p>11) Inclement weather</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media (air, water, soils, etc.). Generation of dusts should be minimized. If airborne dusts are observed, area wetting methods may be used. If area wetting methods are not feasible, termination of activities may be used to minimize exposure to excessive airborne dusts.</p> <p>2) Decontaminate equipment and supplies between boreholes and prior to leaving the site.</p> <p>3) Equipment to be used will be</p> <ul style="list-style-type: none"> - Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600, .601, .602), and manufacturers design and documented as such using Equipment Inspection Sheet (see Attachment IV of this HASP). - Operated by knowledgeable operators and ground crew. - Repaired using only manufacturer approved parts and equipment. <p>In addition to the equipment considerations, the following standard operating procedures will be employed:</p> <ul style="list-style-type: none"> - Personnel not directly supporting the direct push operation will remain at least 25 feet from the point of operation. - Drill Rig height of mast + 25' - Loose clothing/protective equipment will be secured to avoid possible entanglement. - Hand signals will be established prior to the commencement of direct push activities. - A remote sampling device must be used to sample drill cuttings near rotating tools. - Work areas will be kept clear of clutter. - Personnel will be instructed in the location and operations of the emergency shut off device(s). This device will be tested initially (and then periodically) to insure its operational status. - Areas will be inspected prior to the movement of direct push rigs and support vehicles to eliminate any physical hazards. This will be the responsibility of the FOL and/or SSO. <p>4) Hearing protection will be used during subsurface activities.</p> <p>5) Utility clearances must be obtained, in writing, prior to subsurface activities. Prior to any subsurface investigations, the locations of underground utilities must be identified and marked. (See Attachment VI of this HASP)</p> <p>6) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</p> <p>7) Preview work locations for unstable/uneven terrain.</p> <p>8) Traffic and equipment considerations are to include the following:</p> <ul style="list-style-type: none"> - Establish safe zones of approach (i.e. Boom + 3 feet). - Secure loose articles to avoid possible entanglement. - Equipment shall be equipped with movement warning systems. - Activities are to be conducted consistent with the Base requirements. <p>9) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the TiNUS Health and Safety Guidance Manual.</p> <p>10) Avoid nesting areas, use repellents tape up (pants legs/boots). Wear appropriate clothing. Report potential hazards to the SSO. Follow guidance presented in Section 4.0 of the Health and Safety Guidance Manual.</p> <p>11) Suspend or terminate operations until directed otherwise by SSO.</p>	<p>It is not anticipated that potential contaminant concentrations at outdoor sample locations will present an inhalation hazard.</p> <p>A direct reading Photoionization Detector (PID) with a 10.6 eV lamp or higher, or a Flameionization Detector (FID), will be used to screen samples and to detect the presence of TCE. Source monitoring of the borehole will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <ul style="list-style-type: none"> - Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (greater than 1 minute in duration) above 25 ppm in the breathing zone areas of the at-risk employees requires site activities to be suspended and site personnel to retreat to an unaffected area. - Work may only resume if airborne readings in worker breathing zone areas return to below daily-established background levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection. <p>Site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be minimized to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be performed by observing work conditions for visible dust clouds. Potential exposure to contaminated dust will be controlled using water suppression, by avoiding dust plumes, or evacuating the operation area until dust subsides.</p> <p>Where the utility clearance cannot be determined, subsurface activities shall proceed with extreme caution using hand digging to at least below the frost-line depth (no less than 4 ft. BGS).</p>	<p>Subsurface operations are to be initiated in Level D protection. Level D protection constitutes the following minimum protection</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Steel toe safety shoes - Safety glasses - Hardhat - Reflective vest for traffic areas - Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential exists for soiling work attire. - Nitrile gloves or leather gloves with surgical style inner gloves - Hearing protection during soil boring activities and/or other high noise areas as directed by the SSO. <p><i>(Items in italics are deemed optional as conditions or the FOL or SSO dictate.)</i></p> <p>Note: The Safe Work Permit(s) for this task (see Attachment V) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination - Will consist of a soap/water wash and rinse for reusable protective equipment (e.g., gloves). This function will take place at an area adjacent to the drilling operations bordering the support zone.</p> <p>This decontamination procedure for Level D protection will consist of</p> <ul style="list-style-type: none"> - Equipment drop - Soap/water wash and rinse of reusable outer gloves, as applicable - Outer coveralls, boot covers, and/or outer glove removal - Dispose of used PPE as normal refuse. - Wash hands and face, leave contamination reduction zone.

**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES FOR
BUILDING 324
NAVAL AIR STATION – CECIL FIELD, JACKSONVILLE, FLORIDA**

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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment	Decontamination Procedures
<p>Removal of Vegetation</p> <p>All efforts should be directed at limiting the removal of mature growth (>4 inch girth) to the extent possible.</p> <p>When removing mature growth catalog types and numbers removed, so during site restoration activities these same numbers and species may be replaced.</p>	<p>Chemical hazards:</p> <p>None anticipated</p> <p>Physical hazards:</p> <p>2) Rotating/cutting machinery</p> <p>3) Noise</p> <p>4) Biological hazards (Insect/animal bites and stings)</p> <p>5) Foot and equipment traffic</p>	<p>Chemical hazards:</p> <p>1) No provisions are currently instituted for protection against chemical hazards as currently none are anticipated as part of this activity.</p> <p>Physical hazards:</p> <p>2) All equipment to be employed will be</p> <ul style="list-style-type: none"> - Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600, 601, 602), and manufacturers design and documented as such using Equipment Inspection Checklist provided in Attachment III. - Only manufacturer approved parts may be used in repair of site equipment. - Operated by knowledgeable ground crew. - Restrictions at the operation (All personnel not directly supporting this clearance activity will remain at least 50-100 feet from the point of this operation). - Hand signals with the chipper operator or backhoe operator will be established prior to the commencement of activities. - All personnel will be instructed in the location and operations of the emergency shut off device(s). This device will be tested initially (and then periodically) to insure its operational status. - A backhoe or the equivalent shall be used to pull away brush from the brush piles pushed together to potentially avoid reaching into potential nesting areas. Hands or feet shall not be used for this purpose. - Work areas will be kept clear of clutter. <p>Chipper Operations</p> <p>Recommended Safety Practices:</p> <ul style="list-style-type: none"> - All safety devices and controls shall be tested initially, then periodically thereafter to insure operational status. - Buddy system - At least two persons shall be in close contact with one another when operating the chipper. This will enable one to engage safety controls to assist the second should the need arise. - Work gloves, long hair, loose fitting clothing shall be taped or otherwise secured to avoid snagging and entanglement in brush or moving chipper components. - Personnel will not place their hands or feet past the entry plane of the feed hopper. - Brush and limbs shall be fed butt first, to allow these materials to sweep past the worker and avoid hooking and dragging them into the hopper and blades. - Feeding the brush and limbs should take place from the side of the feed hopper to the extent possible to enable quick and accessible activation of the emergency shut off devices. - Once the induction device takes hold of the brush or limbs, walk away, this will assist in avoiding entanglement. - Lay short materials on top of longer materials or feed shorter materials by pushing them forward using longer materials into the intake. - Direct the output into a containment structure or away from all personnel working in the area. <p>Chainsaw Operations</p> <p>Recommended Safe Work Practices:</p> <ul style="list-style-type: none"> - Inspect the chainsaw prior to each use. Insure the blade is adjusted and sharp, and all parts are lubricated per the manufacturer's instruction. - Test all safety devices initially and then periodically to insure operational status. - When starting, place the chainsaw on the ground or some other firm surface. Place your foot in the hand guard at the rear of the saw, grip the top handle of the saw with one hand, pull the start cord with the free hand. Never attempt to start the saw free hand or by placing on your knee. - Never cut with tip of the chain saw blade. - Plan the cut. Know where the tree will fall. Have a clear escape plan when dropping trees greater than 2 inches in girth. - Preview the tree to be dropped. Often, red wasps will nest in hollowed out trunks and in tree tops. - Do not stand between falling trees and branches and fix items or other trees. - Do not cut over your head. - Do not cut materials other than wood with the chain saw. - Where prescribed safety equipment. - Monitor, the condition of the saw during use, make adjustments, as necessary. - When limbing a tree, to the extent possible cut from the other side of the trunk 	<p>Based on previous environmental samples and the type of contaminants of concern, it is not anticipated that field crews associated with this task will be overexposed to any of the site contaminants.</p> <p>4) The SSO may perform noise dosimetry to ensure the operational activities, and any contributonal levels associated with the operation do not surpass the noise attenuation factors associated with the hearing protection selected.</p> <p>5) Traffic patterns will be dictated supporting onsite activities. However, regulated patterns in and about the work zones and support thereof will be established to safely control moving equipment, vehicles, and pedestrians around the area of operation.</p>	<p>The removal of vegetation is anticipated to be initiated in a modified Level D protection.</p> <p>Level D - (Minimum Requirements) For vegetation clearance activities:</p> <ul style="list-style-type: none"> - Tyvek coveralls (Based on site conditions, time of the year, etc.) - Field attire (Long sleeve shirt; long pants) - Safety shoes (Steel toe/shank) - Safety glasses/chippers shield - Hardhat (when overhead hazards exists, or identified as a operation requirement) - Reflective vest for high traffic areas - Hearing protection - Work gloves - Chain saw chaps for chain saw operator <p>Note: Secure all loose fitting PPE.</p> <p>Note: Given the time of year and recent weather conditions, ticks and other insects are not anticipated to be a problem. However, if evidence of their presence becomes obvious personnel will be required to tape pant legs to boots to deny entry, as well as, use insect repellent (Permanone) on shoe or boots, pant legs, pants to shirt seams to control access. If conditions of heat stress are not prevalent, the use of Tyvek with taped pant legs are recommended as the light color of the coveralls makes detection easier.</p> <p>This table for removal of vegetation addresses minimum content based on anticipated hazards and recommended control measures. The Safe Work Permit for this activity is presented in Attachment IV. This is to be completed by the FOL and/or the SSO. In the completion, these permits are to incorporate site-specific information and may actually establish requirement above and beyond, that presented in this table. In all cases, the most conservative measures will apply.</p>	<p>Personnel Decontamination</p> <p>It is not anticipated that site personnel engage in this task will encounter any of the associated site contaminants. Therefore, personnel decontamination will consist of</p> <ul style="list-style-type: none"> - Equipment drop - Remove disposable outer protective garments, as applicable. - Wash hands and face, leave contamination reduction zone <p>Equipment Decontamination</p> <p>General cleaning before return to the rental agency.</p>

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TASKS/HAZARDS/CONTROL MEASURES FOR
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		<p>which will serve as a shield.</p> <ul style="list-style-type: none"> - Be attentive as to which way the trunk may move when removing limbs, place yourself out of the anticipated pathway when cutting. - Be attentive to movement of the trunk as an indication of the stability of the tree and brush pile. - Keep the work area free from clutter to avoid potential slip, trip, and fall hazards. <p>3) Due to operations generated noise levels, excessive noise control will be facilitated through the use of hearing protection.</p> <p>4) Avoid insect nesting areas, employ repellents. Report potential hazards to the SSO.</p> <p>5) Traffic considerations Establish safe zones and routes of approach to the operation.</p> <ul style="list-style-type: none"> - All personnel working in amongst equipment traffic are required to wear reflective vests for high visibility - Secure all loose articles to avoid possible entanglement. - All equipment shall be equipped with movement warning systems. 			
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**TABLE 5-1
TASKS/HAZARDS/CONTROL MEASURES FOR
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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment	Decontamination Procedures
<p>Multi-media sampling, including soil, groundwater (including IDW sampling).</p>	<p><i>Chemical Hazards</i></p> <p>1) Primary contaminant of concern is Trichloroethylene (TCE). TCE however, is not anticipated to be present in significant concentrations to present an inhalation hazard. See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contamination into clean areas</p> <p><i>Physical hazards</i></p> <p>3) Noise in excess of 85 dBA 4) Lifting (strain/muscle pulls) 5) Pinches and compressions 6) Slip, trips, and falls 7) Ambient temperature extremes (heat stress) 8) Vehicular and foot traffic</p> <p><i>Natural hazards</i></p> <p>9) Insect/animal bites and stings</p> <p>10) Inclement weather</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media (air, water, soils, etc.). Generation of dusts should be minimized. If airborne dusts are observed, area wetting methods may be used. If area wetting methods are not feasible, termination of activities may be used to minimize exposure to observed airborne dusts.</p> <p>2) Decontaminate equipment and supplies between sampling locations and prior to leaving the site.</p> <p>3) When sampling at the Geoprobe or HSA use hearing protection. The use of hearing protection outside of 25 feet from the Geoprobe or HSA should be incorporated under the following condition:</p> <p align="center">If you have to raise your voice to talk to someone who is within 2 feet of your location, hearing protection must be worn.</p> <p>4) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</p> <p>5) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points.</p> <p>- A remote sampling device must be used to sample drill cuttings near rotating tools. The equipment operator shall shutdown machinery if the sampler is near moving machinery parts.</p> <p>6) Preview work locations for unstable/uneven terrain.</p> <p>7) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding cold/heat stress concerns is provided in Section 4 of the TINUS Health and Safety Guidance Manual.</p> <p>8) Traffic and equipment considerations are to include the following: - Establish safe zones of approach (i.e. Boom + 3 feet). - Secure loose articles to avoid possible entanglement. - Equipment shall be equipped with movement warning systems. - Activities are to be conducted consistent with the Base requirements.</p> <p>9) Avoid nesting areas, use repellents, tape up (pants legs/boots)... Report potential hazards to the SSO.</p> <p>10) Suspend or terminate operations until directed otherwise by the SSO.</p>	<p>It is not anticipated that potential contaminant concentrations at outdoor sample locations will present an inhalation hazard.</p> <p>A direct reading Photoionization Detector (PID) with a 10.6 eV lamp or higher, or a Flameionization Detector (FID), will be used to screen samples and to detect the presence of any potential volatile organics. Source monitoring of the borehole will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <ul style="list-style-type: none"> - Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (greater than 1 minute in duration) above 10 ppm in the breathing zone areas of the at-risk employees requires site activities to be suspended and site personnel to retreat to an unaffected area. - Work may only resume if airborne readings in worker breathing zone areas return to below daily-established background levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection. <p>Site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be minimized to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be performed by observing work conditions for visible dust clouds. Potential exposure to contaminated dust will be controlled using water suppression, by avoiding dust plumes, or evacuating the operation area until dust subsides.</p>	<p>Level D protection will be utilized for the initiation of sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Steel toe safety shoes - Safety glasses - Surgical style gloves (double-layered if necessary) - Reflective vest for high traffic areas - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists.</i> - <i>Hearing protection for high noise areas, or as directed on an operation by operation scenario.</i> <p><i>(Items in italics are deemed optional as conditions or the FOL or SSO dictate.)</i></p> <p>Note: The Safe Work Permit(s) for this task (see Attachment V) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination will consist of a removal and disposal of non-reusable PPE (gloves, coveralls, etc., as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"> - Equipment drop - Outer coveralls, boot covers, and/or outer glove removal (as applicable) - Removal, segregation, and disposal of non-reusable PPE in bags/containers provided - Soap/water wash and rinse of reusable PPE (e.g., hardhat) if potentially contaminated - Wash hands and face, leave contamination reduction zone.

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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment	Decontamination Procedures
Mobilization/ Demobilization See Table for Building 312					
Decontamination of Sampling and Heavy Equipment	<p><i>Chemical Hazards</i></p> <p>1) Primary contaminants of concern is Trichloroethylene (TCE). TCE however, is not anticipated to be present in significant concentrations to present an inhalation hazard. See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Decontamination fluids - Liquinox (detergent), acetone or isopropanol</p> <p><i>Physical Hazards</i></p> <p>3) Lifting (strain/muscle pulls) 4) Noise in excess of 85 dBA 5) Flying projectiles 6) Decontamination Pad 7) Vehicular and foot traffic 8) Ambient temperature extremes (heat stress) 9) Slips, trips, and falls</p> <p><i>Natural Hazards</i></p> <p>10) Inclement weather</p>	<p>1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Obtain manufacturer's MSDS for any decontamination fluids used onsite. These must be used in well-ventilated areas, such as outdoors. Use appropriate PPE as identified on MSDS. Chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication section of the Health and Safety Guidance Manual (Section 5).</p> <p>3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes.</p> <p>4) Wear hearing protection when operating pressure washer.</p> <p>5) Use eye and face protective equipment when operating pressure washer. Other personnel must be restricted from the area.</p> <p>6) Decon Pad Activities: - Lined - Sloped - Keep hoses gathered - Periodically remove standing water - Drying Racks - 73,000use @least 15 degree deflection tip - Steam or pressure establish controls and PPE for elevated temperatures and hazard controls</p> <p>7) Traffic and equipment considerations are to include the following: - Establish safe zones of approach. - Equipment shall be equipped with movement warning systems. - Activities are to be conducted consistent with the Base requirements.</p> <p>8) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the TtNUS Health and Safety Guidance Manual.</p> <p>9) Preview work locations for unstable/uneven terrain.</p> <p>10) Suspend or terminate operations until directed otherwise by SSO.</p>	<p>Use visual observation, and real-time monitoring instrumentation to ensure equipment has been properly cleaned of contamination and dried. After decon is completed, screen equipment with a PID/FID. If any elevated readings (i.e., above background) are observed, perform decon again and rescreen. Repeat until no elevated PID/FID readings are noted.</p>	<p>For Heavy Equipment This applies to high pressure soap/water, steam cleaning wash and rinse procedures.</p> <p>Level D Minimum requirements - - Standard field attire (Long sleeve shirt; long pants) - Steel toe safety shoes - <i>Chemical resistant boot covers</i> - Nitrile outer gloves - <i>PVC Rainsuits or PE or PVC coated Tyvek</i> - Safety glasses underneath a splash shield when operating power washer - <i>Hearing protection (plugs or muffs) when operating power washer</i></p> <p><i>Items in italics are at the discretion of the SSO.</i></p> <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 - - Standard field attire (Long sleeve shirt; long pants) - Safety shoes (Steel toe/shank) - Nitrile outer gloves - Safety glasses</p> <p>In the event of overspray of chemical decontamination fluids employ PVC Rainsuits or PE or PVC coated Tyvek as necessary.</p>	<p>Personnel Decontamination will consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of: - Equipment drop - Soap/water wash and rinse of outer boots and gloves, as applicable - Soap/water wash and rinse of the outer splash suit, as applicable - Disposable PPE will be removed and bagged.</p> <p>Equipment Decontamination - Heavy equipment decontamination will take place at a centralized decontamination pad utilizing steam or pressure washers. Heavy equipment will have the wheels and tires cleaned along with any loose debris removed, prior to transporting to the central decontamination area. 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 onsite activity.</p> <p>Sampling Equipment Decontamination</p> <p>Sampling equipment will be decontaminated as per the requirements in the Sampling and Analysis Plan and/or Work Plan.</p> <p>MSDS for any decon solutions (Alconox, isopropanol, etc.) will be obtained and used to determine proper handling / disposal methods and protective measures (PPE, first-aid, etc.).</p> <p>Equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site.</p> <p>The FOL or the SSO will be responsible for evaluating equipment arriving onsite and leaving the site. No equipment will be authorized access or exit without this evaluation.</p>

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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment	Decontamination Procedures
<p>IDW management and moving IDW drums to storage areas</p>	<p><i>Chemical Hazards</i></p> <p>1) Primary contaminants of concern is Trichloroethylene (TCE). TCE however, is not anticipated to be present in significant concentrations to present an inhalation hazard. See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contamination into clean areas</p> <p><i>Natural hazards</i></p> <p>9) Insect/animal bites and stings</p>	<p>1) Employ real-time monitoring instrumentation, action levels, and identify PPE to control exposures to potentially contaminated media (e.g. air, water, soils).</p> <p>2) Decontaminate equipment and supplies, if they become contaminated, between locations and prior to leaving the site.</p> <p>3) When working near heavy equipment, use hearing protection.</p> <p>4) Use machinery or drum dollies for moving and placing drums. Use proper lifting techniques.</p> <p>5) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points.</p> <p>6) Preview work locations for unstable/uneven terrain.</p> <p>7) Traffic and equipment considerations are to include the following: - Establish safe zones of approach (i.e. Boom + 3 feet). - Secure loose articles to avoid possible entanglement. - Equipment shall be equipped with movement warning systems. - Activities are to be conducted consistent with the Base requirements.</p> <p>8) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress concerns is provided in Section 4 of the TtNUS Health and Safety Guidance Manual.</p> <p>9) Avoid nesting areas, use repellents, tape up (pants legs/boots). Report potential hazards to the SSO. Follow guidance presented in Section 4.0 of the Health and Safety Guidance Manual.</p>	<p>Monitoring will be performed only in support of the Spill Containment Program.</p>	<p>Level D protection will be utilized for the initiation of sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (long sleeve shirt; long pants) - Cotton/leather work gloves - Steel toe safety shoes - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Reflective vest for high traffic areas</i> - <i>Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists.</i> - <i>Hearing protection for high noise areas, or as directed on an operation by operation scenario.</i> <p><i>(Items in italics are deemed optional as conditions or the FOL or SSO dictate.)</i></p>	<p>Personnel Decontamination will consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"> - Equipment drop - Soap/water wash and rinse of outer boots and gloves, as applicable - Soap/water wash and rinse of the outer splash suit, as applicable - Disposable PPE will be removed and bagged.

6.0 HAZARD ASSESSMENT AND CONTROLS

This section provides reference information regarding the chemical, physical, and natural hazards which may be associated with activities to be conducted as part of the scope of work. Table 6-1 provides specific information related to some of the various chemical hazards that may be present or generated at the planned project areas within NAS Cecil Field. 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

Building 324

This investigation involves the detection of Trichloroethylene (TCE) in groundwater no other contaminants where found to be present.

Building 312

The drums have not been characterized or identified to determine the contaminants of concern. However, based on visual observations, the drums appear to contain various materials including paint, lacquer, packing materials (Desiccite 25), asphalt, tar, trash and epoxy paint. Elevated PID readings obtained from the headspaces of the drums are not anticipated to present an occupational exposure concern to site workers who will collect drum content samples. As a precaution site workers will:

- Remove the bungs from all drums allow the contents to vent for 20 minutes prior to lid removal. If the bung cannot be removed loosen the drum lid and allow the vapors to vent prior to lid removal monitor the breathing zone during this phase of the operation.
- Remove the drum lid monitor the breathing zone. Any readings sustained readings above background will require site evacuation until readings return to background. Additionally, given the limited scope and duration of plan activities, it has been determined that there is little concern for exposure to any site contaminants. Safe work practices and personal protective equipment (PPE) will be used to further minimize the potential for encountering physical and chemical hazards associated with this work.
- Site workers could be exposed to solvents during drum opening. Health hazards associated with solvent exposure include toxicity to the nervous system, reproductive damage, liver and kidney damage, respiratory impairment, cancer, and dermatitis. Solvents share many chemical, physical, and biological properties that warrant attention

6.2 PHYSICAL HAZARDS / NATURAL HAZARDS

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

- Slip, trips, and falls
- Strain/muscle pulls from heavy lifting
- Ambient temperature extremes (heat stress)
- Contact with sharp objects
- Inclement weather

These hazards are discussed further below, and are presented relative to each task in Table 5-1.

6.2.1 Slips, Trips, and Fall

During various site activities there is a potential for slip, trip, and fall hazards associated with wet, steep, or unstable work surfaces. Additionally, open trenches may be present in the area of the debris pile. Site personnel are not permitted to enter any excavation given the potential hazards associated with these areas (confined space, cave-ins, etc.). To minimize slips, trips, and falls, personnel who are required to work in and along areas prone to these hazards will be required to exercise caution, and use appropriate precautions (restrict access, identify hazards, cover open excavations, etc.) and other means suitable for the task at hand. All activities will be performed using the buddy system.

6.2.2 Strain/Muscle Pulls from Heavy Lifting

During execution of planned activities there is some potential for strains, sprains, and/or muscle pulls due to the physical demands and nature of this site work. To avoid injury during lifting tasks personnel are to lift with the force of the load carried by their legs and not their backs. When lifting or handling heavy material or equipment use an appropriate number of personnel. Keep the work area free from ground clutter to avoid unnecessary twisting or sudden movements while handling loads.

6.2.3 Ambient Temperature Extremes (Heat Stress)

Given the geographic location of the site and the project schedule, overexposure to high ambient temperatures (heat stress) may exist during performance of this work depending on the project schedule. Work performed when ambient temperatures exceed 70 °F may result in varying levels of heat stress (heat rash, heat cramps, heat exhaustion, and/or heat stroke) depending on variables such as wind speed, humidity, and percent sunshine, as well as physiological factors such as metabolic rate and skin moisture content. Additionally, work load and level of protective equipment will affect the degree of exposure. Site personnel will be encouraged to drink plenty of fluids to replace those lost through

perspiration. Additional information such as Work-Rest Regimens and personnel monitoring may be found in section 4.0 of the Health & Safety Guidance Manual.

6.3 NATURAL HAZARDS

Insect/animal bites and stings, poisonous plants, and inclement weather are natural hazards that may be present given the location of activities to be conducted. The area around Building 324 has heavy vegetation and brush which will require removal. In general, avoidance of areas of known infestation or growth will be the preferred exposure control for insects/animals and poisonous plants. Specific discussion on principle hazards of concern follows:

6.3.1 Insect/Animal Bites and Stings

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

Areas to be investigated could be prime nesting and/or hiding locations for other insects and snakes. Personnel should avoid reaching into areas that are not visibly clear of snakes or insects. Snake chaps will be worn in areas of known or anticipated snake infestation. Bees also build shelter in places that may be difficult to see, including in the soil. Many people suffer extremely serious allergic reactions to bee stings. All site personnel who are allergic to stinging insects such as bees, wasps, and hornets must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be listed on the Medical Data Sheet and the FOL and SSO notified.

Alligators live in all Florida counties but are most common in the major river drainage basins and large lakes in the central and southern portions of the state. They also can be found in marshes, swamps, ponds, drainage canals, phosphate-mine settling ponds, and ditches. Alligators are tolerant of poor water-quality and occasionally inhabit brackish marshes along the coast. A few even venture into salt water.

Mature alligators seek open water areas during the April-to-May courtship and breeding season. After mating, the females move into marsh areas to nest in June and early July where they remain until the following spring. Males generally prefer open and deeper water year-round. Alligators less than four feet long typically inhabit the marshy areas of lakes and rivers. Dense vegetation in these habitats provides protective cover and many of the preferred foods of young alligators.

- Most human attacks associated with alligators occur when they have been fed by humans or when defending their nests.
- Under no circumstances should you approach an alligator closely. They are quite agile, even on land. As with any wild animal, alligators merit a measure of respect.
- Alligators are classified as a threatened species and thus enjoy the protection of state and federal law. Only representatives of the Florida Game and Fresh Water Fish Commission are empowered to handle nuisance alligators.
- It is illegal to feed, tease, harass, molest, capture, or kill alligators.
- If a serious problem does exist, contact the Florida Game and Fresh Water Fish Commission.



Snakes may be found throughout central Florida. Good snakebite defenses include wearing leather boots, chaps, and gloves. Few snakebites result in death, but any snakebite should be considered

serious. Call 911, describe the event, and follow the instructions given by the emergency service operator.

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

6.3.2 Inclement Weather

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

Tropical Storms and Hurricanes

As Florida is a tropical storm, hurricane prone area, the following information is supplied to explain the potential severity of these natural hazards. The decision to curtail operations and evacuate the area should be made by the FOL, PM, and the HSM.

During the early summer to late fall months, typically from the first of June through the end of November, disturbances migrating off the West Coast of Africa move into the Atlantic Ocean and develop into tropical cyclones known as tropical storms and hurricanes. Many of these cyclones become strong enough to threaten life and property along the Eastern Seaboard and Gulf Coast. There are three main threats associated with tropical storms and hurricanes:

- High winds
- Excessive rainfall
- Storm surge

The impacts of high winds and excessive rainfall occur hours, maybe days, before the tropical storm or hurricane makes landfall. However, the storm surge accompanies the storm or hurricane at the time that landfall occurs.

High Winds

Sustained winds vary greatly from storm to storm, but can range from 39 to 73 miles per hour (wind speeds associated with a tropical storm) to greater than 74 miles per hour (minimal wind speed for a Category 1 hurricane). Table 6-2 compares the type of storm or hurricane and the corresponding wind speed.

Table 6-2
Tropical Storm/Hurricane Rating Scale

TYPE	CATEGORY*	WINDS (MPH)
Tropical Depression	NA	>35-38
Tropical Storm	NA	39 – 73
Hurricane	1	74 – 95
Hurricane	2	96 – 110
Hurricane	3	111 – 130
Hurricane	4	131 – 155
Hurricane	5	>155

Based on the Saffir-Simpson scale

NA – Not Applicable

In addition to strong winds, there is the threat of debris (i.e. building material, trees, etc.) becoming airborne projectiles as they are carried by the high winds. Thunderstorms and tornadoes embedded within the tropical storm or hurricane can further increase the wind speeds on a localized level.

Excessive Rainfall

Heavy rains associated with tropical storms and hurricanes also vary greatly from storm to storm. On average, an inch of rainfall an hour is not uncommon with major hurricanes, somewhat lesser amounts with tropical storms. However, the primary threat is not the intensity of rain, but the duration of rainfall. Since many tropical storms and hurricanes are slow-movers, they are capable of producing sustained heavy rainfall over a long period of time. It is not uncommon for an area to receive nearly 20 inches of rain in 24 hours. Under these conditions, street; stream and creek flooding is inevitable only to be exacerbated by locally heavier rains from thunderstorms.

Storm Surge

The storm surge is an abnormal rise in sea level accompanying a hurricane or tropical storm. The height of the storm surge (usually measured in feet) is the difference in sea level from the observed level (during the storm) and the level that would have occurred in the absence of the storm or hurricane. The more

intense the storm or hurricane the higher the storm surge. Storm surges become even higher if they occur during periods of high tide. Table 6-3 defines some of the terminology and possible calls to action regarding tropical cyclones:

**Table 6-3
TROPICAL STORM/HURRICANE
WATCH AND WARNING**

STORM DESCRIPTION	DEFINITION	CALL TO ACTION
TROPICAL STORM WATCH	TROPICAL STORM CONDITIONS ARE POSSIBLE IN THE SPECIFIED AREA OF THE WATCH, USUALLY WITHIN 36 HOURS	Weather conditions should be monitored for further advisories. Prepare for possible evacuation by local officials
Tropical Storm Warning	Tropical storm conditions are expected in the specified area of the warning, usually within 24 hours.	Work should be suspended in areas where lightning, high winds and rainfall could pose a threat to life. Mandatory evacuations may be enforced by local officials.
Hurricane Watch	Hurricane conditions are possible in the specified area of the watch, usually within 36 hours.	Weather conditions should be monitored for further advisories. Prepare for possible evacuation by local officials
Hurricane Warning	Hurricane conditions are expected in the specified area of the warning, usually within 24 hours.	Mandatory evacuations will most likely be enforced by local officials.

A NOAA Weather Radio is the best means to receive watches and warnings from the National Weather Service. The National Weather Service continuously broadcasts updated hurricane advisories that can be received by widely available NOAA Weather Radios.

6.3.3 Cuts and Lacerations

Cuts and lacerations are the most common and most preventable injuries. Three of the most common are discussed below.

Some soil samplers collect samples in heavy plastic wrappers. The outer wrapper must be cut open before personnel can examine the sample or perform tests on it. A cut finger or hand can result if the sample or the knife slips during the cutting. Wearing leather gloves, placing the sample on a firm surface, and slicing the wrapper away from your body carefully with a sharp knife can prevent this type of injury. More pressure is required if the knife is dull, and greater pressure increases the chance of a slip.

Workers often hurry while clearing brush with a machete, axe, or other tool. Haste increases the chance of falling while carrying a sharp tool. Clearing must be done carefully with sharp tools while paying close attention to anything that might deflect the tool. Cutting tools must be kept in protective sheaths when not in use.

TABLE 6-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
NAS CECIL FIELD, JACKSONVILLE, FLORIDA
PAGE 1 OF 1

Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Trichloroethylene (TCE)	79-01-6	<p>PID: I.P. 9.45 eV, High response with PID and 10.2 eV lamp.</p> <p>FID: 70% Response with FID.</p>	<p>Air sample using charcoal tube; carbon disulfide desorption; Sampling and analytical protocol shall proceed in accordance with OSHA Method #07, or NIOSH Method #1022 or #1003.</p> <p>OSHA: 50 ppm; 200 ppm (Ceiling)</p> <p>ACGIH: 50 ppm; 100 ppm STEL</p> <p>NIOSH: 25 ppm</p> <p>IDLH: 1000 ppm</p>	<p>Inadequate - Odor threshold 82 ppm. APRs with organic vapor/acid gas cartridges may be used for escape purposes. Exceedances over the exposure limits require the use of positive pressure-demand supplied air respirator.</p> <p>Recommended gloves: PV Alcohol unsupported >16.00 hrs; Silver shield >6.00 hrs; Teflon >24.00 hrs; or Viton >24.00 hrs; Nitrile (Useable time limit 0.5 hr, complete submersion for the nitrile selection)</p>	<p>Boiling Pt: 188°F; 86.7°C</p> <p>Melting Pt: -99°F; -73°C</p> <p>Solubility: 0.1% @ 77°F; 25°C</p> <p>Flash Pt: 90°F; 32°C</p> <p>LEL/LFL: 8% @ 77°F; 25°C</p> <p>UEL/UFL: 10.5 @ 77°F; 25°C</p> <p>Vapor Density: 4.53</p> <p>Vapor Pressure: 100 mmHg @ 90°F; 32°C</p> <p>Specific Gravity: 1.46</p> <p>Incompatibilities: Strong caustics and alkalis, chemically active metals (barium, lithium, sodium, magnesium, titanium, and beryllium)</p> <p>Appearance and Odor: Colorless liquid with a chloroform type odor. Combustible liquid, however, burns with difficulty.</p>	<p>Central nervous system effects including euphoria, analgesia, anesthesia, paresthesia, headaches, tremors, vertigo, and somnolence. Damage to the liver, kidneys, heart, lungs, and skin have also been reported. Contact may result in irritation to the eyes, skin, and mucous membranes. Ingestion may result in GI disturbances including nausea, and vomiting</p> <p>NIOSH lists this substance a potential human carcinogen.</p>

7.0 AIR MONITORING

A direct reading instrument such as a PID will be used at the site to detect and evaluate the presence of site contaminants and other potentially harmful agents.

7.1 INSTRUMENTS AND USE

Instruments will be used primarily to monitor source points borehole, well head, drum openings and worker breathing zone areas, while observing instrument action levels. Action levels are discussed in each Table 5-1 as they may apply to a specific task or location.

7.1.1 Photoionization Detector

A Photoionization Detector (PID) with a 10.6 eV (or equivalent) lamp will be used to monitor potential sources areas and to screen collected samples and breathing zones of employees during sampling activities. When calibrated with isobutylene the PID has a one to one correspondence with benzene. Prior to the commencement of any field activities, the background level of the site must be determined and noted. Daily background readings must be taken away from areas of potential contamination to obtain accurate results. These readings, and any influencing conditions (i.e., weather, temperature, humidity) and location will also be documented in the Health and Safety Logbook as a matter of reference.

7.1.2 Hazard Monitoring Frequency

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

7.2 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the TtNUS Equipment Manager. Operational checks and field calibration will be performed on all instruments each day prior to their use. Field calibration will be performed on instruments according to manufacturer's recommendations (for example, the PID must be field calibrated daily and an additional field calibration must be performed at the end of each day to determine any significant instrument drift). These operational checks and calibration efforts will be performed in a manner that complies with the employees health and safety training, the manufacturer's recommendations, and with the applicable manufacturer

standard operating procedure (copies of which can be found in the Health & Safety Guidance Manual which will be maintained on site for reference). All calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook, provided that all of the information specified in Figure 7-1 is recorded. This required information includes the following:

- Date calibration was performed
- Individual calibrating the instrument
- Instrument name, model, and serial number
- Any relevant instrument settings and resultant readings (before and after) calibration
- Identification of the calibration standard (lot no., source concentration, supplier)
- Any relevant comments or remarks

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

This section is included to specify health and safety training and medical surveillance requirements for TtNUS and subcontractor personnel participating in site activities. All TtNUS and subcontractor personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at the NAS Cecil Field. TtNUS and subcontractor personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training within the past 12 months before being cleared for site work. In addition, 8-hour supervisory training in accordance with 29 CFR 1910.120(e) (4) will be required for site supervisory personnel.

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

8.2 SITE-SPECIFIC TRAINING

TtNUS will provide site-specific training to all TtNUS and subcontractor personnel who will perform work on this project. Site-specific training will include:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Medical surveillance requirements
- Safe use of engineering controls and equipment
- Contents of the Health and Safety Plan
- Signs and symptoms of overexposure to site contaminants
- Contents of the Health and Safety Plan
- Emergency response procedures (evacuation and assembly points)
- Spill response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Emergency response procedures (evacuation and assembly points)
- Associated hazards and restricted areas within the NAS Cecil Field.

Site-specific training documentation will be established through the use of Figure 8-2.

8.3 MEDICAL SURVEILLANCE

All TtNUS and subcontractor personnel participating in project field activities will have had a physical examination meeting the requirements of 1910.120 (f). Documentation for medical clearances will be maintained at the project site.

8.3.1 Requirements for All Field Personnel

Each field team member, including subcontractors and visitors, entering the exclusion zone(s) shall be required to complete and submit a copy of the Medical Data Sheet found in Section 7 of the TtNUS Health and Safety Guidance Manual. This shall be provided to the SSO, prior to participating in site activities. The purpose of this document is to provide site personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

9.0 SITE CONTROL

This section outlines the general 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 fractured three-zone approach will be used during work at this site. This three zone approach will utilize an exclusion zone, a contamination reduction zone, and a 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 work areas.

9.1 EXCLUSION ZONE

The exclusion zone will be considered those areas of the sites of known or suspected contamination. It is not anticipated that significant amounts of contamination are present in the drum area or in the area of Building 324. It is anticipated that this will remain so unless contaminants escape the confines of the drums or are detected during drilling and sampling activities. Therefore, the exclusion zones for this project will be limited to those areas of each site where active work is being performed, plus a designated area surrounding the point of operation. All exclusion zones will be delineated using barrier tape, cones, and postings to inform and direct facility personnel.

- Drilling 35' surrounding point of operation
- Drum opening berm area 25' surrounding point of operation

9.2 CONTAMINATION REDUCTION ZONE

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

9.3 SUPPORT ZONE

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

9.4 SAFE WORK PERMITS

All exclusion zone work conducted in support of this project will be performed using Safe Work Permits to guide and direct field crews on a task-by-task and site-by-site 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 will be included as Attachment V of this HASP. The daily meetings conducted at the sites will further support these work permits. This will ensure all site-specific considerations and changing conditions are incorporated into the planning effort. All permits will require the signature of the FOL and SSO.

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

**FIGURE 9-1
SAFE WORK PERMIT**

Permit No. _____ Date: _____ Time: From _____ to _____

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

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

II. Names: _____

III. Onsite Inspection conducted Yes No Initials of Inspector _____
TtNUS NAS Cecil

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

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

Modifications/Exceptions: _____

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

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

Modifications/Exceptions: _____

VII. Procedure review with permit acceptors	Yes	NA		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 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"/>
Equipment 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, fill out appropriate section(s) on safety work permit addendum

X. Special instructions, precautions: _____

Permit Issued by: _____ Permit Accepted by: _____

Job Completed by: _____ Date: _____

9.5 SITE VISITORS

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

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

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

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

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

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

9.6 SITE SECURITY

Site security will be accomplished using TtNUS field personnel. TtNUS will retain complete control over active operational areas. As this activity takes place at a Navy facility open to public access, the first line of security will take place using exclusive zone barriers, site work permits, and any existing barriers at the

sites to restrict the general public. The second line of security will take place at the work sites, referring interested parties to the Base Contact. The Base Contact will serve as a focal point for base personnel and interested parties, and will serve as the final line of security and primary enforcement contact.

9.7 SITE MAP

Once the areas of contamination, access routes, topography, and dispersion routes are determined, a site map may be generated for each field event and adjusted as site conditions change. 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 all personnel involved in site operations.

9.9 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

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

As 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 at the NAS Cecil Field, the FOL will determine and arrange for telephone communications.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

It is not anticipated that bulk hazardous materials (over 55-gallons) will be handled at any given time as part of this scope of work. It is also not anticipated that spillage of any accumulated materials would constitute a danger to human health or the environment. However, as the project progresses, the potential may exist for accumulating Investigative Derived Wastes (IDW) such as decontamination fluids, soil cuttings, purge and well development waters, and other wastes. Once these fluids and other materials have been characterized, they can be removed from each site 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
- Drum Sampling

All drum opening and sampling will be conducted outdoors on a bermed area. It is anticipated that all IDW generated as a result of planned scopes 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 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 will also be containerized for disposal pending analysis. All inspections will be documented in the project logbook.

10.4 PERSONNEL TRAINING AND SPILL PREVENTION

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

10.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

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

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

10.6 SPILL CONTROL PLAN

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

1. Notify the SSO or FOL immediately upon detection of a leak or spill. Activate emergency alerting procedures for that area to remove all non-essential personnel.
2. Employ the personal protective equipment stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.
3. Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.
4. Re-containerize spills, including 2-inch of top cover impacted by the spill. Await test results for treatment or disposal options.

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

11.0 CONFINED-SPACE ENTRY

It is not anticipated, under the proposed scopes of work, that confined space and permit-required confined space activities will be conducted. **Therefore, personnel under the provisions of this HASP are not allowed, under any circumstances, to enter confined spaces.** A confined space is defined as an area which has one or more of the following characteristics:

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

A Permit-Required Confined Space is one that:

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

For further information on confined space, consult the Health and Safety Guidance Manual or call the PHSO. If confined space operations are to be performed as part of the scope of work, detailed procedures and training requirements will have to be addressed.

12.0 MATERIALS AND DOCUMENTATION

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

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- Material Safety Data Sheets for all chemicals brought on-site, including decon solution, fuels, sample preservations, calibration gases, etc.
- A full size OSHA Job Safety and Health Poster
- Training/Medical Surveillance Documentation Form (blank)
- Emergency Reference Form (Section 2.0, extra copy for posting)

12.1 MATERIALS TO BE POSTED OR MAINTAINED AT THE SITE

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

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

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

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

Site Clearance (maintained) - This list is found within the training section of the HASP (See Figure 8-2). This list identifies all site personnel, dates of training (including site-specific training), and medical surveillance. The lists indicate not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

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

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

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

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

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

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

13.0 ACRONYMS / ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
CFR	Code of Federal Regulations
CNS	Central Nervous System
CRZ	Contamination Reduction Zone
DOD	Department of Defense
DOT	Department of Transportation
DPT	Direct Push Technology
EPA	Environmental Protection Agency
eV	electron Volts
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSA	Hollow Stem Auger
N/A	Not Available
NIOSH	National Institute Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PEL	Permissible Exposure Limit
PHSO	Project Health and Safety Officer
PID	Photo Ionization Detector
PPE	Personal Protective Equipment
PVC	Poly Vinyl Chloride
SAP	Sampling and Analysis Plan
SSO	Site Safety Officer
STEL	Short Term Exposure Limit
TCE	Trichloroethylene
TOM	Task Order Manager
VOCs	Volatile Organic Compounds

ATTACHMENT I
INJURY/ILLNESS PROCEDURE
AND REPORT FORM

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

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

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

ADDITIONAL QUESTIONS REGARDING WORKER'S COMPENSATION:

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

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

WHO IS COVERED:

All employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits.



case no. _____

All employees must follow the above injury/illness reporting procedures. Consultants, independent contractors, and employees of subcontractors are not covered by Tetra Tech's Worker's Compensation plan.

WHAT IS COVERED:

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



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT

To: _____
Subsidiary Health and Safety Representative

Prepared by: _____

cc: _____
Workers Compensation Administrator

Position: _____

Project name: _____

Office: _____

Project number: _____

Telephone number: _____

Fax number: _____

Information Regarding Injured or Ill Employee

Name: _____

Office: _____

Home address: _____

Gender: M F No. of dependents: _____

Home telephone number: _____

Marital status: _____

Occupation (regular job title): _____

Date of birth: _____

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.

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. 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

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 NAS CECIL FIELD – JACKSONVILLE, FLORIDA

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 SHEET

EQUIPMENT INSPECTION FOR DRILL RIGS

COMPANY: _____ UNIT NO. _____

FREQUENCY: Inspect at the initiation of the project, after repairs, once every 10-day shift.

Inspection Date: ____/____/____ Time: _____ Equipment Type: _____
(e.g., **Drill Rigs** Hollow Stem, Mud Rotary, Direct Push)

	Good	Need Repair	N/A
Emergency Stop Devices (At points of operation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tires (Tread) 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"/>
Mast condition (Mast Height _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access-ways: Frame, hand holds, ladders, walkways (non-slip surfaces), guardrails?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steering (standard and emergency)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power cable and/or hoist cable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
➤ Hooks			
- Safety Latch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Wear in excess of 10% original dimension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- A bend or twist exceeding 10% from the plane of an unbent hook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Increase in throat opening exceeding 15% from new condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Excessive nicks and/or gouges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
➤ Wire Rope (Hoist Mechanism)			
- Reduction in Rope diameter (5/16 wire rope > 1/64 reduction nominal size -replace) (3/8 to 1/2 wire rope > 1/32 reduction nominal size -replace) (9/16 to 3/4 wire rope > 3/64 reduction nominal size -replace)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Number of broken wires (12 randomly broken wires in one rope lay) (4 broken wires in one strand)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Number of wire rope wraps left on the Running Drum at nominal use (≥3 required)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Lead (primary) sheave is centered on the running drum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Lubrication of wire rope (adequate?)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

EQUIPMENT INSPECTION (Continued)

	Good	Needs Repaired	N/A
- Number of U-Type (Crosby) Clips (5/16 – 5/8 = 3 clips minimum) (3/4 – 1 inch = 4 clips minimum) (1 1/8 – 1 3/8 inch = 5 clips minimum)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
➤ Kinks, bends – Flattened to > 50% diameter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
➤ Hemp/Fiber rope (Cathead/Split Spoon Hammer)			
- Minimum 3/4; maximum 1 inch rope diameter (Inspect for physical damage)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Rope to hammer is securely fastened	<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"/>
Are any structural members bent, rusted, or otherwise show signs of damage? _____	<input type="checkbox"/>	<input type="checkbox"/>
Are fueling cans used with this equipment approved type safety cans? _____	<input type="checkbox"/>	<input type="checkbox"/>
Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? _____	<input type="checkbox"/>	<input type="checkbox"/>

Cleanliness:

- Overall condition (was 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? _____
- Flammable solvents stored in the operators cab? _____

Operator Qualifications (as applicable for all heavy equipment):

- Does the operator have proper licensing where applicable, (e.g., CDL)? _____
- Does the operator, understand the equipment's operating instructions? _____
- Is the operator experienced with this equipment? _____
- Is the operator 21 years of age or more? _____

Additional Inspection Required Prior to Use On-Site

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

Site Safety Officer Signature: _____

Approved for Use: Yes No

ATTACHMENT V

SAFE WORK PERMITS

**SAFE WORK PERMIT
SAMPLING EQUIPMENT DECONTAMINATION ACTIVITIES
NAS CECIL FIELD, JACKSONVILLE, FLORIDA**

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): Decontamination of sampling equipment. Brushes and spray bottles will be used to decon small sampling equipment.
- 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)

- V. Protective equipment required
 - Level D Level B
 - Level C Level A
 - Detailed on Reverse
- Respiratory equipment required
 - Full face APR
 - Half face APR
 - SKA-PAC SAR
 - Skid Rig
- Escape Pack
- SCBA
- Bottle Trailer
- None

Modifications/Exceptions: _____

VI. Chemicals of Concern	Action Level(s)	Response Measures
	Sustained levels above background	Re-perform decon
<u>Waste paints, lacquer,</u>	_____	_____
<u>waste asphalt products</u>	_____	_____
<u>paint chips, floor epoxy, desiccite</u>	_____	_____

- VII. Additional Safety Equipment/Procedures

Hard-hat	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hearing Protection (Plugs/Muffs).....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Safety Glasses	<input 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 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 checked="" type="checkbox"/> No	Impermeable apron.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Modifications/Exceptions: PVC rain suits or PE or PVC coated Tyvek for protection against splashes and overspray. Chemical resistant boot covers if excessive liquids are generated or to protected footwear. Impermeable aprons are acceptable when cleaning sampling equipment instead of a splash suit.

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

- IX. Site Preparation

Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>

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

- XI. Special instructions, precautions: Chemical hazards with decontamination due to fluids such as isopropyl alcohol, etc. Site personnel will use PPE and prevent contact equipment. Refer to the manufacturer's MSDS regarding PPE, handling, storage, and first-aid measures related to any decontamination fluids used.

Permit Issued by: _____ Permit Accepted by: _____

SAFE WORK PERMIT DECONTAMINATION OF HEAVY EQUIPMENT NAS CECIL FIELD JACKSONVILLE, FLORIDA

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 and machinery (i.e., drill rigs, augers, backhoe). Brushes and spray bottles will be used to decon small sampling equipment. Pressure washers or steam cleaning units will be used to decon the augers and backhoe.
- II. Required Monitoring Instrument(s): None required
- 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
Level D <input checked="" type="checkbox"/> Level B <input type="checkbox"/>
Level C <input type="checkbox"/> Level A <input type="checkbox"/>
Detailed on Reverse | Respiratory equipment required
Full face APR <input type="checkbox"/> Escape Pack <input type="checkbox"/>
Half face APR <input type="checkbox"/> SCBA <input type="checkbox"/>
SAR <input type="checkbox"/> Bottle Trailer <input type="checkbox"/>
Skid Rig <input type="checkbox"/> None <input checked="" type="checkbox"/> |
|--|---|

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety glasses, safety footwear, and nitrile gloves. When using pressure washers, steam cleaners field crews will wear hearing protection, and face shields.

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>Trichloroethylene (TCE)</u>	<u>none</u>	<u>none</u>
_____	_____	_____
_____	_____	_____

- VII. Additional Safety Equipment/Procedures
- | | | |
|-------------------------------|---|--|
| Hard-hat | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash Shield..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Barricades <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash suits/coveralls..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type - Nitrile) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 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: Hard hat to hold splash shield. PVC rain suits or PE or PVC coated Tyvek for protection against splashes and overspray. Chemical resistant boot covers if excessive liquids are generated or to protected footwear.

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

- IX. Equipment Preparation
- | | | |
|--|-------------------------------------|-------------------------------------|
| Utility Locating and Excavation Clearance completed..... | Yes | NA |
| Vehicle and Foot Traffic Routes Cleared and Established..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Physical Hazards Barricaded and Isolated..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Emergency Equipment Staged..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

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

- XI. Special instructions, precautions: Other chemical hazards include decontamination fluids such as isopropyl alcohol, etc. To minimize the potential for exposure, site personnel will use PPE and prevent contact with potentially contaminated equipment. Refer to the manufacturer's MSDS regarding PPE, handling, storage, and first-aid measures related to decontamination fluids.

Permit Issued by: _____ Permit Accepted by: _____

Job Completed by: _____ Date: _____

**SAFE WORK PERMIT
MOBILIZATION AND DEMOBILIZATION ACTIVITIES
NAS CECIL FIELD, JACKSONVILLE, FLORIDA**

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)

- V. Protective equipment required
 - Level D Level B
 - Level C Level A
 - Detailed on Reverse
- Respiratory equipment required
 - Full face APR
 - Half face APR
 - SKA-PAC SAR
 - Skid Rig
- Escape Pack
- SCBA
- Bottle Trailer
- None

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, or and safety footwear. Hard hats and hearing protection will be worn if working near operating equipment. Reflective vests for high traffic areas. Hardhat at SSO's direction.

VI. Chemicals of Concern	Action Level(s)	Response Measures
None anticipated _____	NA _____	NA _____
_____	_____	_____
_____	_____	_____

- VII. Additional Safety Equipment/Procedures

Hard-hat <input type="checkbox"/> Yes <input type="checkbox"/> No Safety Glasses <input type="checkbox"/> Yes <input type="checkbox"/> No Chemical/splash goggles..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Splash Shield..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Splash suits/coveralls <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Steel toe Work shoes or boots..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs) ... <input type="checkbox"/> Yes <input type="checkbox"/> No Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Radio..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Barricades..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Gloves (Type -) <input type="checkbox"/> Yes <input checked="" 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. Tyvek coverall may also be used to protect against natural hazards (e.g., ticks).

VIII. Procedure review with permit acceptors	Yes	NA	Yes	NA
Safety shower/eyewash (Location & Use)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Procedure for safe job completion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contractor tools/equipment/PPE inspected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- IX. Site Preparation

Utility Locating and Excavation Clearance completed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" 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"/>

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

- XI. Special instructions, precautions: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Avoid potential nesting areas. Wear light colored clothing so that ticks and other biting insects can be easily visible and can be removed. Inspect clothing and body for ticks. Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather. Use proper lifting techniques as described in Table 5-1.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
DRUM SAMPLING BUILDING 312
NAS CECIL FIELD JACKSONVILLE, FLORIDA**

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): Drum sampling including solid contents and liquids such as paints, epoxy and laquer
- II. Required Monitoring Instrument(s): PID with 10.6 eV lamp
- 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
 - Level D Level B
 - Level C Level A
 - Detailed on Reverse
- Respiratory equipment required
 - Full face APR
 - Half face APR
 - SKA-PAC SAR
 - Skid Rig
- Escape Pack
- SCBA
- Bottle Trailer
- None

Modifications/Exceptions: Minimum requirement are stated below. Upgrading to Level C is based on visible dust concentrations >2 mg/m3. Level C consists of full-face APR with organic vapor/HEPA cartridge for protection against airborne dust.

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>Waste paints, lacquer, waste asphalt products, paint chips, floor epoxy, desiccate.</u>	<u>Sustained levels above background in breathing zone</u>	<u>Evacuate upwind continue only when background levels return..</u>

- VII. Additional Safety Equipment/Procedures

Hard-hat	<input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Safety Glasses	<input 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 type="checkbox"/> No
Splash Shield	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Barricades	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls	<input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Nitrile over surgeon's)	<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 checked="" 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 and PVC or PE coated Tyvek if saturation or work clothes may occur. Impermeable aprons may be used in lieu of the coveralls if it can be demonstrated that it offers as much protection as the coveralls. Reflective vests in high traffic areas

VIII. Procedure review with permit acceptors	Yes	NA	Emergency alarms	Yes	NA
Safety shower/eyewash (Location & Use)	<input type="checkbox"/>	<input type="checkbox"/>	Emergency alarms	<input checked="" 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"/>

- IX. Site Preparation

Utility Locating and Excavation Clearance completed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>

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

XI. Special instructions, precautions Follow sampling approach specified in Table 5-1 and Section 6-1..

Permit Issued by: _____ Permit Accepted by: _____

SAFE WORK PERMIT MONITORING WELL INSTALLATION NAS CECIL FIELD JACKSONVILLE, FLORIDA

Permit No. _____ Date: _____ Time: From _____ to _____

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): Monitoring well installation and soil boring using hollow stem auger and direct push technology
- II. Required Monitoring Instruments: PID with 10.6 eV lamp or FID
- 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 <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: _____

- VI. Chemicals of Concern Action Level(s) Response Measures
- | | | |
|--------------------------------|---|---|
| <u>Trichloroethylene (TCE)</u> | <u>Any readings above 25 PM in the breathing zone</u> | <u>Evacuate area and only investigate when safe levels return</u> |
|--------------------------------|---|---|

- VII. Additional Safety Equipment/Procedures
- | | |
|--|--|
| Hard-hat <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio <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 checked="" type="checkbox"/> No |
| Chemical Resistant Boot Covers <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Impermeable apron <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |

Modifications/Exceptions: Reflective vests for high traffic areas. Tyvek coverall if there is a potential for soiling work clothes. PVC or PE coated Tyvek, if saturation or work clothes may occur. The driller and the driller's helper should wear impermeable aprons to prevent soiling of work clothes when handling auger flights against the body. This can be used if heat stress is an issue.

- VIII. Procedure review with permit acceptors Yes NA
- | | |
|--|---|
| Safety shower/eyewash (Location & Use) <input type="checkbox"/> <input type="checkbox"/> | Emergency alarms <input checked="" 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"/> |

- IX. Site Preparation
- | |
|---|
| Utility Locating and Excavation Clearance completed <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Cleared and Established <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Physical Hazards Barricaded and Isolated <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Emergency Equipment Staged <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

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

- XI. Special instructions, precautions: Follow safe work practices specified in Section 5.0 of this HASP. Complete an Equipment Inspection Checklist for the Drill Rig upon arrival to the site, or after major repairs. Test all emergency stop devices initially then periodically to insure operational status. Decontamination of equipment will consist of soap and water wash and rinse with the use of a pressure washer until visibly clean. Personnel decontamination will consist of vacuuming outer garments and soap and water wash and rinse of outer PPE and hands and face prior to breaks or meals.

Permit Issued by: _____ Permit Accepted by: _____
Permit No. _____ Date: _____ Time: From _____ to _____

**SAFE WORK PERMIT
MULTI-MEDIA SAMPLING AND MONITORING WELL DEVELOPMENT
NAS CECIL FIELD JACKSONVILLE, FLORIDA**

SECTION I: General Job Scope

- I. Work limited to the following (description, area, equipment used): Soil and Groundwater sampling and Monitoring Well Development (IDW sampling if required);
- II. Required Monitoring Instrument(s): PID with 10.6 eV lamp or FID
- 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 <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 requirement are stated below.

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>Trichloroethylene (TCE)</u>	<u>Any readings above 25 ppm in breathing zone</u>	<u>Evacuate area and only investigate when safe levels return</u>
_____	_____	_____
_____	_____	_____

- 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 checked="" type="checkbox"/> No | Safety belt/harness..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio..... | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Shield..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash suits/coveralls..... | <input type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type - 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 checked="" type="checkbox"/> No | Impermeable apron..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

Modifications/Exceptions: Tyvek coverall if there is a potential for soiling work clothes and PVC or PE coated Tyvek if saturation or work clothes may occur. Impermeable aprons may be used in lieu of the coveralls if it can be demonstrated that it offers as much protection as the coveralls. This modification may be made to support measures against effects of heat stress.

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

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

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

XI. Special instructions, precautions: _____

Permit Issued by: _____ Permit Accepted by: _____

**ATTACHMENT VI
UTILITY LOCATING AND CLEARANCE**



TETRA TECH NUS, INC.

STANDARD OPERATING PROCEDURES

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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, TiNUS 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-excitation 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**

- | | | |
|---|--|--|
| Alabama
Alabama One-Call
1-800-292-8525 | Iowa
Iowa One-Call
1-800-292-8989 | New Jersey
New Jersey One Call
1-800-272-1000 |
| Alaska
Locate Call Center of Alaska, Inc.
1-800-478-3121 | Kansas
Kansas One-Call System, Inc.
1-800-344-7233 | New Mexico
New Mexico One Call System, Inc.
1-800-321-2537
Las Cruces- Dona Ana Blue Stakes
1-888-528-0400 |
| Arizona
Arizona Blue Stake
1-800-782-5348 | Kentucky
Kentucky Underground Protection Inc.
1-800-752-6007 | New York
Dig Safely New York
1-800-862-7962
New York City- Long Island One Call
Center
1-800-272-4480 |
| Arkansas
Arkansas One Call System, Inc.
1-800-482-8988 | Louisiana
Louisiana One Call System, Inc.
1-800-272-3020 | North Carolina
The North Carolina One-Call Center,
Inc.
1-800-632-4949 |
| California
Underground Service Alert North
1-800-227-2600
Underground Service Alert of Southern
California
1-800-227-2600 | Maine
Dig Safe System, Inc.
1-888-344-7233 | North Dakota
North Dakota One-Call
1-800-795-0555 |
| Colorado
Utility Notification Center of Colorado
1-800-922-1987 | Maryland
Miss Utility
1-800-257-7777
Miss Utility of Delmarva
1-800-282-8565 | Ohio
Ohio Utilities Protection Service
1-800-362-2764
Oil & Gas Producers Underground
Protect'n Svc
1-800-925-0988 |
| Connecticut
Call Before You Dig
1-800-922-4455 | Massachusetts
Dig Safe System, Inc.
1-888-344-7233 | Oklahoma
Call Okie
1-800-522-6543 |
| Delaware
Miss Utility of Delmarva
1-800-282-8555 | Michigan
Miss Dig System, Inc.
1-800-482-7171 | Oregon
Oregon Utility Notification Center/One
Call Concepts
1-800-332-2344 |
| Florida
Sunshine State One-Call of Florida, Inc.
1-800-432-4770 | Minnesota
Gopher State One Call
1-800-252-1165 | Pennsylvania
Pennsylvania One Call System, Inc.
1-800-242-1776 |
| Georgia
Underground Protection Center, Inc.
1-800-282-7411 | Mississippi
Mississippi One-Call System, Inc.
1-800-227-6477 | Rhode Island
Dig Safe System, Inc.
1-888-344-7233 |
| Hawaii
Underground Service Alert North
1-800-227-2600 | Missouri
Missouri One-Call System, Inc.
1-800-344-7483 | South Carolina
Palmetto Utility Protection Service Inc.
1-888-721-7877 |
| Idaho
Dig Line Inc.
1-800-342-1585
Kootenai County One-Call
1-800-428-4950
Shoshone - Benewah One-Call
1-800-398-3285 | Montana
Utilities Underground Protection Center
1-800-424-5555
Montana One Call Center
1-800-551-8344 | South Dakota
South Dakota One Call
1-800-781-7474 |
| Illinois
JULIE, Inc.
1-800-892-0123
Digger (Chicago Utility Alert Network)
312-744-7000 | Nebraska
Diggers Hotline of Nebraska
1-800-331-5666 | Tennessee
Tennessee One-Call System, Inc.
1-800-351-1111 |
| Indiana
Indiana Underground Plant Protection
Service
1-800-382-5544 | Nevada
Underground Service Alert North
1-800-227-2600 | |
| | New Hampshire
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
1-800-682-4111

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

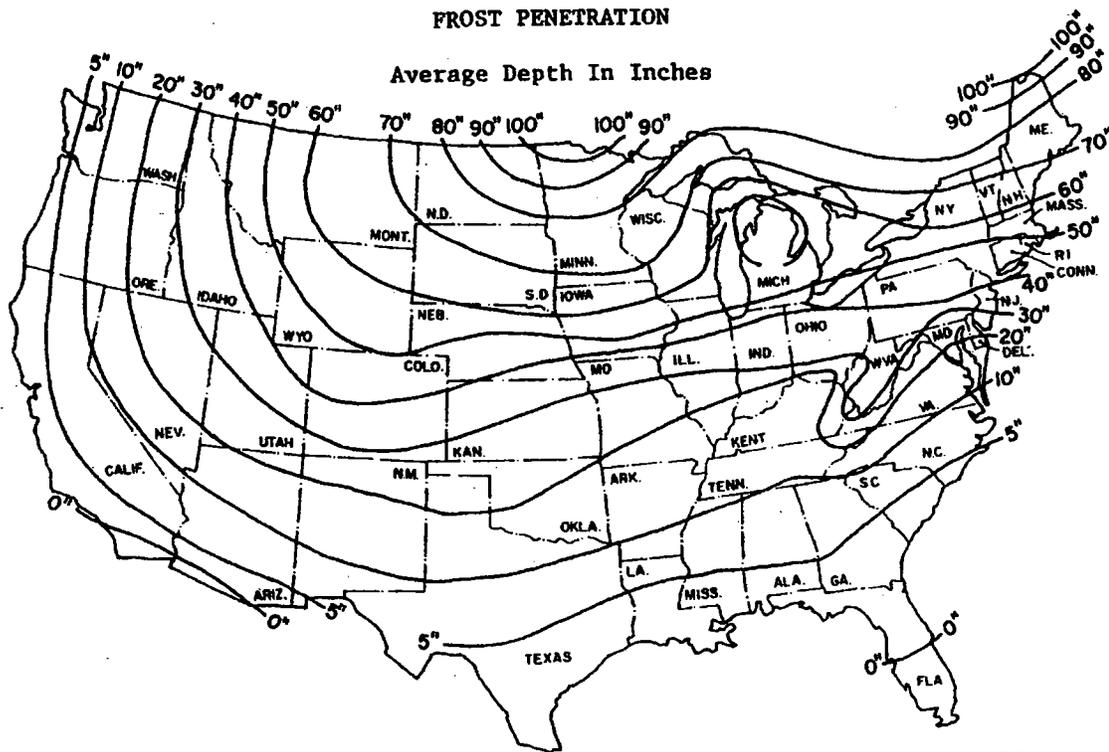
Ontario One-Call System
1-800-400-2255

Quebec

Info-Excavation
1-800-663-9228

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:

ATTACHMENT VII

**MATERIAL SAFETY DATA SHEET
DESICCITE 25**

MSDS Code: J96001

DESICCITE® 25

Revision date: 06/09/2003

Date Printed: 06/09/2003

NFPA Classification:Health: 0
Flammability: 0
Instability: 0
Special Hazards:**HMIS Classification:**Health: 1 *
Flammability: 0
Reactivity: 0
Personal Protection: E

* Indicates possible chronic health effects.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Common Name: Bentonite, Heat Activated Granules

Chemical Name: Montmorillonite Clay

CAS No: 1302-78-9

Product Use: Desiccant.

Supplier: ENGELHARD CORPORATION
SEPARATION SYSTEMS
600 E. MCDOWELL ROAD
JACKSON, MS 39204
1-800-654-4039For Chemical Emergency Call CHEMTREC (24 hours):
1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands)
1-703-527-3887 (Outside Above Area)**2. COMPOSITION / INFORMATION ON INGREDIENTS**

<u>Ingredient</u>	<u>Weight in Product (%)</u>	<u>Notes</u>
Aluminum Silicate 12141-46-7	97	None.
Silica, Crystalline (Quartz) 14808-60-7	1-3	None.

Other Information: NOTE: Industrial hygiene sampling in our plant, where this product is packaged, resulted in a respirable fraction of crystalline silica quartz of only 0.1-0.115%.

3. HAZARDS IDENTIFICATION

Color: Off White-gray
Form: Granules
Odor: Odorless
Flash Point, °C: Not Applicable

Most Important Hazards: Contains SUSPECT CANCER HAZARD. Risk of cancer depends on route, duration and level of exposure. Prolonged or repeated exposure may cause lung damage. Inhalation may result in respiratory irritation.

Potential Health Effects:

Inhalation: Causes respiratory tract irritation. May cause disabling, progressive pulmonary fibrosis (silicosis) due to crystalline silica. Symptoms include cough, dyspnea, wheezing, and impairment of pulmonary function. Progression of symptoms can continue after dust exposure ceases.

Ingestion: No adverse health effects are expected from swallowing.

Skin Contact: May cause mechanical injury.

Eye Contact: Large amounts of dust may cause mechanical irritation.

Carcinogenicity:

<u>Ingredient</u>	<u>Weight in Product (%)</u>	<u>NTP (Y/N)</u>	<u>IARC (See Notes)</u>	<u>OSHA (Y/N)</u>	<u>ACGIH (See Notes)</u>
Aluminum Silicate 12141-46-7	97	N	N	N	N
Silica, Crystalline (Quartz) 14808-60-7	1-3	Y	Y1	N	A2

Notes:

IARC: Y1=Carcinogenic to humans; Y2A=Probably carcinogenic to humans; Y2B=Possibly carcinogenic to humans; N3=Not classifiable as to its carcinogenicity; N=Not studied or probably not carcinogenic.

ACGIH: A1=Confirmed human carcinogen; A2=Suspected human carcinogen; A3=Confirmed animal carcinogen; A4=Not classifiable as a human carcinogen; A5=Not suspected as a human carcinogen; N=Not studied.

Chronic Health Hazards: Refer to Carcinogenicity and Potential Health Effects.

Aggravated Medical Conditions: Pulmonary disorders.

4. FIRST AID MEASURES

Inhalation: Move person to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

Ingestion: Procedures normally not needed. If large quantities are ingested, seek medical advice.

Skin Contact: Flush skin with large amounts of water. If irritation persists, get medical attention.

Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

5. FIRE FIGHTING MEASURES

Flash Point, °C: Not Applicable
Autoignition Temperature, °C: Not Determined
Lower Explosive Limit, %: Not Determined
Upper Explosive Limit, %: Not Determined

Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Fire Fighting Procedures: Positive pressure, self-contained breathing apparatus. Wear full protective clothing.

Unusual Fire and Explosion Hazards: Not a fire or explosion hazard.

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures: Contain spillage. Scoop up or vacuum into a container for reclamation or disposal. Avoid dusting.

7. HANDLING AND STORAGE

Keep container closed.
Store in a cool, dry location away from incompatible materials.
Material may be slippery when wet.
Practice good housekeeping.
Avoid generating or breathing dust.
Avoid contact with eyes.
Use only with adequate ventilation.
See American Society for Testing and Materials (ASTM) standard practice E1132-99a, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica."

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>Ingredient</u>	<u>Weight in Product (%)</u>	<u>OSHA PEL:</u>	<u>ACGIH TLV:</u>
Aluminum Silicate 12141-46-7	97	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)	10 mg/m ³ (Inhalable particulate) 3 mg/m ³ (Respirable particulate)
Silica, Crystalline (Quartz) 14808-60-7	1-3	30 mg/m ³ ÷ (%SiO ₂ + 2) (Total dust) 250 mppcf ÷ (%SiO ₂ + 5), or 10 mg/m ³ ÷ (%SiO ₂ + 2) (Respirable dust)	0.05 mg/m ³ (Respirable fraction)

Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWAs) and total dust (particulates only). All ACGIH TLVs refer to the 2002 standards. Unless otherwise noted, all OSHA PELs refer to 29 CFR Part 1910 Air Contaminants: Final Rule, June 30, 1993.

Personal Protective Equipment: Safety glasses with side shields. Wear suitable gloves.

Respiratory Protection: Use a NIOSH/MSHA approved respirator as necessary to protect from: dust. If respiratory protection is used, follow all requirements for respiratory programs set forth in OSHA regulations (29 CFR 1910.134).

Ventilation: General ventilation. Local exhaust ventilation is recommended to control exposures to within applicable limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Granules
Color: Off White-gray
Odor: Odorless

Specific Gravity: 2.4
Solubility (in water): Negligible
pH: 6-9 (Slurry)

10. STABILITY AND REACTIVITY

Stability Data: Stable

Conditions/Hazards to Avoid: None anticipated

Incompatibility (Materials to Avoid): Strong alkalies. Strong oxidizing agents.

Hazardous Decomposition Products: None anticipated

Polymerization: None anticipated.

Polymerization - Avoid:

None anticipated.

11. TOXICOLOGICAL INFORMATION

Information on Product:

No data available.

Information on Components:

<u>Ingredient</u>	<u>Weight in Product (%)</u>	<u>Acute Toxicity - Oral</u>	<u>Acute Toxicity - Inhalation</u>	<u>Acute Toxicity - Dermal</u>	<u>Acute Toxicity - Other</u>
Aluminum Silicate 12141-46-7	97	Not Available	Not Available	Not Available	Not Available
Silica, Crystalline (Quartz) 14808-60-7	1-3	Not Available	Not Available	Not Available	Not Available

12. ECOLOGICAL INFORMATION

Information on Product:

Environmental Fate:

No data available.

Ecotoxicological Information:

No data available.

13. DISPOSAL CONSIDERATIONS

US EPA Waste Number:

Not Regulated

Disposal of Waste Method:

Federal, state and local disposal laws and regulations will determine the proper waste disposal/recycling/reclamation procedure. Disposal requirements are dependent on the hazard classification and will vary by location and the type of disposal selected. All waste materials should be reviewed to determine the applicable hazards (testing may be necessary).

14. TRANSPORT INFORMATION

International Transport Regulations:

UN/PIN Number:

Not Regulated

US Transportation Regulations:

DOT Classification:

Not Regulated

Canadian Transportation of Dangerous Goods (TDG):

TDG Classification:

Not Regulated

15. REGULATORY INFORMATION

International Inventories:

United States: This product or its ingredients are listed on or compliant with the TSCA Inventory.
Canada: This product or its ingredients are listed on or compliant with the DSL.
Europe: This product or its ingredients are listed on or compliant with EINECS.
Japan: This product or its ingredients are listed on or compliant with MITI.
Australia: This product or its ingredients are listed on or compliant with AICS.
Korea: This product or its ingredients are listed on or compliant with the ECL.

US Federal Regulations:

<u>Ingredient</u>	<u>Weight in Product (%)</u>	<u>Subject to SARA 313 Reporting</u>
Aluminum Silicate 12141-46-7	97	No
Silica, Crystalline (Quartz) 14808-60-7	1-3	No

SARA 311/ 312 Hazard Categories:

Chronic Health Hazard

CAA 602 Ozone Depleting Substances (ODS):

This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1990 and 40 CFR Part 82.

US State Regulations:

California Proposition 65 - Carcinogen:

WARNING: This product contains chemicals known to the State of California to cause cancer.

Canadian Regulations:

WHMIS Classification:

Class D Division 2 Subdivision A

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*.

16. OTHER INFORMATION

Revision number: 14

Section(s) Revised in this Version: Section 7: Handling and Storage
Section 8: Exposure Controls/Personal Protection

Prepared By: Engelhard Corporate Environmental Health & Safety Group

The information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport, or

otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations, management and for persons working with or handling this product. The information presented in the MSDS is premised upon proper handling and anticipated uses, and is for the material without chemical additions/alterations. We believe this information to be reliable and up-to-date as of the date of publication, but make no warranty that it is. Additionally, if this Material Safety Data Sheet is more than three years old, please contact the supplier at the phone number listed in Section 1 to make certain that this sheet is current. Copyright Engelhard Corporation. License granted to make unlimited copies for internal use only. End of MSDS.....

**ATTACHMENT VII
DRUM/CONTAINER MANAGEMENT PLAN**

1.0 INTRODUCTION

Accidents may occur during handling of drums and other hazardous waste containers. Hazards include detonations, fires, explosions, vapor generation, and physical injury resulting from sudden pressure releases, moving heavy containers by hand and working around stacked drums, heavy equipment, and deteriorated drums. While these hazards may always be present, proper work practices such as minimizing drum handling, and using equipment or procedures that isolate workers from hazardous substances, can minimize the risks to site personnel.

This plan defines practices and procedures for safe handling of drums and other hazardous waste containers. It is intended to aid the Task Order Manager/Project Manager in setting up a waste container handling program. Information contained in this plan was obtained from the NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985), and OSHA 29 CFR 1910.120 (j), Handling drums and containers.

2.0 INSPECTION

The appropriate procedures for handling drums/containers depend on the contents. Thus, prior to any handling, drums/containers should be visually inspected to gain as much information as possible about their contents. The inspection should include looking for the following items:

- Symbols, words, or other marks on the drum indicating that its contents are hazardous, (e.g., radioactive, explosive, corrosive, toxic, flammable).
- Signs of deterioration such as corrosion, rust, and leaks.
- Drum type (see Table 2-1 "Special Drum Types"). Drums and containers which do not meet these definitions will be addressed accordingly.
- Configuration of the drumhead (see Table 2-2)

Conditions in the immediate vicinity of the drums may provide information about drum contents and their associated hazards. Monitoring shall be conducted around the drums/containers using instruments for measuring atmospheric concentrations of contaminants (radiation survey meter, organic vapor monitors [PID and FID], and/or a LEL/O₂ meter).

The results of this survey can be used to classify the drums into preliminary hazard categories, for example:

- Radioactive
- Leaking/deteriorated
- Bulging
- Explosive/shock sensitive
- Contains small-volume individual containers of laboratory waste or other dangerous materials.
- Non-hazardous waste

Note: This preliminary assessment is impacted by the limitation of the instruments employed.

As a precautionary measure, personnel should assume that unlabelled drums contain hazardous materials until their contents are characterized. Also, they should keep in mind that drums are frequently mislabelled, particularly drums that are reused. Thus, a drum's label may not accurately describe its contents.

TABLE 2-1

SPECIAL DRUM TYPES AND THEIR ASSOCIATED HAZARDS

Polyethylene or PVC - Lined Drums	Often contain strong acids or bases. If the lining is punctured, the substance may quickly corrode the steel, resulting in a significant leak or spill.
Exotic Metal Drums (Aluminum, nickel, stainless steel, steel, or other unusual metal)	Very expensive drums that usually contain an extremely dangerous material.
Single-Walled Drums Used as a Pressure Vessel	These drums have fittings for both product filling and placement of an inert gas, such as nitrogen. May contain reactive, flammable, or explosive substances.
Laboratory Packs	Used for disposal of expired chemicals and process samples from university laboratories, hospitals, and similar institutions.

TABLE 2-2

INFORMATION PROVIDED BY DRUMHEAD CONFIGURATION

CONFIGURATION	INFORMATION
Whole lid of drum is removable	Designated to contain solid material.
Drum lid is removable with bung	Designated to contain solid or liquid material
Drum lid has a bung	Designated to contain a liquid.
Contains a liner	May contain a highly corrosive or otherwise hazardous material.

Valuable information can be obtained from drum markings. There are primarily two types of drum markings that could be encountered on a drum. These types of markings include those which employ a typical United Nations classification marking and approval and the second is one derived from United States DOT. Examples of these types of markings are presented below.

United Nations Classification

U 1A2/Y150/S/89/USA/VL825
N

INFORMATION PROVIDED BY DRUM MARKINGS

Packaging Symbol	Information
United Nations	Indicates packaging complies with United Nations packaging requirements.
1A2	Indicates packaging type which are as follows: 1 – Drum; 2 – Wooden barrel; 3 – jerrican; 4 – Box; 5 – Bag; 6 – Composite package; 7 – Pressure receptacle

INFORMATION PROVIDED BY DRUM MARKINGS (cont.)

1A2	Indicates types of materials which are as follows: A – Steel (All types and surface treatments); B – Aluminum; C – Natural wood; D – Plywood; F – Reconstituted wood; G – Fibreboard; H – Plastic materials; L – Textile; M – Paper (Multi-wall); N – Metal; P – Glass, porcelain, & stoneware
1A2/Y	This letter designates the packaging group or degree of hazard. The letter designation is as follows: X – Packaging Groups I, II, and III Y - Packaging Groups II, and III Z - Packaging Group III only
1A2/Y150	Indicates package was tested to hold 150 kilograms
1A2/Y150/S/	Indicates the packaging is intended to contain solids
1A2/Y150/S/89/	Year the package was made
1A2/Y150/S/89/USA	Where the package was made
1A2/Y150/S/89/USA/VL825	Manufacturer's Registered Symbol

Additional markings which may be seen include "R" for reconditioned such as 1A2/Y150/S/89/USA/RB/90R.

Additional marking of a "T" indicates salvage or over-pack container such as 1A2T/Y300/S/94/USA.

United States Department of Transportation(DOT)

Former U.S. DOT designations were more abbreviated. Examples of the two typically seen are:

- U.S. DOT 17E – Closed or tight end. The top is not removable. This top will have bung openings for the introduction of liquids.
- U.S. DOT 17H – Open top. The top is removable. This top may or may not have bung openings.

In addition, to carry this qualification (17 E or H) the drum had to be constructed of at least 16 or 18 gauge material. Which gauge was selected was based on material to be transported and the density or specific gravity of the substance to be transported.

It should be noted that in October of 1991, U.S. DOT adopted HM-181 charter aligning DOT's requirements with the international community. In doing so adopted container designations, hazard classifications (some, DOT still retains some of their own for transportation of dangerous goods in the continental U.S.), and many of the United Nations rules and regulations for the transportation of dangerous goods.

3.0 PLANNING

Since several hazards are associated with drum handling, every step of the operation should be carefully planned, based on all the information available at the time. The results of the preliminary inspection can be used to determine: (1) if any hazards are present and the appropriate response, (2) where opportunistic openings exist (i.e., rust holes, breaks in the shell) and can be accessed for sampling the drums content, and (3) which drums need to be moved in order to be opened and sampled.

3.1 Sampling

Excavated drums will be placed in DOT-approved over-pack containers and secured on-site until analytical results of the soil samples are received. Whenever possible, excavated materials will be returned to the appropriate excavation. If the integrity of an excavated drum is compromised (cracked, punctured, etc.), then a sample will be collected from any liquid contained inside of the drum. If an excavated drum contains liquids, but the integrity has not been compromised, then the drum will be sampled at a later date. If necessary, drums that are deteriorated or otherwise breached and contain liquids, sludges, or semi-solids, will be sampled through opportunistic routes such as holes or other openings. Once containers or over-packs have been opened to permit sample acquisition they will be resealed upon completion of the sampling.

4.0 HANDLING

The purpose of handling the drums/containers is to:

- (1) respond to any obvious problems that might impair worker safety, such as radioactivity, leakage, or the presence of explosive substances,
- (2) unstack and orient drums for sampling, and
- (3) if necessary, to organize drums into different areas on site to facilitate characterization and remedial action. Drum/container movement for sample acquisition in support of this operation will be held to a minimum whenever possible.

Since accidents occur frequently during drum/container handling (particularly initial handling), drum/container movement will be minimized. Prior to drum/container mobilization, all personnel will be warned about the potential hazards associated with movement and handling of the drum/container. In all phases of drum/container management, personnel should be alert for new information about potential hazards.

The following procedures will be used to maximize worker safety during drum handling and movement:

1. Where possible use mechanized equipment to move and stage drums.

2. All equipment used in support of drum handling, staging, sampling, and disposal should be inspected and in good working order. This includes nylon slings, cargo net slings, and drum grapplers all used for drum handling.
3. Remove all non-essential personnel when moving drums from their originating location to the staging area. Personnel will only be introduced if they are needed for controlling the load or hook-up and release of the load.
4. Train personnel in proper lifting and moving techniques to prevent back injuries.
5. Have over-packs, spill material, and emergency aid equipment ready before any attempt is made to move drums.
6. Before moving anything, determine the most appropriate sequence in which the various drums and containers should be moved.
7. Exercise extreme caution in handling drums/containers that are not intact and tightly sealed.
8. Wear appropriate PPE as directed by the HASP and/or the Safe Work Permit.

4.1 Hoisting and Rigging – Drums/Containers

All hoisting and rigging of drums/containers shall be performed by knowledgeable person(s) educated in the selection and use of rigging devices.

All rigging apparatus/appliances received on the site will be inspected

- Prior to each use
- For acid/caustic burns
- For melting or charring of the nylon
- Snags, punctures, tears, or cuts
- Wear or elongation exceeding the manufacturer allotted amount.
- Distortion of fittings
- Apparent defects
- Lifting capacity not tagged
- Hooks
 - Cracked
 - Wear exceeding 10% original dimension
 - A bend exceeding 10 degrees out of plane from an unbent hook
 - Increased throat opening exceeding 15% from new condition
 - If safety latch is provided, it is in working order

Other rigging appliances may also be used including shackles, lifting bars and spreaders. The important thing to remember is the inspection is identifying physical damage and distortion. These items along with the lifting capacity will be the focus of the inspection. The FOL and/or the SSO will be responsible for inspecting and documenting the inspection of equipment of this nature.

The scope of this work identifies drums to be handled as part of this Drum Management Plan as those which may be encountered during test pit operations. To accomplish rigging an intact drum/container out of a test pit the following steps will be required:

- Excavate around the drum/container being careful not to contact the container.
- A nylon sling looped back through an end loop (forming a choker) will be lower from the side of the excavation over the drumhead to below the first structural ring.

AT NO TIME WILL ANYONE UNDER ANY CIRCUMSTANCES ENTER A TEST PIT TO HOOK-UP A DRUM/CONTAINER.

- The choker will be tightened and attached to the backhoe bucket.
- The backhoe will extract the drum from the pit and place it into a secondary containment structure outside the pit.

To remove a drum/container whose structural integrity is damaged it is recommended that the backhoe attempt to scoop the drum/container with the bucket as gentle as possible.

Note: All of the above activities will take place employing the precautions identified in this Drum Management Plan, the HASP, and the Safe Work Permit.

4.2 Spill Management

Bulk hazardous materials (over 55-gallons) may be handled during some of the site activities conducted as part of the scope of work. Independent of the contents of any drums/containers that are excavated, at a minimum Investigative-Derived Wastes (IDW) will be produced. Depending on the nature and identity of site contaminants that are identified, spills of drums/containers may constitute a danger to human health or the environment. As site contaminants are identified and characterized, the Spill Management Program will be modified to reflect the nature of the contaminants.

4.2.1 Potential Spill Areas

To prevent and control further potential contamination of the environment, vulnerable areas to this hazard include

- the area surrounding the drums/containers.
- areas used for staging area.
- the handling, loading and unloading areas.
- resource staging and storage area.

4.1.2 55-Gallon Drums

All drums containing liquids or solids which require over-packing and/or transfer of its contents will be staged, as necessary, within a lined berm capable of holding a maximum of the drum(s) contents plus volumes reduced caused by the displacement of the drums. Capacity of the bermed area is generally fixed at approximately 110% of the total volume stored. Rainwater capture inside the lined area will be allowed to evaporate providing it does not exceed 1% of the bermed areas capacity.

4.1.3 Leak and Spill Detection

The early detection of potential spills or leaks will be accomplished through the initial inspection to identify deteriorated drums/containers. If a leak is detected the drum contents will be transferred using a hand pump into a new 55-gallon drum. The leak will be collected and contained using absorbents such as Oil-dry, vermiculite, or sand, stored at the staging area in a drum conspicuously marked. This material too, will be containerized for disposal pending analyses. All inspections will be documented in the Project logbook.

4.1.4 Personnel Training and Spill Prevention

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

4.1.5 Spill Prevention and Containment Equipment

The following represents the minimum equipment which will be maintained at the staging area at all times for the purpose of supporting this Spill Prevention/Containment Program.

- Sand, clean fill, vermiculite, or other noncombustible absorbent (oil-dry);
- Drums (55-gallon U.N.1A2)
- Over-packs (U.N. 1A2T/Y300)
- Shovels, rakes, and brooms
- Hand operated drum pump with hose
- Labels
- Drum Patch kit
- Potable water (emergency drenching purposes- minimum 55 gallons)
- PPE:
 - SCBA's or Airline respirators with escape capabilities (3 sets – 2 in and 1 back-up)
 - Rain suits with hoods
 - Nitrile inner and outer gloves
 - Silver shield glove liners
 - Hardhats
 - Rubber over boots

4.1.6 Spill Control Plan

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

1. Notify the SSO or FOL immediately upon detection of a leak or spill. Activate emergency alerting procedures for that area to remove all non-essential personnel.
2. Employ the personal protective equipment stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.
3. Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.

4. 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 SSO following direction provided in the HASP.

Over-pack drums (larger drums in which leaking or damaged drums/containers are placed for storage or shipment) and an adequate volume of absorbent will be kept near areas where minor spills may occur.

4.2 Drums Containing Radioactive Waste

It is not anticipated that any drums located at this site will contain radioactive waste. However, due to the uncertainty associated with the site, all containers encountered will be screened as part of the monitoring activity. If any drums/containers are identified that have radiation levels significantly above background level (> 50 microrentgens/hour), immediately contact the PHSO or HSM.

4.3 Drums that May Contain Explosive or Shock-Sensitive Waste

It is not anticipated to encounter explosive or shock sensitive waste material. However, if a drum is suspected to contain explosive or shock-sensitive waste as determined by visual inspection, this drum/container will be barricaded and left alone until specialized equipment and assistance may be obtained before handling.

4.4 Bulging Drums

Pressurized drums are extremely hazardous. This condition is not anticipated for this project. However where pressurized drums/containers are encountered they will be handled in the same manner as explosive or shock sensitive materials.

4.5 Leaking, Open, and Deteriorated Drums

As discussed under Section 3.1, excavated drums will be placed in DOT-approved overpack containers and secured on-site until analytical results of the soil samples are received. If the integrity of an excavated drum is compromised (cracked, punctured, etc.), then a sample will be collected from any liquid contained inside of the drum. If an excavated drum contains liquids, but the integrity has not been compromised, then the drum will be sampled at a later date. Leaking, open, and/or deteriorated drums may not be able to be moved without rupture or compromising the integrity of the drums.

All drums/containers used as part of this operation should be compatible with the type of material to be introduced. If you are overpacking a plastic drum, then it should be placed in a plastic overpack. The same shall apply when transferring from one container to another. All containers used for these purposes shall meet or exceed the appropriate DOT, OSHA, or EPA regulations for the wastes containerized. These drums/containers will be staged at a predetermined location.

5.0 OPENING

Drums/containers may be opened and sampled during this site operation. However, drums/containers of a suspicious nature will be handled at a later time once incidental drums/containers can be removed and conditions for specialized operations structured. Procedures for opening drums/containers are the

same, regardless of where the drums are opened. To enhance the efficiency and safety of drum-opening personnel, the following procedures will be instituted:

- Personnel will use supplied-air respiratory protection, preferably airline respirators with a bank of air cylinders located outside the work area which supply air to the operators via airlines and escape SCBA.
- Site control will keep nonessential personnel at a safe distance from the drums/containers being opened. Drums/containers of a suspicious nature will be handled remotely where possible. Drum opening equipment, monitoring equipment, fire suppression equipment (i.e., fire extinguishers), emergency aid equipment (i.e., First-aid, stretcher, etc.) will be placed at an accessible distance to support the operation.
- Use the following remote-controlled devices will be employed for high hazard drum opening operations including exotic metal drums, bulging drums:
 - Remote operated pneumatically operated impact wrench to remove drum bungs.
 - Remote operated hydraulically or pneumatically operated drum piercers.
 - Backhoes with shielded cabs equipped with bronze spikes for penetrating drum tops in large-scale operations.
- Personnel will **not** use picks, chisels, or other potential sparking media to open drums.
- If any drum/container shows signs of swelling or bulging (positive pressure), it will be left alone until the appropriate barriers and equipment can be mobilized to support relieving excess pressure prior to opening.
- Monitor the air continuously during drum/container opening exercises. Place probes of monitoring equipment (PID, FID, and LEL/O₂) as close as possible to the source of contaminants.
- Polyethylene or polyvinyl chloride-lined (PVC-lined) drums can be accessed through the bung by removal or drilling. Exercise extreme caution when manipulating these containers.
- Do **not** open or sample individual containers within laboratory packs.
- Reseal open bungs and drill openings as soon as possible with new bungs or plugs to avoid explosions and/or vapor generation. If an open drum cannot be resealed, place the drum into an over pack. Plug any openings in pressurized drums with pressure-venting caps set at a 5-psi release to allow venting of vapor pressure.
- All drum/container opening will be done so using spark proof tools with all potential ignition sources removed.
- Decontaminate equipment after each use to avoid mixing incompatible wastes.
- Employees shall not stand or work from atop any drum/container.

6.0 SAMPLING

Drum sampling can be one of the most hazardous activities to worker safety and health because it presents direct contact with unidentified wastes. Prior to collecting a sample, the following steps have been executed to minimize the potential hazards involved in this operation.

- Research background information about the waste as thoroughly as possible.
- Determine how the drums/containers should be sampled.
- Select the appropriate sampling device(s) and container(s).
- Develop a sampling plan which includes the number, volume, and locations of samples to be taken.
- Develop Standard Operating Procedures for opening drums/containers, sampling, and sample packaging and transportation.
- The SSO is part of the sampling team and will offer assistance based on available information about the waste and site conditions, the appropriate actions, personal protection modifications to be used during sampling and decontamination activities. Guidelines for PPE usage have been established as part of this HASP.

When manually sampling from a drum, use the following techniques:

- Of the two men team to perform the sampling, one will open the drum/container, and perform the initial monitoring, while the sampling team member maintains a safe distance. Both members will participate in the closure of the drums/containers. During all operations of this nature, a back-up member will remain at the ready to assist if needed.
- Cover drum tops with plastic sheeting or other suitable non-contaminated materials to avoid excessive contact with the drum tops.

7.0 CHARACTERIZATION

The goal of characterization is to obtain the data necessary to determine how to safely and effectively package, transport, and manage the waste for treatment and/or disposal. If wastes are bulked, they must be sufficiently characterized to determine which of them can be safely combined. As a first step in obtaining these data, standard tests should be used to classify the wastes into general categories, including auto reactives, water reactives, inorganic acids, organic acids, heavy metals, pesticides, cyanides, inorganic oxidizers, and organic oxidizers. In some cases further analysis should be conducted to more precisely identify the waste materials. A complete and detailed description of the analysis may be obtained from the Sampling and Analysis Plan. The Drum/Container Characterization Sheet (Figure 1) will aid field personnel in the general field characterization of the contents of the unidentified drums.

**Figure 1
DRUM/CONTAINER CHARACTERIZATION SHEET**

Site Name: _____		Date: _____	Project #: _____
Project Description: _____ _____		Drum # _____	Field Crew/Role: _____ _____
		Head Configuration	Identifiable markings:
Unknown	Steel	Ring top (no bungs)	Sketch drum/container position
30 gallon	Aluminum	Ring top (bungs)	
55 gallon	Plastic	Closed top	
80 Gallon	Glass	Unknown	
Other (Specify)	Metal/Other (Specify Type)	Other (Specify)	
_____ _____ _____ _____ _____	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____	
Estimated Volume: _____ _____			
General condition of the drum/container: _____ _____ _____ _____			Can it be handled/moved and re-staged or over-packed? _____ _____ _____

		Drum Contents (Indicate % if mixture of more than one media)	
Radioactivity _____mR Background	_____mR	Solids Classification	Liquids Viscosity
PID _____eV Lamp _____ppm (background)	_____p pm	Trash	Other
FID _____ppm (background)	_____p pm	Drum Contents (Color)	
Combustibility	_____ %LEL _____ % O2	Unknown	Red
Draeger Multi-test	_____	Cream	Yellow
Air Reactive	_____ Δ Temp	Clear	Amber
Water Reactive	_____ Δ Temp	White	Purple
Water solubility	_____ Yes _____ No _____ % Partial	Gray	Black
Flammable	_____ Yes _____ No	Orange	Brown
pH	_____	Green	Other:
Cyanide	_____ ppm (Draeger Tube over Water Bath)	Greenish Blue	
Area surrounding drums/containers (stressed vegetation, distribution pathways):			

Comments:			

See Attached Safe Work Permit for Protective/Hazard Control Measures

See Attached Drum/Container Inventory

It should be noted that once a sample aliquot is removed from the drum to be characterized and sampled, the characterization of this media should occur a safe distance from the drum. This activity is best accomplished at a remote work station slightly removed from the drums in question. This will permit the control of the hazards associated with the sample aliquot and will permit quick characterization as all testing stations can be previously constructed and ready for use.

8.0 LABELING

All containers once characterized will be labeled for purposes of hazard communication. For this purpose the following three label choices will be employed.

Non-hazardous Material labels – These labels will be used only when the opening, characterization and/or analytical results confirm that this material is non-hazardous.

Hazardous Material labels – These labels will be employed when through drum characterization or analytical results a material falls into a hazard class definition as per DOT and/or RCRA 40 CFR 261.

Investigative Derived Waste (IDW) labels – These labels will be employed when the information derived from all characterization efforts are negative in determining the physical, chemical, radioactive, or reactive properties of the substance being tested.

Once the material is subjected to analytical testing and results obtained, the material in question will be relabeled for purposes of hazard communication, transportation, and disposal. The FOL and/or the SSO will be responsible for this activity.

8.1 DRUM INVENTORY

All drums/containers which are uncovered as part of this field effort will be numbered and inventoried. Drum characterization sheets will be referenced to the drum number. See Figure 2 for the Drum Inventory sheet.

9.0 STAGING

Every attempt will be made to minimize drum handling until characterization. Staging involves a trade-off between the increased hazards associated with drum movement and the decreased hazards associated with the enhanced organization and accessibility of the waste materials.

One staging area will be created to support this operation should it be required. It is not anticipated this staging area will be used as the reconnaissance indicated all drums/containers were accessible and therefore movement would not be required.

10.0 BULKING

Wastes that have been characterized are often mixed together and placed in bulk containers for shipment to treatment or disposal facilities. This increases the efficiency of transportation. Bulking will only be performed after thorough waste characterization.

