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HEALTH AND SAFETY PLAN FOR MONITORING, PETROLEUM, OIL AND LUBRICANTS
SUPPORT FREE PRODUCT RECOVERY, INVESTIGATION DERIVED WASTE
INSPECTION/MANAGEMENT, INTERIM REMOVAL ACTION AND SITE ASSESSMENT AT
UST SITES 351-2, 425, 1343, 1585, 1586 AND 289 NS MAYPORT FL

09/08/2011

TETRA TECH NUS

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62470-08-D-1001



**Health and Safety Plan
for
Monitoring, POL Support: Free Product
Recovery, IDW Inspection/Management, Interim
Removal Action, and Site Assessment
at
UST Sites 351-2, 425, 1343, 1585, 1586,
and 289 (Site Assessment)**

**Naval Station Mayport
Jacksonville, Florida**

Contract Task Order JM60

September 2010



NAS Jacksonville
Jacksonville, Florida 32212-0030



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September 8, 2011

Project Number 112G03576

Naval Facilities Engineering Command, Southeast
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Remedial Project Manager
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Jacksonville, FL 32212-0030

Reference: CLEAN Contract Number N62470-08-D-1001
Contract Task Order Number JM60

Subject: Health and Safety Plan for Monitoring, POL Support: Free Product Recovery, IDW Inspection/Management, Interim Removal Action, and Site Assessment at UST Sites 351-2, 425, 1343, 1585, 1586, and 289 (Site Assessment)
Naval Station (NAVSTA) Mayport, Jacksonville, Florida

Dear Mr. Syme:

Tetra Tech NUS, Inc. (Tetra Tech) is pleased to submit the Health and Safety Plan (HASP) for Monitoring, POL Support: Free Product Recovery, IDW Inspection/Management, Interim Removal Action, and Site Assessment at UST Sites 351-2, 425, 1343, 1585, 1586, and 289 (Site Assessment), NAVSTA Mayport, Jacksonville, Florida. This HASP was prepared for the United States Navy, Naval Facilities Engineering Command Southeast under Contract Task Order (CTO) JM60 for the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62470-08-D-1001. Copies of this report have also been provided to the NAVSTA Mayport Partnering Team as indicated below.

If you have any questions with regard to this submittal, please feel free to contact me at (904) 730-4669, extension 226, or via e-mail at David.Siefken@tetrattech.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'David R. Siefken', is written over a light blue horizontal line.

David R. Siefken
Task Order Manager

DRS/lc

Enclosure

c: Paul Malewicki, NAVSTA Mayport
John Winters, FDEP (courtesy copy)
RDM, Tetra Tech Pittsburgh
CTO JM60 Project File

**HEALTH AND SAFETY PLAN
FOR
MONITORING, POL SUPPORT: FREE PRODUCT RECOVERY, IDW
INSPECTION/MANAGEMENT, INTERIM REMOVAL ACTION,
AND SITE ASSESSMENT AT
UST SITES 351-2, 425, 1343, 1585, 1586, & 289 (SITE ASSESSMENT)
NAVAL STATION MAYPORT
JACKSONVILLE, FLORIDA**

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

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

**Submitted by:
Tetra Tech NUS, Inc.
234 Mall Boulevard
King of Prussia, Pennsylvania 19406**

**CONTRACT NUMBER N62470-08-D-1001
CONTRACT TASK ORDER JM60**

SEPTEMBER 2011

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1.0 INTRODUCTION

Tetra Tech NUS, Inc. (Tetra Tech) and identified subcontractor personnel will be performing various

- Environmental investigation activities
 - Groundwater sampling using low flow purge and sample techniques at multiple sites to support quarterly, semiannual, and annual monitoring of these sites.
 - Soil and groundwater sampling at Site 289 to delineate and quantify contamination associated with a petroleum release.
- Petroleum removal activities – This includes the placement and removal of petroleum absorbent socks within identified wells, and
- IDW management including the containerization of purge and decontamination waters and soils generated at identified petroleum impacted sites base wide.

These activities will be conducted at the Naval Station (NAVSTA) Mayport located in Jacksonville, Florida.

The purpose of this Site-specific Health and Safety Plan (HASP) to be used in conjunction with the Tetra Tech Health and Safety Guidance Manual (HSGM) is to provide personnel with the following:

- Health and safety work practices and procedures, requirements, and restrictions that are to be observed while engaged in these site activities to ensure the safety and health of Tetra Tech and subcontractor employees.
- To ensure the protection of property and the environment.

Compliance Objective: This HASP is intended to provide specific information as to the potential hazards that may be encountered while conducting environmental investigatory activities. This document is supported by the HSGM that provides safe work practices; standard operating procedures (SOPs) and program elements. These documents will be onsite and used together is to ensure the following:

- Compliance with 29 Code of Federal Regulations (CFR) 1910.120/1926.65
- The Project Manager (PM) will ensure information is provided and personnel are instructed as to those requirements regarding NAVSTA Mayport policies and procedures.

Authorization: Comprehensive Long-term Environmental Action Navy (CLEAN) IV, as defined under Contract Number N62470-08-D-1001.

Contract Task Order (CTO): JM60

Modification/Changes: This HASP has been developed using the latest available information regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work and sites. The HASP will be modified if any of the following occur:

- New information becomes available,
- Changes in scope,
- Stop work authorization employed,
- In response to incident or injury.

1.1 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibilities for site safety and health for Tetra Tech employees engaged in onsite activities. The personnel assigned to participate in the field work have the primary responsibility for performing their work tasks in a manner that is consistent with the following:

- The Tetra Tech Health and Safety Policy,
- The health and safety training that they have received,
- The contents of this HASP,
- An overall manner that protects their personal safety and health and that of their co-workers.

The following persons are the primary point of contact (POC) and have the primary responsibility for observing and implementing this HASP and for overall on-site health and safety.

1.1.1 Tetra Tech Project Manager (PM)

The Tetra Tech PM is responsible for the overall direction of health and safety for this project including the following functions:

- Having signed approved documents onsite accessible to all employees and subcontractor personnel including the work plan and this HASP.

- Ensuring recordkeeping meets the objectives specified in this workplan/HASP. This activity includes monitoring field documentation to ensure adequate health and safety practices and action items are properly employed.
- Verifying, where specified, corrective actions are implemented and evaluated.
- Ensuring that project personnel have received training regarding the applicable contents of the work plan, this HASP, and identified elements of the HSGM.
- Providing budgeting for appropriate monitoring, personal protective equipment, decontamination materials, and other project necessities.
- The PM is ultimately responsible for the actions of his Field Operation Leaders (FOLs) and Site Safety Officers (SSOs) as it pertains to the health and safety measures employed onsite.
- Ensuring when deficiencies are noted that the appropriate control measures are instituted and that this information is communicated to all personnel to ensure it does not happen again. Lessons learned are to be communicated during Tailgate Training sessions. This will also ensure as the project progresses the efficiency and quality of the work product continually improves.
- Notifying the Navy Remedial PM, Contracting Officer, and the Facility POC in the event of an emergency action/response measure or incident.

1.1.2 Tetra Tech Project Health and Safety Officer (PHSO)

The PHSO is responsible for developing this HASP in accordance with applicable Occupational Safety and Health Administrative (OSHA) regulations and elements of the Tetra Tech Health and Safety Program. Specific responsibilities include the following:

- Providing information regarding site contaminants and physical hazards associated with the site.
- Conducting Job hazard Analysis for each task in order to provide:
 - Identifying standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
 - Establishing air monitoring and decontamination procedures.
 - Assigning personal protective equipment based on task and potential hazards.

- Determining emergency action or response procedures as well as identifying emergency contacts and resources nearest to the site to facilitate immediate life saving or non-life threatening care.
 - Identifying general training requirements; location specific training requirements as well as task specific training requirements.
- Modifying this HASP, as it becomes necessary.

To fulfill these objectives, the PM must provide the following:

- Current and historical data concerning each site to the PHSO.
- Site specific requirements as they may pertain to access, security, hours of operation, POCs, etc.
- Site control elements including access and control points, possible terrain challenges, sensitive receptors, emergency action requirements(site specific), logistical support components (access to restrooms, telephone communication points) as determined to be necessary.

1.1.3 Tetra Tech Field Operations Leader (FOL)

The Tetra Tech FOL is responsible for implementation of this HASP with the assistance of an appointed SSO. The FOL manages field investigation/remedial activities, executes the work/sampling plan, and enforces safety procedures as applicable to the work plan. Specific duties include the following:

- Serving as a liaison with facility and subcontractor personnel.
- Ensuring compliance with the HASP, identified sections of the HSGM, and policies and procedures of NAVSTA Mayport of all personnel.
- Coordinating site activities within independent areas of investigation such that they may be performed in an effective, efficient, and safe manner.
- Enforcing the buddy system on-site.
- Controlling site entry of unauthorized personnel.
- Assuring availability of all safety equipment. This includes the proper application.

- Conducting pre-site surveys prior to the commitment of personnel and equipment. The purpose is intended to identify potential hazards and/or challenges in completing the scope of work.
- Conducting operations surveys to ensure compliance with the elements specified in this HASP, HSGM, and NAVSTA Mayport policies and procedures.
- Providing logistical support include access to items such as, but not limited to the following:
 - Potable water for drilling operations,
 - Areas for equipment laydown and storage,
 - Communication – POCs,
 - Utility clearance support, where applicable,
 - Hours of operation.

1.1.4 Tetra Tech Site Safety Officer (SSO)

The SSO supports site activities by advising and assisting the FOL on the aspects of health and safety onsite. These duties may include the following:

- Coordinating and supporting health and safety activities with the FOL through implementation of this HASP and applicable elements of the HSGM.
- Evaluating and communicating with the PHSO concerning the selection, application, inspection, and maintenance of personal protective equipment, air monitoring instruments, and other site equipment and materials. The purpose of this evaluation is to insure these items are meeting the identified objectives as they are presented in the field.
- Confirming that site personnel meet appropriate training and medical clearance/surveillance requirements identified.
- Conducting site-specific training, periodic safety meetings (Tailgate Safety Meeting), and periodic inspections/self assessments.
- Verifying decontamination procedures are being implemented as defined in the HASP.
- Implementing, where appropriate, safety and health programs including Hazard Communication, Hearing Conservation, and other associated health and safety programs as they may apply to site activities.

- Coordinating emergency action/response procedures and follow-up.
- Investigating accidents and injuries (see Attachment II - Illness/Injury Reporting Procedure and Form/Total System).
- Providing input to the PHSO regarding the need to modify this HASP or applicable health and safety associated documents as per site-specific requirements.
- Observing and monitoring field team members for symptoms of exposure or stress as well in determining the use and application of personal protective equipment (PPE) and associated safety equipment.
- Performing site surveys along with the FOL prior to committing personnel or resources. The objective of this survey is to identify hazards that may be presented to site personnel and then take measures to flag/identify, remove/mitigate, or barricade. In addition, as part of this measure, selected entry and exit routes will be established as well as emergency assembly points.

Compliance with the requirements stipulated in this HASP will be monitored by the SSO and coordinated through the Tetra Tech PM, PHSO, and, the Tetra Tech Health and Safety Manager (HSM).

1.1.5 Health and Safety Manager (HSM)

Tetra Tech HSM is responsible for providing the CLEAN Health and Safety Program and the PM with assistance and support with regard to all regulatory and safety aspects of site activity. The HSM is responsible for the following:

- Oversees the development and implementation of this HASP.
- Visits the site as needed to audit the effectiveness of these documents.
- Remains available for project emergencies.
- Evaluates the application of occupational exposure monitoring/air sampling data and direct the adjustment of action levels by the PHSO as necessary.
- Serves as a quality control staff member.
- Approves/signs this HASP indicating reviewed and approved.

- Follows up on information generated through audits/evaluations to insure corrective measures have been completed and are effective.
- Evaluates the Tetra Tech Health and Safety Program based on information derived from audits, self assessments, incidents, and near misses to determine where improvements may be made.
- Serves as the arbitrator and final authority as it may pertain to dispute resolution regarding health and safety issues associated with this project.

Note: In some rare cases, one person may be designated responsibilities for more than one position. For example, the FOL may also be responsible for SSO duties. This action will be performed only as credentials, experience, complexity of the tasks, and availability permits. This should be evaluated on a case by case basis by the PM and HSM.

1.1.6 Tetra Tech Employees and Subcontractor Personnel

Tetra Tech and subcontractor employees are responsible for the following:

- Understanding and following direction provided in this HASP and other project plans and as provided under the direction of the SSO and/or the FOL. Opportunities will be given to ask questions regarding the information provided in these documents during site-specific training, tail gate and safety meeting sessions, and of course at any time during the project.
- Reporting unsafe conditions or incidents to the SSO and/or FOL.
- Satisfactorily completing/meeting necessary training and medical surveillance requirements.
- Completing the Medical Data Sheet(s) and provide this information to the SSO. In such cases where site activities may present an increased hazard to certain site personnel (such as allergies to bee stings or fire ants) site personnel will be required to carry their doctor recommended antidote kits and to provide instruction to personnel they work with on the use of these devices.
- Attending site-specific training and periodic safety meetings.
- Knowing the Tetra Tech Health and Safety Program is founded on the following principal elements that our managers and employees:

- Recognize a personal responsibility for their own health and safety and for actions that affect the health and safety of fellow employees.
- Integrate safety and health into all aspects of their work, with the well-being of themselves and their fellow employees as their primary concern.
- That each employee take an active role in the Health and Safety Program by providing input and constructive criticism for the overall improvement of the program.

1.2 STOP WORK AUTHORIZATION

All employees are empowered, authorized, and responsible to stop work at any time when an imminent and uncontrolled safety or health hazard is perceived. In a Stop Work event (immediately after the involved task has been shut down and the work area has been secured in a safe manner) the employee shall contact the PM and HSM. Through observations and communication, all parties involved shall then develop, communicate, and implement corrective actions necessary and appropriate to modify the task and to resume work.

1.3 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: NAVSTA Mayport **Address:** Jacksonville, Florida

U.S. Naval Personnel:	Discipline/Tasks Assigned:	Phone#:
<u>Ms. Beverly Washington</u>	<u>Navy Remediation Project Manager (RPM)</u>	<u>(904) 542-5581</u>
<u>Mr. Paul Malewicki</u>	<u>NAVSTA Mayport POC</u>	<u>(904) 270-3188</u>

Scope of Work: See Section 1.4 of this HASP

Proposed Dates of Work: August 2011 until completion

Project Team:

Tetra Tech Personnel:	Discipline/Tasks Assigned:	Phone#:
<u>David Siefken</u>	<u>PM</u>	<u>(930) 730-4669 x226</u> <u>(904)334-7260 Cell</u>
<u>To Be Determined (TBD)</u>	<u>FO</u> <u>L</u>	<u></u>
<u>Matthew M. Soltis, CIH, CSP</u>	<u>HSM</u>	<u>(412) 921-8912</u>
<u>Thomas Dickson, CSP</u>	<u>PHSO</u>	<u>(412) 921-8457</u> <u>(412) 720-3006 Cell</u>
<u>TBD</u>	<u>SSO</u>	<u></u>

Non-Tetra Tech Personnel:	Affiliation/Discipline/Tasks Assigned:	Phone# :
<u>TBD</u>	<u>Direct Push Technology (DPTT Driller</u>	<u></u>
<u>TBD</u>	<u>Investigative Derived Waste</u>	<u></u>
<u>TBD</u>	<u>Analytical Laboratory</u>	<u></u>

Safety and Health risk/hazard analysis were conducted by (for purposes of 29 CFR 1910.132) and HASP preparation conducted by:

Tom Dickson

1.4 SCOPE OF WORK

The following activities are elements identified in the workplan and are covered in this HASP. The safety and health risk/hazard analysis were conducted on the these activities, that include the following:

- Site mobilization/demobilization activities,
- Free product recovery (425, 1343, and 1586),
- Soil boring and sampling, and monitoring well installation via DPT (1343 and 1585),
- Groundwater sampling (425, 1343, 351-2, 1585, 289, and 1586) using low flow purge and sample techniques,
- Decontamination Low pressure applications,
- Investigative-Derived Waste (IDW) Management – This includes the containerization, movement to a centralized location, labeling, and final transfer for removal and disposal.

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

The following represent detailed descriptions of the identified activities and are the basis on which the safety and health risk/hazard is based:

- Site Mobilization/Demobilization – These activities will include, but not limited to the following:
 - Marking out proposed subsurface locations to obtain a utility clearance prior to the commencement of onsite activities. This activity will also identify surface monuments to help locate subsurface structures.
 - Identifying access and egress routes to sample locations.
 - Identifying work area control points.
 - Identifying emergency evacuation routes and assembly points.
 - Receiving and inspecting all equipment prior to use.
 - Training personnel regarding the contents of this HASP and the work plan to insure all personnel are familiar with the tasks to be conducted, as well as the potential hazards that may be encountered during the proposed work.
- Free Product Removal – This activity will include pumping petroleum materials out of the identified monitoringwells. In addition sorbent socks will be placed in the identified monitoring wells to collect residual product. These socks will be secured with a rope and lowered into the monitoring well. These sorbents will then be placed in the drums containing free product for disposal.

- DPT Drilling – This method of collecting soil boring samples and installing groundwater monitoring wells utilizes a combustion engine driven hydraulic unit to advance sampling and analytical tools into the ground through hydraulic pressure and percussion hammering. Steps specific to this activity are defined in the Activity Hazard Analysis (AHA) and include the following:
 - Soil borings will be drilled using a DPT drill rig. These samples will be collected using a Dual Tube sampler. The Dual Tube sampler consists of the advancement of dual tubes permitting soil samples to be collected from the inner tube while the outer tube provides a continuous casing. The inner tube is driven into the soils. As it is forced downward, soils load into an acetate liner. When samples are extracted, the inner tube is disassembled and the soil filled acetate liner is then provided to the sample screening station to be opened and examined during which geological information is collected and the soils are scanned using a flame ionization detector (FID). Based on these results sample intervals will be selected based on the highest reading.
 - Monitoring Well Installation – Groundwater samples may be collected from the screen point sampler or a temporary monitoring well installed through the Dual Tube sampler. See the Work Plan for details.
 - Groundwater samples will be collected using a 12 volt battery operated peristaltic pump. This activity will also include groundwater level measurements and well development. See the Work Plan for details.
- Upon completion, soil borings/well point locations where a permanent well is not installed will be abandoned and backfilled with bentonite. See the Work Plan for details.
- Decontamination
 - Soil Sampling - Low pressure decontamination will consist of soap (Liquinox) and water wash and rinse of the drive rods, associated sampling tools (cutting shoe, screen point, etc.), and all parts of the rig and tooling that may have come in contact with contaminated media. This will be accomplished between locations. Prior to leaving the site, the unit will be cleaned of any residual soils at the wash area. The procedures are as follows:
 - Two 5-gallon buckets will be placed in a mortar tub to serve as secondary containment. One bucket will be partially filled with soap and water and the other will receive the rinse water.
 - The pieces will be scrubbed using brushes until visibly clean and rinsed using a pump up or battery operated low pressure sprayer. All of the soap will be removed until visibly clean.
 - The piece then will be used again or moved to a clean location to air dry and be wrapped to protect from ambient pollutants until used again.

- Dedicated Tubing/PPE – Single use dedicated materials such as tubing and PPE will be decontaminated as follows:
 - Tubing that is not left in the well to be used again will be rinsed using soapy or clean water to remove any residual contaminants and then disposed of as general refuse.
 - PPE will be rinsed of visible residual materials and then disposed of as general refuse.

- Geographical Land Surveying – Horizontal positions of the completed soil borings will be identified using a handheld global positioning system (GPS) unit. This should be coupled with measurements from fixed points for which surveyed positions are known and exist. This will allow for any adjustments due to instrument inaccuracy, drift, number of satellites, etc. Professional land surveyors will locate the wells and borings horizontally and establish vertical elevations for the monitoring wells.

- IDW Management
 - Soil cuttings and groundwater not collected as representative sample material will be drummed for disposal.
 - Decontamination waters at the soil boring operations will be changed regularly. Waters generated during this process will be collected and containerized in a 55-gallon drum. These materials will be characterized using the sample results. Disposal selection will then be determined based on these results.
 - Purge waters collected through the quarterly, semiannual, or annual sampling will be moved to a centralized location containerized, sealed, and labeled. Analytical results will be utilized to profile the waste disposal characterization.
 - Concrete cores and asphalt debris (if generated) at Site (Building) 289 will be gathered and disposed of as construction debris.
 - Used PPE, packaging, and consumables will be disposed of as general refuse.

2.0 EMERGENCY ACTION PLAN

2.1 INTRODUCTION

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an incident or an emergency that could occur during this investigation.

Tetra Tech will provide initial response measures for incidents such as:

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

Incidents and conditions above this level of participation are and will be considered emergencies. These events are considered beyond the capabilities of field personnel and/or available resources to provide emergency response safely. Therefore, the emergency response agencies listed in this plan are capable of providing the most effective response and will be designated as the primary responders in the event of an emergency. These agencies are located within a reasonable distance (within 5 minutes) from the area of site operations, which ensures adequate emergency response time.

In the event of an incident, which cannot be handled by site personnel, the personnel are to leave the area and notify the appropriate emergency response agencies. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person. Local emergency response agencies will provide the most effective response and, as such, are designated as the primary responders.

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, the following are considered emergencies that could result from travel to or associated with the chemical and/or physical hazards encountered on station:

- Striking a utility – Field personnel are not equipped to respond to damaged utilities.
- Severe injury – Those requiring more than first aid treatment.
- Vehicle accidents – Those requiring Police participation; injury, and property damage.

- Fire and/or explosion.
- On Station emergency.

These are considered the most predominant hazards that through their occurrence are considered emergencies. To minimize the potential occurrence, the following actions will be employed:

- Effective communication with the Area Managers (those in charge of the areas where the tank investigations are being conducted. This is critical in secured or high hazard areas) – not all emergencies will be Tetra Tech related. The FOL/SSO will request the Emergency Action Plan for the facility. From this they will be instructed as to the following:
 - Alarm types,
 - Evacuation routes and assembly points,
 - Emergency notification,
 - Allow the FOL/SSO to share our intended response measures to be taken during incident response, chain of command, and prevention and protection methods to be employed to minimize the potential occurrence of an incident and/or emergency.
- Effective communication with responding agencies – In order to receive assistance those that would respond must be informed of your activity and the types of emergencies that could occur. Effective communication will allow rapid response and will allow the responding agencies to respond with some indication as to what they may face. This will involve contacting emergency services as part of initial site mobilization to ensure that they are aware that Tetra Tech and our subcontractor personnel will be onsite, our location, and our activities.

Information Requirements

The following information has been developed or will be collected, maintained onsite and made available to the responding agencies. This information will include the following:

- Identifying and mapping the closest hospital to the site.
- Emergency Notification - phone numbers. These are provided as Table 2-1.
- Onsite personnel Medical Data Sheets. All site personnel will be asked complete a Medical Data Sheet. On this sheet they will be asked to provide information they would want medical personnel to know should they be incapacitated.

- Material Safety Data Sheets (MSDSs) for all chemicals brought onsite including volumes, storage locations, and hazards associated with these chemicals.

2.3 EMERGENCY RECOGNITION AND PREVENTION

Many of the efforts described in this HASP are intended to stop an emergency from happening in the first place. Some of these are as follows:

Potential Emergency: Damaging an underground utility or striking an overhead utility.

Planned Control Measure: Utility location and clearance will occur in accordance with Sunshine State One Call of Florida, Inc. 1(800)432-4770 or utilize 811 National Clearinghouse) protocol for utility location and avoidance to minimize potential damage to buried.

In addition, Tetra Tech Utility Locating and Excavation Clearance Procedures (Section 7.0 of the HSGM) will be employed in tandem with these procedures. Within this SOP, direction is provided to the field crew concerning passive detection methods to identify subsurface structures. These will include, but are not limited to, the following:

- All utilities marked within 5 feet of the intended boring location will be located using hand augers or pot-holing will be conducted used to verify the location of the utility prior to excavating/drilling in that area.
- The area will be surveyed for above ground monuments
- The FOL will contact all non-responding utility owners to confirm the absence of utilities in the area. This will be recorded in the Project log book.
- The Utility/Excavation Ticket will remain active and onsite during ongoing activities.

Planned Control Measure – Jobsite Hazard Evaluation Site Surveys - As part of early recognition, the FOL and/or the SSO will conduct the following activities:

- An initial site walk through will be conducted prior to the commitment of personnel or equipment. The purpose of this walk through will be to examine the site for conditions that may predispose field personnel to potential hazards including the following:

- The existence of overhead power sources or process lines near where equipment will operate.
 - Surface monuments indicating underground utilities in the area (manhole covers, valve boxes, cathodic protection test points, etc.).
 - Areas that may require alterations of traffic patterns or scheduling when the work will be conducted.
 - Physical hazards within the work area.
 - Terrain challenges.
- Periodic operations surveys – FOL and/or the SSO will conduct these surveys for the purpose of the following:
 - Ensuring field personnel are following protective measures specified within this HASP (specifically stated in the AHAs).
 - Reviewing the initial hazard assessments to insure they reflect the hazards as it may pertain to site specific conditions.
 - Preparing for Emergencies. This includes staging emergency equipment, adequate site control measures, identifying site personnel who will engage incidental response measures, and reviewing what measures will be taken and when and by who prior to declaring an emergency.

These surveys should be documented within the project logbook. The results of these surveys are not intended to be disciplinary in nature however identify areas of need improvement, where applicable. The results of these surveys are to be discussed with the field personnel as part of the Tail Gate Safety meetings.

Process Lines Energized Lines: If the desired location places the drill rig near electric, pneumatic, hydraulic process, or energized lines, measures will be taken to de-energize (or shield), blank, and drain during the field activities. This is a precautionary measure.

Potential Emergency: Severe injury.

Planned Control Measure: It is the intent through the application of this HASP and elements of the HSGM to control such events through the following:

- Ensure all personnel are adequately trained and are medically qualified to perform such work.
- Initial project training supported by ongoing measures as the project continues to educate personnel of the task hazards and those associated with the work area.
- Conduct equipment inspections to insure no one gets hurt due to faulty equipment.

- Site and operations surveys to identify hazards within the work zone and to correct deficiencies noted to avoid incidental occurrences or those that could lead to an emergency.

Through the incorporation of these measures significant injuries can be controlled and avoided.

If all measures fail to control an incident or an emergency occurs, provisions for addressing these occurrences must be in place and ready for use.

Medical Assistance – First Aid/CPR Support:

- Life Threatening Injuries - The Base Medical Center can be used by Tetra Tech and subcontractor personnel.
- Non-life Threatening - As the distance to the closest medical assistance is greater than 4 minutes (life threatening; >15 minutes non-life threatening) at least two First Aid/CPR trained personnel will be onsite. Personnel with non-threatening injuries will be transported to the Baptist Medical Center Beaches located at 1350 13th Avenue S, Jacksonville Beach, Florida.

What is the closest access point for emergency vehicles? As part of the pre-planning have an emergency escape route and emergency assembly point planned in advance. **Record roads intersections and building number** so you can relay this location to emergency crews. Do not rely on your ability to remember in an emergency. Accidents of this type include direct contact with energized sources; struck by a high pressure line. Measures to control such accidents have been incorporated into this HASP.

Potential Emergency: Vehicle accident.

Planned Control Measure: Persons are more likely to be injured in a vehicle accident than a work place injury. The following measures will be employed to minimize the potential for a vehicle accident:

- Make sure all drivers are Tetra Tech approved drivers
- Avoid distracted driving –
 - No cell phone use while driving unless hands-free devices are employed.
 - Avoid eating, drinking, playing with the radio, etc. during driving.
 - Carry in your vehicle the Tetra Tech Incident Reporting Form IR-C to record pertinent information should you be involved in an accident.
 - Make sure you can use your phone for photos or carry a disposable camera. Record accurate notes, locations, witnesses, etc. should this information be needed in the future.

- If you are tired/fatigued, switch driving responsibilities if you are travelling with someone or rest before proceeding.
- Use the 4-second rule when determining the travel distance between you and the vehicle in front of you.
- Emergency markers and a high visibility vest will be kept in the car/truck to warn others approaching the accident to proceed with caution and to increase your visibility. If possible move all vehicles out of the travel lanes.
- Do not attempt to argue whose fault. Gather the information, be respectful to the authorities, and others involved.
- DO NOT admit fault.

Potential Emergency: Fire and/or explosion.

Planned Control Measure: Fire and/or explosion will be controlled through fire prevention measures. These include the following:

- There will be no hot work on station. If hot work needs to be performed, the pieces will be removed from the station, and fire control measures will be incorporated such as removing all combustibles within 35 feet.
- A Hot Work Permit will be completed for all hot work. This permit will be approved by the SSO and on station fire department.
- Suitable fire suppression equipment will be maintained onsite, inspected, placed in readily accessible locations (within 75 feet of travel for Class A fires and within 50 feet of travel for Class B fires), and ready for use.

Potential Emergency: On station emergency.

Planned Control Measure: For each work area, the FOL and/or the SSO will meet with the Area Operations Manager to ensure they are aware of the emergency action requirements associated with that controlled area. Information exchange should include the following:

- Alarm types,
- Evacuation routes,
- Assembly points.

This information will be conveyed to field personnel as part of the Tail Gate Safety Meeting. In situations where this information is not developed or provided, site personnel will move to the closest intersection upwind. From this position they may provide direction/information to responding emergency crews.

2.4 EMERGENCY CONTACTS

Prior to initiating field activities, personnel are thoroughly briefed on the emergency procedures to be followed in the event of an accident. Table 2-1 provides a list of emergency contacts and their associated telephone numbers. Any pertinent information regarding allergies to medications or other special conditions are provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite (see Attachment I).

2.5 EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety, or welfare of site workers. Specific examples of conditions that may initiate an evacuation include, but are not limited to, severe weather conditions, fire or explosion, monitoring instrumentation readings that indicate levels of contamination are greater than instituted action levels, and evidence of personnel overexposure to potential site contaminants.

In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the Tetra Tech FOL. Safe places of refuge will be identified prior to the commencement of site activities by the SSO and will be conveyed to personnel as part of the pre activities training session. This information will be reiterated during daily safety meetings. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain at the refuge location until directed otherwise by the Tetra Tech FOL or the on-site Incident Commander of the Emergency Response Team. The FOL or the SSO will perform a head count at this location to account for and to confirm the location of site personnel. Emergency response personnel will be immediately notified of any unaccounted personnel. The SSO will document the names of personnel onsite (on a daily basis) in the site Health and Safety Logbook. This information will be utilized to perform the head count in the event of an emergency.

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate

evacuation routes. As a result, assembly points will be selected and communicated to the workers relative to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site.

☛ **Remember** – This work will take place in populated areas. Direct communications and POCs for each operation must be established for those tenants working in or adjacent to our operations. During evacuation, these people must be notified of the type of emergency and our evacuation so they may remove their personnel.

2.6 EMERGENCY CONTACTS

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

As soon as possible, the Facility contact will be informed of any incident or accident that requires medical attention, involves property damage (utilities) or potential environmental impact.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite (see Attachment I).

**TABLE 2-1
EMERGENCY CONTACTS
NAVSTA MAYPORT**

AGENCY	TELEPHONE
NAVSTA Mayport - Emergency Dispatch	(904) 270-5583 or (904) 270-5584
NAVSTA Mayport Security	(904) 270-5583 or (904) 270-5584
NAVSTA Mayport Medical Center (for life threatening emergencies only)	(904) 270-5444
Baptist Medical Center Beaches (for non-life threatening care)	(904) 627-2900
NAVSTA Mayport Safety Department (Building 1363)	(904) 270-5218
NAVSTA Mayport Point of Contact, Ms. Diane Racine	(904) 270-6730
NAVSTA Mayport Public Works Office	(904) 270-5580
NAVSTA Mayport Duty Officer	(904) 270-5401
Sunshine State Utility One-Call of Florida	1-800-432-4770 or 811
Poison Control Center	(800) 222-1222
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
Tetra Tech Jacksonville Office	(904) 636-6125
Project Manager, David Siefken	(904) 730-4669 x226 (904) 334-7260 Cel
CLEAN Health and Safety Manager, Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer, Tom Dickson	(412) 921-8457 (412) 720-3006 Cell
WorkCare	800-455-6155 ext. 109

Note: When calling base telephone numbers from within the base (i.e., from an on-base telephone), dial a zero (0) and the last four digits of the telephone number. For example, to contact the Base Medical Center dial 05444. When calling from your cell phone all numbers must be dialed.

2.7 ROUTE TO HOSPITALS

For emergency care only, non-Navy personnel are permitted to go to the Base Medical Center:

Branch Medical Clinic
NS Mayport
Mayport, FL 32228

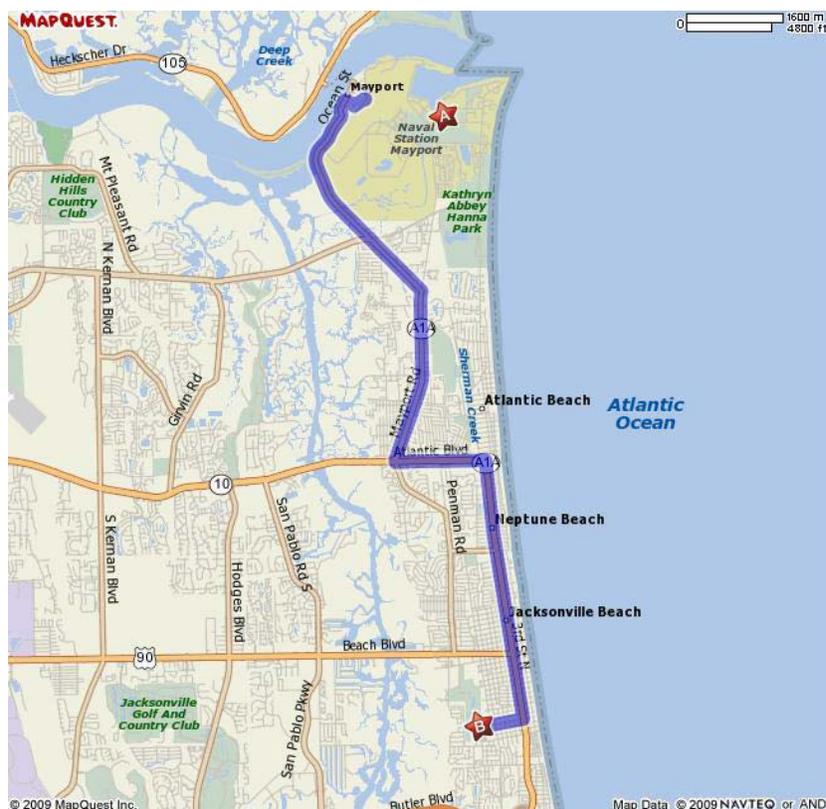
The Base Medical Clinic should be used for life-threatening emergencies only. It is located in Building 1363 on Massey Avenue.

For urgent, non-emergency care services:

Baptist Medical Center Beaches
1350 13th Ave S
Jacksonville Beach, FL 32250-3203

Baptist Medical Center Beaches will be used for medical care beyond basic first aid treatment. Directions to the Center: Southwest on Ribault Park St. toward Pearl St. Turn right onto Pearl St. then turn left onto Ocean St (FL-A1A). Turn right onto Mayport Rd. (FL-A1A). Turn right onto Atlantic Blvd (FL-A1A). Turn right onto 3rd St. N (FL-A1A). Turn right onto South 13th Ave. Hospital is on the left

**FIGURE 2-1
ROUTE TO BAPTIST MEDICAL CENTER BEACHES**



2.8 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Tetra Tech personnel will be working in close proximity to each other at the Sites. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency.

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

- Alert other field personnel
- Initiate incidental response measures (employ fire extinguishers, spill pads, first aid, etc.)
- If the FOL and/or the SSO are not onsite, alert them of the occurrence.
- The SSO will initiate an Incident Investigation to determine the cause and effect. As part of this effort, the Incident Reporting Forms will be completed. This information will be entered into the TOTAL Reporting System as soon as possible.
- The FOL will notify the PM and HSM of the occurrence, response measure, and measures to ensure it does not happen again.
- The occurrence and the cause for the occurrence will be reviewed at the Tail Gate Safety Meeting. Where necessary, retraining will be conducted to minimize or eliminate the re-occurrence.
- Restock expended supplies.

If an incident is not controlled in the initial response stages or if an emergency occurs requiring evacuation, the following measures will be conducted:

- Initiate the evacuation.
- Call (904) 270-5583 (Base Security) – Inform the dispatch of the emergency and remain on the line to answer all questions pertaining to the incident (type of emergency, number of injured, etc.) so they may send the proper personnel and equipment.
- The FOL and/or the SSO will account for all personnel. At this time, personnel may be deployed at unaffected areas to serve as perimeter security until responding agencies arrive.

The FOL will notify the PM and HSM and begin the incident investigation using Attachment II.

2.9 PPE AND EMERGENCY EQUIPMENT

Based on the initial hazard assessment, if an emergency event was to occur it would most likely be limited to personal injury, minor spills or releases, or contact with subsurface structures (utilities). As a result, limited emergency and first aid equipment will be required to be maintained onsite.

2.9.1 Emergency Equipment

The following represent emergency equipment to be maintained on-site during operations:

- A first-aid kit(s),
- Eye wash units,
- Fire extinguishers,
- Spill containment pads and absorbent.

2.9.1.1 Emergency Equipment Placement

The SSO shall ensure that at least one properly-stocked first-aid kit(s) is provided and maintained at the work site so that it is readily accessible if needed. Also, at least one, inspected 5 pound type A/B/C portable fire extinguisher will be on hand. The SSO is responsible for inspecting these items both initially as part of site mobilization, and then at least monthly for the fire extinguisher and weekly for the eyewash and first aid kit(s) thereafter until the project is completed and the team has demobilized. All such inspections must be documented in the field log book.

2.9.1.2 Fire Extinguisher Types

Portable fire extinguishers will be of type A/B/C, so that they can be effective on any type of fire that is likely to occur at this work site. Capacity has been determined based on potential use. In this case recognizing the fuel capacity of the DPT unit and any portable storage to supplement the supply as needed. All site personnel will be instructed in the placement and use of these devices as part of their initial site specific health and safety training session. If it is maintained in a tool box of the support vehicle, the outer container will be appropriately marked to allow quick access. Materials and equipment also stored in these storage locations will not restrict immediate access. During site specific training, the personnel will be reminded concerning the use of portable fire extinguishers. This will cover the following aspects:

- Proper use of portable fire extinguishers (P.A.S.S. – **P**ull pin, **A**im discharge hose at the base of the fire, **S**queeze the activating handle, and **S**weep the fire from a side-to-side motion.
- Requirement to notify other workers immediately in the event of any fire.
- Authorization to use portable fire extinguishers only on small fires that can be extinguished with only one extinguisher. Fires greater than the capacity of one fire extinguisher will be considered an emergency and will require the responding agencies to be notified.
- The need to observe the area after the fire has been extinguished to monitor for flashback.

Note: Hot work operations are not anticipated as part of this scope of work. The area will be examined to remove all combustibles and to support general housekeeping as a preventative measure. All coring and drilling operations will be wet cut or drill; therefore, elevated temperature applications are not anticipated.

2.9.1.3 First-Aid Kits

At least one first-aid kit will be maintained at the job-site. The kit must be a Type III, 16-unit kit meeting the specifications of American National Standards Institute (ANSI Z308.1-1998), and the basic fill requirements as specified in USACE EM 385-1-1, Section 3. These minimum fill requirements are listed in Table 2-2. It is the SSO's responsibility to inspect the kit as part of initial site mobilization and at least weekly thereafter to ensure that the minimum basic fill requirements are maintained.

**TABLE 2-2
FIRST AID KIT BASIC (MINIMUM) FILL REQUIREMENTS**

Unit First Aid Item	Minimum Size or Volume (Metric)	Minimum Size or Volume (US)	Item Quantity per Unit Package	Unit Package Size
*Absorbent Compress	60 sq. cm	24 sq. in.	1	1
*Adhesive Bandage	2.5 x 7.5 cm	1 x 3 in.	16	1
*Adhesive Tape	457.2 cm	5 yd. (total)	1 or 2	1 or 2
*Antiseptic Swab	0.5 g	0.14 fl. oz.	10	1
Antiseptic Wipe	2.5 x 2.5 cm	1 x 1 in.	10	1
Antiseptic Towelette	60 sq. cm	24 sq. in.	10	1
Bandage Compress (2 in.)	5 x 91 cm	2 x 36 in.	4	1
Bandage Compress (3 in.)	7.5 x 152 cm	3 x 60 in.	2	1
Bandage Compress (4 in.)	10 x 183 cm	4 x 72 in.	1	1

Unit First Aid Item	Minimum Size or Volume (Metric)	Minimum Size or Volume (US)	Item Quantity per Unit Package	Unit Package Size
*Burn Treatment	0.5 g	0.14 fl. oz.	6	1
Eye Covering, with means of attachment			1	1
Eye Wash	30 ml	1 fl. oz. total	1	2
Eye Wash & Covering, with means of attachment			1	2
Surgeons or Dust Mask**			2	1
Roller Bandage, 4 in.	10 x 550 cm	4 in. x 6 yd.	1	1
Roller Bandage, 2 in.	5 x 550 cm	2 in. x 6 yd.	2	1
*Sterile Pad	7.5 x 7.5 cm	3 x 3 in.	4	1
*Triangular Bandage	101 x 101 x 142 cm	40 x 40 x 56 in.	1	1
Nitrile Surgeons Gloves**	Medium and Large		4 pair	1
MicroShield CPR Mask**			2	
Surgeons mask**			4	
Safety Glasses**			1 pair	
Hospital Map & Emergency Phone Number Listing			1 copy	
Medical Data Sheets***			Completed copies	

* Minimum mandatory contents for basic fill kit. Additional items from this table are needed to meet 16-unit kit requirement.

** - These items are those intended to support protection against bloodborne pathogens.

*** - Having these items contained within the first-aid kit will provide immediate access in the event of an injury.

2.9.2 Spill Response Equipment

Major spills are not anticipated in the performance of planned site activities. Items that will be maintained onsite to respond to minor spills that may occur include the following:

- Shovel/rake/broom,
- Adsorbent material (such as kitty litter or oil-dry),
- Oil pads,
- PPE
 - Nitrile outer gloves
 - Splash shield,
 - Impermeable over-boots,
 - Rain suit or impermeable apron.

As the investigation proceeds, spills that could potentially threaten the environment are those associated with the resource deployment or due to equipment failure. Simple measures include the following:

- Place a spill pad under the hydraulic lines to capture potential rupture.
- Place spill pads under the the unit during fueling to capture incidental spills.
- Place plastic sheeting under the DPT rig to capture hydraulic fluid should a line rupture. Exercise care not to extend the plastic into the area where the driller and helper must walk/work.
- Have spill pads at the operation ready to respond should a release occur. The quicker response is rendered, the likelihood of environmental damage is greatly reduced.

2.10 INJURY/ILLNESS REPORTING

If any Tetra Tech personnel are injured or develop an illness as a result of working on site, the Tetra Tech “Incident Report Form” (Attachment II) must be filled out. Following this procedure is necessary for documenting of the information obtained at the time of the incident.

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

2.10.1 TOTAL Incident Reporting System

TOTAL is Tetra Tech’s new online incident reporting system. Use TOTAL to directly report health and safety incidents, notify key personnel, and initiate the process for properly investigating and addressing the causes of incidents, including near-miss events. An incident is considered any unplanned event. It may include several types of near misses, events where no loss was incurred, or incidents that resulted in injuries or illness, property or equipment damage, chemical spills, fires, or damage to motor vehicles.

TOTAL looks like the incident reporting form in Attachment II. TOTAL is an intuitive system that will guide you through the necessary steps to report an incident within 24 hours of its occurrence. Behind the scenes, TOTAL is a powerful tool for health and safety professionals, and will help Tetra Tech to better track incidents, analyze root causes, implement corrective action plans, and share lessons learned. The ultimate result is a more safe and healthy working environment for us all.

TOTAL is maintained on the Tetra Tech Intranet site at <https://my.tetrattech.com/>.

Once on the "My Tetrattech" site, TOTAL can be found under the Health and Safety tab, Incident Reporting section, select "Report an Incident (TOTAL)". This will connect you directly to TOTAL. TOTAL can also be accessed directly from the internet using the following web address: <http://totalhs.tetrattech.com/>.

Note: When using the system outside the Tetra Tech intranet system or when operating in a wireless mode, a VPN connection will be required. The speed of the application may be affected dependent upon outside factors such as connection, signal strength, etc. Enter the system using your network user name and password. The user name should be in the following format - TT\nickname.lastname.

3.0 SITE BACKGROUND

NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, and approximately 12 miles to the northeast of downtown Jacksonville and adjacent to the Town of Mayport. The station complex is located on the northern end of a peninsula bounded by the Atlantic Ocean to the east and the St. Johns River to the north and west.

3.1 BACKGROUND AND HISTORY

Site 351-1 and 351-2 originally began as Building 351 (Tank N1388) where a 3,000 gallon Fuel Oil #2 release occurred on July 1, 1999. Site assessments, contaminated soil removals, and free product recovery efforts were performed in hopes of remediating the site. A future release, caused by a faulty day tank, occurred on December 16, 2003, and resulted in separating the site into two distinct sites (351-1 and 351-2). Site 351-2 was assessed and underwent a treatability study to remove free product. Post-study quarterly monitoring is being implemented and shall be continued via this scope for another year.

Building 289 (Housing): On March 29, 2010 approximately 40 gallons of diesel fuel leaked out of the fill port of an abandoned underground storage tank at Building 289. Approximately 300 gallons of diesel fuel and 200 gallons of oily/water mixture was pumped out of the tank. The parking lot was scrubbed with absorbent material and 30 cubic yards of contaminated soil was dug up. All waste was disposed of through the Part B Facility. Soil samples were taken from the "clean" soil and when results were received, the area was backfilled and new sod was laid. The tank was emptied. The heating oil tank was removed on February 1, 2010. Field screening was performed with an OVA (PID) and there were a few OVA readings above 10 ppm from the fill area. Two soil samples and one ground water sample were taken for laboratory analysis. A tank closure report was prepared February 2011.

Buildings 425 and 1343 were previously funded for semiannual groundwater monitoring for one year. Free product recovery was also underway for two years. Free product has decreased and the pumps can no longer recover product effectively. Additional recovery, utilizing absorbent socks or similar methods, will be addressed via this scope.

Building 1585 underwent a site assessment and an interim measure to monitor groundwater and remove free product during 2006 and 2007, respectively. Additional monitoring and free product recovery as well as quarterly monitoring will be addressed via this scope.

Building 1586 underwent a Treatability Study to determine an effective remediation system for site conditions. Tasks including a site assessment and Remedial Action Plan preparation were previously

scoped. A Remedial Action Plan is presently under preparation. Monthly monitoring and free product recovery shall be addressed via this scope for one year.

4.0 IDENTIFYING AND COMMUNICATING GENERAL SAFE WORK PRACTICES

The AHA contained in Attachment IV provides the identification of task specific related hazards identified along with the intended control measure. The purpose of this section is to identify general safe work practices that will be employed as general precautionary measures to assist in the control of these hazards.

Section 5.0 presents additional information on hazard anticipation, recognition, and control relevant to the planned field activities.

4.1 GENERAL SAFE WORK PRACTICES

The following general safe work practices are to be followed when conducting work on-site:

- Eating, drinking, chewing gum or tobacco, taking medication, or smoking in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists is prohibited. The purpose is intended to minimize the potential for hand to mouth transfer resulting in exposure through ingestion.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. If a source of potable water is not available at the work site that can be used for hands-washing, the use of waterless hands cleaning products will be used, followed by actual hands-washing as soon as practicable upon exiting the site.
- Avoid contact with potentially contaminated substances including puddles, pools, mud, or other such areas. Avoid kneeling on the ground or leaning or sitting on equipment. Keep monitoring equipment away from potentially contaminated surfaces.
- Plan and mark entrance, exit, and emergency evacuation routes.
- Rehearse unfamiliar operations prior to implementation.
- 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.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report injuries, illnesses, and unsafe conditions, practices, and equipment to the SSO.
- Observe co-workers 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.

4.2 DPT SAFE WORK PRACTICES

The following Safe Work Practices are to be followed when working in or around the DPT Rig Operations.

- Identify underground utilities and buried structures before commencing any DPT operations. Follow the Tetra Tech Utility Locating and Excavation Clearance Standard Operating Procedure.
- DPT rigs will be inspected by the SSO or designee, prior to the acceptance of the equipment at the site and prior to the use of the equipment. Repairs or deficiencies identified will be corrected prior to use. The inspection will be accomplished using the Equipment Inspection Checklist for DPT rigs provided in Attachment III. After the initial inspection and release for use on site, additional inspections will be performed at least at the beginning of every 5- or 10-day shift, or following any repairs or significant maintenance activities.
- Ensure that all machine guarding is in place and properly adjusted.
- Block the DPT rig and use levelers to prevent inadvertent movement, where applicable.
- The work area around the point of operation will be cleared to the extent possible to remove any trip hazards near or surrounding operating equipment.
- The driller's helper will establish an equipment staging and laydown plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards. Mechanisms to secure heavy objects such as DPT flights will be provided to avoid the collapse of stacked equipment.

- Minimize contact to the extent possible with contaminated tooling and environmental media. Potentially contaminated tooling will be placed on polyethylene sheeting for storage and wrapped for transport to the centrally located equipment decontamination area
- Support functions (sampling and screening stations) will be maintained a minimum distance from the DPT rig of the height of the mast plus 5 feet, but not less than 25 feet around the rig.
- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the DPT rig.
- During maintenance, use only manufacturer provided/approved equipment (i.e., auger flight connectors, etc.)
- In order to minimize contact with potentially contaminated tooling and media and to minimize lifting hazards, multiple personnel should be used to move auger flights and other heavy tooling.
- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone.
- Equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the FOL and/or the SSO to determine cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.
- Motorized equipment will be fueled prior to the commencement of the day's activities.
- When not in use, the DPT rig will be shutdown, emergency brakes set, and wheels chocked to prevent movement.

Investigative areas 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 immediately removed, the area will be barricaded to limit access.

4.3 GROUNDWATER SAMPLING SAFE WORK PRACTICES

Groundwater sampling will be conducted using a well screen point in an effort to delineate any subsurface fuel plume. The well screen point is driven in using the DPT. Then, at the desired depth, it is extracted keeping the well point at that elevation. When the rod is pulled back, this exposes the well screen. These samples are collected with very little purging conducted. Once these samples are

collected and analyzed, there may be a need to return and install permanent monitoring wells using the DPT unit. These are generally preconstructed with a filter pack in place. The following safe work practices will apply to groundwater sampling from well screen points, temporary monitoring wells and permanent monitoring wells.

- Scene safety – When approaching an established monitoring well location, always examine the area surrounding the well. Well pads are a favorite sunning spot for snakes, and protective casings provide a controlled nesting environment for spiders such as the widow variety (black, brown, and red), as well as bees nests. Fire ants have an affinity for building nests along well pads. Exercise caution as these insects swarm if disturbed even accidentally. Any collected brush near the well monitoring location will often serve as a nesting or hunting location. Again examine the area for hazards during your set up. Remember where the hazards will come from (the brush, the water, etc.), so place yourself where you can monitor hazards of this nature.
- When opening the monitoring well do so at a fully extended arms length. That way, if the monitoring well is pressurized and the cap blows, you will not get struck. Wear nitrile gloves and safety glasses during this activity.
 - Walk away to minimize exposure to off gassing. This will also allow the well to equilibrate prior to purging and sampling.
- To minimize potential inhalation of off gas products, keep a lid placed loosely on your collection bucket during sampling. Position yourself up wind.
- Keep wires to your power source, as well as your water quality meter leads, collected to minimize trip hazards in and around the monitoring wells and well points.
- Practice good housekeeping. Keep your equipment clean and wiped down; keep your work area orderly. Wipe down the outside of the IDW buckets to minimize contact and/or off gassing in your vehicle during transport.
- When transporting IDW, keep the lid on the bucket to avoid off gassing in your vehicle. This condition increases as the temperature increases driving volatiles off the water.
- Do NOT fill transport buckets greater than 80% to minimize lifting and potentially spill hazards.
- Wear safety glasses and nitrile gloves when handling sample ware with preservatives. These are corrosives in many cases and will result in injury to tissue at all points of contact.

- Carry all sample ware in a hard-sided container, so if you fall you will not impale yourself with shards of glass.
- Practice safe cutting practices when cutting tubing, etc. See Section 4.13 of the HSGM.

Electrical hazards

If you must connect to your vehicle's battery to provide power to your Peristaltic pump, the following measures need to be employed:

- For purposes of connecting for groundwater sampling, never reach under the hood for any reason with the motor running.
- Wear safety glasses and nitrile gloves, connect the negative or black lead first to establish a ground, then connect the red or positive lead. When you connect the lead, do so at arm's length from the side to avoid having your face over the battery when connections are made.

For additional safe work practices and how they may apply to the tasks being conducted, see Section 13.0 of the HSGM.

5.0 HAZARD ASSESSMENT

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

5.1 CHEMICAL HAZARDS

The sites to be investigated are sites that have been identified based on historical releases of petroleum products (fuel oil, diesel fuel, heating oil). Petroleum products and fuel oils are refined from crude petroleum and may be categorized as either a distillate fuel or a residual fuel depending on the method of production. Diesel fuels are similar to fuel oils used for heating [fuel oils Number 1 (aka kerosene), Number 2 and Number 2D (aka Diesel fuel, and Number 4 (aka heating oil)]. These fuels are employed in facilities and engines that do not require preheating of fuel prior to combustion.

Fuel oils consist of complex mixtures of aliphatic and aromatic hydrocarbons (i.e., paraffins and naphthalenes; benzene, toluene, ethylbenzene, and xylenes [BTEX]; styrene; and indene). Due to the low volatility of fuel oil, kerosene, diesel, and heating oil human exposure to vapor concentrations above occupational exposure limits is unlikely with the exception presented in a confined space.

Fuel Oil #1 – This material in a product form is a light amber liquid with a mild petroleum odor. Generally, petroleum products will present themselves as a multi color sheen on water and saturated soils. It is insoluble in water and will float.

Fuel Oil #2 – This material in its product form is a brown slightly viscous liquid. Generally, petroleum products will present themselves as a multi-color sheen on water and saturated soils. It is also insoluble in water and with a specific gravity of 0.86 will also float.

Fuel Oil #2D (Diesel fuel) – This material in its product form is a brown slightly viscous liquid. It is also insoluble in water and with a specific gravity of less than 0.86 will also float. Diesel fuel is higher in paraffinic and naphthalenic compound mixtures resulting in a lower benzene concentration. Based on the benzene content, these fuels are exempted under 1910.1028 Benzene standard.

Fuel Oil #4 (aka heating oil) – This material in its product form is a moderately dark (brown to black) viscous liquid. This material is insoluble and will also float.

Health Effects – These materials will not sufficiently volatilize to present an inhalation hazard. However, the inhalation of aerosols or mists will result in respiratory tract irritation, headache, dizziness, nausea,

and potentially unconsciousness. These materials are skin, eyes, and mucous membrane irritants. Prolonged exposure to the skin may result in drying and cracking of the skin associated with dermatitis. Exposure to the mucous membranes may result in irritation and the development of fluid in the lungs. Death may occur due to the development of pulmonary edema.

All of these fuel oils to one extent or the other are listed as limited animal or limited human data regarding the cancer causing capabilities. This, of course, is over an extended period of time to repeated low and elevated concentrations that are not anticipated associated with this scope of work.

Fuel Oil Constituents

From an occupation exposure standpoint, we must evaluate the products as a whole, then exposures to constituents of fuel oils (e.g., BTEX, etc.) are of greater concern, and are used as the basis for establishing action levels for air monitoring instrumentation. The greatest potential for exposure is anticipated to occur whenever free product is encountered or if soils that are saturated with free product are handled. Keep in mind, the individual components may not be available as an exposure compound as they are bound in the overall product – fuel oils.

Based on historical information, the predominant chemical substances assumed to be encountered at the sites are diesel fuels, BTEX, and general polynuclear aromatic hydrocarbons (PAHs). Table 5-1 below shows the contaminant of concern (COCs) for the site compared to their current occupational exposure limits.

**TABLE 5-1
VOLATILE ORGANICS
AND THEIR CURRENT OCCUPATIONAL EXPOSURE LIMITS**

Volatile Organics			
Contaminant of Concern	Maximum Concentration Previously Detected	Possible Worst-Case-Scenario Concentration	Current OSHA PEL and ACGIH TLV
Benzene	87.5 ug/L	6.06 ppm	OSHA: 1 ppm, TWA ₈ 5 ppm STEL ACGIH: 0.5 ppm TWA ₈ 25 ppm STEL
Toluene	0.22 ug/L	0.02 ppm	OSHA: 200 ppm 300 ppm (Ceiling) ACGIH: 50 ppm (skin)
Xylenes	42.1 ug/L	2.65 ppm	ACGIH: 100 ppm, 150 ppm STEL OSHA: 100 ppm
Ethylbenzene	37.8 ug/L	2.81 ppm	ACGIH: 100 ppm; 125 ppm STEL OSHA: 100 ppm
PAHs	NA	NA	OSHA: 0.2 mg/m ³
Diesel fuel/ Fuel oils	NA	NA	ACGIH 100mg/m ³ ; 12ppm**
Kerosene	NA	NA	AGIH 200mgm ³ ; 41 ppm**

Table Notes:

- TWA₈: Average air concentration over an 8-hour work period that is not to be exceeded
- ACGIH STEL: Concentration in air that is not be exceeded for more than 15 minutes more than 4 times per day.
- ** - This is based on an average molecular weight for this hydrocarbon group.

5.1.1 Properties and Exposure Signs/Symptoms

The following information concerning individual components are provided for informational purposes as they may represent degradation into these subset materials. When previous sampling was conducted, fuel types were not part of the analytical suite.

Benzene

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities. Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume.

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking

foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

The major effect of benzene from long-term exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Long-term exposure to high levels of benzene in the air can cause leukemia, particularly acute myelogenous leukemia, often referred to as AML. This is a cancer of the blood-forming organs. The Department of Health and Human Services has determined that benzene is a known carcinogen. The International Agency for Research on Cancer and the United States Environmental Protection Agency (USEPA) have determined that benzene is carcinogenic to humans.

The principle route that a worker could be exposed to this COC is inhalation. Secondary pathways contributing to exposure include ingestion, and direct skin contact and absorption.

Toluene

Overexposure to this substance may result in mild to moderate irritation at the points of contact, and central nervous system (CNS) changes including euphoria, confusion, nervousness, and possibly paresthesia characterized by an abnormal burning sensation, pricking, or numbness. At 200 to 500 parts per million (ppm) exposure has resulted in headaches, nausea, eye irritation, loss of appetite, bad taste, impair coordination, fatigue, and weariness. Chronically, toluene overexposure may result in dermatitis, liver, and kidney damage.

Xylenes

Effects may of overexposure include irritation at the points of contact, CNS changes (i.e., dizziness, excitement, drowsiness, incoherent, staggering gait), difficulty in breathing, pulmonary edema, and possibly respiratory failure. Chronic effects may include dermatitis and cornea vacuolization.

Ethylbenzene

Ethylbenzene is regulated primarily because of its potential to irritate the eyes and respiratory system. In addition, effects of overexposure may include headaches, narcotic effects, CNS changes (i.e., coordination impairment, impaired reflexes, tremors), difficulty breathing, possible chemical pneumonia, and potential respiratory failure or coma.

PAHs

PAHs are regulated based on effects on respiratory tract and skin irritation. Other effects may include eye irritation and central nervous system disturbances. Acute exposures may result in difficulty breathing, respiratory failure, and skin and eye irritation and burns. Chronic exposure may damage the liver, kidneys, lungs, and skin or cause photosensitivity. The USEPA list some PAHs such as benzo(a)pyrene as potential carcinogens.

5.1.2 Inhalation

Based on the historical data and previous investigations at the sites, worker exposure to airborne concentrations of these BTEX COCs that could represent a health concern is considered to be possible, but not likely. Control measures will employ the following:

- Direct monitoring instruments will be employed to monitor airborne concentrations and to respond to airborne concentrations base on exceeding an established action levels as specified in Section 6.0.
- Work practices will be employed such as setting up screening stations upwind, keeping purge water covered in enclosed vehicles, utilization of DPT to minimize surface exposure foot print to minimize exposure potential.

5.1.3 Ingestion and Skin Contact

Potential exposure concerns to the primary BTEX/PAH COCs may also occur through ingesting or coming into direct skin contact with contaminated water and soils. The likelihood of worker exposure concerns through these two routes are also considered unlikely, provided that workers follow good personal hygiene and standard good sample collection/sample handling practices and wear appropriate PPE as specified in this HASP. Examples of onsite practices that are to be observed that will protect workers from exposure via ingestion or skin contact include the following:

- No hand-to-mouth activities on site (eating, drinking, smoking, etc.)
- Washing hands upon leaving the work area and prior to performing any hand to mouth activities
- Wearing appropriate gloves whenever handling potentially contaminated media including soils, water, hand tools, and sample containers.

5.1.4 **Biological Exposure Indices (BEI)**

As you have seen reading through this plan, many efforts have been directed to minimize the potential for exposure. Unfortunately, signs and symptoms of overexposure may not vary much from the common flu. If someone is experiencing signs and symptoms, or say “They just don’t feel well”, experiencing headache, nausea transport to the identified medical provider for testing. The person in question will be required to provide a urine sample. The determinants are as follows:

Determinant	Sampling time	BEI
S-Phenylmercapturic acid in urine	End of Shift	25 µg/g creatinine
t,t-Muconic acid in urine	End of Shift	500 µg/g creatinine

Note: Transport and collect at the time of signs and symptoms. Do not wait for end of shift. Notify the PHSO of the intended transport, complete the IR forms specified in Section 2.10.

5.2 **PHYSICAL HAZARDS**

The following is a list of the more prominent physical hazards that may be encountered at the site during during the performance of site activities associated with the Scope of Work:

- Slip, trip, and fall hazards (See Section 4.1 of the HSGM),
- Heavy lifting (See Section 4.4 of the HSGM),
- Cuts and lacerations (See Section 4.13 of the HSGM),
- Pinches and compressions (See Section 4.5 of the HSGM),
- Struck by/Vehicle traffic (See Section 4.3 of the HSGM),
- Heat/cold stress (See Section 4.6 of the HSGM),
- Natural hazards (See Section 4.0, subpart 5.1 of the HSGM),
- Inclement weather (See Section 4.6 of the HSGM).

These hazards are discussed relative to each task in the task-specific AHA and will not be repeated here. For additional information outside of that provided in the AHAs, see the applicable sections of the HSGM for safe work practices, SOPs, and programmatic elements.

6.0 AIR MONITORING

Through our hazard assessment discussion it was determined that the releases of these oils and fuels from these tanks present a limited inhalation hazard. However, direct reading instruments will be used at the site to detect and evaluate the presence of airborne site contaminants and to quantify these contaminants in comparison to a reference standard. As a result, specific air monitoring measures and requirements are established pertaining to the specific hazards and tasks of an identified operation.

6.1 INSTRUMENTS AND USE

Instruments will be used primarily to monitor source points and worker breathing zone (B2) areas while observing instrument action levels.

6.1.1 Flame Ionization Detector (FID)

A FID is required in the detection and evaluation of contaminants associated with releases under the Florida Administration Code in the investigation of underground storage tanks (USTs). To support this requirement, as well as worker health and safety, this instrument will be employed.

Prior to the commencement of any field activities, the following will be performed:

- The instrument will be fueled with 99.999% pure laboratory grade hydrogen.
- The instrument will be started and allowed to warm up for at least 5 minutes.
- The background levels of the site in an area unaffected by contaminants in question. These values will be recorded. Daily background readings will be taken away from any areas of potential contamination.
- Any influencing conditions (i.e., weather, temperature, humidity) and site location must be documented in the field operations logbook or other site documentation (e.g., sample log sheet).
- The SSO shall monitor source areas (e.g., above collected samples boreholes, headspace monitoring wells, etc.) for the presence of any reading above the daily-established background level.

Instrument Action Levels: The following action levels are observed:

- FID Action Level: 0 to 10 ppm above background in BZ areas. Continue to work; continue to monitor.

- >10 ppm sustained for 15 minutes (no more than 4 exposures per day)
 - Evacuate the area to an upwind, safe, unaffected area where they will remain until further directed by the SSO. Allow 5 to 10 minutes for the airborne concentrations to recede through general dilution. The SSO will then measure airborne concentrations again. Only when background levels are regained in BZ areas will work be permitted to resume.
 - If background levels are not regained, the SSO will contact the HSM or PHSO for additional direction.

6.2 INSTRUMENT MAINTENANCE AND CALIBRATION

FIDs will be maintained and pre-field calibrated by the equipment vendor. Daily operational checks or bump tests will be performed by the instrument user twice per day (prior to use and end of day to determine battery loss and instrument drift).

- In this bump test, the instrument will be exposed to the calibration gas under normal operating mode. The results should be within 5% of the posted value (e.g., 100 ppm methane in air). If not, calibration will be required.

These operational checks and calibration efforts will be performed in a manner that complies with the employee's health and safety training and the manufacturer's recommendations. (These will be supplied with each instrument received in the field.)

Calibration efforts must be documented. Figure 6-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook provided that the information specified in Figure 6-1 is recorded. This required information includes the following:

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

6.3 DOCUMENTING INSTRUMENT READINGS

The SSO is responsible for ensuring that air monitoring instruments are used in accordance with the specifications of this HASP and with manufacturer's specifications/recommendations. In addition, the SSO is also responsible for ensuring that the instrument use and results are appropriately documented.

This requirement can be satisfied either by recording instrument readings on pre-printed sampling log sheets or in a field log book. This includes the requirement for documenting instrument readings that indicate no elevated readings above noted daily background levels (i.e., no-exposure readings). At a minimum, the SSO must document the following information for each use of an air monitoring device:

- Date, time, and duration of the reading.
- Site location where the reading was obtained.
- Instrument used (e.g., photoionization detector, FID, etc.).
- Personnel present at the area where the reading was noted.
- Other conditions that are considered relevant to the SSO (such as weather conditions, possible instrument interferences, etc.).

6.4 COMPRESSED GAS SAFETY

One of the most hazardous activities personnel will be exposed to during this work will be the transport, securing, and use of the hydrogen gas used as a fuel source for the FID. This hazard is also recognized to a much lesser extent to the calibration gases (100 ppm of methane in air) employed to calibrate this instrument.

Hydrogen can be used as safely as other common fuels we use today when guidelines are observed and users understand its behavior.

The Facts of Hydrogen Safety

Hazard: The first hazard to recognize is that this is a compressed gas with all of the hazards associated with utilizing a cylinder to fill this gas into a smaller internal tank on the FID.

Control measures: These are as follows:

- Where possible, have the gas supplier deliver the gas to your desired use location with an MSDS. Have a place ready for storage out of the direct sunlight, cool, and well ventilated.
- If you must move the cylinder, use a cylinder cart; do not drag or roll.
- The cylinder will be used to fill the FID in an upright secured position.
- Do NOT transport any cylinders of hydrogen greater than 30 pounds water weight in your vehicle. Do not store cylinders in your vehicle.

- Do not secure cylinders near doorways, stairs, or other emergency egress routes.
- Have a dry powder extinguisher in the area of use for extinguishing fires.
- Besides fire and explosion hazards, this cylinder can rocket under great pressure creating significant damage, injury, and death.

Hazard: As the lightest and smallest element in the universe, confining hydrogen is very difficult. Hydrogen is much lighter than air and rises at a speed of almost 20 meters per second — two times faster than helium and six times faster than natural gas — which means that when released, it rises and disperses quickly. Leaking hydrogen cylinders can collect in the upper areas of buildings and containing structures thereby creating a fire and explosion hazard.

Control measure: Hydrogen cylinders will be **stored outside** in a cool ventilated space. Signs will be posted – Hydrogen Gas - No Smoking or Ignition Sources within 50 feet.

- Combustion cannot occur in a tank or any contained location that contains only hydrogen. As with any fuel, an oxygen source must be present. This is pertinent as hydrogen released into a building or room with oxygen can burn and/or explode. The second scenario would have oxygen being sucked into the tank during a flashback. See below concerning flashback arrestors.
- Hydrogen is odorless, colorless, and tasteless and, therefore, undetectable by human senses.

Hazard: Hydrogen burns very quickly. Under optimal combustion conditions, the energy required to initiate hydrogen combustion is significantly lower than that required for other common fuels, such as natural gas or gasoline. The hydrogen flame is almost invisible.

Control measure: Because of this low combustion temperature and almost invisible flame, persons have been burned by hydrogen flames emanating from connections simply because they did not know it was on fire. Therefore, the following measures will be employed:

- Remove the protective cap from the cylinder.
- Attach the regulator. It is a common practice to open the valve to clear any particulate from the cylinder orifice prior to connecting the regulator. DO NOT do this with hydrogen gas. See note below. Connect all lines.
- The regulator will be equipped with flash back protection.
- Open the valve slowly, quarter to half turn. If there are leaks quickly turn the valve off.
- A trick used by gas haulers is to use a broom with corn stalk or similar bristles to sweep over connections. If there is a fire, the brooms bristles will burn. Immediately call 911. They will apply water to the cylinder keeping it cool while efforts are made to turn the valve off.
- At this point there are three options in addition to calling 911:
 - Wear fire retardant garments and gloves. Turn the valve off. This will stop the flow of fuel and extinguish the fire. The flashback protector will prevent the flame and oxygen from being sucked into the tank.

- Use your dry extinguisher to extinguish the fire, then turn the valve off.
- Evacuate all to a minimum of 330 feet for a small leak ($\frac{1}{2}$ mile for a cylinder on fire) and allow the cylinder and contents to burn.
- Hydrogen flames have low radiant heat. A hydrogen fire has significantly less radiant heat when compared to a hydrocarbon fire. Since low levels of heat are emitted near a hydrogen flame and the nearly invisible flame the potential for acquiring burns is increased.

Filling the Hydrogen Cylinder

- Use only approved connections and adaptors for filling your instrument.
- During filling of the FID, the site control boundary will be 10 feet surrounding the fill point/cylinder. Have a suitable stable stand to place the instrument on during filling.
- Do NOT overtighten fittings.
- With the 3-way valve turned to closed, open the hydrogen cylinder slowly; $\frac{1}{4}$ to $\frac{1}{2}$ turn. Check for leaks using a soap solution.
- Slowly purge the fill line enough to drive out debris and air impurities.
- With a successful leak test and purge, connect the hose to the instrument (that is off) through the quick connect fitting. Turn the valve to fill.
- Stay with the instrument, monitor the instrument gauge, and be careful not to overfill.
- Turn the 3-way valve to off.
- Close the cylinder valve on the tank of hydrogen.
- With the flexible tubing disconnected from the instrument, vent the hydrogen into the flexible tubing.

Remove the fill adaptor, replace the valve stem protective cap, and you are ready to use your FID.

Hydrogen is non-toxic and non-poisonous. It will not contaminate groundwater (it is a gas under normal atmospheric conditions) and a release of hydrogen is not known to contribute to atmospheric pollution or water pollution.

A Compressed Gas Cylinder Safety Checklist has been provided in Attachment V to ensure provisions for safely working with compressed gases are addressed.

7.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

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

7.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

Tetra Tech and subcontractor personnel must complete the following:

- 40 hours of introductory hazardous waste site training and 3 days of on the job training prior to performing work at the NAVSTA Mayport.
- Persons 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.
- 8-hour supervisory training in accordance with 29 CFR 1910.120(e)(4) will be required for site supervisory personnel.
- 8-hour supervisory refresher training must be completed for supervisors who have had their initial or most recent supervisory refresher training greater than 12 months ago.

Documentation of Tetra Tech 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.

7.2 SITE-SPECIFIC TRAINING

The Tetra Tech FOL and the SSO will provide site-specific training to Tetra Tech employees and subcontractor personnel who will perform work on this project.

The FOL will be responsible for providing training concerning the work to be performed as stipulated in the scope of work. In this training SOP review, methods of sampling, etc. The SSO in tandem or separately will review the safety and health measures as specified in this plan and in the identified elements of the HSGM as it relates to the scope of work and facility specific requirements.

Figure 7-1 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities. This

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

Tetra Tech will conduct a pre-activities training session prior to initiating site work. Additionally, a brief meeting may be held daily to discuss operations planned for that day as well as a short meeting that may be held at the end of the day to discuss the operations completed and any problems encountered. This activity will be supported through the use of the AHA or Tail Gate Safety Meeting Attendance Form provided as Figure 7-2. Documentation of these efforts can also be recorded in the project logbook.

7.2.1 Other Training

In addition, on-site personnel will be required to provide proof of training, license, or certification in the following:

- Driller License or Certification,
- Surveyors License or Certification,
- First Aid/CPR and Bloodborne Pathogen Training (2 persons preferred),
- Any activity requiring the support of a Competent or Qualified Person as defined by OSHA,
- Persons responsible for the implementation of Safety and Health programs including but not limited to the following:
 - Hazard Communication,
 - Hearing Conservation,
 - Bloodborne Pathogens.

Appropriate documentation of completed personnel training will be collected, reviewed, and maintained at the project worksite by the SSO.

7.3 MEDICAL SURVEILLANCE

Tetra Tech personnel participating in project field activities will have had a physical examination meeting the requirements of their respective companies medical surveillance program. The medical surveillance program will meet the minimum contents of 29 CFR 1910.120(f).

Documentation for medical clearances will be maintained on the project site and made available, as necessary, and will be documented using Figure 7-1 for every employee participating in onsite work activities at this site. Documentation will be censored for private information (social security numbers, etc.). This information will be removed or blackened to obscure.

7.4 MEDICAL DATA SHEETS

Medical Data Sheet Exception – Health Insurance Portability and Accountability (HIPAA) Requirements – The Privacy Rule

The HIPAA came into effect in 1996. The Privacy Rule was then amended April 14, 2003. Loosely interpreted, it establishes regulations for the use and disclosure of Protected Health Information (PHI) by the entity collecting that information. PHI is any information about health status (such as that you may report on your Medical Data Sheet information), provision of health care, or payment for health care. This rule also requires Tetra Tech, in this case, to insure the confidentiality of communication (Medical Data Sheets). This provision severely limits the ability of the Medical Data Sheet to convey information you would want the Doctor to know regarding PHI if you were incapacitated. This rule also limits the SSO ability to insure provisions are in place to provide timely response for instance to a severe allergic reaction. So, before you complete the Medical Data Sheet understand the following:

- The Medical Data Sheets will not be maintained in a secure location. They will be maintained in a file box or binder accessible to all members of the field crew. In addition, all personnel will carry a copy on their person. This is intended to make these documents quickly accessible so they can accompany the injured party to the hospital should there be an event.
- DO NOT include information that you do not wish others to know, only information that may be pertinent in an emergency situation or treatment such as allergic reaction to insects, drugs, or occupationally relevant information.

Each field team member, including visitors, entering the exclusion zone(s) will be requested to complete and submit a copy of the Medical Data Sheet (see Attachment I of this HASP). This shall be provided to

the SSO, prior to participating in site activities. You may opt out, but should inform the SSO of any condition that may be relevant in your treatment.

8.0 SITE CONTROL

The objective of site control is to prevent or reduce the migration of potentially contaminated materials and to prevent the entry of unauthorized personnel into the work area to ensure their safety and that of those working within those zones.

8.1 WORK ZONES

The following modified 3-work zone approach will be established at each sample collection site: 1- the Exclusion Zone (EZ) 2- the Contamination Reduction Zone (CRZ), and 3- the Support Zone (SZ). Basically, each sample location will be designated as a localized EZ. In each EZ, work will be performed in accordance with the AHA created for that task.

Adjacent to each localized EZ, a controlled area will be established as a localized CRZ for personnel and equipment decontamination operations. At these areas, decontamination-generated wastes will be collected, bagged, and disposed of in accordance with client requirements. Outside of the CRZ structure, the field vehicles are designated as the SZ for this site.

The FOS/SSO will periodically evaluate this zone configuration and adjust the specific location boundaries of each zone as necessary.

It will be the responsibility of the FOL to arrange the work as such to minimize cross contamination. For instance, DPT soil samples and groundwater samples at the point of release will be the most contaminated. Those further from the tank the least. In this case, work should begin working from the least contaminated to the greatest. This along with diligent decontamination, the use of dedicated equipment will minimize the potential for cross contamination.

8.1.1 Exclusion Zone

The EZ is the innermost area of the three areas and is considered contaminated. The EZ will be the area identified for excavation. Within this area, levels of protection prescribed in this HASP will be used by all personnel. The boundary between the EZ and CRZ is the hot line, which will be established at a safe distance from the potentially contaminated area. The location of the hot line will be determined by on-site personnel and may be physically demarcated by flagging, signs, or caution tape.

As indicated within the AHAs, the EZs are those areas in which not only chemical hazards exist but physical and biological hazards also exist.

Some general EZ dimensions are as follows:

- Drilling – Height of the mast plus 10 feet or 35 feet, whichever is most conservative. This distance removes personnel from not only potential chemical hazards, but also physical hazards potentially associated with this operation including structural component failure, noise, high pressure lines, etc.
- Groundwater sampling – 10 feet surrounding the monitoring well head and/or collection container.
- Soil sampling – 10 feet (soil disruption – soil coring, hand augering)
- 10 feet low pressure decontamination activities.
- 35 feet surrounding high pressure operations washing and heavy decontamination operations.
- Free product capture through pumping and/or using the absorbent socks – 10 feet surrounding point of operation.
- IDW storage area – Authorized personnel only.
- 15 feet Surveying – During vegetation removal using hand tools.

EZs may be delineated using signs, barrier tape, cones and/or drive poles, and other postings to inform and direct facility site personnel and visitors, as necessary. Physical barriers will be at the PHSO and the SSO determination based on site the tasks to be conducted and the necessity for complete control due to persons wandering in from adjacent operations. In the event that EZ cannot be adequately marked given the configuration work area, Tetra Tech site personnel will be responsible for policing the area and keeping unauthorized personnel from areas where potential exposure concerns may exist. Signs will also be used to alert other site personnel or visitors of the hazardous nature of the work being performed. Signs will instruct personnel to stay out of the area. Signs will also be used when appropriate such as Surveyors Working Ahead.

Indigenous Personnel

Many of these operations will occur at active facilities. For instance, Site 289 is occupied by the facility housing unit. The FOL will meet with the Operation Managers to schedule work as appropriately to avoid

disruption of day to day activities. Where possible, the FOL will schedule activities such as DPT during off hours or weekends.

This will also require that the FOL proceed the activity by placing cones in parking locations to secure and adequate work zone.

Work zones will be strictly controlled in areas of common pedestrian movement.

EZs will be restored to equal or better condition. In no way shall physical hazards be left without warning signs and barricades placed to warn indigenous personnel in the area of such hazards.

The FOL and/or the SSO will be responsible for a walk over of each work area/each day to ensure it has been restored sufficiently to release unprotected.

8.1.2 Contamination Reduction Zone

The area between the EZ and SZ is the CRZ. The purpose of this area is to prevent the transfer of contaminants that may have been picked up by personnel or equipment leaving the EZ.

Contaminated materials will be bagged before leaving this area (tubing, acetate liners, etc.) or decontaminated before leaving this zone.

8.1.3 Support Zone

The SZ is the outermost region and is a controlled, uncontaminated area outside the CRZ. The SZ will include the field office, possibly site vehicles parked in the close proximity to support sampling measures, first aid area, and other support facilities. The SZ for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. The SZs will be established at areas of the site where exposure to site contaminants would not be expected during normal working conditions or foreseeable emergencies.

☛**Remember** – These zones will not always be contiguous in all situations. An example of this is groundwater sampling at a monitoring well. The EZ will be 10 feet surrounding the monitoring well. The CRZ, however, may actually be at a centralized decontamination points where equipment is decontaminated. Contaminated tooling would be wrapped and transported to this location.

8.1.3.1 Sanitation and Break Areas

This section will address the following items:

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

8.1.3.2 Toilets

One toilet will be provided for every 20 people. All toilets will be unisex and will have locking doors. The toilet provided will either be a chemical toilet and service provider or the flush toilet readily accessible at a predetermined approved location at the site or sites where work is being conducted.

8.1.3.3 Potable Water

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

- All containers will be clean and replenished daily.
- All containers will clearly marked as to their contents (Potable Water – Drinking Water Only; Gatorade, etc.).
- Dispensing locations will be placed in identified break areas within the SZ. The most likely location will be at a support vehicle staged near the work area. This will serve as an area for cooling or warming as well as an identified food and drink consumption area.
- If larger containers are used, dispensing cups will be provided.
- The coolers used for storage of potable drinks and cups will be stored in plastic bags away from potentially contaminating materials when not in use.

8.1.3.4 Showers and Change Rooms

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

8.1.3.5 Break Areas

Given the location and the time of the year, structured suitable locations for work breaks and cooling regimens will reflect the ambient conditions anticipated for that time of the year. Portable shelters, such as canopies, can be provided for protection from the sun as well as to provide a suitable area to permit cooling in a hot environment. This may also be suitable for conducting certain field activities within a static position such as monitoring well installation, groundwater sampling, and/or traffic control.

8.2 VISITORS

As the intended work area is not accessible by persons who do not possess appropriate Department of Defense Security Clearances or Base Passes, it is unlikely that the field team will need to contend with site visitors. If the unlikely properly-cleared individual does arrive at the work site as a visitor, the SSO will be responsible for advising the visitors of the potential hazards associated with the site including the types of potential contaminants. Visitors are to be restricted from entering the localized EZs established at the sampling locations.

Upon gaining access to the site, site visitors wishing or those persons working in areas adjacent to the operation wishing to observe operations **in progress** will be escorted by a Tetra Tech representative (arranged for by the FOL/SSO) and shall be required to meet the following minimum requirements:

- Site visitors will be routed to the FOL/SSO, who will sign them into the field logbook or a sign in sheet. Information to be recorded in the logbook will include the individual's name (proper identification required), the entity which they represent, and the purpose of the visit.
- Site visitors will be required to produce the necessary information supporting clearance into the operational areas of the site. This shall include information attesting to applicable training (40 hours of HAZWOPER training) and medical surveillance as stipulated in Section 6.0 of this document. In addition, to enter the site operational zones during planned activities, visitors will be required to first go through site-specific training.

Once the site visitors have completed the above items, they will be permitted to enter the operational zone. Visitors are required to observe the protective equipment and site restrictions in effect at the site at the time of their visit. Any visitors not meeting the requirements stipulated in this plan will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site entry will cause the termination of onsite activities until the unauthorized visitor is removed from the

premises. Removal of unauthorized visitors will be accomplished with support from the FOL/SSO or on-site NAVSTA Mayport Security personnel.

8.3 SITE SECURITY AND ACCESS

Before site activities begin at an active site, the base POC shall ensure that clearance arrangements are made with the site-specific contact and other base personnel who may be directly or indirectly impacted by site operations. Any site-specific hazards or security issues pertaining to the area where work will be performed will be shared among contractor and facility personnel. An example of this has been previously discussed as it pertained to sharing Emergency Action Plan elements. Authorization to enter these sites and work areas will not be granted until these health and safety issues are identified and field personnel are briefed on any site-specific concerns.

With NAVSTA Mayport approval, Tetra Tech will retain control over active operational work areas where site investigation activities are being performed. The primary method of ensuring security will be site personnel keeping track of those people on site and referring interested parties to the FOL and/or the SSO. These individuals will serve as a focal point for site personnel and will serve as the final line of security and the primary enforcement contact.

8.4 SITE MAPS

A site map will be generated once access routes and potentially hazardous areas are identified as well as potential dispersion routes. It will be adjusted as site conditions change. The maps will show potential points of contact with the public, roadways, and other significant characteristics that may impact site operations and safety. Emergency assembly points will be identified on these maps as well as to the extent possible zone delineations and chemical contaminant gradients. The FOL and/or the SSO will be responsible for the keeping this map up to date and adding information as it becomes available.

Utility identification will be annotated onto the site map.

8.5 BUDDY SYSTEM

Personnel engaged in onsite activities will practice the "buddy system" to ensure their safety during this operation. Depending on the hazard level/location, it is mandatory that at least two persons be assigned to work within voice or visual contact of each other. In situations where elevated levels of hazards are recognized, this number may be increased based on the level of protection employed and critical function. In all cases, two persons will be the minimum.

8.6 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

Tetra Tech personnel and subcontractors that bring hazardous materials onto NAVSTA Mayport property must submit MSDS(s) or notify the RPM of the materials to be brought onto site, volumes, storage locations, and will provide MSDSs upon request.

All contractors will refrain from bringing chemicals onto the site that are not directly related to performing the scope of work.

All substances determined to be highly toxic as defined by 29 CFR 1910.1200 shall receive permission in advance prior to receiving, shipping, and/or transporting these substances onto NAVSTA Mayport.

Tetra Tech personnel will retain MSDSs for all chemicals brought on site. As part of the Onsite Hazard Communication program the following measures will be conducted:

- The SSO shall review each MSDS for the following:
 - ensure it is complete.
 - ensure it is the most recent version available.
 - ensure the protective measures selected in this HASP provide equal or better protection than required on the MSDS.
 - the necessary emergency equipment specified in the MSDS is available.

As part of hazard communication training, 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 the chemicals used on site will be developed using Section 5.0 of the HSGM. The MSDSs will then be maintained in a central location and will be immediately available for anyone to review upon request. Within Section 5.0 there exists a site-specific hazard communication program that the SSO is required to implement anytime chemical are brought on site.

☛ Chemicals that are used/maintained onsite in volumes that require specific storage requirements, specific secondary containment or other secondary control measures will be reported to the Emergency Response Personnel. They will be provided with both the chemical inventory list, updated volumes, and site MSDSs. The SSO will be responsible for briefing the fire department or associated response unit concerning the hazards and any specific response measures.

8.7 COMMUNICATION

It is anticipated that in most instances Tetra Tech personnel will be working in close proximity to each other at NAVSTA Mayport. As a result, hand signals, voice commands, and line of sight will provide the initial means of communication. If necessary, two-way communication will be used.

External communication will be accomplished by using provided telephones or cell phones at the site. External communication will primarily be used for the purpose of resource and emergency resource communication.

An updated phone list, preferably on a laminated card will be provided to site personnel. It is acceptable and recommended to enter these phone numbers into the contacts of their cell phone and not physically carry this list and/or card.

8.8 ACTIVITY HAZARD ANALYSIS (AHA)

The AHAs provided in Attachment IV will be employed to guide and direct all activities within an identified work zone or work activity as defined by this scope of work. Within these AHAs, the tasks have been broken down to individual steps, and the hazards associated with those steps and the intended control measures have been specified.

This is not where it ends. The FOL and/or the SSO will be required to take these documents and to incorporate site specific conditions. As a pre-work activities meeting, result of operational survey, or moving to a new site, this AHA will be reviewed with site personnel and they will sign indicating they understood the requirements placed upon them to ensure their safety and those around them.

9.0 SPILL CONTAINMENT PROGRAM

9.1 SCOPE AND APPLICATION

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

9.2 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 the following:

- Resource deployment,
- Waste transfer,
- Central staging.

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

9.3 LEAK AND SPILL DETECTION

To establish an early detection of potential spills or leaks, the following measures will be employed:

IDW

- A periodic walk-around by the personnel staging or disposing of drums area will be conducted during working hours to visually determine that storage vessels are not leaking. If a leak is detected, the contents will be transferred into a new vessel using a hand pump. The leak will be collected and contained using absorbents such as Oil-Dry or sand, which will be maintained in vulnerable areas in a conspicuously marked drum. This used material, too, will be containerized for disposal pending analysis.
- The FOL and/or the SSO will identify potential transport routes from the IDW storage area. These routes will be blocked or otherwise controlled to minimize migration from this release location.

- IDW storage areas inspections will be documented in the project logbook.

Equipment Use and Deployment

Preventative measures include the following:

- Equipment inspections to identify potential leak points.
- Replacing faulty equipment.
- As the DPT is a hydraulically power piece of equipment, spill pads will be maintained at the rig for quick response should it be required.

9.3.1 Additional Spill Prevention Methods

Some common practices to be employed to control the potential for spills are as follows:

- Fuel will be dispense from safety cans using funnels.
- Oil spill pads will be placed beneath the fueling operation. Be prepared for a spill!
- Temporary containers used for storage such as drums will be appropriately labeled and inspected during filling or at least once per day to insure it is not leaking.
- Only approved containers will be used (UN 1A2 drums).
- Drums and buckets will only be filled to 80% to minimize the difficulty in moving these containers and potentially spilling them. It is preferred that temporary containers (5 gallon buckets with lids) be used to transport collected fluids to the IDW storage area.

9.4 PERSONNEL TRAINING AND SPILL PREVENTION

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

9.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

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

- Sand, clean fill, or other non combustible absorbent (Oil-Dry),
- Drums (UN 1A2, 55-gallon U.S. Department of Transportation [DOT] 1A 1 or 1 A 2),

- Shovels, rakes, and brooms,
- Container labels.

9.6 SPILL CONTROL PLAN

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

1. Notify the SSO or FOL immediately upon detection of a leak or spill. Alert personnel initiate spill response procedures.
2. Employ the PPE stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.
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 this HASP.

10.0 CONFINED-SPACE ENTRY

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

A confined space is a space that has the following characteristics:

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

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

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

For further information on confined spaces, contact the PHSO.

If it is determined that confined space operations are to be performed as part of the Scope of Work, detailed procedures and training requirements will have to be addressed and this document will need to be modified.

11.0 MATERIALS AND DOCUMENTATION

The Tetra Tech FOL shall ensure the following materials/documents are taken to the project site and used when required:

- A complete copy (signed) of this HASP,
- The HSGM,
- Incident Reports,
- Medical Data Sheets,
- MSDSs for chemicals brought on site, including decontamination solutions, fuels, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (Attachment VI),
- Training/Medical Surveillance Documentation Form (Blank),
- Emergency Contacts List and directions and map to the hospital.

11.1 MATERIALS TO BE POSTED AT THE SITE

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

Chemical Inventory Listing (posted) - This list represents the chemicals brought on-site, including decontamination solutions, sample preservations, fuel, etc. This list should be posted in a central area. See Section 5.0 of the HSGM.

MSDSs (maintained) - The MSDSs should also be in a central area accessible to the site personnel. These documents should match the listings on the chemical inventory list for the substances employed on-site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents. See Section 5.0 of the HSGM.

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

Site Clearance (maintained) - This list is found within the training section of the HASP (see Figure 7-1). This list identifies site personnel, dates of training (including site-specific training), and medical

surveillance. The list indicates not only clearance, but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

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

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

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

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

12.0 GLOSSARY

AHA	Activity Hazard Analysis
BEI	Biological Exposure Indices
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-term Environmental Action Navy
CNS	Central Nervous System
COC	Contaminant of Concern
CRZ	Contamination Reduction Zone
CTO	Contract Task Order
DOT	Department of Transportation
DPT	Direct Push Technology
EZ	Exclusion Zone
FID	Flame Ionization Detector
FOL	Field Operations Leader
GPS	Global Positioning System
HASP	Health and Safety Plan
HIPAA	Health Insurance Portability and Accountability
HSGM	Health and Safety Guidance Manual
HSM	Health and Safety Manager
IDW	Investigative-Derived Waste
MSDS	Material Safety Data Sheet
NAVSTA	Naval Station
OSHA	Occupational Safety and Health Administration
PAH	Polynuclear Aromatic Hydrocarbon
PHI	Protected Health Information
PHSO	Project Health and Safety Officer
PM	Project Manager
PPE	Personal Protective Equipment
ppm	Parts per Million
POC	Pont of Contact
RPM	Remedial Project Manager
SOP	Standard Operating Procedure
SSO	Site Safety Officer
SZ	Support Zone
TBD	To Be Determined

Tetra Tech
USEPA

Tetra Tech NUS, Inc.
United States Environmental Protection Agency

ATTACHMENT I

MEDICAL DATA SHEET

MEDICAL DATA SHEET

This Medical Data Sheet must be completed by on-site personnel and kept in a centralized location during the conduct of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project: NAVSTA Mayport, Jacksonville, Florida

Name: _____ Cell Phone: _____

Address: _____

Age: _____ Height: _____ Weight: _____

Person to notify in the event of an emergency: _____

Phone: _____

Drug or other Allergies: _____

Particular Sensitivities: _____

Do You Wear Contacts? _____

What medications are you presently using? _____

Name, Address, and Phone Number of personal physician: _____

Note: Health Insurance Portability and Accountability Act (HIPAA) Requirements

HIPAA took effect in 1996 and was amended on April 14, 2003. Loosely interpreted, HIPAA regulates the disclosure of Protected Health Information (PHI) by the entity collecting that information. PHI is any information about health status (such as that you may report on this Medical Data Sheet), provision of health care, or other information. HIPAA also requires Tetra Tech to ensure the confidentiality of PHI. This Act can affect the ability of the Medical Data Sheet to contain and convey information you would want a Doctor to know if you were incapacitated. So before you complete the Medical Data Sheet understand that this form will not be maintained in a secure location. It will be maintained in a file box or binder accessible to other members of the field crew so that the can accompany an injured party to the hospital.

DO NOT include information that you do not wish others to know, only information that may be pertinent in an emergency situation or treatment.

Name (Print clearly)

Signature

Date

ATTACHMENT II

INCIDENT REPORT FORM

Report Date	Report Prepared By	Incident Report Number
INSTRUCTIONS: IR		
Incidents (including those involving subcontractors under direct supervision of Tetra Tech personnel) must be documented on the IR Form.		
Complete any additional parts to this form as indicated below for the type of incident selected.		
TYPE OF INCIDENT (Check all that apply)		Additional Form(s) Required for this type of incident
Near Miss (No losses, but could have resulted in injury, illness, or damage)	<input type="checkbox"/>	Complete IR Form Only
Injury or Illness	<input type="checkbox"/>	Complete Form IR-A; Injury or Illness
Property or Equipment Damage, Fire, Spill or Release	<input type="checkbox"/>	Complete Form IR-B; Damage, Fire, Spill or Release
Motor Vehicle	<input type="checkbox"/>	Complete Form IR-C; Motor Vehicle
INFORMATION ABOUT THE INCIDENT		
Description of Incident		
<hr/> <hr/> <hr/>		
Date of Incident	Time of Incident	
	_____ AM <input type="checkbox"/> PM <input type="checkbox"/> OR Cannot be determined <input type="checkbox"/>	
Weather conditions at the time of the incident	Was there adequate lighting?	
	_____ Yes <input type="checkbox"/> No <input type="checkbox"/>	
Location of Incident		
_____ Was location of incident within the employer's work environment? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Street Address	City, State, Zip Code and Country	
Project Name	Client:	
Tt Supervisor or Project Manager	Was supervisor on the scene?	
	Yes <input type="checkbox"/> No <input type="checkbox"/>	
WITNESS INFORMATION (attach additional sheets if necessary)		
Name	Company	
Street Address	City, State and Zip Code	
Telephone Number(s)		

CORRECTIVE ACTIONS				
Corrective action(s) immediately taken by unit reporting the incident:				
<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black;"></div>				
Corrective action(s) still to be taken (by whom and when):				
<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px solid black;"></div>				
ROOT CAUSE ANALYSIS LEVEL REQUIRED				
Root Cause Analysis Level Required: Level - 1 <input type="checkbox"/> Level - 2 <input type="checkbox"/> None <input type="checkbox"/>				
Root Cause Analysis Level Definitions				
Level - 1	<p>Definition: A Level 1 RCA is conducted by an individual(s) with experience or training in root cause analysis techniques and will conduct or direct documentation reviews, site investigation, witness and affected employee interviews, and identify corrective actions. Activating a Level 1 RCA and identifying RCA team members will be at the discretion of the Corporate Administration office.</p> <p>The following events may trigger a Level 1 RCA:</p> <ul style="list-style-type: none"> ▪ Work related fatality ▪ Hospitalization of one or more employee where injuries result in total or partial permanent disability ▪ Property damage in excess of \$75,000 ▪ When requested by senior management 			
Level - 2	<p>Definition: A Level 2 RCA is self performed within the operating unit by supervisory personnel with assistance of the operating unit HSR. Level 2 RCA will utilize the 5 Why RCA methodology and document the findings on the tools provided.</p> <p>The following events will require a Level 2 RCA:</p> <ul style="list-style-type: none"> ▪ OSHA recordable lost time incident ▪ Near miss incident that could have triggered a Level 1 RCA ▪ When requested by senior management 			
Complete the Root Cause Analysis Worksheet and Corrective Action form. Identify a corrective action(s) for each root cause identified within each area of inquiry.				
NOTIFICATIONS				
Title	Printed Name	Signature	Telephone Number	Date
Project Manager or Supervisor				
Site Safety Coordinator or Office H&S Representative				
Operating Unit H&S Representative				
Other: _____				

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

INSTRUCTIONS: IR-A

Complete all sections below for incidents involving injury or illness.
Do NOT leave any blanks.
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)

EMPLOYEE INFORMATION

Company Affiliation

Tetra Tech Employee? TetraTech subcontractor employee (directly supervised by Tt personnel)?

Full Name

Company (if not Tt employee)

Street Address, City, State and Zip Code

Address Type

Home address (for Tt employees)

Business address (for subcontractors)

Telephone Numbers

Work: _____ Home: _____ Cell: _____

Occupation (regular job title)

Department

Was the individual performing regular job duties?

Yes No

Time individual began work

_____ AM PM OR Cannot be determined

Safety equipment

Provided? Yes No

Used? Yes No If no, explain why

Type(s) provided: Hard hat Protective clothing
 Gloves High visibility vest
 Eye protection Fall protection
 Safety shoes Machine guarding
 Respirator Other (list)

NOTIFICATIONS

Name of Tt employee to whom the injury or illness was first reported

Was H&S notified within one hour of injury or illness?

Yes No

Date of report

H&S Personnel Notified

Time of report

Time of Report

If subcontractor injury, did subcontractor's firm perform their own incident investigation?

Yes No If yes, request a copy of their completed investigation form/report and attach it to this report.

INJURY / ILLNESS DETAILS

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

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

Describe the object or substance that directly harmed the individual: Examples: "Concrete floor"; "Chlorine"; "Radial Arm Saw". If this question does not apply to the incident, write "Not Applicable".

MEDICAL CARE PROVIDED

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

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

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

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

SIGNATURES

I have reviewed this report and agree that all the supplied information is accurate

Affected individual (print)	Affected individual (signature)	Telephone Number	Date

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

INSTRUCTIONS: IR-B

Complete all sections below for incidents involving property/equipment damage, fire, spill or release.
Do NOT leave any blanks.
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)	
--	--

TYPE OF INCIDENT (Check all that apply)

Property Damage <input type="checkbox"/>	Equipment Damage <input type="checkbox"/>	Fire or Explosion <input type="checkbox"/>	Spill or Release <input type="checkbox"/>
--	---	--	---

INCIDENT DETAILS

Results of Incident: Fully describe damages, losses, etc.

Response Actions Taken:

Responding Agency(s) (i.e. police, fire department, etc.)	Agency(s) Contact Name(s)

DAMAGED ITEMS (List all damaged items, extent of damage and estimated repair cost)

Item:	Extent of damage:	Estimated repair cost

SPILLS / RELEASES (Provide information for spilled/released materials)

Substance	Estimated quantity and duration	Specify Reportable Quantity (RQ)
		_____ Exceeded? Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>

FIRES / EXPLOSIONS (Provide information related to fires/explosions)

Fire fighting equipment used? Yes No If yes, type of equipment: _____

NOTIFICATIONS

Required notifications	Name of person notified	By whom	Date / Time
Client: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			
Agency: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			
Other: _____ Yes <input type="checkbox"/> No <input type="checkbox"/>			

Who is responsible for reporting incident to outside agency(s)? Tt Client Other Name: _____

Was an additional written report on this incident generated? Yes No If yes, place in project file.

INSTRUCTIONS: IR-C

Complete all sections below for incidents involving motor vehicle accidents. Do NOT leave any blanks.
Attach this form to the IR FORM completed for this incident.

Incident Report Number: (From the IR Form)			
INCIDENT DETAILS			
Name of road, street, highway or location where accident occurred		Name of intersecting road, street or highway if applicable	
County	City	State	
Did police respond to the accident? Yes <input type="checkbox"/> No <input type="checkbox"/>		Did ambulance respond to the accident? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Name and location of responding police department		Ambulance company name and location	
Officer's name/badge #			
Did police complete an incident report? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, police report number: _____ Request a copy of completed investigation report and attach to this form.			
VEHICLE INFORMATION			
How many vehicles were involved in the accident? _____ (Attach additional sheets as applicable for accidents involving more than 2 vehicles.)			
Vehicle Number 1 – Tetra Tech Vehicle		Vehicle Number 2 – Other Vehicle	
Vehicle Owner / Contact Information		Vehicle Owner / Contact Information	
Color		Color	
Make		Make	
Model		Model	
Year		Year	
License Plate #		License Plate #	
Identification #		Identification #	
Describe damage to vehicle number 1		Describe damage to vehicle number 2	
Insurance Company Name and Address		Insurance Company Name and Address	
Agent Name		Agent Name	
Agent Phone No.		Agent Phone No.	
Policy Number		Policy Number	

DRIVER INFORMATION							
Vehicle Number 1 – Tetra Tech Vehicle				Vehicle Number 2 – Other Vehicle			
Driver's Name				Driver's Name			
Driver's Address				Driver's Address			
Phone Number				Phone Number			
Date of Birth				Date of Birth			
Driver's License #				Driver's License #			
Licensing State				Licensing State			
Gender		Male <input type="checkbox"/> Female <input type="checkbox"/>		Gender		Male <input type="checkbox"/> Female <input type="checkbox"/>	
Was traffic citation issued to Tetra Tech driver? Yes <input type="checkbox"/> No <input type="checkbox"/>				Was traffic citation issued to driver of other vehicle? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Citation #				Citation #			
Citation Description				Citation Description			
PASSENGERS IN VEHICLES (NON-INJURED)							
<p>List all non-injured passengers (excluding driver) in each vehicle. Driver information is captured in the preceding section. Information related to persons injured in the accident (non-Tt employees) is captured in the section below on this form. Injured Tt employee information is captured on FORM IR-A</p>							
Vehicle Number 1 – Tetra Tech Vehicle				Vehicle Number 2 – Other Vehicle			
How many passengers (excluding driver) in the vehicle? ____				How many passengers (excluding driver) in the vehicle? ____			
Non-Injured Passenger Name and Address				Non-Injured Passenger Name and Address			
Non-Injured Passenger Name and Address				Non-Injured Passenger Name and Address			
Non-Injured Passenger Name and Address				Non-Injured Passenger Name and Address			
INJURIES TO NON-TETRATECH EMPLOYEES							
Name of injured person 1				Address of injured person 1			
Age	Gender	Car No.	Location in Car	Seat Belt Used?	Ejected from car?	Injury or Fatality?	
	Male <input type="checkbox"/> Female <input type="checkbox"/>			Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Injured <input type="checkbox"/> Died <input type="checkbox"/>	
Name of injured person 2				Address of injured person 2			
Age	Gender	Car No.	Location in Car	Seat Belt Used?	Ejected from car?	Injury or Fatality?	
	Male <input type="checkbox"/> Female <input type="checkbox"/>			Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Injured <input type="checkbox"/> Died <input type="checkbox"/>	
OTHER PROPERTY DAMAGE							
Describe damage to property other than motor vehicles							
Property Owner's Name				Property Owner's Address			

COMPLETE AND SUBMIT DIAGRAM DEPICTING WHAT HAPPENED

A large, empty rectangular box with a black border, intended for drawing a diagram. The box occupies most of the page below the instruction header.

ATTACHMENT III

EQUIPMENT INSPECTION CHECKLIST FOR DRILL RIGS

Equipment Inspection Checklist for Drill Rigs

Company: _____

Unit/Serial No#: _____

Inspection Date: ____ / ____ / ____ Time: ____ : ____

Equipment Type: DPT
(e.g, Drill Rigs Hollow Stem, Mud Rotary, Direct Push, HDD)

Project Name: NS Mayport, Mayport, Florida

Project No#: 112G03576

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emergency Stop Devices	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Emergency Stop Devices (At points of operation) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Have all emergency shut offs identified been communicated to the field crew? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Has a person been designated as the Emergency Stop Device Operator? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Highway Use	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Cab, mirrors, safety glass? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Seat Belts? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Is the equipment equipped with audible back-up alarms and back-up lights? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Horn and gauges 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Brake condition (dynamic, park, etc.) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Tires (Tread) or tracks 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Windshield wipers 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Exhaust system 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Steering (standard and emergency) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Wheel Chocks? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Are tools and material secured to prevent movement during transport? Especially those within the cab? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Are there flammables or solvents or other prohibited substances stored within the cab? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Are tools or debris in the cab that may adversely influence operation of the vehicle (in and around brakes, clutch, gas pedals) 	

Yes	No	NA	Requirement	Comments
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Fluid Levels:</p> <ul style="list-style-type: none"> • Engine oil • Transmission fluid • Brake fluid • Cooling system fluid • Hoses and belts • Hydraulic oil 	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>High Pressure Hydraulic Lines</p> <ul style="list-style-type: none"> • Obvious damage • Operator protected from accidental release • Coupling devices, connectors, retention cables/pins are in good condition and in place 	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Mast Condition</p> <ul style="list-style-type: none"> • Structural components/tubing • Connection points • Pins • Welds • Outriggers • Operational • Plumb (when raised) 	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Hooks</p> <ul style="list-style-type: none"> • Are the hooks equipped with Safety Latches? • Does it appear that the hook is showing signs of wear in excess of 10% original dimension? • Is there a bend or twist exceeding 10% from the plane of an unbent hook? • Increase in throat opening exceeding 15% from new condition • Excessive nicks and/or gouges • Clips • Number of U-Type (Crosby) Clips (cable size 5/16 – 5/8 = 3 clips minimum) (cable size 3/4 – 1 inch = 4 clips minimum) (cable size 1 1/8 – 1 3/8 inch = 5 clips minimum) 	

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Power cable and/or hoist cable <ul style="list-style-type: none"> • Reduction in Rope diameter π (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"/>	<ul style="list-style-type: none"> • Number of broken wires (6 randomly broken wires in one rope lay) (3 broken wires in one strand) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Number of wire rope wraps left on the Running Drum at nominal use (≥ 3 required) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Lead (primary) sheave is centered on the running drum 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Lubrication of wire rope (adequate?) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Kinks, bends – Flattened to > 50% diameter 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hemp/Fiber rope (Cathead/Split Spoon Hammer) <ul style="list-style-type: none"> • Minimum $\frac{3}{4}$; maximum 1 inch rope diameter (Inspect for physical damage) 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Rope to hammer is securely fastened 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safety Guards – <ul style="list-style-type: none"> • Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Hot pipes and surfaces exposed to accidental contact? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • High pressure lines 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Nip/pinch points 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Operator Qualifications <ul style="list-style-type: none"> • Does the operator have proper licensing where applicable, (e.g., CDL)? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Does the operator, understand the equipment's operating instructions? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Is the operator experienced with this equipment? 	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> • Is the operator 21 years of age or more? 	

Yes	No	NA	Requirement	Comments
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	PPE Required for Drill Rig Exclusion Zone <ul style="list-style-type: none"> • Hardhat • Safety glasses • Work gloves • Chemical resistant gloves _____ • Steel toed Work Boots • Chemical resistant Boot Covers • Apron • Coveralls Tyvek, Saranex, cotton) _____ 	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Other Hazards <ul style="list-style-type: none"> • Excessive Noise Levels? _____ dBA • Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.) <ul style="list-style-type: none"> - MSDSs available? • Will On-site fueling occur <ul style="list-style-type: none"> - Safety cans available? - Fire extinguisher (Type/Rating - _____) 	

Approved for Use Yes No See Comments

 Site Health and Safety Officer

 Operator

ATTACHMENT IV

ACTIVITY HAZARD ANALYSES (AHAs)



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NS Mayport, Mayport, Florida

Task: Site Mobilization/Demobilization

Prepared by	T. Dickson	Date	08/11	FOL	
Reviewed by	C. Snyder	Date	08/11	SSO	

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
<p>1. All vehicle operation conducted while performing duties associated with the project or in a motor vehicle rented for such purpose.</p>	<p>1. Vehicle Accident - Unauthorized drivers Vehicle/equipment failure Distracted driving Struck by motor vehicles Speeding Unsecured loads</p>	<p>1. The following measures will be employed to minimize the potential for an accident</p> <p>Before Driving</p> <ul style="list-style-type: none"> Ensure driver is "authorized" per the Tetra Tech Vehicle Safety Program Prior to use, walk around your vehicle make sure you have adequate tire pressure, no lights are broken, etc. Examine gauges to ensure operational fluids are at desired levels; check brakes, steering in the parking lot. Preset radio stations, secure wires for auxiliary iPod or similar devices so this is not attempted while driving. Attach hands free devices to cell phones, place devices where they are easily accessed. Set address for GPS or similar devices so this does not have to occur while driving. <p>Driving</p> <ul style="list-style-type: none"> Do not use cell phones, eat, play with the radio or engage in any activities that would distract you from your primary task of driving. Cell phone use while driving is only permitted when a hands-free device is used. If you receive a call, let it go to voice mail or pull over and answer it. Ensure you have an Orange Vest and a Reflective Triangle in your vehicle at all times, a disposable camera, Tetra Tech Incident Form (IR-C). Practice defensive driving whenever traveling in a vehicle. Always permit adequate room between you and the driver in front of your vehicle. Use the 4-second rule. Follow the direction of posted signs (speed limits, etc.). You will be responsible for all moving and parking violations. Exercise extra caution when moving through school and work zones. All items in and on your vehicle should be secured to prevent movement or loss from the vehicle potential causing an accident. <p>If you are in an accident</p> <ul style="list-style-type: none"> Move you vehicle if possible from the travel lanes. Turn on your emergency flashers. Do not step into traffic when exiting your vehicle. Place your warning triangle (100-feet behind your vehicle) and put on your Orange vest. Contact the FOL and the SSO. Be respectful to the Local authorities. Do NOT attempt to argue whose fault.

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
		<ul style="list-style-type: none"> • DO NOT admit fault. • Secure all valuables. Take the keys from the ignition if you leave your vehicle for any reason. (Be aware there will be a fee for towing, traffic citations, etc.). • Complete the IR-C form to make sure you have gathered all pertinent information
<p>2. Preparatory tasks, such as: Assembling, packing, unpacking equipment and supplies.</p>	<p>2. Minor cuts, abrasions or contusions handling equipment and tools</p>	<p>2. Wear cut-resistant gloves when handling items with sharp or rough edges or when using knives to cut open packages. A cut resistant glove should at least be worn on the non-knife hand.</p> <ul style="list-style-type: none"> • Exercise caution when unpacking boxes. Make sure you can see clearly into the box and do not reach in and contact broken glass (possibly damaged in shipment) or sharp articles. • Always cut away from yourself and others. • Do not place items to be cut on your hand and/or knee • Always use a sharp cutting instrument. Many accidents result from struggling with dull cutting implements. • Secure work pieces to be cut. • Carry and transport glassware in a hard sided container. That way if you fall, you will not fall on broken glass. • If there is broken glass place it in a hardsided container for disposal. Placement in a soft sided container may result in cuts and lacerations if the bag is penetrated by shards of glass. <p>See Section 4.13 of the HSGM for additional safe work practices as it pertains cuts/lacerations.</p>
<p>3. Unpacking; assembling; inspecting equipment before use</p>	<p>3. Strains or sprains during manual lifting and carrying activities</p>	<p>3. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible), and plan each lift:</p> <ul style="list-style-type: none"> • Inspect/clear the intended path of travel and areas where loads will be deposited, • test lift each object to ensure you can without injuring yourself, • ensure good grasp is obtainable on object, • keep back straight and lift with legs not back, • obtain help when needed to lift large, bulky, or heavy items. <p>Remember: Your muscles, tendons, and ligaments are not as flexible in the early morning hours. Stretch before physical taxing activities. In the later afternoon, your muscles, tendons, and ligaments maybe stressed from fatigue. Take breaks as necessary to avoid injury.</p> <p>See Section 4.4 of the HSGM for additional safe lifting practices.</p>
<p>3A. Performing Equipment inspections of vehicles and equipment arriving/preparing to depart the site</p> <ul style="list-style-type: none"> • Equipment Inspection – 	<p>3A. The following potential hazards may be encountered during the equipment inspection process</p> <ul style="list-style-type: none"> • Flying projectiles – 	<p>3A. The purpose of the following inspections is to prevent possible injury from faulty equipment. However, as the equipment has to operate to test personnel may also be exposed to inherent hazards such as those described.</p> <p>DPT Drill Rig</p> <ul style="list-style-type: none"> • Complete Equipment Inspection Checklist for the Drill Rig and associated

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
DPT Rig and hand tools	<p>Pressurized systems – High pressure hydraulics</p> <ul style="list-style-type: none"> • Cuts and lacerations • Pinch/compressions • Struck by <p>As part of this effort compressed nitrogen will be secured brought onto and most likely stored on base. The nitrogen will be employed to test non-dedicated pumps. Injuries due to faulty equipment</p>	<p>attachments. See Attachment III. All emergency stop devices will be tested initially, then daily from that point on.</p> <ul style="list-style-type: none"> • Do not place hands or fingers within pinch or compression points. If this is necessary (which it should never be) use blocking or tools intended for that purpose to secure potential energy sources. <p>Inspector or selected Qualified person should employ hardhat, safety glasses, and leather work gloves during the inspection activity. All potential and kinetic energy sources will be secured or controlled during inspection.</p> <p>Sampling devices</p> <ul style="list-style-type: none"> • Threads of sampling devices will be examined. If they are washed out difficult to assemble and disassembled have them replaced. • Connectors, pins, associated attachments will not show signs of excessive wear. This will also pertain to wrenches employed to construct/disassemble pump assemblies. Check teeth and gripping surfaces to minimize the potential for slip. • Exercise caution when handling machine (drive tubes, drive rods, cutting shoes, etc.) components due to the potential for sharp edges
Equipment Inspection (continued)	3B. High pressure air lines – Struck by hazards	<p>3B. Struck by hazards – To prevent hazards of this nature the following measures will be employed</p> <p>All high pressure air lines that are not mechanically connected will have connections pinned and will be equipped with a whip check to minimize the lines thrashing should they become disconnected.</p>
Equipment Inspection (continued)	<p>3C. Spills Prevention –</p> <ul style="list-style-type: none"> • Hydraulic fluid release – A hydraulic line that ruptures can release hydraulic fluid • Thermal Burns 	<p>3C. During the Equipment Inspection additional attention will be focused to the condition of the hydraulic lines to avoid a potential rupture and/or release. This will include</p> <ul style="list-style-type: none"> • Attention will be focused on connection points • Condition of the hoses <ul style="list-style-type: none"> ○ Damaged steel braids ○ Areas of friction wear patterns ○ Damage or deterioration to the rubber protective outer coating (indicative of overheating) <p>In all cases, suspect hoses will be replaced.</p> <p>It is recommended where possible, that plastic be placed on the ground in the area under the rig to capture incidental spills and releases should they occur. Care should be taken not to extend the plastic beyond the rig proper as such creating a slip trip and fall hazard.</p>
Equipment Inspection (continued)	3D. Hoisting and Rigging – Structural failure, struck by	<p>3D. Hoisting and Rigging – Structural failure, struck by – To control hazards of this nature</p> <ul style="list-style-type: none"> • Hardware inspection will occur initially, then daily prior to use. • Periodic inspections will occur at a frequency not to exceed 1 year. The Driller will provide such certification upon request. • Removal criteria

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
		<ul style="list-style-type: none"> ○ Missing or illegible identification or markings ○ Heat or environmental damage ○ Bent, twisted, distorted, elongated, cracked load bearing components including mast and outriggers where applicable. ○ Any other condition that causes doubt in the continued use of the rigging hardware. ○ Connections will be examined for damage; means of connection.
<p>4. Receiving chemicals, storing chemicals, preparing to use chemicals, collecting Material Safety Data Sheets completing chemical Inventory;</p>	<p>4. Chemical Exposure</p> <p>Gathering, providing and maintaining hazard awareness information.</p>	<p>4. Chemical hazards – It is not anticipated that site personnel will encounter chemical hazards as it pertains to mobilization as no direct encounter is planned. However, it will be the responsibility of the FOL and/or the SSO to implement the Onsite Hazard Communication Program (See Section 5.0 of the HSGM). In this effort all chemicals brought onsite (compressed gases (calibration gases), decontamination fluids; sample preservatives, well construction supplies, etc.) will</p> <ul style="list-style-type: none"> • All chemicals will have an accompanying Materials Safety Data Sheet (MSDS) that has been reviewed and approved for use by the SSO. <ul style="list-style-type: none"> ○ The SSO will review the HASP to ensure emergency equipment and/or associated PPE necessary to ensure the safety of the workers are equal or better than that listed in the MSDS. • All incoming containers will be properly labeled, will be in English and not defaced. If the materials will be transferred to temporary containers, these too will be appropriately labeled by the SSO or the person using the materials. • All materials received onsite will be added to the Chemical Inventory List. Included in this information is the volume and location stored and primary hazards. • All materials will be stored as prescribed with compatible chemicals. • As necessary employ spill prevention pans or like equipment to capture or contain spills within the storage area. •
<p>5. Initial Site Surveys - Access/egress into Controlled areas</p>	<p>5. Coordinate efforts with facility personnel</p> <ul style="list-style-type: none"> • Inherent hazards or restrictions 	<p>5. In order to address the potential hazards associated with the initial entry</p> <ul style="list-style-type: none"> • The FOL and/or the SSO will meet with the restricted area personnel/operators to ensure they are aware of planned activities. • As part of these discussions Inquire of the potential hazard in the area and areas to avoid. • Inquire as to what the facilities Emergency Action Requirements are should there be an emergency and where you should go as an assembly point. • What security measures are required • PPE requirements for location (such as flame retardant clothing) • Restriction boundaries • If persons must enter the restricted area local requirements will prevail. These include <ul style="list-style-type: none"> ○ Signing in ○ PPE minimum requirements for the location • The FOL and/or the SSO will survey the area to ensure areas prone to slip, trip, and fall hazards are flagged or removed. <ul style="list-style-type: none"> ○ Entry/access routes will be determined as well as schedules.

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
<p>Initial site survey of the intended work areas</p>	<p>Emergency Prevention – This component will be critical in identifying potential emergencies that may be task associated. These are as follows:</p> <ul style="list-style-type: none"> • Utility strike – Overhead powerlines; buried utilities; gas, sewage, and/or water. • Physical hazards – Steep embankments, sink holes; poisonous vegetation. <p>Determining site control boundaries:</p> <p>Emergency preparation</p> <ul style="list-style-type: none"> • Selecting evacuation routes and assembly points; determining emergency equipment requirements 	<p>All workers are to wear sturdy work shoes that are outfitted with slip resistant aggressive tread.</p> <p>All exits and selected access pathways will be maintained free of obstructions to allow free movement of site personnel, equipment, and if necessary emergency equipment.</p> <p>Utility strikes –</p> <ul style="list-style-type: none"> • Overhead power lines – In the areas in which the mast will be raised will be examined for the existence of overhead power lines or obstructions. • Personnel will perform walkovers to examine the surface for surface monuments including: <ul style="list-style-type: none"> ○ Valve or meter boxes ○ Manhole covers ○ Direction cable boxes ○ Utilities entering or exiting buildings. <p>The FOL/SSO will determine the necessary boundary at each work location:</p> <ul style="list-style-type: none"> • DPT Rig drilling operations – 35-feet or the height of the mast, whichever is greater. During this time, the FOL and/or the SSO will determine if physical hazards exists, terrain challenges and the necessary amount of vegetation to be removed to allow access and a sufficient size work area; overhead powerlines, etc.. • Groundwater measurements; well development; groundwater measurements, and groundwater sampling – 10-feet surrounding the point of operation • High pressure decontamination 35-feet surrounding the point of operation. • Low pressure decontamination 10-feet surrounding point of operation. <p>The Emergency Evacuation point will be selected as part of the initial site survey. The initial and secondary evacuation point will be determined in the field and communicated as part of the Daily Tail Gate meeting. See Section 7.2 for additional information.</p>
<p>6. Preparing the site for work activities.</p>	<p>6. Site set up</p> <ul style="list-style-type: none"> • Struck By • Tip Over • Backing • Electrocution / Explosion • Slips, Trips, Falls 	<p>6. Struck by/ Tip Over</p> <ul style="list-style-type: none"> • All equipment, augers, rods and tools will be properly secured during transport and in preparation for deployment. • All vehicles and equipment will comply with DOT requirements, where applicable. • Never move the drilling rig with the mast upright. Set hydraulic leveling jacks before raising the mast, where applicable. Ensure the drilling site foundation is stable and as level as possible. Soft spots or inadequate compaction will be supported by temporary cribbing/ground pads. • Use a ground guide along with a functioning back-up alarm during equipment backing to avoid striking objects or backing into pits and/or ditches. This is especially critical as this is within and around buildings, or process areas where movement may be tight.

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
		<p>Utility damage prevention</p> <ul style="list-style-type: none"> Inspect for buried and overhead utilities in the vicinity of the drilling location. A drilling clearance permit shall be obtained from base personnel or utility companies prior to initiating intrusive operations. <p>Slip, trips, and falls</p> <ul style="list-style-type: none"> Practice good housekeeping to keep the ground around the drilling site clear of obstructions, equipment and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<p>DPT Drill Rig Hand tools (dollies, hand carts, hand knives, carpenter tools, fixed and portable ladders, etc.)</p>	<p>Visual inspection of hand and power tools will be performed by the SSO. Tools will be tagged with colored electrical tape. Green tape ok for use. Red tape do not use. All red taped items should be repaired or removed from the site.</p> <p>Each time a tool is used it will undergo a cursory inspection by the user. Noted damage (mushroomed head, splintered handle, etc.) will require removal from service.</p> <p>FOL and SSO to perform regular (e.g., daily) inspections for housekeeping issues. The results of these efforts will be documented in the Field Logbook</p>	<p>All personnel</p> <ul style="list-style-type: none"> 40-Hour General Site Worker Training [OSHA 29 CFR 1910.120 (e)] 8-Hour General Site Worker Refresher Training [OSHA 29 CFR 1910.120 (e)(8)] Site Specific Training – All personnel shall review this Abbreviated Health and Safety Plan prior to the commencement of on-site activity. Participate in a Medical Clearance/Surveillance Program as described in OSHA 29 CFR 1910.120 (f). Complete a Medical Data Sheet Review applicable MSDSs if you are unaware of the hazards and recommended control measures for diesel fuel and grout. <p>Supervisory personnel: 8-Hour General Site Worker Supervisory Training [OSHA 29 CFR 1910.120 (e)(4)]</p>
<p>Personal Protective Equipment: Minimum: Steel toed work boots; hardhats, safety glasses, standard field attire (sleeved shirt and long pants; work gloves for set up and take down. Fueling, greasing equipment, adding fluids should also employ nitrile surgeons gloves. Optional items: High visibility vest, Hearing protection will be required in the plant.</p>	<p>Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.</p>	<p>PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.</p> <p>The SSO will be responsible for the implementation of the following Site Specific Health and Safety Programs:</p> <ul style="list-style-type: none"> Hazard Communication Hearing Conservation

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Compressor noise levels can reach 95dBA at the compressor. HTRW: None anticipated for this task. Note: Personnel may require to meet location specific PPE requirements.		AHA Assessment - During the initial walk through the FOL and/or the SSO shall review the AHA to determine applicability or information that will need added given site specific conditions.

All persons working within the operational will sign this AHA indicating that they have reviewed the document and are aware of their responsibilities as stated in the AHA.

Name (Printed)	Signature	Occupation	Date Reviewed/Training

FIELD CHEMICAL INVENTORY LIST

This chemical inventory is to be completed for hazardous chemicals known to be present at project sites. Chemical inventories may be maintained separately (Tetra Tech NUS, Inc. and Subcontractors) or they may be maintained separately.

Site Name: NS Mayport, Mayport, Florida Project: 112G03576

Tetra Tech Hazard Communication On-site Program Administrator: _____ (SSO)

Subcontractor Hazard Communication On-site Program Administrator/Point of Contact: _____

Chemical/Product Name/Synonym	Owner	Quantity	Location	Hazards	Supplier/Manufacturer
Alconox/Liquinox Synonym: Anionic Detergent	Tetra Tech NUS, Inc.	1-gallon	Field Office Support Trailer Note: Smaller amounts are maintained at work sites.	- Irritating to the eyes. - May cause drying of the skin.	Alconox, Inc. 215 Park Avenue South New York, New York 10003 (212) 473-1300
Isobutylene/Air Synonym: Isobutene Methylpropene	Tetra Tech NUS, Inc.	()Cylinders	Field Office Support Trailer	Inhalation hazard – May act as a simple asphyxiant in closed or confined spaces. Pressurized cylinder hazard – Containers may rupture in a fire	Scott Specialty Gases 6141 Easton Road Plumstaedville, PA 18949 (215) 766-8861 Liquid Carbonic 135 South LaSalle Street Chicago Illinois 80603-4282 (504) 673-8831 Chemtrec (800) 424-9300
2- Propanol Synonym: Isopropanol	Tetra Tech NUS, Inc.	4-liters (1.05 gallons)	Field Office Support Trailer Note: Smaller amounts are maintained at work sites.	- Flammable - Eyes, skin, and respiratory irritant	Fisher Scientific 1 Reagent Lane Fairlawn, New Jersey 07410 Emergency #: (201)796-7100

FIELD CHEMICAL INVENTORY LIST

This chemical inventory is to be completed for hazardous chemicals known to be present at project sites. Chemical inventories may be maintained separately (Tetra Tech NUS, Inc. and Subcontractors) or they may be maintained separately.

Site Name: NS Mayport, Mayport, Florida Project: 112G03576

Tetra Tech Hazard Communication On-site Program Administrator: _____ (SSO)

Subcontractor Hazard Communication On-site Program Administrator/Point of Contact: _____

Chemical/Product Name/Synonym	Owner	Quantity	Location	Hazards	Supplier/Manufacturer



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NS Mayport, Mayport, Florida

Task: Soil Boring using a DPT Drill Rig and Associated Attachments – Soil Sampling will be conducted in the unsaturated zone. Screen point water sampling will also be conducted.

Prepared by	T. Dickson	Date	08/2011	FOL	
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Reviewed by	C. Snyder	Date	08/2011	SSO	
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JOB STEPS	HAZARDS	CONTROLS
Rig set up and operation <ul style="list-style-type: none"> • Positioning Unit • Assembling equipment and supplies 	1. Struck By	<ul style="list-style-type: none"> • Hard hats and high visibility vests for all personnel in work area. • Control work area (use flaggers, signage, barricades, and/or other means) and restrict all non-essential personnel from the area. • The rig will be placed over the desired location and the sample screening station 35-feet from the placement of the drill rig. • Insure groundspotters are in place when positioning the rig to avoid striking utilities, building components, or parked vehicles.
	2. Tip Over	<ul style="list-style-type: none"> • Do not permit rig to attempt to traverse severely sloping terrain. • Use a ground guide along with a functioning back-up alarm during equipment backing.
	3. Slips, Trips, Falls	<ul style="list-style-type: none"> • Do not block or infringe on established pedestrian or vehicle routes. • Practice good housekeeping to keep the ground around the Rig clear of obstructions, equipment and other tripping hazards. • Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.
	4. Minor cuts, or abrasions	<ul style="list-style-type: none"> • When handling equipment and tools wear cut-resistant gloves when handling items with sharp or rough edges.
	5. Heavy lifting (muscle strains and pulls)	<ul style="list-style-type: none"> • Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible. • Ensure clear path of travel, good grasp on object, perform "test lift" to gauge ability to safely make the lift • Lift with legs, obtain help to lift large, bulky, or heavy items.
	6. Inclement weather	<ul style="list-style-type: none"> • The FOL and/or the SSO will temporarily suspend outside activities in the event of electrical storms or high winds. • It is preferred that supported systems such as lightning detection

JOB STEPS	HAZARDS	CONTROLS
		<p>devices or emergency weather broadcasts are employed.</p> <ul style="list-style-type: none"> • However, when this is not possible field personnel should use the 30/30 Rule: <i>“If there is less than 30 seconds between thunder and lightning go inside and stay inside for at least 30 minutes after the last thunder.”</i>
	7. Vehicle hazards	<ul style="list-style-type: none"> • Allow sufficient free space of travel (6-feet) from the established traffic pattern. If you must work within this area <ul style="list-style-type: none"> a. Place signs on all approach venues – Men Working b. All personnel will wear High Visibility Vests. c. Traffic control plan will be implemented in accordance with Manual of Uniform Traffic Control Devices (MUTCD). Buffer areas and placement of signs will be determined based on traffic speed. d. Where necessary, (your work impedes normal traffic flow or a travel lane must be closed) Traffic Control Flagmen will be utilized. • Always keep sufficient room to allow the passage of emergency vehicles. Where this is not possible, the FOL will meet with responding Emergency Agencies to discuss the temporary travel restrictions.
DPT Drilling Operations	1. Intermittent high noise levels	<ul style="list-style-type: none"> • Operators/nearby personnel (within 35-feet) are to wear hearing protection. • If you do not know whether hearing protection should be employed use this simple rule: If noise levels are such that they must raise their voice in order to communicate with someone who is within arm’s reach (approx. 2’) of them. • SSO responsible for determining and designating when hearing protection is required or if conditions are met as defined above.. • Hearing protection is to consist of either ear muffs or ear plugs that have an NRR of at least 25 dB. • The SSO will be responsible for the implementation of the Site-Specific of the Hearing Conservation Program, Section 6.0 of the HSGM.
	2. Contact with equipment moving parts.	<ul style="list-style-type: none"> • Ensure that workers are thoroughly trained and competent to perform their assigned task with the equipment used in investigation. • Ensure that back-up alarms are functional on equipment. • The equipment operators and Site Supervisors are responsible to ensure that the equipment is properly inspection prior to being permitted onsite. (see Equipment Inspection Checklist Attachment III)

JOB STEPS	HAZARDS	CONTROLS
		<ul style="list-style-type: none"> • Ensure that all moving parts are guarded if such parts are exposed. Check/test all emergency stop controls. Note: As many DPT rigs are hand actuated hydraulically operated they have no emergency stop devices. The exception to this rule is – Any rig with rotating components will have such a device or devices.
	<p>3. Pressurized hydraulic lines could rupture, causing release of hot hydraulic fluid.</p>	<ul style="list-style-type: none"> • Inspect all hydraulic lines before placing rig in service. Any damaged hoses or connections must be replaced before unit is used. • Place plastic under the rig to capture incidental or line ruptures. Do not extend plastic out into the work area where it can become a slip, trip, and fall hazard. • Immediately shut down equipment if lines rupture. If rupture occurs, as quickly as possible, berm the liquid to minimize the area over which the liquid spreads. • Keep spill pads at the rig for immediate deployment. • Use spill pads when servicing fluid levels to capture incidental spills. •
	<p>4. Workers/Pedestrian traffic - could trip or fall by the borehole.</p>	<ul style="list-style-type: none"> • Cap, flag, or cover open boreholes. If left unattended, protect all open boreholes as any open excavation. • The FOL and/or the SSO will be responsible for walking over each work area to ensure it is adequately cleaned; slip, trip, and fall hazards are removed or blocked. • The FOL will arrange where necessary building occupants use other designated doorways to avoid passing through or along work areas.
<p>Subsurface soil sampling using MacroCore or Dual Tube Samplers.</p>	<p>1. Struck by</p>	<ul style="list-style-type: none"> • The system will be operated at the manufacturers recommended pressure and vacuum rates. • All high pressure lines not connected through a mechanical connection (threaded) will be pinned and whip checked to protect persons working nearby. • Equipment to be used; equipment to be deconned or air dried; or equipment to be restocked will be secured to avoid falling and striking someone. • Ensure the work area is adequate size to handle drive rods, samplers to avoid striking someone while wielding the tools.
	<p>2. Utility strike – Clearing to 4-feet</p>	<ul style="list-style-type: none"> • If utilities are identified within 5-feet of the intended boring location, potholing is required to locate and confirm. Hand augers or something more advanced such as an air knife/vacuum will not damage any utilities. Make sure all utility clearance holes are the same diameter to accommodate the down hole tools of the drill rig to be employed.

JOB STEPS	HAZARDS	CONTROLS
	<p>3. Chemical exposure to concentrations of fuel oils; kerosene; diesel etc. VOCs particularly Benzene; Chemical exposure to contaminated particulates</p>	<ul style="list-style-type: none"> • Many utilities are buried at depths much greater than 4-feet, so it is imperative that this method be used as a tool with the Utility clearance and not in place of. <ul style="list-style-type: none"> • Wear surgeons gloves when handling potentially-contaminated media and samples. Avoid contact with potentially-contaminated media to the extent possible. • Practice good personal hygiene (hands and face washing) when exiting work area. Hand-to-mouth activities in the work area are prohibited (eating, drinking, smoking, etc.). • Exposure via dermal contact and ingestion represent some limited concern during this task. • Periodically screen sample with FID. If readings above daily-established background levels (BGLs) are noted in borehole, monitor worker breathing zone (BZ) areas. If readings in worker BZ areas exceed: <ul style="list-style-type: none"> • FID Action Level: <10 ppm above BG continue to work and continue to monitor. • >10 ppm sustained in the workers breathing zone, stop work, evacuate upwind; re-measure after 5-minutes once the vapors/gases have had a chance to disperse. If readings are back to BG continue to work. If not report measured concentrations to PHSO or HSM for additional instructions. • Monitoring will be conducted at the source (borehole or sample medium in the acetate liner) then in the breathing zone of the driller or sampler. <p>Groundwater sampling</p> <ul style="list-style-type: none"> • Position sampling equipment and yourself upwind. • Keep collection bucket, loosely covered during sampling. • Keep collection bucket covered while in vehicle to avoid the evolution of gases into the vehicle while parked. • Open the well at arms length then back away allow it to off gas and equilibrate. <p>It is not anticipated that field personnel will be impacted by emissions associated with these contaminants.</p> <p>Note: The FID may at time give elevated readings when the atmosphere it is being used to monitor contributes to the flame intensity. Additionally,</p>

JOB STEPS	HAZARDS	CONTROLS
		<p>when sucking the sample from inside a well head or other confined space may cause flame out due to inadequate oxygen. Use tubing to extend the sample port inlet as it is imperative that you keep the instrument as level as possible as it may impact the flame again causing erroneous readings. A piece of Teflon tubing extending from the sample port can resolve this issue. Change out filters each day.</p>
	<p>4. Cuts and lacerations – Handling the sampling tools and associated devices.</p>	<ul style="list-style-type: none"> • Do not place sharp cutting edges against skin or against PPE as the inadvertent triggering can cause damage. • Wear leather or similar cut resistant gloves when handling sharp edges. • Pins, hose clamps that present a sharp edge should be covered to avoid snags or punctures. • Use appropriate tools – Acetate tube retention and designated knife. <ul style="list-style-type: none"> a. Do not cut towards yourself or other b. Do not place items to be cut in your other hand or on your knee. c. If it is necessary wear leather or similar cut resistant glove or gauntlet protection. • Carry all glassware in hard sided containers to avoid falling and impalement on shards of glass.
<p>Air monitoring</p>	<p>5. Compressed gas hazards Fire and/or explosions</p>	<ul style="list-style-type: none"> • A compressed gas cylinder containing laboratory grade 99.999% pure hydrogen will be used to fuel the FID. A number of safe work practices will be required to minimize the potential for injury due to sudden release of compressed gases; fire and/or explosion. These are provided in Attachment VI and Section 6.4 of this HASP. • The compressed gas storage will be kept away from heavily populated areas; exits; access points; pedestrian routes. The storage area will be cool, shaded, and away from potential traffic patterns that could strike the bottle. • Signs will be placed Hydrogen Gas – No Smoking within 50-feet • Fire extinguisher will be maintained within 50-feet of the dispersement point. • Only approved adaptors are permitted for refilling the internal tank of the FID. • All cylinders will be stored and used in the upright position.

JOB STEPS	HAZARDS	CONTROLS
Hand augering – Soil Sampling	1. Equipment failure	<ul style="list-style-type: none"> • Inspect the hand auger prior to use. A structural failure could result in your impalement onto a broken extension. • Do not use cheater pipes to maximize twisting capabilities as this may damage and/or result in structural failure
	2. Muscle/tendon/ ligament strain, sprain, or tear	<ul style="list-style-type: none"> • Loosen up/stretch before engaging in physical activities. • Muscles are at risk earlier in the morning as they have not loosened up and later in the day due to fatigue. Take turns hand augering.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<p>Drill Rig, bore rods, auger flights, sharp knives, hand tools (dollies, hand carts, etc.)</p> <p>Safety Equipment:</p> <ol style="list-style-type: none"> 1. A 20-pound dry chemical ABC fire extinguisher readily available. 2. Spill-control kit available at drilling location. 3. First-aid kit, eyewash, and an emergency air horn nearby. 4. Portable eye wash bottle <p>Monitoring Instruments: FID</p>	<p>Visual inspection prior to use by user. FID must be calibrated as per the manufacturer's recommendations and documented on each use.</p> <p>See Attachment VI Compressed Gas Cylinder Safety Checklist for measures to be employed when handling the hydrogen gas cylinders.</p>	<ol style="list-style-type: none"> 1. Review of AHA during pre-task tailgate safety briefing with all intended task participants. 2. Personnel must be trained in use of drilling equipment. 3. The Drill/DPT operator must have current certifications to operate the equipment. 4. Personnel will be proficient in the operation of the FID and the hydrogen filling procedure.
<p>Personal Protective Equipment: Minimum: Safety toe boots, safety glasses.</p> <p>Optional items: Hardhat, hearing protection.</p> <p>HTRW: nitrile surgeon's style gloves and Tyvek if there is a change to soil clothing.</p>	<p>Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.</p>	<p>PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in any onsite activities, and will be confirmed by visual observations of worker activities.</p>

I have read and understand this AHA:

Name (Printed)	Signature	Date



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NS Mayport, Mayport, Florida

Task: Free Product Removal

This task will consist of the collect of absorbent socks from designated wells and the deployment of fresh ones. In addition, where measureable product is noted in a well this product will be pumped out and a oil absorbent sock placed in the well.

Prepared by	T. Dickson	Date	08/2011	FOL	
Reviewed by	C. Snyder	Date	08/2011	SSO	

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
<p>Removal of petroleum contaminated socks. These socks are lowered to the desired level based on results achieved from the Hydrocarbon Interface Probe. They are tied off and after a period of time they are retrieved by pulling up the rope and then placing the contaminated sock in an IDW container.</p>	<p>1. Exposure to site contaminants</p> <ul style="list-style-type: none"> i. Inhalation ii. Skin contact/absorption, ingestion <p>Fuel oils; diesel; or Benzene –</p>	<p>1. The following measures will be employed</p> <ul style="list-style-type: none"> • While wearing safety glasses and nitrile surgeons gloves, at arms length open the well and step away allow it to off gas as necessary. • Have your IDW container ready to receive the contaminated sock. Place it in a secondary container (mortar tub) next to the well to avoid carrying a dripping sock across the parking lot. • From an upwind position pull the sock and rope, drop it in the IDW container (rope and all) close the container. • Measure the water oil interface to determine if there is floating product. Lower tubing into the well to the desired depth. Once placed begin pumping into the container currently holding the absorbent sock. Keep the lid loosely covered during pumping stay upwind. <ul style="list-style-type: none"> a. Decontaminate the probe during extraction using deionized water and disposable towels. • Once completed close the container tightly to avoid spillage and off gassing in your vehicle during transport to the IDW storage area, label and place. • Secure the tubing for future use. • Attach new rope to a new absorbent sock, measure and lowered to desired depth and secure. <p>To control exposure through skin contact, absorption, and/or ingestion personnel handling contaminated media will</p> <ul style="list-style-type: none"> • Wear surgeons gloves when handling potentially-contaminated media and samples, avoid contact with potentially-contaminated media to the extent possible, follow good decontamination and practice good personal hygiene (hands and face washing) when exiting work area, hand-to-mouth activities in the work area will be prohibited (eating, drinking, smoking, etc.). • Practice good housekeeping to avoid the spread of contamination. • Work from the least contaminated toward the source to avoid potential cross contamination <p>Once at the IDW storage area do not mix this waste with other wastes. Keep these materials segregated.</p>

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<p>5-Gallon buckets – make sure they do not leak with lids; Mortar tubs to act as secondary containment</p>	<p>FOL and/or the SSO will conduct initial site surveys of all work areas prior to committing personnel and/or equipment. Hazards will be eliminated or demarcated. All hazards identified will be discussed at the Tail Gate training session prior to entering the work site. Ensure containers do not leak. Fill buckets only to 80%</p>	<ul style="list-style-type: none"> • 40-Hour General Site Worker Hazardous Waste Operations Training • 8-Hour General Site Worker Refresher Training - If it has been greater than 12 months since receiving the 40-hour training or last refresher training. • 8-Hour Supervisory Training [29 CFR 1910.120 (e)(4)] for all personnel operating within the supervisory capacity. • Site-Specific Training – All personnel performing work within designated exclusion zones will have gone through site specific training including <ul style="list-style-type: none"> ○ Reviewing the contents of the site specific Health and Safety Plan ○ Applicable sections of the HSGM. ○ Work Plan • Tail Gate Training Sessions
<p>Hand tools (dollies, hand carts, hand knives, shovels, etc.)</p> <p>Emergency Equipment – Fire Extinguishers</p> <p>First Aid (with Bloodborne Pathogen provisions)</p> <p>Eye wash units</p>	<p>Visual inspection prior to use by user.</p> <p>Upon receipt then monthly thereafter</p> <p>The SSO will be responsible for insuring the first aid kits are fully stocked and replenished as supplies are used.</p> <p>The SSO will be responsible for inspecting the onsite Emergency Eyewash units upon receipt then</p>	<p>None required</p> <p>All personnel will have received fire extinguisher training for the types of extinguishers to be employed. This will be through their respective companies or as part of the site-specific training.</p> <p>All personnel designated as first aid providers will have had formal training in first aid and CPR as well as in Bloodborne Pathogen (BBP) control and program elements.</p>
<p>Personal Protective Equipment: Minimum: Steel toe boots, safety glasses, hardhat, hearing protection cotton or leather gloves when handling drill tooling; Nitrile with grip support for handling contaminated tooling.</p> <p>HTRW: Nitrile gloves when handling samples or other potentially-contaminated media.</p>	<p>Initial PPE inspection will be performed by the user (prior to each use). The SSO will monitor use/application of PPE by the users. The SSO will address any deficiencies noted at the occurrence then at Tail Gate Safety Meetings.</p> <p>FID to be subjected to calibration and operational checks in accordance with manufacturer's recommendations (but not less than daily)</p>	<p>PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.</p> <p>SSO trained in proper calibration, use, and care of air monitoring devices used (FID). This is a general component of 40 hour HAZWOPER training, and SSO must become very familiar with the Operator's Manual for any instrument used.</p>



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NS Mayport, Mayport, Florida

Task: Monitoring Well Groundwater Sampling Using a Peristaltic Pump

Prepared by T. Dickson

Date: 08/11

FOL

Reviewed by

Date

SSO

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
<p>1. Groundwater sampling - Site preparation and set up.</p>	<p>1. Biological hazards Terrain challenges Free space for travel</p>	<p>1. Initial site preparations were critical during the mobilization phase in the identification, barricading or removal of hazards that may exist and hence the protection of site personnel and resources. Personnel moving to their sample locations will repeat this process to ensure they are aware of hazards within their immediate work area</p> <ul style="list-style-type: none"> • Perform a site walk over The hazards types include <ul style="list-style-type: none"> ○ Terrain challenges – Paths for vehicle and pedestrian movement will travel, fence physical barriers, etc. • Once the site is set up provisions for adequate Emergency Access/Egress shall be maintained to allow emergency vehicles passage if required.
<p>2. Groundwater sampling. This will apply to all groundwater sampling - Well screen point Temporary wells Permanent wells</p> <p>This will apply to all associated activities including groundwater measurements and associated development where required.</p>	<p>2. Minor cuts, abrasions or contusions handling equipment and tools</p>	<p>2. Use hand tools that are in good condition. Hand tool users must be familiar with their proper use and must use them only in a manner that is consistent with their intended operation. As indicated earlier, the users will be responsible for inspecting tools prior to use. Additional measures include:</p> <ul style="list-style-type: none"> • When cutting tubing cut away from yourself and not towards others • It is recommended that scissors be used to cut tubing versus knives. Where this is not possible, wear a leather glove on your non-knife hand. • Sample glassware should be transported in hard sided containers such as coolers, that way if you fall the likelihood of falling onto glassware causing lacerations and punctures are greatly minimized. • Do not throw broken glass directly into the trash. Place it into a hard sided container such as a cardboard box. That way when you are transporting the garbage bag to the waste receptacle it will not cut through the bag and potentially cause lacerations. • Do not arbitrarily reach into the trash to retrieve something. Dump it out onto a flat surface. This will minimize potential punctures if someone else has thrown sharp articles into the trash.

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
<ul style="list-style-type: none"> • Well purging and development • Collection of groundwater samples (via small battery-operated pumps such as peristaltic pumps through groundwater quality instruments and placement into sample containers) 	<p>2A. Slips, Trips, Falls</p> <p>2B. Electrical hazards – This hazard exists only when connecting to vehicle batteries. It does not exist when using sealed batteries or the 12v power plug</p> <p>2C. Back Strain</p>	<ul style="list-style-type: none"> • Used glass ampoules should be rinsed and disposed of in a hard sided container such as a water bottle for transport and disposal to avoid punctures and lacerations. <p>2A. Clear intended work areas and walking paths of roots, weeds, limbs and other ground hazards. Practice good housekeeping to keep the site clear of obstructions, materials, equipment and other tripping hazards. Use caution when working on uneven and wet ground. Mark or flag obstructions such as overhead process lines that present head strike hazards. Use orange or yellow marking paint to increase visual recognition of trip hazards.</p> <p>2B. When possible use the 12V power connection such as the cigarette lighter or provided 12v power inlet. When this is not possible:</p> <ul style="list-style-type: none"> • Shut the vehicle off to avoid entanglement • Wearing leather gloves and safety glasses, connect negative terminal first, then positive. <p>2C. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure clear path of travel, good grasp on object, lift with legs not back, and obtain help when needed to lift large, bulky, or heavy items). Fill buckets and drums only to 80% which is manageable. Place lids on during transport. Remember if you must carry articles to the sample locations because vehicle access is not possible a cart or wagon is recommended for transport.</p> <p>2D. Knee injuries – Much of the sampling activities will require the sampler to get on the ground (flush mounts). When monitoring wells are installed as flush mounts this requires personnel to kneel to open wells, take groundwater level measurements, etc. This could result in knee injuries from kneeling on stones/foreign objects and general damage due to stress on the joints. To combat this hazard, personnel will wear hard sided knee pads. Where possible the PM will request Stick ups to minimize this hazard.</p> <p>2E. During groundwater sampling or well development, the following measures should be conducted to minimize contaminant exposure:</p> <ul style="list-style-type: none"> • At arm's length, open the well and remove the J-Plug and retreat. During this time, the well may off gas, but it will also allow the water levels to reach equilibrium once pressure is removed. • Prepare your equipment. • Set up your sampling station from an upwind position. • The lid on the discharge bucket or drum should be placed loosely to allow the collection of the water but to contain any volatiles during discharge. • Wear nitrile surgeon's gloves during sample equipment deployment, sample collection,

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
	<p>2D. Flush mount versus stick up</p> <p>2E. Chemical Contaminants – Fuel oils; kerosene; diesel fuel; fuel oil components - Benzene In addition, the potential exists for pressurized off gasing at the well. The well will be developed and allowed to set for 24 hours prior to sampling. During this time or through subsequent sampling events the potential exists for gases to build.</p>	<p>and removal as applicable.</p> <ul style="list-style-type: none"> • Use good work hygiene practices including <ul style="list-style-type: none"> ○ Minimizing hand to mouth contact during this sample collection period. ○ Flushing disposable tubing out and wiping down the exterior as it is extracted prior to disposal. • Sample collection buckets and flow through cells should be placed in a mortar tub or similar secondary containment to minimize incidental release during collection and transportation to the disposal area • Wrap or bag all contaminated pumps and tubing for transport. Decontaminate as soon as possible. DO NOT allow contaminated equipment or tubing to off gas in your vehicle. Keep the bag sealed and get it cleaned. <p>See Section 5.1 of this HASP as it pertains to chemical hazards associated with well sampling.</p> <p>2E. It has been identified in Section 5.1, when exposure potential would be at its greatest and the routes of that exposure. It has been further discussed in Section 6.0, the air monitoring approach that will be employed to quantify VOC emissions and to take action based on the results obtained during air monitoring. These are as follows:</p> <ul style="list-style-type: none"> • FID Action Level: <10 ppm above BG continue to work; continue to monitor • >10ppm sustained in the workers breathing zone, in BZ areas for no more than 4 exposures of 15 minutes sustained in one work day. Stop work, evacuate to an upwind position. Allow the vapors/gases to disperse, the SSO will re-evaluate after 5-10 minutes. If the concentrations have not reduced to background, report measured concentrations to PHSO or HSM for additional instructions. • Monitoring will be conducted after the well has been permitted to off gas. • Monitoring will be conducted in the breathing zone of the sampler who is to set up upwind. Monitoring will also occur over the collection container to evaluate air emissions from this source point. <p>It is not anticipated that field personnel will be impacted by emissions associated with these contaminants.</p>
3. Sampler preservatives	3. Sample preservatives;	<p>3. Hydrochloric acid is used as a sample preservative for volatile organic compound groundwater samples. Others that maybe encountered include</p> <ul style="list-style-type: none"> • Hydrochloric acid – VOCs • Methanol for soil samples <p>These substances are used to minimize microbial degradation while not impacting the sample</p>

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
	3. Corrosives	<p>quality. The problem with these substance is that they are corrosive and will degrade steel and human tissue. By following the guidelines provided in the Mobilization/demobilization AHA including</p> <ul style="list-style-type: none"> • Completing the onsite Hazard Communication Program – Know the hazards and how to prevent them. Review the MSDS; • Provide for the emergency even if it is using drinking water to flush a contact point; • Wear proper PPE – When opening sample bottles wear nitrile surgeons gloves and safety glasses • Store containers in the upright position. • Hold over your secondary containment when opening. <p>You can minimize if not eliminate these hazards.</p> <p>In addition to the use of PPE to serve as a barrier, provisions for flushing the eyes and skin will be available.</p> <p>It is the intent that through the use of the small 1-liter eyewash solutions, to offer immediate aid during removal and transport to the medical provider. Drinking water may also be used when additional solution is needed until medical support is achieved. The eyewash units onsite will be Immediately accessible during sampling.</p> <p>Inspected once/week Replaced when expired Maintain these solutions accessible but out of direct sunlight – No one wants to flush their eyes with hot or cold solutions.</p>
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Peristaltic pumps; dedicated or disposable tubing Groundwater quality measurement devices; turbidity.	Electrical connections, wiring, tubing connections; pressurized connections; compressed gas cylinder safety awareness	The FOL will direct personnel on the procedure to be employed to collect groundwater samples. General operating/demonstrated skill of the sampling technician per the SOP for groundwater sampling and/or well development should be assessed by the FOL. Instruction should be provided as necessary.
Personal Protective Equipment: Minimum: Safety Glasses; steel toed/shank footwear; hard hat;	None required	All personnel <ul style="list-style-type: none"> • 40-Hour General Site Worker Training [OSHA 29 CFR 1910.120 (e)] • 8-Hour General Site Worker Refresher Training [OSHA 29 CFR 1910.120 (e)(8)] • Site Specific Training – All personnel shall be instructed and attest to the review and understanding of this HASP prior to the commencement of on-site activity. • Periodically, Tailgate Training Sessions will be conducted to review activities in progress,

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<p>leather/canvas work gloves for site set up.</p> <p>Nitrile surgeons or nitrile outer gloves will be utilized when handling clean and contaminated tubing or sampling equipment.</p> <p>Optional items: High visibility vests are recommended for these activities in high traffic areas.</p>		<p>results of site surveys, and upcoming tasks. It is recommended that AHAs be reviewed prior to conducting the identified task.</p> <ul style="list-style-type: none"> • Participate in a Medical Clearance/Surveillance Program as described in OSHA 29 CFR 1910.120 (f). • Complete a Medical Data Sheet • Review applicable MSDSs if you are unaware of the hazards and recommended control measures for sample preservatives. <p>Supervisory personnel: 8-Hour General Site Worker Supervisory Training [OSHA 29 CFR 1910.120 (e)(4)]</p> <p>Documentation attesting to applicable training and medical clearance will be collected by the FOL and/or the SSO and maintained on site.</p>

All persons working within the operational will sign this AHA indicating that they have reviewed the document and are aware of their responsibilities as stated in the AHA.

Name (Printed)	Signature	Occupation	Date Reviewed/Training



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NS Mayport, Mayport, Florida

Task: Decontamination – Hand tools and associated equipment. This is a low pressure application

Prepared by T. Dickson

Date 08/2011

FOL

Reviewed by

Date

SSO

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
1. Site set up Decontamination of non-dedicated hand tools and equipment can take place onsite or at a centralized location.	1. Slips trips and fall	1. Slips trips and falls – To prevent these types of hazards the following measures will be incorporated: <ul style="list-style-type: none"> • Station placement – Keep the decon station far enough back from the operation to allow room to work. • Practice Good housekeeping – Keep tubing and tools gathered and organized to prevent a tripping hazard. • Do not lay items around on the floor or ground where someone could step on them and go down. • Clear other obstructions in the area that may present trip hazards.
2. Washing and rinsing process	2. Contaminant accumulation - Contaminant exposure Fuel oils; kerosene; diesel fuel; Benzene	2. Based on reported source concentrations the contaminant levels are not anticipated to be extremely elevated. To minimize exposure <ul style="list-style-type: none"> • Wear nitrile gloves, safety glasses, and an impermeable apron to prevent saturation of clothing. • Change out the wash water frequently to insure adequate decontamination but also protect from overloading contaminants. • Personnel involved in the decontamination process will themselves wash reusable garments (impermeable aprons); Follow good decontamination practices (work from top down and outside in). Surgeon's gloves are to be the last item of PPE removed; change gloves regularly and wash hands and face before any hand to mouth activities. • Keep decon areas orderly, maintain good housekeeping.

<p>4. Decon procedure Decontamination will include: a) Flushing tubing using a soap/water solution prior to disposal as general refuse.</p>	<p>4. Hazard Communication</p> <p>a., b. - Incidental spills - Slips, Trips, Falls</p> <p>c. Contaminant exposure</p>	<p>4. The SSO will complete the Site Specific Hazard Communication Program. This includes</p> <ul style="list-style-type: none"> Recording chemicals employed onsite for decontamination onto a Chemical Inventory List MSDSs are available to all personnel and they are aware of the hazards associated with each. The SSO has reviewed the documents for completeness and have also determined if there are additional equipment (PPE and/or Emergency equipment) that is needed. <p>a., b. - Incidental spills - Slips, Trips, Falls - The decontamination will employ 5 gallon buckets with soap and water and rinse water contained in mortar tubs to serve as secondary containment to control incidental spills. Wash waters, as well as, purge waters will be containerized in buckets with the lids on to control spills and off gassing into the transport vehicles.</p>
<p>Decontamination – High Presssure</p>		
<p>Decontamination of heavy equipment and large tooling (e.g., vehicles, etc.) using pressure washer</p>	<p>1. Noise</p> <p>2. Flying projectiles/water lacerations</p>	<p>1. Pressure washer operator must wear hearing protection (muffs or plugs with NRR of at least 25 dB)</p> <p>2. Control measures include</p> <ul style="list-style-type: none"> Restrict other personnel from decon pad during pressure washing operations. Pressure washer operator must exercise care when directing the wand so that it is not pointing at himself/herself or at any other worker. Restrict pressure washer to 3000psi with not less than 15° deflection tip Pressure washer operator must wear full face shield over safety glasses with side shields and brow protection. At SSO discretion, additional PPE consisting of hardhat, rainsuit, apron, and or boot covers may be required during heavy equipment decon operations <p>Depending on observations indicating that significant contact with decon overspray and/or windy conditions during washing activities.</p>

	3. Falling objects	3. Control measures include: <ul style="list-style-type: none"> Place items to be decontaminated on ground or on washing/drying racks in a manner that they are secure and will not fall. Wear safety toe safety footwear.
	4. Slips, trips, and falls	4. To control slips , trips, and falls <ul style="list-style-type: none"> Keep hoses gathered when not in use. Configure decon pad so the hoses maybe be run in an area not employed by pedestrian (employee) traffic. As a tarp or plastic containment will be placed on the ground to serve to contain spilled decon solutions, this may become slippery. Where necessary apply a light coating of sand to enhance traction. Keep waters collected in the pad pumped to a minimal level as not to disguise trip hazards.
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Hand tools (hand brushes, garden sprayers, hoses, etc.) Pressure washer	When decontaminating equipment check equipment for deficiencies report to the SSO. After decontamination is complete, scan with the FID to determine if there remains any contaminants, repeated as necessary.	All personnel participating in this activity must be current with HAZWOPER training requirements as specified in Mobilization/Demobilization.
Personal Protective Equipment: <u>Minimum:</u> <ul style="list-style-type: none"> Nitrile gloves. Safety glasses Rain suit or moisture-repellant disposable coveralls or impermeable apron, When there is a potential for the saturation of work 	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
clothing. Optional items: As determined by the SSO based on site specific conditions.		

All persons working within the operational will sign this AHA indicating that they have reviewed the document and are aware of their responsibilities as stated in the AHA.

Name (Printed)	Signature	Occupation	Date Reviewed/Training



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NS Mayport, Mayport, Florida

Task: IDW Management

Prepared by	T. Dickson	Date	08/2011	FOL	
Reviewed by	C. Snyder	Date	08/2011	SSO	

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
1. Storage Area set up	1. Traffic hazards; Material handling hazards	<p>1. Traffic hazards/Material Handling hazards – This area should be easily accessible in order to place and remove the drums accumulated.</p> <p>To further reduce material handling hazards, support spill containment and control, and sampling when necessary, the IDW storage area should be structured as follows:</p> <ul style="list-style-type: none"> • Maximum 4-drums to a pallet with retaining ring bolt and label on the outside for easy access/reference. • Maintain a minimum of 4-feet between each row of pallets. This is the minimum distance necessary to wheel drums on a drum dolly. • If the site is not secured, the satellite storage area shall be fenced and signs placed indicating the following: <ol style="list-style-type: none"> a. Primary Point of Contact (make sure they know they been identified as the primary point of contact). b. Phone Number c. Emergency Contact (If different from the primary) • Provide a Drum/Container Inventory to the Primary Point of Contact and to Emergency Services, if they deem it necessary. The inventory should contain: <ol style="list-style-type: none"> a. Each drum shall be assigned a unique identification number. This number shall be placed on the label and drum shell using a paint marker (Note: Do not paint the number on the lid as these have a tendency to get exchanged from time to time.) b. Types of waste materials (decontamination waters; purge waters, etc.) c. Volumes (Full or level associated with the container after completion of the project location) d. Where it was derived from (The site and/or wells)

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
		e. Dates (When filling began) f. Contact – For more information Ensure all lids are secured.
2. Material Handling	2. Lifting (strain/muscle pulls)	2. Lifting (strain/muscle pulls) <ul style="list-style-type: none"> • Use mechanical means (i.e. dollies, etc.) to move and handle containers. Use proper lifting techniques described in Section 4.4 of the Health and Safety Guidance Manual (HSGM). • Fill drums and buckets only to 80% to minimize some of the weight and incidental spill issues. • Use help to move and place drums Reminder: The drums you are attempting to move, lift and/or relocate may weigh on the average of <ul style="list-style-type: none"> • 55-Gallon container of purge or decontamination waters = ~500 lbs. (including the container)
3. Placing the drums	3. Pinches and compressions	3. Pinches and compressions – During placement of drums/containers on pallets use machinery or assistance from another person where possible. Keeps hand out of the area between drums during placement. It is best to place the drums and pallets then transport buckets to fill the drums already placed. Wear steel toed shoes with adequate lug to support traction when moving heavy containers.
4. Spill prevention and protection <ul style="list-style-type: none"> • Staging and Labeling Containers. 	4. Chemical contaminants exposure	4) Chemical hazards – Generally encountering contaminants during this activity is low unless the contents of a container must be transferred due to a faulty container [leak(s)]. The outside of containers should be cleaned of residual waters (e.g. splashes, etc.) to avoid potentially exposing all who come in contact. The FOL and/or the SSO will <ul style="list-style-type: none"> • Insure the outsides of all drums moved to the staging area are washed/wiped clean.
Spill Containment - Within this scope of work the primary area of concern regarding spills and/or releases are associated with <ul style="list-style-type: none"> • Collection point – This is being addressed through using mortar tubs as secondary containment. • Moving/Handling the drums/containers of waste materials. This can be minimized based on the method of picking these drums up and the method of transport. 		

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	
<ul style="list-style-type: none"> ○ Use the proper lifting appliances such as drum grapplers, drum dollies, etc.,. Secure containers for movement over long distances. ○ Care should also be exercised when using a backhoe or similar device to lift the drums. This sometimes results in a bucket tooth into the drum again resulting in a release. ○ Place the drums onto a lift gate and flat bed with removable sides for transport to the staging area. <p>This section describes the procedures the Tetra Tech NUS field personnel will employ upon the detection of a spill or leak.</p> <ul style="list-style-type: none"> ● Initiate incidental response measures, including <ul style="list-style-type: none"> ○ Employ the personal protective equipment (see below). 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 (for containers). Spread the absorbent material in the area of the spill, covering it completely. ○ Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options. ● Re-containerize spills, including 2-inch of top cover (if over soils) impacted by the spill. Await test results for treatment or disposal options. ● Notify the SSO or FOL immediately upon detection of a leak or spill and actions taken or employed. <ul style="list-style-type: none"> ● Personal Protective Equipment <ul style="list-style-type: none"> - Nitrile outer gloves - Splash Shield - Impermeable over-boots - Rain suits 			
<p>Hazard Monitoring Required: Visual observation of work practices by the FOL and/or the SSO to minimize potential physical hazards (i.e., improper lifting, unsecured loads, cutting practices, etc.). Monitoring will only be employed if Spill Containment is implemented. Periodic visual inspection for leaks when filling drums or those at the staging area.</p>	<p>Decontamination Procedures: Not required, unless spill containment protocol is implemented. Then the following will apply</p> <ul style="list-style-type: none"> ● Once the spill is secured and all of the spill equipment has been through a soap and water wash and rinse. ● Personnel will wash/rinse outer protective garment with soap and water. ● Remove outer protective garments. ● Wash hands and face. 	<p>Permits/Requirements:</p> <ul style="list-style-type: none"> ● Complete IDW Inventory List 	

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS	
<p>Training Required</p> <ul style="list-style-type: none"> • 29 CFR 1910.120 (e) Site Specific Training, See Figure 8-1 • Tail Gate Meeting Attendance, AHA review, See Figure 7-2 <p>Medical Clearance/Surveillance Required</p> <ul style="list-style-type: none"> • Completed a Medical Data Sheet (See Attachment I) 		<p>Emergency Equipment</p> <ul style="list-style-type: none"> - First Aid Kit - Fire Extinguisher - Map to Hospital and Emergency Contact List (Posted and a copy placed in your First-Aid Kit. - Spill Kit (Oil dry, wood shavings, or other absorbent materials, Shovels, brooms, Oil absorbent pads 	<p>H&S Supporting Program Requirements</p> <p>None required. See Section 10.0 of the HSGM for additional decontamination instruction.</p>
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Hand tools Carts drum dolly		When handling IDW check equipment for deficiencies report to the SSO.	All personnel participating in this activity must be current with HAZWOPER training requirements as specified in Mobilization/Demobilization.
<p>Personal Protective Equipment: Minimum:</p> <ul style="list-style-type: none"> • Nitrile gloves. • Safety glasses <p>Optional items: As determined by the SSO based on site specific conditions.</p>		Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

All persons upon review will sign off on this AHA prior to participating in these activities.

Name (Printed)	Signature	Occupation	Date of Review or Training

Drum/ Container Number #	Drum/ Container Type	Media (Contents)	Location (SWMU and Well #, etc.)	Estimated Volume	Date Filling Began	Comments
1	5-Gallon Bucket 55-Gallon Drum (UN1A2)	Purge/Development Water Decontamination Wash Waters		()- Gallons	/	
2				()- Gallons	/	
3				()- Gallons	/	
4				()- Gallons	/	

Drum/ Container Number #	Drum/ Container Type	Media (Contents)	Location (SWMU and Well #, etc.)	Estimated Volume	Date Filling Began	Comments

Field Operations Leader: _____

NS MAYPORT POINT OF CONTACT: _____

Phone Number: _____

Phone Number: _____



ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NS Mayport, Mayport, Florida

Task: Surveying

Prepared by	T. Dickson	Date	08/2011	FOL	
Reviewed by	C. Snyder	Date	08/2011	SSO	

ACTIVITY / PHASE	POTENTIAL HAZARDS	RECOMMENDED ACTIONS / CONTROLS
<p>Geographical Surveying will utilize Handheld GPS to mark the final coordinates on each sample location. In this practice, the handheld GPS will also annotate a fixed known survey position such as a monitoring well or similar point as a reference.</p> <p>Professional Surveyors will survey the horizontal position and vertical elevations of the monitoring wells tying to established benchmarks/control points.</p> <p>Steps include Mobilization to the site. Parking/placement of the vehicle. Location of control points Incidental vegetation removal to obtain line of sight. Shooting points. Carry control to benchmarks or control points.</p>	<p>1) Flying projectiles/Struck by</p> <p>2) Slips/Trips/Falls</p> <p>3) Poisonous Plants/Insect Bites</p>	<p>1) Flying projectiles/Struck by</p> <ul style="list-style-type: none"> • When hammering wooden hubs into the ground there is a possibility that shards may break off. To protect from potential eye injury during this activity personnel will wear safety glasses. • Crack or damage hubs will not be used. • Use a suitable hammer to drive the hubs. The hammer shouldn't be so heavy that an additional person must hold the hub while you drive it into the ground. • Inspect the hammer to insure the head is attached tightly and there are no indications of mushrooming head that could also become a flying projectile should it break off. <p>2) Slips, trips, and falls</p> <ul style="list-style-type: none"> • Remove/identify trip hazards from the work area so they may be avoided. • Maintain good housekeeping within the work area. • Place the hubs in a bucket or similar device. That way should you fall you are less likely to impale yourself. <p>3) Poisonous plants/Insect Bites – There are areas that are not well maintained (Grass is cut, etc.) and therefore poisonous plants and insects may be encountered. The following measures should take place when this hazard is imminent:</p> <ul style="list-style-type: none"> • Poisonous Plants – Within the work area we have Poison Ivy, Poison Oak, Poison Sumac and Florida Holly also known as Brazilian Red Pepper. An irritating, allergic reaction can occur after direct contact with the plant or indirect contact through some piece of equipment or clothing article. Oils are transferred from the plant to exposed skin, clothing, or

<p>4. Removal of Vegetation – Cutting site lines</p> <p>5. Traffic hazards</p>	<p>4. Cuts/lacerations; Struck by</p> <p>5. Traffic hazards – Struck by</p>	<p>piece of equipment. The degree of the irritation or allergic reaction can vary significantly from one person to the next. To control exposure to these plants</p> <ul style="list-style-type: none"> ○ Know the plants. Avoid if at all possible. If not wear protective clothing that maybe thrown away when the task is complete. ○ Wear barrier creams or PPE, prior to entry into heavy brush. ○ Wash with cool water and soap or an over the counter solutions to remove these oils from the skin. Wash your contaminated clothes separate from your other clothes. <ul style="list-style-type: none"> ● Insects – Use repellants applied liberally to skin and clothing per the Manufacturers requirements. <ul style="list-style-type: none"> ○ Wear light colored clothing – This will assist in controlling heat stress as well as seeing crawling insects on your body easier to detect. ○ Tape pant legs to boots to control insect (Ticks) access into clothing. ○ See Section 4.0 of the HSGM regarding biological hazards and the removal of ticks as well as conducting close body inspection. ● Snake chaps should be worn in heavy vegetation or areas of reported stings. <p>4. Cuts/lacerations; Struck by</p> <ul style="list-style-type: none"> ● See Hand tool use for removal of vegetation – Cutting site lines ● Wear Hard hat, safety glasses, and leather gloves when cutting and removing vegetation. ● Keep cutting tools within their sheath during periods of travel or non-use. <p>5. To minimize potential Vehicle Traffic Hazards</p> <ul style="list-style-type: none"> ● Be extremely cautious around heavy and/or fast-moving equipment. ● DO NOT place obstructions along the sides of the service or access roads that may cause personnel to move into the flow of traffic. Provide a required Free Space of Travel. ● Required “Free Space”: Maintain at least 6-feet of space between you and moving traffic. ● Where this is not possible, use flaggers and/or signs to warn oncoming traffic of activities near or within the travel lanes. ● Face Traffic: Whenever feasible, if you must move within the 6-feet of required space, or into traffic attempt to face moving traffic at all times. Always leave yourself an escape route. ● Wear High Visibility Vests to increase visual recognition by motorist. ● Do not rely on the operator’s visibility, judgment, or ability. Make eye contact with the driver. ● Carefully and deliberately use hand signals so they will not startle or
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		<p>confuse motorists or be mistaken for a flagger's direction before moving into traffic.</p> <ul style="list-style-type: none"> • Move Deliberately: Do not make sudden movements that might confuse a motorist. • Avoid where possible interrupting Traffic Flow: Minimize crossing traffic lanes. • People can't stand it they have to look to see what is going on, what you are doing. As a result many fender benders occur within work areas. Where possible move traffic through the work area but keep them separated to the extent possible that they do not collide with the car in front of them. • Warning signs shall be placed indicating surveyors working from all approach venues where applicable. <p>Distraction – One of the most hazardous conditions persons will encounter during this activity is distraction. They take their off of the task or hazard at hand and they take their mind off of the task or hazard at hand. When these conditions exist they place themselves into traffic in some instances by mistake they become wrapped in their job.</p> <p>In situations due to the complexity of the task; multiple concurrent information points utilize traffic control to protect those individuals involved. Restrict flow and speed associated with traffic. Minimize activities during high traffic periods or when visibility maybe affected such as early morning and near dusk.</p>
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EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Machetes; brush axes; sledge hammers; Survey equipment.	Inspect handles; heads; cutting implements	General operating/demonstrated skill of the survey personnel.
Personal Protective Equipment: Minimum: Safety Glasses; footwear with adequate Lug and ankle support; leather/canvas work gloves.	Inspect PPE to insure it is in adequate condition	<p>All personnel</p> <ul style="list-style-type: none"> • Site Specific Training – All personnel shall be instructed and attest to the review and understanding of this SSHP prior to the commencement of on-site activity. • Periodically, Tailgate Training Sessions will be conducted to review activities in progress, results of site surveys, and upcoming tasks. It is recommended that AHAs be reviewed prior to conducting the identified task. • Complete a Medical Data Sheet <p>Survey License and/or Certification Proof</p>

<p>Optional items: High visibility vests are recommended for these activities in high traffic areas.</p> <p>Emergency Equipment</p> <ul style="list-style-type: none"> - First Aid Kit - Fire Extinguisher - Map to Hospital - Emergency Contact List 		<p>Decontamination Procedures: Not required. Good personal hygiene practices are to be employed prior to breaks lunch or other period when hand to mouth contact occurs. This will minimize potential ingestion exposures.</p> <p>Inclement Weather – Use the 30/30 Rule – If there is 30 seconds or less between thunder and lightning go inside for 30 minutes or more since the last thunder.</p>
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All persons working within the operational will sign this AHA indicating that they have reviewed the document and are aware of their responsibilities as stated in the AHA. All persons in the operational zone during this activity will have signed off this AHA. It is preferred that the sign off take place once any additional site specific information has been incorporated immediately prior during the review

Name (Printed)	Signature	Occupation	Date Reviewed/Training

ATTACHMENT V

COMPRESSED GAS CYLINDER SAFETY CHECKLIST

Compressed Gas Cylinder Safe Work Practices

Prior to purchase, transportation, or use inspect the cylinders condition, including:

- Check the cylinder head for deformities.
- Determine the condition of the cylinder sidewalls; look for rust, pitting, deformities (e.g. dents) or any condition that may cause the cylinder to fail.
- Look for damage that occurred during transportation.
- Ensure the cylinder is properly labeled regarding the cylinder contents.
- If cylinder head is threaded ensure that a proper cylinder valve cover is in place as well as the proper gauge. Flammable gases will be reversed threads versus non-flammable.
- Always use the proper regulator for each cylinder. Don't use an adaptor or other connections to attach a regulator to a gas cylinder. If it is the correct regulator, it will fit easily on the existing connection.

If cylinder irregularities are found secure the area, allow no one to approach the cylinder. Have the vendor retrieve the cylinder. **UNDER NO CIRCUMSTANCE MOVE OR TRANSPORT A DAMAGED CYLINDER.** If the vendor will not respond to the site call the Health Sciences Group in Pittsburgh for further instructions.

Wear appropriate personal protective equipment when working with cylinders. Due to the high flammability of hydrogen flame retardant gloves and dermal protection are required when handling cylinders and refilling the FID.:

- If flammable gases are involved, post the area restricting smoking or other open flames from at least a 50' area.
- Locate cylinder storage areas in an area away from vehicle traffic or equipment movement.
- Steel toe shoes when moving the cylinder
- Gloves for hand protection
- Safety Glasses to protect eyes from flying debris or a pressurized gas release or pressure driven particulates or debris.
- Flame Retardant Garments for hot work operations.
- Do NOT use oil or grease to lubricate any part of the cylinder or gauges.
- Do NOT use oily rags to clean valves or gauges.
- Flash back arrestors will be used for all oxy/acetylene operations.

- Properly selected filtration goggles, glasses, or shield will be employed for all hot work operations.
- Keep the protective hood or cap in place when not in use.
- The cylinder shall be secured in a cart or other device to permit movement within the general work area and to provide security when in use.
- Compressed gas cylinders will be used in a vertical upright position.

Storage Procedures:

- Always store cylinders in an upright position
- Secure all cylinders to a fixed support with chains, or other substantial restraining device.
- When cylinder is not in use keep the valve protective cap securely in place.
- Store cylinders away from heat and electrical sources.
- Store in a well-ventilated area designated for cylinders only. Cylinders will not be stored with any other site equipment.
- Empty cylinders will be marked "Empty" or "MT".
- Keep cylinder valves closed when not in use with cap in place. This includes empty cylinders.
- Store and properly secure cylinders in a well ventilated location. The use and storage of flammable or combustible gases maybe restricted at the location. Always seek Advance approval before bringing compressed gas cylinders onsite.
- All cylinders utilized onsite shall be free of corrosion and inspected/tested per DOT requirements. Any cylinder that does not meet DOT inspection requirements must be tagged "Do Not Use" and removed from the property.
- Keep oxidizing gases separate from fuel gases.
- Cylinders should be tagged and capped when empty. It is recommended that full and empty cylinders be stored separately

4. Marking and Labeling

- Cylinders must be properly labeled, including the gas identity and appropriate hazard.
- Material Safety Data Sheet (MSDS) must be obtained for all gases brought on site. Personnel will be familiar with the hazards of that particular gas.

5. Transportation of Compresses Gas Cylinders

- The Tetra Tech policy for transporting compressed gas cylinders is to first rely on having a vendor deliver the cylinders to the work site. This avoids having personnel transporting cylinders in private vehicles thus eliminating the possibility of accidents and injuries. But if vendor delivery is not possible, the transportation of compressed gas cylinders will be permitted under the following circumstances:
 - Cylinders do not exceed 66lbs for flammable gases
 - Non-flammable gas cylinders do not exceed 220 pounds.
 - Cylinders must be secured in the vehicle with chains or tie down devices that do not allow the cylinder to move or break free.
 - Cylinders must be adequately cushioned to prevent banging against other objects or equipment.
 - Cylinders must be labeled with the appropriate hazard (i.e.: Flammable Gas label for Hydrogen). The supplier will provide labels.
 - Personnel are responsible for obtaining the appropriate MSDS for the product from the supplier:
 - The MSDS must remain in the vehicle while the cylinder is being transported.
 - The MSDS must also be maintained in the site Hazard Communications Folder.
 - Cylinders transported must have their valve caps tightly secured and in place.

CRITERIA	RESPONSE AND COMMENT		
1. Are periodic inspections of compressed gas storage and usage areas performed and deficiencies corrected?	Y	N	N/A ??
2. Are work areas maintained in clean and orderly condition?	Y	N	N/A ??
3. Are Material Safety Data Sheets available for all compressed gases used?	Y	N	N/A ??
4. Are cylinders (FULL OR EMPTY) stored in upright positions and immobilized by chains or other means to prevent them from being knocked over? [CGA 3.4.4 and 29 CFR 1910.101(b)]	Y	N	N/A ??
5. Are cylinders stored away from highly flammable substances such as oil, gasoline, or waste? [CGA 3.3.6]	Y	N	N/A ??
<i>Store cylinders in a dry well ventilated area away from heat and ignition sources. Keep cylinders at least 20 ft from flammable materials such as paint, oils and/or solvents.</i>			
6. Are cylinders stored away from electrical connections, gas flames or other combustible waste material? [CGA 3.5.1] Cylinders are not designed for temperatures above 130 F.	Y	N	N/A ??
7. Are flammable gases separated from oxidizing gases in storage areas? [CGA 3.3.3]	Y	N	N/A ??
<i>Hydrogen, acetylene and propane cylinders (fuels) should be separated from oxygen cylinders (oxidizers) when not in use.</i>			
8. Are oxygen and fuel gas cylinders separated by a minimum of 20 feet when in storage? [CGA 3.5.3]	Y	N	N/A ??

<i>The cylinders could be separated by 5 ft high wall with halfhour fire resistant rating.</i>			
9. Are storage rooms for cylinders dry, cool and well ventilated? [CGA 3.3.5]	Y	N	N/A ??
<i>The storage rooms should be fire resistant and the storage should not be in subsurface locations. The cylinders should be stored in secure areas at temperatures below 125°F away from radiant heat sources. Cylinders should never be stored in unventilated lockers or closets.</i>			
10. Are cylinders stored away from incompatibles, excessive heat, continuous dampness, salt or other corrosive chemicals, and any areas that may subject them to damage? [CGA 3.3.7 and 29 CFR 1910.101(b)]	Y	N	N/A ??
<i>Rusting will damage a cylinder and may cause the valve protective cap to stick making it difficult to remove. Protect cylinders from weather extremes.</i>			
13. Is the storage area permanently posted with the names of the gases stored in the cylinders? in that area? [CGA 3.3.2 and 29 CFR 1910.101(b)]	Y	N	N/A ??
<i>Ensure that 'No Smoking' Signs are posted and enforce rules.</i>			
14. Do all compressed gas cylinders have their contents and precautionary labeling clearly marked on their exterior? [29 CFR 1910.101(b)]	Y	N	N/A ??
<ul style="list-style-type: none"> • <i>Flammable, oxidizing and/ or inert gases. All compressed gas cylinders have to be legibly marked to identify the gas contained.</i> • <i>Toxic gases (e.g. Carbon monoxide, hydrogen cyanide, nitric oxide, phosgene)</i> • <i>Corrosive gases (e.g. ammonia, chlorine, nitrogen dioxide, nitric oxide, sulfur dioxide, etc.)</i> • <i>Flammable gases (e.g. acetylene, ammonia, ethylene, etc.)</i> 			

<ul style="list-style-type: none"> • <i>Oxidizers (e.g. Fluorine, oxygen, etc.)</i> • <i>Explosive (e.g. Hydrogen, etc.)</i> • <i>Simple asphyxiates (e.g. Carbon dioxide, helium, nitrogen, sulfur hexafluoride)</i> 			
10. Are all compressed gas cylinder valve covers in place when cylinders are not in use? [29 CFR 1910.101(b)]	Y	N	N/A ??
11. Are all compressed gas cylinders stored so they do not interfere with exit and entrances? [29 CFR 1910.101(b)] Store away from elevators, stairs, doorways, aisles, general pedestrian routes	Y	N	N/A ??
12. Are all compressed gas cylinders subjected to periodic hydrostatic testing and interior inspection? [29 CFR 1910.101(a)]	Y	N	N/A ??
13. Do all compressed gas cylinders have safety pressure relief valves? [29 CFR 1910.101(c)]	Y	N	N/A ??
15. Are safety relief devices in the valve or on the cylinder free from any indication of tampering? CGA 3.1.14	Y	N	N/A ??
<i>Ensure that there is no tampering with the safety relief device in the valve or cylinder or any attempt to repair or alter the cylinder</i>			
17. Is painting cylinders without authorization by the owner prohibited? Often color codes are used to help designate cylinders. Arbitrary paint is not recommended. (CGA 3.1.20)	Y	N	N/A ??
18. Are charged or full cylinders labeled and stored away from empty cylinders?[CGA3.3.4; 29 CFR 1910.101(b)]	Y	N	N/A ??
19. Is the bottom of the cylinder protected from the ground to prevent rusting? [CGA3.3.9]	Y	N	N/A ??

20. Are all compressed gas cylinders regularly inspected for corrosion, pitting, cuts, gouges, digs, bulges, neck defects and general distortion? [29 CFR 1910.101(a)]	Y	N	N/A ??
21. Are cylinder valves closed at all times, except when the valve is in use? [CGA 3.1.15]	Y	N	N/A ??
22. Are compressed gas cylinders always moved, even short distances, by a suitable hand truck? [CGA 3.2.6]	Y	N	N/A ??
23. Is using wrenches or other tools for opening and closing valves prohibited? [CGA 3.4.9] Hammering ,lubricants, pipes and other leverage devices are strictly prohibited.	Y	N	N/A ??
24. Are suitable pressure regulating devices in use whenever the gas is emitted to systems with pressurated limitations such as a cylinder with a lower pressure? [CGA 3.4.5]	Y	N	N/A ??
25. Are all compressed gas cylinder connections such as pressure regulators, manifolds, hoses, gauges, and relief valves checked for integrity and tightness? Are compressed gas cylinders visually inspected? [29 CFR 1910.101(a)]	Y	N	N/A ??
26. Are all compressed gas cylinders regularly subjected to leak detection using an approved leak detecting liquid? [29 CFR 1910.101(a)] Leak detection liquids are available from commercial welding supply houses.	Y	N	N/A ??
27. Is an approved leak detection liquid used to detect flammable gas leaks?	Y	N	N/A ??

[CGA 3.5.2]			
<i>Ordinary soap solution may contain oils that are unsafe when used with oxygen cylinders. Never use a flame to determine if a cylinder is leaking or not.</i>			
28. Are procedures established for when a compressed gas cylinder leak cannot be remedied by simply tightening the valve? [CGA 3.1.6] The procedures should include the following: a. Attach tag to the cylinder stating it is unserviceable. b. Remove cylinder to a well ventilated out of doors location. c. If the gas is flammable or toxic, place an appropriate sign at the cylinder warning of these hazards. d. Notify the gas supplier and follow his/her instructions as to the return of the cylinder.	Y	N	N/A ??
29. Are employees prohibited from using compressed gases (air) to clean clothing or work surfaces? Cleaning machinery, bench tops, clothing, objects and other things with compressed air is dangerous.			
29. Are compressed gases only handled by experienced and properly trained people? [CGA 3.4.1]	Y	N	N/A ??
<i>Training must include safe usage procedures, employee protection from potential health and physical hazards associated with gas and cylinder usage, personal protective equipment and specific information relevant to the gas being used.</i>			
30. Are fire extinguishing equipment readily available when combustible materials could be exposed to welding or cutting operations using compressed cylinder gases?	Y	N	N/A ??
31. Are laboratory storage of compressed gas cylinders limited only those in use?	Y	N	N/A ??

Use cylinders in rotation as received from the supplier. Plan storage layout so that old stock can be removed	
References:	
<i>Handbook of Compressed Gases</i> , Compressed Gas Association, Arlington, VA, latest edition.	NIOSH Safety Checklist Program for Schools.
Comments/Corrective action:	

ATTACHMENT VI

OSHA POSTER

Job Safety and Health

It's the law!

OSHA

Occupational Safety
and Health Administration
U.S. Department of Labor

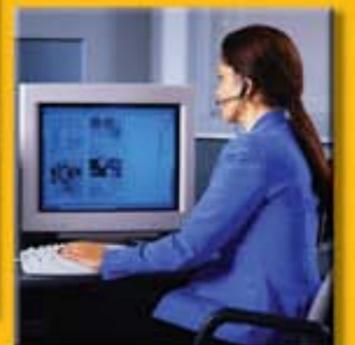
EMPLOYEES:

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

EMPLOYERS:

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the *OSH Act*.

This free poster available from OSHA –
The Best Resource for Safety and Health



Free assistance in identifying and correcting hazards or complying with standards is available to employers, without citation or penalty, through OSHA-supported consultation programs in each state.

1-800-321-OSHA
www.osha.gov

OSHA 3185-12-06R