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FINAL HEALTH AND SAFETY PLAN FOR WELL AND PIEZOMETER GROUND TRUTHING
NSA PANAMA CITY FL
4/1/2014
TETRA TECH

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-04-D-0055



Health and Safety Plan for Ground Truthing Activities at Naval Support Activity Panama City Panama City, Florida

Contract Task Order 0066

April 2014



NAS Jacksonville
Jacksonville, Florida 32212-0030

**HEALTH AND SAFETY PLAN
FOR
GROUND TRUTHING ACTIVITIES
AT
NAVAL SUPPORT ACTIVITY PANAMA CITY
PANAMA CITY BEACH, FLORIDA**

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

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

**Submitted by:
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**CONTRACT NO. N62467-04-D-0055
CONTRACT TASK ORDER 0066**

APRIL 2014

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1.0 INTRODUCTION

The objective of this Health and Safety Plan (HASP) is to provide the safety and health requirements, restrictions, practices and procedures for Tetra Tech personnel participating in environmental investigation activities as specified in Section 4.0 of this HASP at the Naval Support Activity Panama City, Panama City Beach, Florida (NSA Panama City).

This HASP is to be used in conjunction with the Tetra Tech Health and Safety Guidance Manual. The HSGM provides detailed information pertaining to hazard recognition and control, Tetra Tech standard operating procedures, as well as Tetra Tech. This HASP and the contents of the Guidance Manual were developed to comply with the requirements stipulated in 29 CFR 1910.120 (OSHA's Hazardous Waste Operations and Emergency Response Standard). These documents must be present at the site.

This HASP has been written to support proposed tasks and techniques associated with the scope of work as presented in Section 4.0. It has been developed using the latest available information regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work at the site. Should the proposed work site conditions and/or suspected hazards change, or if new information becomes available, this document will be modified. Changes to the HASP will be requested by the Tetra Tech Project Manager (PM) and made with the approval of the Tetra Tech Project Health and Safety Officer (PHSO). The PM will notify all affected personnel of changes in this HASP. Site specific training and Tailgate Safety meetings will be used to communicate the changes.

1.1 AUTHORITY

This work is authorized under the Comprehensive Long - Term Environmental Action Navy (CLEAN) contract, administered through the U.S. Navy Southeast, Naval Facilities Engineering Command, as defined under Contract No. N62467-04-D-0055; Contract Task Order Number 0066.

1.2 KEY PROJECT PERSONNEL AND ORGANIZATION

This section defines responsibilities for site safety and health for Tetra Tech and subcontractor employees conducting the site investigation activities under this field effort. All personnel assigned to participate in the field work have the responsibility for performing work tasks in a manner that is consistent with the Tetra Tech Health and Safety Policy, the health and safety training that they have received, the contents of this HASP, and in a manner that protects their personal safety and health and that of their co-workers. The following persons are the primary point of contact and have the primary responsibility for observing and implementing this HASP and for overall on-site health and safety.

1.2.1 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.
- Ensuring recordkeeping meets the objectives of the work plan/HASP. This activity includes monitoring field documentation to ensure adequate health and safety practices and action items are properly employed.
- Coordinating with project and facility personnel to implement necessary emergency action/response procedures where necessary.
- Verifying corrective actions are implemented where identified through self assessments.
- Providing for appropriate monitoring, personal protective equipment, decontamination materials, and other project necessities.
- The PM is ultimately responsible for the actions of the Field Operation Leaders (FOLs) and Site Safety and Health Officers as it pertains to the health and safety measures employed onsite.
- His/her role is to ensure 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. These lessons learned are to be communicated daily progress meetings or during Tailgate Safety Meetings.
- The FOL and/or the SSO will be the representatives onsite; however communication concerning project issues or measures to be taken shall be directed through the PM to the Facility Contact representative. This may include notification of the Facility representative in the event of an emergency action/response measure or incident.

1.2.2 Tetra Tech Project Health and Safety Officer (PHSO)

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

- Providing information regarding site contaminants and physical hazards associated with the site.
- Conducting Job Hazard Analysis for each task in order to provide:
- 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.

It is the responsibility of the PHSO to conduct or provide technical support during the execution of onsite ongoing field operations to ensure the objectives of the HASP are being met.

1.2.3 Tetra Tech Field Operations Leader (FOL)

The Tetra Tech Field Operations Leader (FOL) is responsible for implementation of the work plan and the HASP with the assistance of the Site Safety and Health Officer (SSO). The FOL manages field investigation/remedial activities, executes the work/sampling plan, and enforces safety procedures as applicable to the work plan. Additional duties include:

- To serve as a liaison with the Facility Representative, subcontractor, and/or regulatory personnel.
- Ensuring and enforcing compliance with the HASP and the HSGM for all personnel.
- Coordinating site activities such that they are performed in an effective, efficient, and safe manner consistent with the HASP, work plan, and site activities in which coordination with a multi-employer work place.
- Enforcing the buddy system on-site.
- Controlling site entry of unauthorized personnel.
- Assuring availability of all safety equipment.
- Logistical support include access to items such as, but not limited to:
 - Potable water for decontamination activities
 - Areas for equipment laydown and storage
 - Communication – Points of Contact
 - Utility clearance support
 - Hours of operation

- General site rules and regulations
- Coordination and control of the transportation element.

1.2.4 Tetra Tech Site Safety and Health Officer (SSO)

The SSO duties may include:

- Coordinating and supporting health and safety activities with the FOL through implementation of the site HASP and work plan.
- Advising and assisting the FOL on the aspects of health and safety onsite.
- 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.
- Confirming that site personnel meet appropriate training and medical clearance/surveillance requirements and any licenses or certification required.
- Conducting site-specific training, periodic safety meetings, and periodic inspections/self assessments.
- Verifying that the decontamination procedures are being implemented as defined in the HASP.
- Implementing, where appropriate, safety and health programs including Hazard Communication, Respiratory Protection Programs, 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 Section 2.10.1 TOTAL Reporting System or Attachment I - Illness/Injury Reporting Procedure and Form).
- 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 prior to committing personnel or resources.

Compliance with the requirements stipulated in this HASP are monitored by the SSO and coordinated through the Tetra Tech PHSO and the Tetra Tech Corporate Health and Safety Manager.

1.2.5 Health and Safety Manager (HSM)

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

- Overseeing the development and subsequent implementation of the HASP.
- Visiting the site as needed to audit the effectiveness of these documents and to support program improvement.
- Remaining available for project emergencies.
- Assisting the PHSO in the evaluation of occupational exposure monitoring/air sampling data and direct the adjustment of action levels as necessary.
- Serving as a quality control staff member.
- Approving/signing this HASP document indicating reviewed and approved.
- Following up on information generated through audits/evaluations to ensure corrective measures have been completed and are affective.
- Evaluating 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.
- Serving as the arbitrator and final authority as it may pertain to dispute resolution regarding health and safety issues associated with this project.

1.2.6 Tetra Tech Employees and Subcontractor Personnel

Tetra Tech and subcontractor employees are responsible for:

- Understanding and following direction provided in this HASP, HSGM, work plan and other project documents and as provided under the direction of the SSO and/or the FOL.
- Reporting unsafe conditions or incidents to the SSO and/or FOL.
- Completing/meeting necessary training and medical surveillance requirements.
- Completing the Medical Data Sheet(s) (see Attachment II) and providing this information to the SSO.
- Attending site-specific training and periodic safety meetings.

Note: In some 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.

1.3 STOP WORK AUTHORIZATION

All employees and subcontractor personnel 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 and/or the subcontractor employee shall contact the Project Manager and the Corporate Health and Safety Manager. 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.

1.4 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Naval Support Activity Panama City **Client Contact:** Richard Lee

Address: Panama City Beach, Florida **Phone Number:** (850) 230-7060

Purpose of Site Visit: Basewide well inventory

Proposed Dates of Work: April 2014 to completion

Project Team:

Tetra Tech Personnel:

Discipline/Tasks Assigned:

Tom Johnston

PM

Matthew M. Soltis, CIH, CSP

HSM

Jennifer Carothers, PhD

PHSO

TBD

FOL

TBD

Field Technician

TBD

SSO

Hazard Assessments (for purposes of OSHA 29 CFR 1910.132) and HASP preparation conducted by:
Jennifer Carothers, PhD

2.0 EMERGENCY ACTION PLAN

2.1 INTRODUCTION

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an emergency that is outside of the field team's ability to respond based on training, nature of the incident, or sufficient supplies in which to respond. In such an event, the field team will primarily evacuate and assemble to an area unaffected by the emergency and notify the appropriate local emergency response personnel/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. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. The Navy RPM will be notified if outside response agencies are contacted.

Tetra Tech personnel may participate in minor event response and emergency prevention activities such as:

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

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, the following are considered emergencies that could occur as they are inherent with the tasks to be completed:

The following represent conditions and/or occurrences in which are considered emergencies and are beyond the capabilities of the field personnel:

- Vehicle accident
 - Any vehicle accident including vehicle versus worker or vehicle versus vehicle will require the support and assistance of the local law enforcement.
 - Personnel will provide emergency rescue, where possible.

- Limited first aid to the person's knowledge in an attempt to stabilize.
- Provide scene security until law enforcement arrives.
- Inclement weather
 - All electrical storms will require all work to cease until the storm passes. Use support means (radios) and the 30/30 rule for assessing actions to be employed.
 - During drilling the mast will be lowered and personnel will take shelter in their vehicles.

To minimize or eliminate the potential for these emergency situations, pre-emergency planning activities will include the following (which are the responsibility of the SSO and/or the FOL):

- Coordinating with the Emergency Response personnel to ensure that Tetra Tech emergency action activities are compatible with existing emergency response procedures.
- Establishing and maintaining information at the project staging area (support zone) for easy access in the event of an emergency. This information will include the following:
 - Chemical Inventory (of chemicals used onsite), with Material Safety Data Sheets.
 - Onsite personnel medical records
 - A logbook identifying personnel onsite each day.
 - Hospital route maps with directions (these should also be placed in each site vehicle.
 - Emergency Notification - phone numbers.

The Tetra Tech FOL will be responsible for the following tasks:

- The FOL and/or the SSO will serve as the Incident Command until responding agencies arrive.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Providing the necessary equipment to safely accomplish identified tasks.

2.3 EMERGENCY RECOGNITION AND PREVENTION

2.3.1 Recognition

Recognition will be conveyed through site specific training and tail gate safety meetings. Through these mechanisms, hazards will be described as well as instructing personnel what to look for and pre-measures to be put in place prior to the commencement of field work.

- Pre-work site surveys by the FOL and/or the SSO to identify potential hazards, as well as examining the area for underground and overhead utilities.
- During operations it is the primary responsibility of each person to follow the direction provided in the AHA as well as verbal direction given by supervisory personnel.
- The FOL and the SSO will perform operational assessments to ensure all of the applicable described tenants within the HASP are being followed.

Visual observation will play a role in detecting potential exposure events to some chemical hazards. To adequately recognize chemical exposures, site personnel must have a clear knowledge of signs and symptoms of exposure associated with the principle site contaminants of concern as presented in this HASP. Tasks to be performed at the site, potential hazards associated with those tasks and the recommended control methods are discussed in detail in Sections 5.0 and 6.0. Additionally, early recognition of hazards will be supported by daily site surveys to eliminate any situation predisposed to an emergency. The FOL and/or the SSO will be responsible for performing surveys of work areas prior to initiating site operations and periodically while operations are being conducted.

The above actions will provide early recognition for potential emergency situations, and allow Tetra Tech to instigate necessary control measures pre-emergency/incident.

However, if the FOL and the SSO determine that control measures are not sufficient to eliminate the hazard; Tetra Tech will withdraw from the site and notify the appropriate response agencies.

2.3.2 Prevention

Tetra Tech and subcontractor personnel will minimize the potential for emergencies by following this HASP. Daily site surveys of work areas, prior to the commencement of that day's activities, by the FOL and/or the SSO will also assist in prevention of injuries when hazards are recognized early and control measures initiated.

2.4 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 the following: severe weather conditions; utility damage; or injury requiring removal from the field.

In the event of an emergency requiring evacuation, personnel will immediately stop activities, provide life saving support as needed, 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. 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.

2.5 EMERGENCY CONTACTS

Prior to initiating field activities, personnel will be 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.

**TABLE 2-1
 EMERGENCY CONTACTS
 NAVAL SUPPORT ACTIVITY
 PANAMA CITY, FLORIDA**

CONTACT	PHONE NUMBER
EMERGENCY (Police, Fire, and Ambulance Services)	911
Bay Medical Center (Primary Hospital)	(850) 769-1511
Seawind Medical Center (Alternate Hospital)	(850) 249-1000
Navy Onsite Representative at NSA, Panama City Richard Lee	(850) 230-7060
Navy RPM, Brian Syme	(904) 542-6151
NSA Safety Officer	(850) 234-4332
Chemtrec	(800) 262-8200
National Response Center	(800) 424-8802
FOL Amber Igoe	(850) 385-1352
Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer Jennifer Carothers, PhD	(412) 921-8083
Project Manager Tom Johnston	(412) 921-8615

2.6 EMERGENCY ROUTE TO HOSPITAL

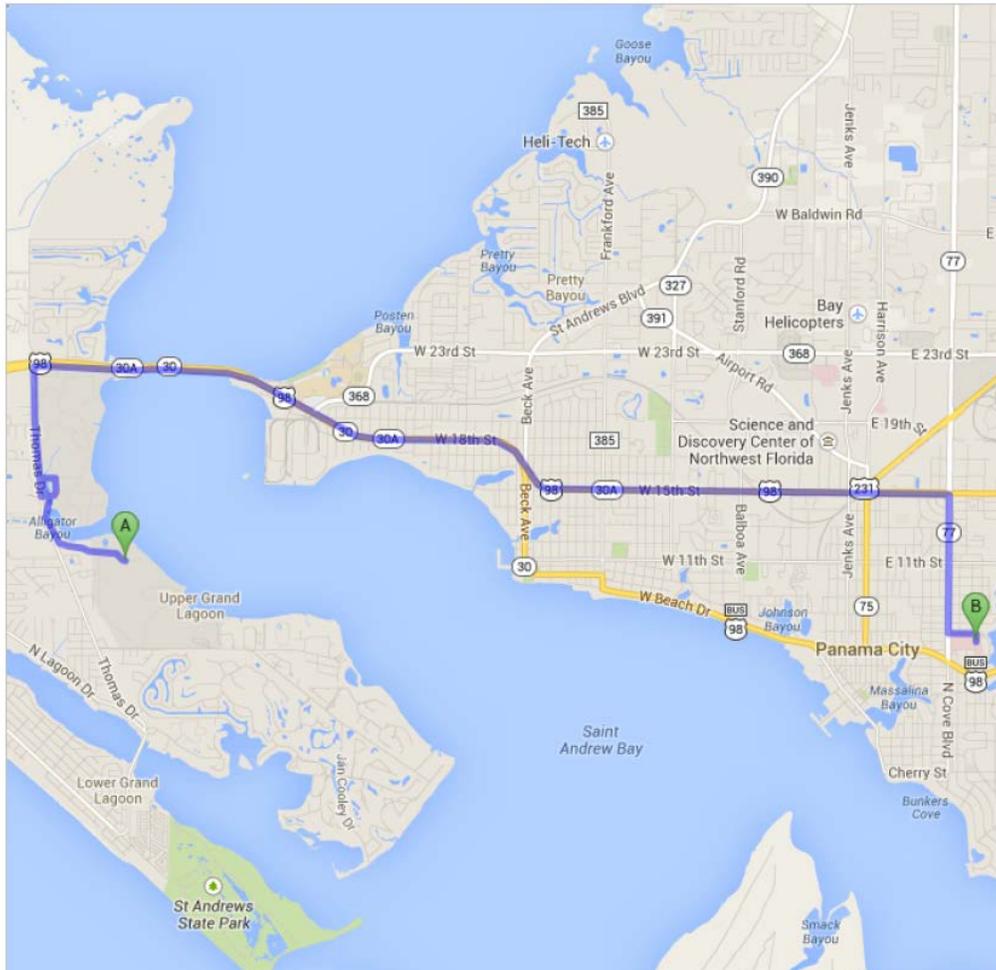
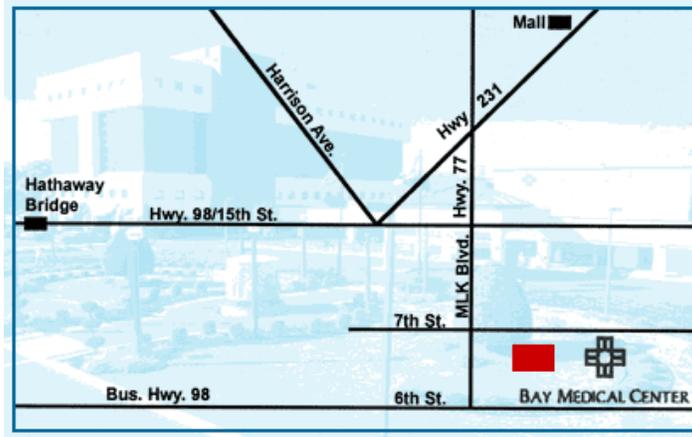
Maps and directions to both the Primary (Bay Medical Center) and Alternate (Seawind Medical Clinic) are provided (Figures 2-1 & 2-2.). This information will be posted in the field office and within each site project vehicle.

Directions to Bay Medical Center (Primary)

1. Take Thomas Dr north
2. Turn right across the bridge.
3. Take the ramp onto FL-30 E/US-98 E. Continue to follow US-98 E
4. Turn right onto N Cove Blvd/Martin Luther King Jr Blvd
5. Turn left onto E 7th St
6. Turn right onto N Bonita Ave. Destination will be on the right

Bay Medical
615 North Bonita Avenue
Panama City, FL 32401

FIGURE 2-1
BAY MEDICAL CENTER MAP



Directions to Seawind Medical Clinic (Alternate)

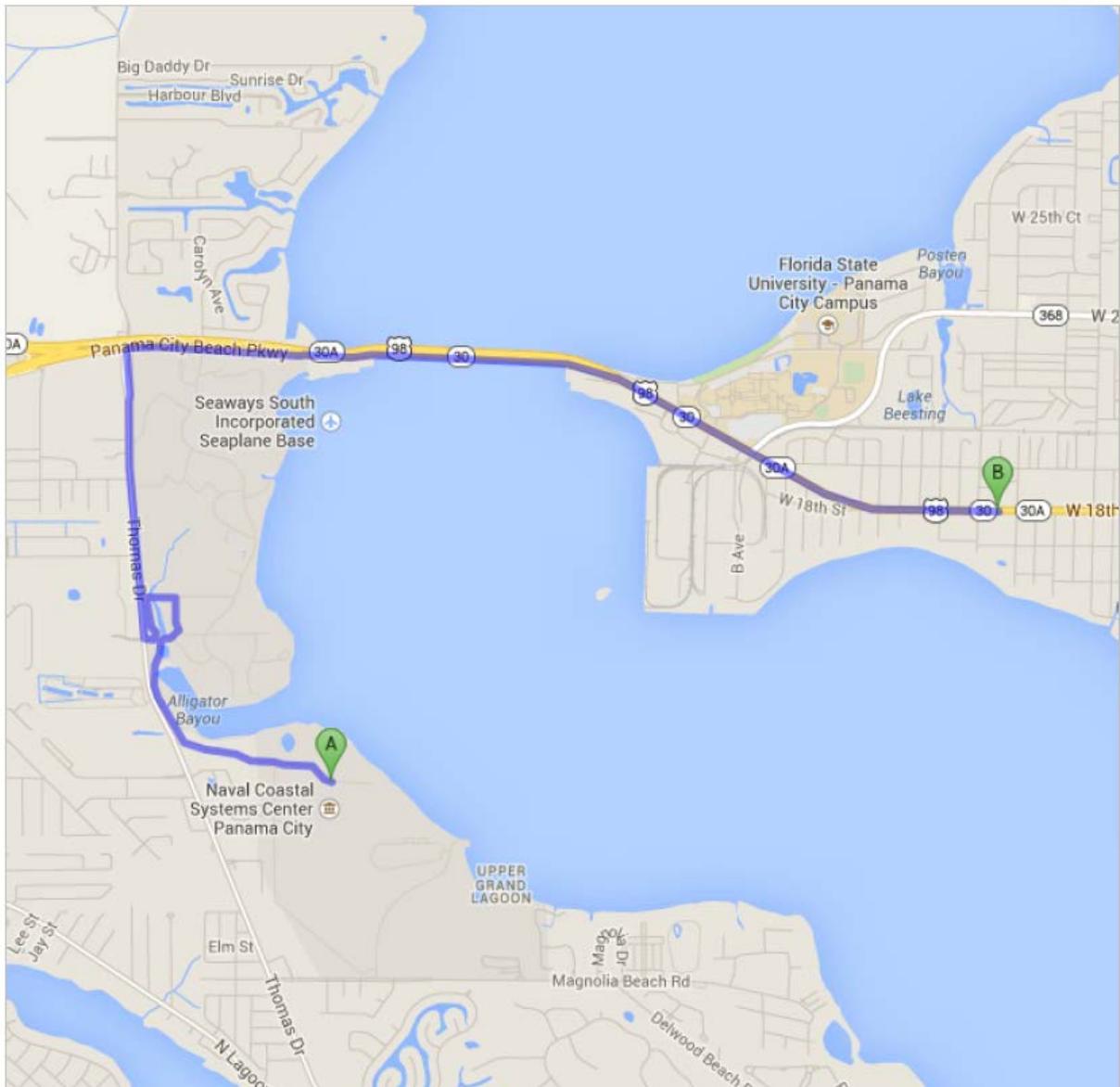
The alternate source of medical assistance is Seawind Medical Clinic. Directions to this hospital are:

1. Take the 1st right onto Thomas Dr
2. Turn right across bridge.
3. Take the ramp onto FL-30 E/US-98 E. Destination will be on the right

Seawind Medical Clinic

4121 W. Highway 98 Panama City, FL

**FIGURE 2-2
SEAWIND CLINIC MAP**



2.7 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Tetra Tech personnel will be working in close proximity to each other at NSA Panama City and other work sites associated with the installation of residential wells. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency.

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

- Initiate the evacuation via hand signals, voice commands, or line of site communication
- Report to the designated refuge point where the FOL will account for all personnel
- Once non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the FOL (FOL will serve as the Incident Coordinator) pertinent incident details.

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

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

2.8 PPE AND EMERGENCY EQUIPMENT

The following emergency equipment will be provided for the field team:

- First Aid Kit meeting OSHA/ANSI standards
- Fire Extinguisher
- Eye wash units (or bottles of disposable eyewash solution)

The first aid kit will be supplied with equipment to protect against bloodborne pathogens will also be available on site. Personnel identified within the field crew with bloodborne pathogen and first-aid training will be the only personnel permitted to offer first-aid assistance.

2.9 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT

During any evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of field workers. Decontamination will be postponed if the incident warrants

immediate evacuation. However, it is unlikely that an evacuation would occur which would require workers to evacuate the site without first performing the necessary decontamination procedures.

Tetra Tech personnel will perform rescue operations from emergency situations and may provide initial medical support for injury/illnesses requiring only "Basic First-Aid" level support, and only within the limits of training obtained by field personnel. At least one person will be certified in First-Aid. Basic First-Aid is considered treatment that can be rendered by a trained first aid provider at the injury location and not requiring follow-up treatment or examination by a physician (for example; minor cuts, bruises, stings, scrapes, and burns). Not included as Basic First-Aid are second or third degree burns, cuts, lacerations requiring stitches or butterfly bandaging, heat exhaustion, severe poisonous plant or insect bite reactions. Personnel providing medical assistance are required to be trained in First-Aid and in the requirements of OSHA's Bloodborne Pathogen Standard. Medical attention above First-Aid level support will require assistance from the designated emergency response agencies.

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 "Injury/Illness Procedure" (Attachment I) must be followed. 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 on site. 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 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 I. TOTAL is an intuitive system that will guide you through the necessary steps to report an incident within 24 hours of its occurrence.

TOTAL is maintained on the Tetra Tech Intranet website at <https://my.tetratech.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 Virtual Private Network (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

This section provides information pertaining to NSA Panama City and the site that is to be investigated. This information will be revised if additional information becomes available or if additional sites are going to be investigated.

3.1 SITE HISTORY

The NSA Panama City facility is located on the western shore of St. Andrew Bay in Panama City Beach, Bay County, Florida. The facility is bounded by US Highway 98 to the north, St. Andrew Bay to the east, State Road 292B (Magnolia Beach Road) to the south, and State Road 292 (Thomas Drive) to the west.

NSA Panama City had its origin in the mine countermeasures research conducted during World War II at the U.S. Naval Mine Warfare Test Station, Solomons, Maryland. In 1945, equipment, facilities, and personnel were transferred from Solomons to Panama City, Florida, to occupy a 373-acre tract along St. Andrew Bay. This same tract was used as a Naval Section Base in 1942, the U.S. Naval Amphibious Training Base in 1944, and was inactivated in June 1945. It was established as the U.S. Navy Mine Countermeasures Station July 20, 1945.

From July 1945 to January 1992 NSA Panama City has undergone multiple name changes. In January 1992, the facility was re-designated the Coastal Systems Station, Dahlgren Division, Naval Surface Warfare Center, reporting to the Naval Sea Systems Command. On October 1 2003, Coastal Systems Station was reorganized as a part of the alignment under Commander, Navy Installations. During this reorganization, the base was renamed NSA Panama City, reporting to the Commander, Navy Region Southeast. The research and development mission workforce was renamed the Naval Surface Warfare Center, Panama City Division. The primary mission and work areas of the base have remained unchanged.

NSA Panama City totals 657 acres and houses 221 buildings. The unique conditions in the Gulf of Mexico, coupled with mission synergy, make NSA Panama City an ideal location for fleet training and littoral warfare missions. NSA Panama City employs approximately 3,000 civilian and military personnel. Throughout its existence, NSA Panama City and its tenants have continued to evolve to meet the demanding requirements of the U.S. Navy - to defend today and to plan for tomorrow in response to national needs.

4.0 SCOPE OF WORK

This section of the HASP addresses proposed site activities to be conducted while performing a basewide well inventory. The specific tasks anticipated to be involved with this effort include the following:

- Mobilization/demobilization
- Monitoring well ground truthing activities and water level measurements:
 - Use of a Magellan Global Positioning System (Mobile Mapper CE with Fast Survey Software)
 - Schonstedt metal detector to assist in locating the monitoring wells.
 - Confirmation of the monitoring well presence and location and determination of the monitoring well the condition. Information to be included during the inspection of the monitoring well condition may include (as necessary):
 - o presence of well cap and lock (or access limiting devices),
 - o condition of lock
 - o condition of well riser, surface pad, bollard posts of protective devices and access availability.
 - Depth sounding and water level measurement
 - A photograph will be taken at each location to document the aforementioned items.

No other activities are anticipated to be necessary. If it becomes apparent that additional or modified tasks must be performed beyond those listed above, the work is not to proceed until the FOL or SSO notifies the Project Manager and the HSM, so that any appropriate modifications to this HASP can first be developed and communicated to the intended task participants.

5.0 GENERAL SAFE WORK PRACTICES

The purpose of this section is to provide general safe work practices based on the anticipated hazards and appropriate hazard prevention/hazard control measures that are to be observed for each planned task or operation. These topics have been summarized for each planned task through the use of task-specific Activity Hazard Analysis (AHAs), which are to be reviewed in the field by the SSO with the task participants prior to initiating any task. See Attachment III.

5.1 GENERAL SITE SAFE WORK PRACTICES

In addition to the task-specific work practices and restrictions identified in the AHAs attached to this HASP, 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.
- 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 or hand wipes will be used, followed by actual hands-washing as soon as practicable upon exiting the site.
- 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 all 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.

6.0 HAZARD ASSESSMENT AND CONTROLS

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

6.1 CHEMICAL HAZARDS

Past investigations have revealed low levels of volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), and metals.

- Metals
- VOCs
- SVOCs

Table 6-1 shows the primary COCs with a comparison to current occupational exposure limits (OELs).

**TABLE 6-1
COMPARISON OF COCs
CONCENTRATIONS WITH CURRENT
OCCUPATIONAL EXPOSURE LIMITS**

Contaminant of Concern	Highest Concentration Previously Detected	Worst Case Scenario Concentration Possible	Current OEL
Benzene	18 ug/l	1.25 ppm	OSHA: 0.5 ppm TWA ₈
1,1-DCE	62 ug/l	16.69 ppm	OSHA: 1 ppm TWA ₈

Table Notes:

TWA₈: Average air concentration over an 8-hour work period that is not to be exceeded

6.1.1 VOCs

VOC's refer to organic chemical compounds which have significant vapor pressures and which can affect the environment and human health. VOCs are numerous, varied, and ubiquitous. Although VOCs include both man-made and naturally occurring chemical compounds, it is the anthropogenic VOCs that are regulated, especially for indoors where concentrations can be highest. VOCs are typically not acutely toxic but have chronic effects. Because the concentrations are usually low and the symptoms slow to develop, analysis of VOCs and their effects is a demanding area.

Health effects include: Eye, nose, and throat irritation; headaches, loss of coordination, nausea; damage to liver, kidney, and central nervous system. Some organics can cause cancer in animals; some are suspected or known to cause cancer in humans. Key signs or symptoms associated with exposure to VOCs include conjunctival irritation, nose and throat discomfort, headache, allergic skin reaction, dyspnea, declines in serum cholinesterase levels, nausea, emesis, epistaxis, fatigue, dizziness.

The ability of organic chemicals to cause health effects varies greatly from those that are highly toxic, to those with no known health effect. As with other pollutants, the extent and nature of the health effect will depend on many factors including level of exposure and length of time exposed. Eye and respiratory tract irritation, headaches, dizziness, visual disorders, and memory impairment are among the immediate symptoms that some people have experienced soon after exposure to some organics. At present, not much is known about what health effects occur from the levels of organics usually found in homes. Many organic compounds are known to cause cancer in animals; some are suspected of causing, or are known to cause, cancer in humans.

6.1.2 SVOCs

A semi-volatile organic compound is a water or soil contaminant such as diesel and motor oils, herbicides, pesticides, and combustion residues. A semi volatile organic compound is an organic compound which has a boiling point higher than water and which may vaporize when exposed to temperatures above room temperature. Semi volatile organic compounds include phenols and polynuclear aromatic hydrocarbons (PAH). SVOCs include a variety of chemicals, which may have short and long term adverse health effects. The health effects can vary greatly from those that are highly toxic, to those which at present, have no known health effects. Many are suspected to be cancer causing in humans and some are known to be carcinogenic in animals and humans e.g. benzo (a) pyrene. Other SVOCs have also been shown to be reproductive toxicants based on animal studies e.g. phthalates and have been linked to asthma, allergies, and other bronchial irritations. Organ system toxicity (non-reproductive), cancer, birth or developmental effects, brain and nervous system, Reproduction and fertility, Immune system (including sensitization and allergies). The three primary routes of exposure for humans are:

- Ingestion (swallowing),
- Respiration (lungs), and
- Dermal absorption (through the skin).

The suspected health effects cover a broad range including, but not limited to, sensory irritation symptoms, allergies and asthma, neurological and liver toxicity, and cancer. SVOC's volatilize slowly at standard temperature (20 degrees C and 1 atm pressure).

6.1.3 Metals

The physical effects of poisoning from the heavy metals tend to be a very slow process and occur over a long period of continued exposure to the source of the toxic metal. The physical symptoms which are typically induced by the presence of toxic metals in the body tend to be very vague and can include symptoms such as persistent fatigue, the appearance of splitting and blinding headaches, the presence of an upset stomach, disorders such as colic and even anemia in some cases. The central nervous system is the main part of the human body likely to be affected by the presence of toxic metals. Symptoms of a disrupted central nervous system include the appearance of muscular tremors, the development of spells of dizziness, the presence of insomnia, the poor concentration abilities in the person and a sudden lack of muscular coordination in the body.

6.1.4 Ingestion and Skin Contact

Potential exposure concerns to the COCs may also occur through ingesting or coming into direct skin contact with contaminated soils and then ingestion through hand to mouth or glove to mouth contact. The likelihood of worker exposure concerns through these two routes are also considered very 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 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 surgeon's-style gloves whenever handling potentially-contaminated media, including soils, hand tools, and sample containers.

6.1.5 Inhalation

Given the minimal intrusive nature of the work to be performed, inhalation of airborne dusts is not anticipated during these activities.

6.2 PHYSICAL HAZARDS

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

- Slip, trips, and falls
- Strain/muscle pulls from heavy lifting and bending

- Cuts/lacerations
- Heat Stress
- Vehicular traffic
- Natural hazards (snakes, ticks, poisonous plants, etc.)
- Inclement weather

These hazards are discussed further below, and are presented relative to each task in the task-specific AHAs.

6.2.1 Slips, Trips, and Falls

During various site activities there is a potential for slip, trip, and fall hazards associated with wet, steep, or unstable work surfaces. To minimize hazards of this nature, personnel required to work in and along areas prone to these types of hazards will be required to exercise caution, and use appropriate precautions (restrict access, guardrails, life lines and/or safety harnesses) and other means suitable for the task at hand. Site activities will be performed using the buddy system. See Section 4.1 of the HSGM for additional safe work practices to control hazards of this nature.

6.2.2 Cuts/Lacerations

The potential for cuts/lacerations may occur when clearing vegetation to gain well access. Protective measures include:

- Cut away from yourself and not towards others.
- Use only sharp cutting implements with secured handles.
- Do not place items to be cut on your knee or in your other hand.
- Where possible, wear a cut resistant glove at least on your non-knife hand.
- Carry all glassware in hard sided containers to minimize breakage and lacerations in the event of a fall.

Additional protective measures are specified in Section 4.13 of the HSGM.

6.2.3 Heat/Cold Stress

It is always necessary for the field team to be aware of the signs and symptoms and the measures appropriate to prevent heat/cold stress. Because of the geographical location of the planned work, the seasonal weather conditions, and the physical exertion that can be anticipated with some of the planned tasks, it is necessary for the field team to be aware of the signs and symptoms and the measures

appropriate to prevent heat stress. If such conditions are encountered use the following information on heat stress recognition, prevention and control.

Ambient temperature extremes during this task will (hot working environments) may occur during performance of hazardous waste work depending on the project schedule. Work performed when ambient temperatures exceed 70°F may result in varying levels of heat stress such as heat rash, heat cramps, heat exhaustion, and/or heat stroke.

In either case, these conditions can be debilitating and, when extreme, they can be fatal. An understanding of the importance in preventing heat/cold stress, coupled with the worker's awareness of the signs and symptoms of overexposure, can significantly reduce the potential for adverse health effects. If this hazard is present during site operations, each worker will be provided with information necessary to protect them, and site management will be instructed to permit frequent breaks in mild temperature rest areas having hot/cold fluids available for consumption. In extreme cases, biological monitoring may be performed and data compared to the most recent recommendations of the American Conference of Governmental Industrial Hygienists (ACGIH).

6.2.3.1 Heat Related Disorders

There are four heat related disorders to monitor while performing work on site.

6.2.3.1.1 Heat Rash

Also known as prickly heat, this condition affects the skin. It occurs in situations where the skin remains wet most of the time. The sweat ducts become plugged and a skin rash soon appears.

Signs and Symptoms

- Skin rash will appear on affected areas of the body.
- Tingling or prickling sensation will be felt on the affected areas.

6.2.3.1.2 Heat Cramps

Heat cramps are muscle pains, usually in the lower extremities, the abdomen, or both, that occur after profuse sweating with accompanying salt depletion. Heat cramps most often afflict people in good physical condition, who overwork in conditions of high temperature and humidity. Untreated, heat cramps may progress to heat exhaustion.

Signs and Symptoms

- Cramps in the extremities and abdomen that begin suddenly during vigorous activity.
- Heat cramps can be mild with only slight abdominal cramping and tingling in the extremities, but more commonly present intense and incapacitating pain in the abdomen and extremities.
- Respiration rate will increase, decreasing after the pain subsides.
- Pulse rate will increase
- Skin will be pale and moist.
- Body temperature will be normal
- Generalized weakness will be noted as the pain subsides.
- Loss of consciousness and airway maintenance are seldom problems with this condition.

Treatment for heat cramps is aimed at eliminating the exposure and restoring the loss of salt and water.

6.2.3.1.3 Heat Exhaustion

Heat exhaustion is a more severe response to salt and water loss, as well as an initial disturbance in the body's heat-regulations system. Like heat cramps, heat exhaustion tends to occur in people working in hot environments. Heat exhaustion may progress to heat stroke. Treatment for heat exhaustion is similar in principle to that for heat cramps.

Signs and Symptoms

- Heat exhaustion may be accompanied present by a headache, fatigue, dizziness, or nausea with occasional abdominal cramping.
- More severe cases of heat exhaustion may result in partial or complete temporary loss of respiration and circulation due to cerebral ischemia.
- Sweating will be profuse.
- Pulse rate will be rapid and weak.
- Respiration rate will be rapid and shallow.
- The skin will be pale and clammy
- The body temperature will be normal or decreased.
- The person could be irritable and restless.

6.2.3.1.4 Heat Stroke

Heat stroke is caused by a severe disturbance in the body's heat-regulating system and is a profound emergency: The mortality rate ranges from 25% to 50%. It can also occur from having too much exposure to the sun or prolonged confinement in a hot atmosphere. Heat stroke comes on suddenly. As the sweating mechanism fails, the body temperature begins to rise precipitously, reaching 106°F (41°C) or

higher within 10 to 15 minutes. If the situation is not corrected rapidly, the body cells -- especially have very vulnerable cells to the brain--are literally cooked, and the central nervous system is irreversibly damaged. The treatment for heat stroke is aimed at maintaining vital functions and causing as rapid a decrease of body temperature as possible.

Signs and Symptoms

- The person's pulse will be strong and bounding.
- The skin will be hot, dry, and flushed.
- The worker may experience headache, dizziness, and dryness of mouth
- Seizures and coma can occur.
- Loss of consciousness and airway maintenance problems can occur.

6.2.3.1.5 Controlling Heat Stress

The following control measures are only guidelines for heat related emergencies. Actual training in emergency medical care or basic first aid is recommended. Employees will monitor one another for signs of heat stress. If indications of heat stress occur, the following corrective measures will be performed:

- Inform affected workers of the signs and symptoms of heat stress and encourage co-worker observations.
- Schedule tasks that are physically-demanding in early morning and late afternoon timeframes when heavy loads would be less of an issue.
- Notify the SSO who may perform biological monitoring to determine the extent of the heat related condition.
- The SSO may alter the work regime that will provide adequate rest periods for cooling down. This may require additional shifts of workers.
- The SSO may also recommend cooling devices such as vortex tubes or cooling vests can be worn beneath protective garments.
- When conditions of heat related disorders may be experienced the SSO through site-specific training and safety briefing informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.
- Provide adequate liquids to replace lost body fluids.
- Personnel must replace water and salt lost from sweating.
- Personnel must be encouraged to drink more than the amount required to satisfy thirst.
- Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.
- Approximately 1 cup of cool water every 20 minutes is recommended.
- Replacement fluids can be commercial mixes such as Gatorade®.

- Move affected persons into a shaded cool rest area (below 77°F is best).
- Personnel shall remove impermeable protective garments during rest periods.
- Personnel shall not be assigned other tasks during rest periods.

One of the following biological monitoring procedures may be utilized by the SSO to monitor heat stress concerns.

- Heart rate (HR) shall be measured by the pulse for 30 seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats/minute.
- If the HR is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of rest period stays the same.
- If the pulse rate is 100 beats/minute at the beginning of the next rest period, the following work cycle should be shortened by 33%.
- The length of the initial work period will be determined by using the table below.

TABLE 6-2
PERMISSIBLE HEAT EXPOSURE THRESHOLD LIMIT VALUES

Work-Rest Regimen	Work Load		
	Light	Moderate	Heavy
Continuous	80.0 F	80.0 F	77.0 F
75% Work - 25% Rest, Each Hour	87.0 F	82.4 F	78.6 F
50% Work - 50% Rest, Each Hour	88.5 F	85.0 F	82.2 F
25% Work - 75% Rest, Each Hour	90.0 F	88.0 F	86.0 F

Body temperature shall be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99°F. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period stays the same. However, if the oral temperature exceeds 99.7°F at the beginning of the next rest period, the following work cycle shall be further shortened by 33%. OT should be measured at the end of the rest period to make sure that it has dropped below 99°F. At no time shall work begin with the oral temperature above 99°F.

NOTE: External temperatures in excess of those stated above shall be regarded as inclement weather.

6.2.3.1.6 Temperature Extremes – Heat Stress Indication

Temperature extremes are considered inclement weather. Steps should be taken to the extent possible protect site personnel from the effects of heat stress and the sun. Control measures include:

- Watch for signs of heat stress/exhaustion
- Provide fluid replacement
- Provide adequate number of breaks within a cooler environment.

Care should be exercised when working outdoors due to harmful effects of the sun. To reduce the potential for sunburn and melanoma use the following measures:

- Wear a hat that shades the face, neck, and ears.
- Apply sunscreen with a SPF of 15 or higher liberally on any exposed skin at least 15 minutes before going outside, then at least every two hours, more if you are sweating a lot.
- Plan/provide suitable equipment to offer shade to avoid the midday sun since the sun's ultraviolet rays are most intense between 10 A.M. and 4 P.M. and can damage your skin even on hazy days. Portable canopies over the sample station are an example of this.
- Wear wrap-around sunglasses to protect the eyes and delicate skin around them.

**TABLE 6-3
 HEAT STRAIN SYMPTOMS**

Stop Work If Any Worker Demonstrates Any Of The Following

Heart Rate	Sustained (several minutes) heart rate minus worker's age > than 180 beats per minute (bpm) measured at any time.
Body Core Temperature	> 101.3°F (38.5° C)
Recovery Heart Rate	> 110 bpm (Measured 1 minute after peak work effort)
Other symptoms	Sudden and sever fatigue, nausea, dizziness, or headache

Individuals May Be at Greater Risk of Heat Stress If:

Profuse sweating is sustained over hours
Weight loss over a shift is > 1.5% of beginning body weight
24-hour urinary sodium excretion is less than 50 nmoles

6.2.4 Vehicular and Equipment Traffic

Hazards associated with vehicular and equipment traffic are unlikely to exist during site activities. To minimize the potential for injuries associated with potential vehicular hazards, site personnel will be instructed to maintain awareness of traffic and moving equipment when performing site activities. When working near roadways, site personnel will wear high visibility vests.

6.2.5 Natural Hazards

Natural hazards such as poisonous plants, bites from poisonous or disease carrying animals or insects (e.g., snakes, ticks, mosquitoes) are often prevalent at sites that are being investigated such as this site.

To minimize the potential for site personnel to encounter these hazards, nesting areas in and about work areas will be avoided to the greatest extent possible. Work areas will be inspected to look for any evidence that dangerous animals may be present. For snakes, the use of ankle chaps is highly recommended to minimize potential exposure to possible poisonous snakes.

During warm months (spring through early fall), tick-borne Lyme Disease may pose a potential health hazard. The longer a disease carrying tick remains attached to the body, the greater the potential for contracting the disease. Wearing long sleeved shirts and long pants (tucked into boots and taped) will prevent initial tick attachment, while performing frequent body checks will help prevent long term attachment. Site first aid kits should be equipped with medical forceps and rubbing alcohol to assist in tick removal. For information regarding tick removal procedures and symptoms of exposure, consult Section 4.0 of the Health and Safety Guidance Manual.

West Nile Virus (WNV) and other mosquito-borne diseases may occur when an infected mosquito sucks blood from a person. About one in 150 people infected with WNV will develop severe illness. Severe symptoms can include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. These symptoms may last several weeks, and neurological effects may be permanent. Up to 20 percent of the people who become infected have symptoms such as fever, headache, and body aches, nausea, vomiting, and sometimes swollen lymph glands or a skin rash on the chest, stomach and back. Symptoms can last for as short as a few days, though even healthy people have become sick for several weeks. Approximately 80 percent of people (about 4 out of 5) who are infected with WNV will not show any symptoms at all.

Although no longer common in the United States, malaria may occur when a mosquito or other infected insect sucks blood from an infected person, and the insect becomes the carrier to infect other hosts. The parasite reproduces within the mosquito, and is then passed on to another person through the biting action. Acute symptoms include chills accompanied by fever and general flu-like symptoms. This generally terminates in a sweating stage. These symptoms may recur every 48 to 72 hours.

Contact with poisonous plants and bites or stings from poisonous insects are other potential natural hazards. Long sleeved shirts and long pants (tucked into boots), and avoiding potential nesting areas, will minimize the potential for exposure. Additionally, insect repellents may be used by site personnel. Personnel who are allergic to stinging insects (such as bees, wasps and hornets) must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be listed on the Medical Data Sheet (Attachment II), and the FOL notified.

6.2.5.1 Fire Ants

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

Also, areas to be investigated could be prime nesting and/or hiding locations for snakes and other insects. Personnel should avoid reaching into areas that are not visibly clear of snakes or insects. Snake chaps will be worn in areas of known or anticipated snake infestation. Site personnel who are allergic to stinging insects such as bees, wasps, and hornets must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be listed on the Medical Data Sheet and the FOL and SSO notified.

6.2.5.2 Alligators

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

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

- Most human attacks associated with alligators occur when they have been fed by humans or when defending their nests.
- Under no circumstances should you approach an alligator closely. They are quite agile, even on land. As with any wild animal, alligators merit a measure of respect.

- Alligators are classified as a threatened species and thus enjoy the protection of state and federal law. Only representatives of the Florida Game and Fresh Water Fish Commission are empowered to handle nuisance alligators.
- It is illegal to feed, tease, harass, molest, capture or kill alligators.
- If a serious problem does exist, contact the Florida Carolina Game and Fresh Water Fish Commission.

6.2.5.3 Snakes

There are both non-venomous and venomous snakes living in Florida. Some key physical differences between these two groups of snakes facilitate their identification. These characteristics do not necessarily apply to the differentiation of species not native to the area.

The native venomous snakes possess:

- Indentation or pit on each side of the head between the eye and nostril,
- Vertically elliptical eye pupil resembling that of a cat, and
- Single row of scales on the underside of the tail.

Of course, rattlesnakes usually display one or more rattles. However, these can be missing because of natural causes.

Non-venomous native snakes do not possess facial pits, their eye pupils are round like a human's, and there is a double row of scales on the underside of the tail.

Head shape often presents problems in identification. Rattlesnakes and copperheads have obviously flattened, triangular-shaped heads. However, some nonvenomous species can also at times display a flattened head. The average person often misinterprets head shape in snakes that one has seen. Therefore, it is wise to focus on the other characteristics when identifying snakes.

Venomous snakes

Venomous snake bites usually occur while a person is trying to catch or carelessly handle one of these snakes. All of these species are usually non-aggressive and prefer to avoid confrontation. Thus, they

often quietly move away from an approaching human or remain completely still and allow what they perceive as a threat to pass by.

Contrary to popular belief, rattlesnakes do not always rattle when a person or animal is near. When traveling through areas thought to contain venomous snakes, people can minimize the possibilities of an unintended encounter by using some common sense. In the vast majority of encounters with snakes, people have more than ample opportunity to stop, back up or otherwise avoid the snake.

Snakes tend to be found near cover such as fallen logs, brush piles, rock walls, abandoned house foundations or rock ledges. They may be resting or lying in wait for prey. Encounters can be reduced by watching where you place your hands and feet. One should try to walk around, rather than step over, fallen logs.

Sometimes a person's curiosity or fear can lead to poor judgment and possibly result in a snakebite. There are several signs and symptoms of venom entering the body. They include fang marks, pain and possibly a metallic or rubbery taste in the mouth several minutes after a bite, with a tingling or numbness of the tongue. Other signs include significant swelling within 10 minutes of a bite. Nausea, weakness and temperature change may occur. Black and blue discoloration may appear within three to six hours.

If a person is bitten by a venomous snake, there are several steps that should be taken. The following are important do's and don'ts in the event of a snakebite.

Do's

- Calm and reassure the victim, and keep the victim immobile.
- Call the Poison Control Center at (800) 222-1222.
- You may apply a light constricting band above the bite area (be able to insert a finger under the band). Do not release the band unless it becomes too tight from swelling.
- Move the victim to a medical facility without delay.
- A tetanus shot may also be required.

Don'ts

- Don't use ice, cold packs or sprays.
- Don't incise and suction unless directed by a physician.
- Don't use a tourniquet.
- Don't give alcohol or any drugs.
- Don't wait to see if symptoms develop. Immediately transport the victim to a medical facility.

6.2.5.4 Other Wild Animals

Wild animals with their young, domestic animals, and bee and wasps nests in the ground are also hazards. They include:

- Coyote
- Fox
- Opossum
- Raccoon
- Striped Skunk
- Armadillos
- Ground Squirrels
- Rats
- Badger
- Beaver
- Porcupine
- Squirrels
- Bats
- Flying Squirrels
- Moles
- Raccoons
- Skunks
- Voles
- Woodchuck

Treat all wildlife as though it is infected. Never touch or approach wildlife. Do not touch nests, dens or feces. Keep your distance. Treat all snakes as if they are venomous. If you are bitten or scratched by wildlife, keep the animal if you can. Do not injure the head and contact your local health department immediately. The animal in question must be checked for diseases.

6.2.5.5 Poisonous Plants

Various plants which can cause allergic reactions may be encountered during field work. These include poison ivy, poison oak, and poison sumac. Contact with these plants may occur when clearing vegetation for access to work areas, or as a result of movement through these plants. 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 piece of equipment. The degree of the irritating, allergic reaction can vary significantly from one person to the next.

Protective measures to control and minimize the effects of this hazard may include, but not be limited to, the following:

- Identify plants for field personnel.
 - Poison Ivy - Characterized by climbing vines, three leaf configuration ovate to elliptical in shape, deep green leaves with a reddish tint, greenish flowers, and white berries.
 - Poison Sumac - Characterized as a tall bush of the sumac family bearing compound leaves (7-13 entire leaflets), branched from a central axis, drooping, with auxiliary clusters of white fruit: However, these white fruits and berries may exist only during pubescent stages.
 - Poison oak - Characterized as similar to poison ivy consisting of a shrub, stems erect, 0.3 to 2.0 meters tall, leaflets consist of broad thick lobes coarsely serrated configuration, denser at the base, less so than the top.

- Protective measures may include wearing disposable garments such as Tyvek when clearing brush. These may be carefully removed and disposed of along with any oils accumulated from the plants.

- Personal Hygiene - The oils obtained from the plants will only elicit an allergic response when the person's bare skin layer is contacted. This can be aggravated when skin pores are open (perspiring), or through breaks in the skin such as cuts, nicks, scratches, etc. This can also be accomplished when using excessively hot water for cleaning the skin, which also causes pores to open. Prior to break time, lunchtime, etc. personnel should wash with cool water and soap to remove as much of the oils as possible. In heavily vegetated areas of these plants, additional measures including barrier creams and blocks may be used to prevent the oils from accessing and penetrating the skin.

These plants present an airborne sensitization hazard when burned.

6.2.6 Inclement Weather

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

7.0 AIR MONITORING

The primary COCs (benzene and 1,1-DCE) has potential to be present in concentrations that could present an inhalation hazard during planned site activities. To assure that such exposures are avoided and non-exposure is documented, a direct reading instrument photoionization detector (PID) or a flame ionization detector (FID) will be used to monitor potential airborne concentrations during only intrusive activities (opening monitoring wells and taking water level measurements).

Persons using this instrument should be aware of the limitations of this instrument including it will not identify the compounds in question. However, the PID/FID will provide a response to substances whose ionization potential are within the working range of the lamp strength similar to those contaminants in question.

In addition, it is not currently planned to collect air samples analysis, given the low probability that any measurable VOC or Benzene concentrations will be detected in an outdoor environment. Should the real time monitoring indicate excursions near or above the action level, air sampling may be conducted based on an evaluation of real time monitoring data by the PM, PHSO and HSM.

7.1 INSTRUMENTS AND USE

A Photoionization Detector (PID) using a lamp energy of 10.6 eV or a Flame Ionization Detector (FID) will be used to monitor the air when drilling temporary wells, and during groundwater sampling.

The PID/FID will be used primarily to monitor source points and worker breathing zone areas, while observing instrument action levels. The SSO shall obtain and document the daily background (BG) reading at an upwind, unaffected area and observe for readings above that BG level. The SSO shall monitor groundwater sample levels for the presence of any reading above the daily-established BG level. If elevated readings are observed, the SSO shall monitor the workers breathing zone (BZ) areas with the PID/FID. If the appropriate instrument Action Level is exceeded (see below), the following process will be followed:

- The SSO shall stop work and move site personnel upwind to a safe, unaffected area, where they will remain until further directed by the SSO.
- The SSO shall allow at least 5 minutes to pass so that the work area can ventilate, and will then re-approach the work area while continuously monitoring the BZ areas.
- Only when BG levels are regained in BZ areas will work be permitted to resume.
- If BG levels are not regained, the SSO will contact the PHSO for additional direction.

Instrument Action Levels: The use of a PID/FID will be acceptable, provided that the following action level is observed.

- PID Action Level: 1 ppm above BG in BZ areas for no more than four exposures extending greater than 5 minutes per occurrence in one work day.
- FID Action Level: 2.75 ppm above BG in BZ areas for no more than four exposures extending greater than 5 minutes per occurrence in one work day.

7.2 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the rental service employed. Operational checks and field calibration will be performed on the instruments each day prior to their use. Field calibration will be performed on instruments according to manufacturer's recommendations (for example, the PID/FID must be field calibrated daily and an additional field calibration must be performed at the end of each day to determine any significant instrument drift). These operational checks and calibration efforts will be performed in a manner that complies with the employee's health and safety training, the manufacturer's recommendations, and with the applicable manufacturer standard operating procedure. The calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration activities. This information may instead be recorded in a field operations logbook, provided that the information specified in Figure 7-1 is recorded. This required information includes the following:

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

7.3 DOCUMENTING INSTRUMENT READINGS

The SSO is responsible for ensuring that the PID/FID is used in accordance with the manufacturer's specifications/recommendations. In addition, the SSO is also responsible for ensuring that the instrument use is documented. This requirement will be satisfied by recording instrument readings 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 the PID/FID:

- Date, time, and duration of the reading

- Site location where the reading was obtained
- 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.)

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

This section is included to specify health and safety training and medical surveillance requirements for Tetra Tech and subcontractor personnel participating in on site activities. Given the nature of the work all personnel participating in intrusive field activities must:

- Complete 40 hours of introductory hazardous waste site training prior to performing work at the NSA Panama City facility. These 40-Hours must also have been coupled with at least 3 days of on the job training.
- Personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training within the past 12 months before being cleared for site work.
- In addition, 8-hour supervisory training in accordance with 29 CFR 1910.120(e)(4) will be required for site supervisory personnel.

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

8.2 SITE-SPECIFIC TRAINING

Tetra Tech SSO will provide site-specific training to Tetra Tech and subcontractor employees who will perform work on this project. Figure 8-1 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities. This training documentation will be employed to identify personnel who through record review and attendance of the site-specific training are cleared for participation in site activities. This document shall be maintained at the site to identify and maintain an active list of trained and cleared site personnel.

The Tetra Tech SSO will also conduct a pre-activities training session prior to initiating site work. This will consist of a brief meeting at the beginning of each day to discuss operations planned for that day, and a review of the appropriate AHAs with the planned task participants. A short meeting may also be held at the end of the day to discuss the operations completed and any problems encountered. Documentation of this training will be recorded in the Logbook.

8.3 MEDICAL SURVEILLANCE

Tetra Tech and subcontractor personnel participating in project field activities will have had a physical examination by a board certified occupational health physician which meet the requirements of the employer's medical surveillance program. Medical surveillance programs will meet the minimum requirements as specified in 29 CFR 1910.120(f). Documentation for medical clearances will be maintained onsite.

9.0 SITE CONTROL

This section outlines the means by which Tetra Tech will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is anticipated that a three-zone approach will be used during work at this site. This approach will be comprised of an exclusion zone, a contamination reduction zone, and a support zone. It is also anticipated that this approach will control access to site work areas, restricting access by the general public, minimizing the potential for the spread of contaminants, and protecting individuals who are not cleared to enter work areas.

9.1 EXCLUSION ZONE

The exclusion zone will be considered the areas of the site of known or suspected contamination during intrusive activities only. These areas will be marked and personnel will maintain safe distances. Once intrusive activities have been completed, the potential for exposure is again diminished and the area can then be reclassified as part of the contamination reduction zone. Therefore, the exclusion zones for this project will be limited to those areas of the site where opening monitoring wells and taking water level measurements is occurring. Exclusion zones will be delineated as deemed appropriate by the FOL, through means such as erecting visibility fencing, barrier tape, cones, and/or postings to inform and direct personnel.

9.2 CONTAMINATION REDUCTION ZONE

The contamination reduction zone (CRZ) will be a buffer area between the exclusion zone and any area of the site where contamination is not suspected. This area will also serve as a focal point in supporting exclusion zone activities. This area will be delineated using barrier tape, cones, and postings to inform and direct facility personnel.

9.3 SUPPORT ZONE

The support zone for this project will include a staging area where site vehicles will be parked and where food and drink containers will be maintained. The support zones will be established at areas of the site where away from potential exposure to site contaminants during normal working conditions or foreseeable emergencies.

9.4 ACTIVITY HAZARD ANALYSIS

Exclusion Zone work conducted in support of this project will be performed using AHAs to guide and direct field crews on a task by task basis. The AHAs are located in Attachment III of this HASP. It is the SSO's responsibility to finalize the AHAs where necessary based on current, existing conditions the day the task is to be performed, and then review that completed document with the field crew before commencing that activity. This will ensure that site-specific considerations and changing conditions are appropriately incorporated into the AHA, provide the SSO with a structured format for conducting the tailgate sessions, as well will also give personnel an opportunity to ask questions and make suggestions. The AHAs will require the signature of the FOL or SSO as the issuing authorization. All personnel participating will also initial to indicate they have participated in the review of the AHA and are aware of the requirements stipulated in that document.

9.5 SITE VISITORS

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

- Personnel invited to observe or participate in operations by Tetra Tech
- Regulatory personnel (i.e., DOD, EPA, FDEP, OSHA)
- Property Owners
- Authorized Navy Personnel
- Other authorized visitors

Non-DOD personnel working on this project are required to gain initial access to the base by coordinating with the Tetra Tech FOL or designee and following established base access procedures.

Once access to the base is obtained, personnel who require site access into areas of ongoing operations will be required to obtain permission from the PM. Upon gaining access to the site, site visitors wishing to observe operations in progress will be escorted by a Tetra Tech representative and shall be required to meet the minimum requirements discussed below:

- Site visitors will be directed to the FOL/SSO, who will sign them into the field logbook.
 - 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 wishing to enter the exclusion zone will be required to produce the necessary information supporting clearance to the site.
 - This shall include information attesting to applicable training and medical surveillance as stipulated in Section 8.0 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 covering the topics stipulated in Section 8.2 of this HASP.

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. Visitors entering the exclusion zones during ongoing operations will be accompanied by a Tetra Tech representative. Visitors not meeting the requirements, as stipulated in this plan, for site clearance will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause the termination of on site activities until the unauthorized visitor is removed from the premises. Removal of unauthorized visitors will be accomplished with support from local law enforcement personnel.

9.6 SITE SECURITY

Site security will be accomplished using Tetra Tech field personnel. Tetra Tech will retain complete control over active operational areas. As this activity takes place at a Navy facility open to public access, the first line of security will take place using exclusive zone barriers, site work permits, and any existing barriers at the sites to restrict the general public. The second line of security will take place at the work site referring interested parties to the Base Contact. The Base Contact will serve as a focal point for base personnel, interested parties, and serve as the final line of security and the primary enforcement contact.

9.7 SITE MAP

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

9.8 BUDDY SYSTEM

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

9.9 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

Tetra Tech and subcontractor personnel will provide MSDSs for chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of the chemicals used on site will be developed, See Section 5.0 of the HSGM for direction in the implementation of the onsite program. The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request. It is recommended that additional copies be maintained with the materials or in the area of use.

9.10 COMMUNICATION

As personnel will be working in proximity to one another during field activities, a supported means of communication between field crew members will not be necessary.

External communication will be accomplished by using the telephones at predetermined and approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Personnel will enter emergency contact numbers into their cell phones as well as that of the FOL and the SSO. For each site at least two persons will have adequate signals in order to reach emergency services should it be required.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

No bulk hazardous materials (over 55-gallons) will be generated or handled at any given time as part of this scope of work.

11.0 CONFINED-SPACE ENTRY

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

A confined space is defined as a space that:

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

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

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

For further information on confined space definition of operation, consult the PHSO. If confined space operations are to be performed as part of the scope of work, detailed procedures and training requirements will have to be addressed and this document will have to be modified.

12.0 MATERIALS AND DOCUMENTATION

The Tetra Tech Field Operations Leader (FOL) shall ensure the following materials/documents are taken to the project site and used when required.

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- Material Safety Data Sheets for chemicals brought on site, including decontamination solutions, fuels, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (posted in the site trailer)
- Training/Medical Surveillance Documentation Form (Blank)
- First-Aid Supply Usage Form
- Emergency Reference Form (Section 2.0, extra copy for posting)
- Directions to the Hospital

12.1 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.
- **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.
- **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. See the HSGM Section 6.0.

- **Site Clearance (maintained)** - This list is found within the training section of the HASP (Figure 8-1). This list identifies the 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. See Table 2-1.
- **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. See Attachment II.
- **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 is to allow site personnel quick access. Variations concerning location and methods of presentation are acceptable providing the objective is accomplished.

13.0 ACRONYMS / ABBREVIATIONS

CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long-Term Environmental Action Navy
CSP	Certified Safety Professional
DRI	Direct Reading Instrument
FDEP	Florida Department of Environmental Protection
EOD	Explosive Ordnance Disposal
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
IDW	Investigation Derived Waste
NAS	Naval Air Station
N/A	Not Available
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PHSO	Project Health and Safety Officer
PM	Project Manager
PPE	Personal Protective Equipment
RPM	Remedial Project Manager
SSO	Site Safety Officer
TBD	To be determined
VOCs	Volatile Organic Compounds

ATTACHMENT I
TETRA TECH INCIDENT REPORTING FORMS



Report Date	Report Prepared By	Incident Report Number

INSTRUCTIONS:

All 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

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 No

Street Address	City, State, Zip Code and Country
Project Name	Client:
Tetra Tech 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:

Corrective action(s) still to be taken (by whom and when):

ROOT CAUSE ANALYSIS LEVEL REQUIRED

Root Cause Analysis Level Required: Level - 1 Level - 2 None

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:

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.

Form containing sections: Incident Report Number, EMPLOYEE INFORMATION, Safety equipment, and NOTIFICATIONS. Includes fields for company affiliation, full name, address, telephone numbers, occupation, and safety equipment provided.



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"

Three horizontal lines for text 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"

Four horizontal lines for text entry.

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".

Two horizontal lines for text entry.

MEDICAL CARE PROVIDED

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

One horizontal line for text entry.

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

Table with 2 columns: Name of physician or health care professional, Facility Name, Street Address, City State and Zip Code, Telephone Number, Type of Care? (Was individual treated in emergency room?, Was individual hospitalized overnight as an in-patient?, Did the individual die?, Will a worker's compensation claim be filed?)

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

Table with 4 columns: 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:

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 [] Equipment Damage [] Fire or Explosion [] Spill or Release []

INCIDENT DETAILS

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

Three horizontal lines for describing incident results.

Response Actions Taken:

Three horizontal lines for describing response actions.

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)

Table with 3 columns: Item, Extent of damage, Estimated repair cost. Includes three empty rows for data entry.

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

Table with 3 columns: Substance, Estimated quantity and duration, Specify Reportable Quantity (RQ). Includes a checkbox for 'Exceeded?'.

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

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

NOTIFICATIONS

Table with 4 columns: Required notifications, Name of person notified, By whom, Date / Time. Includes rows for Client, Agency, and Other notifications.

Who is responsible for reporting incident to outside agency(s)? Tetra Tech [] Client [] Other [] Name: _____

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



INSTRUCTIONS:

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.

Form with sections: Incident Report Number, INCIDENT DETAILS (Name of road, County, City, State, Police/Ambulance response), and VEHICLE INFORMATION (Vehicle 1 and 2 details, Insurance, Agent info).



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		



TETRA TECH, INC.

Safety Excellence

TETRA TECH, INC.
INCIDENT FORM IR-C

COMPLETE AND SUBMIT DIAGRAM DEPICTING WHAT HAPPENED

A large, empty rectangular area with a thin black border, intended for drawing a diagram depicting an incident. The area is currently blank.

ATTACHMENT II
MEDICAL DATA SHEET

MEDICAL DATA SHEET

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

Project _____

Name _____ Cell Phone _____

Address _____

Age: _____ Height: _____ Weight: _____

Person to notify in the event of an emergency:

Name: _____ Relationship: _____

Phone#: _____

Drug or other Allergies: _____

Particular Sensitivities/Pre-Existing Condition(s): _____

Do You Wear Contacts? _____

What medications are you presently using? _____

Name and Phone Number of your personal physician: _____

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

HIPAA took effect in 1996 and was amended on April 14, 2003. 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 it 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 it 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 III
ACTIVITY HAZARD ANALYSIS (AHA)



ACTIVITY HAZARD ANALYSIS (JHA)

Activity/Work Task: Mobilization/Demobilization	Overall Risk Assessment Code (RAC) (Use highest code)	L
Project Location: NSA Panama City	Risk Assessment Code (RAC) Matrix	
Contract Number: N62467-04-D-0055 CTO 0066	Severity	Probability
Site: Basewide		Frequent Likely Occasional Seldom Unlikely
Date Prepared: April 2014	Catastrophic	E E H H M
Prepared by: Jennifer Carothers, PhD	Critical	E H H M L
Reviewed by: Jim Laffey	Marginal	H M M L L
	Negligible	M L L L L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)	
	"Probability" is the likelihood to cause an incident, near miss, or accident and Identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.	RAC Chart
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible	E= Extremely High Risk
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.	H= High Risk
		M= Moderate Risk
		L = Low Risk

JOB STEPS	HAZARDS	CONTROLS	RAC
Mobilization / Demobilization <ul style="list-style-type: none"> • Assembling equipment and supplies • Performing initial/exit inspections of the intended work areas • Arranging for site access, notifying appropriate client 	<ol style="list-style-type: none"> 1. Minor cuts, abrasions or contusions 2. Heavy lifting (muscle strains and pulls) 3. Vehicular traffic 	<ol style="list-style-type: none"> 1. The use of knives when cutting has resulted in lacerations to workers' hands, legs, and fingers. <ul style="list-style-type: none"> • Wear cut-resistant gloves when handling items with sharp or rough edges. • Use manufacturer-approved cutting tools. • Never rest an object on your knee or other part of your body when cutting. • Keep cutting tools sharp. 2. 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 not back, obtain help when needed to lift large, bulky, or heavy items). 3. Designate/demarcate vehicle and equipment staging areas. Inform all site 	L

ACTIVITY HAZARD ANALYSIS
Site Mobilization/Demobilization
Page 2 of 3

JOB STEPS	HAZARDS	CONTROLS		RAC
<p>contacts</p> <ul style="list-style-type: none"> Collecting and confirming applicable worker training and medical compliance documentation 	<p>4. Slips, trips and falls</p> <p>5. Heat/Cold Stress</p> <p>6. Inclement weather</p>	<p>personnel of their responsibility to stay clear of moving vehicles. In high traffic areas, wear high-visibility vests.</p> <p>4. Conditions such as steep terrain and/or heavy vegetation may create an increased potential for slip, trip, and fall hazards.</p> <ul style="list-style-type: none"> The safest approach to sample points will be identified and cleared to permit field crew access to sample locations. Establish anchor points and rope handrails for traversing/ascending/descending angles and slopes greater than 45% grade. Footwear with an adequate traction. Prepare work areas by removing tripping hazards (ruts, roots, debris). <p>5. It is always necessary for the field team to be aware of the signs and symptoms and the measures appropriate to prevent cold stress. This is addressed in detail in Section 4.0 of the Tetra Tech HSGM, which the SSO is responsible for reviewing and implementing as appropriate for this project.</p> <p>6. In the event that adverse weather conditions arise (electrical storms, hurricanes, etc.), the FOL and/or the SSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.</p>		
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
Hand tools (dollies, hand carts, hand knives, etc.)		Visual inspection prior to use by user.	Review of AHA during pre-task tailgate safety briefing with all intended task participants.	
<p>Personal Protective Equipment: <u>Minimum</u>: Safety toe boots, safety glasses. <u>Optional items:</u> Hardhat, hearing protection. <u>Hazardous, Toxic, Radioactive Waste (HTRW)</u>: None anticipated for this task.</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 any onsite activities, and will be confirmed by visual observations of worker activities.	

ACTIVITY HAZARD ANALYSIS
G]h'AcV']nU]cb#8 Ya cV']nU]cb
Page 3 of '

I have read and understand this AHA:

Name (Printed)	Signature	Date



ACTIVITY HAZARD ANALYSIS (AHA)

Activity/Work Task: Basewide Well Inventory (Ground Truthing and Well Sounding) and Water Level Measurements		Overall Risk Assessment Code (RAC) (Use highest code)				L																																			
Project Location: NSA Panama City		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Severity</th> <th colspan="5" style="text-align: center;">Probability</th> </tr> <tr> <th style="text-align: center;">Frequent</th> <th style="text-align: center;">Likely</th> <th style="text-align: center;">Occasional</th> <th style="text-align: center;">Seldom</th> <th style="text-align: center;">Unlikely</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Catastrophic</td> <td style="text-align: center; background-color: red;">E</td> <td style="text-align: center; background-color: red;">E</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: yellow;">M</td> </tr> <tr> <td style="text-align: center;">Critical</td> <td style="text-align: center; background-color: red;">E</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: yellow;">M</td> <td style="text-align: center; background-color: lightgreen;">L</td> </tr> <tr> <td style="text-align: center;">Marginal</td> <td style="text-align: center; background-color: orange;">H</td> <td style="text-align: center; background-color: yellow;">M</td> <td style="text-align: center; background-color: yellow;">M</td> <td style="text-align: center; background-color: lightgreen;">L</td> <td style="text-align: center; background-color: lightgreen;">L</td> </tr> <tr> <td style="text-align: center;">Negligible</td> <td style="text-align: center; background-color: yellow;">M</td> <td style="text-align: center; background-color: lightgreen;">L</td> </tr> </tbody> </table>					Severity	Probability					Frequent	Likely	Occasional	Seldom	Unlikely	Catastrophic	E	E	H	H	M	Critical	E	H	H	M	L	Marginal	H	M	M	L	L	Negligible	M	L	L	L	L
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JOB STEPS	HAZARDS	CONTROLS				RAC																																			
Basewide Well Inventory and Water Level Measurements	1. Chemical exposure during intrusive activities (opening monitoring wells and water level measurements)	<p>1. To Minimize exposure to COPCs:</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. 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. <ul style="list-style-type: none"> Monitoring with PID/FID during intrusive activities only (opening monitoring wells and water level measurements). Establish background levels to be incorporated into the monitoring results. Periodically screen the borehole and any samples collected with a PID 				L																																			

ACTIVITY HAZARD ANALYSIS

Well Inventory

JOB STEPS	HAZARDS	CONTROLS	RAC
		<p>equipped with a 10.6 eV Ultra Violet (UV) lamp.</p> <ul style="list-style-type: none"> • If readings in worker BZ areas exceed: <ul style="list-style-type: none"> ○ PID Action Level: 10 ppm above BG in BZ areas for any exposure in one work day. • Monitoring will be conducted in the worker breathing zone. • When handling samples and potentially contaminated equipment <ul style="list-style-type: none"> ○ Wear surgeon’s gloves when handling potentially-contaminated media and samples ○ Avoid contact with potentially-contaminated media. ○ These are disposable, change out as necessary to avoid break through. • Follow good decontamination: <ul style="list-style-type: none"> ○ When exiting the exclusion zone, wash the outer gloves to remove any residual contamination. ○ This will also permit disposal in the general refuse. ○ Remove gloves, wash hands and face to minimize any potential introduction of contaminants into the body. ○ Leave consumable materials such as cigarettes, snuff chewing tobacco, candies, medications, etc. in the break area to avoid potential contact. • Practice good personal hygiene (hands and face washing) when exiting work area, avoiding any hand-to-mouth activities in the work (eating, drinking, smoking, etc.). • Practice good housekeeping to avoid the spread of contamination. 	
	<p>2. Slips, Trips, Falls</p> <p>3. Inclement weather</p>	<p>2. Maintain good housekeeping in IDW storage areas, keeping it clear of loose debris and other potential tripping hazards.</p> <ul style="list-style-type: none"> • Wear appropriate foot protection to prevent slips and trips. • Use caution when working on uneven and wet ground surfaces. <p>3. The FOL and/or the SSO will temporarily suspend outside activities in the event of electrical storms or high winds.</p> <ul style="list-style-type: none"> • It is preferred that supported systems such as lightning detection devices or emergency weather broadcasts are employed. • 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> 	L

ACTIVITY HAZARD ANALYSIS

Well Inventory

Page 3 of 3

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<p>Hand and development tools</p> <p>Personal Protective Equipment: <u>Minimum:</u> Safety toe boots, safety glasses, nitrile gloves <u>Optional items:</u> Hard hat if overhead hazard, Hearing protection if high noise, Tyvek[®] if chance to soil clothing.</p> <p>Monitoring Instruments: none</p>	<p>Visual inspection prior to use by user.</p>	<p>Review of AHA during pre-task tailgate safety briefing with all intended task participants.</p>
<p>Personal Protective Equipment: Minimum: Safety toe boots, safety glasses. Optional items: Hardhat, hearing protection Nitrile surgeon's style gloves and Tyvek if there is a change to soil clothing. HTRW: VOCs, SVOCs, and metals</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 visually of worker activities.</p>

I have read and understand this AHA:

Name (Printed)	Signature	Date

ATTACHMENT IV

OSHA POSTER

Job Safety and Health

It's the law!



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

