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HEALTH AND SAFETY PLAN FOR PRELIMINARY SUBSURFACE INVESTIGATION AT FORMER AQUADRIVE FUEL SYSTEM NAS CORPUS CHRISTI TX

9/1/2012

TETRA TECH

Comprehensive **L**ong-term **E**nvironmental **A**ction **N**avy

CONTRACT NUMBER N62470-08-D-1001

Health and Safety Plan
for
Preliminary Subsurface Investigation at
Former Aquadrive Fuel System

at

Naval Auxiliary Landing Field Cabaniss
Corpus Christi, Texas

Contract Task Order JM65

September 2011

NAVFAC
Naval Facilities Engineering Command
NAVFAC SOUTHEAST

NAS Jacksonville
Jacksonville, Florida 32212-0030

TETRA TECH NUS, Inc.

HEALTH AND SAFETY PLAN
FOR
PRELIMINARY SUBSURFACE INVESTIGATION
AT
FORMER AQUADRIVE FUEL SYSTEM

NAVAL AUXILIARY LANDING FIELD CABANISS
CORPUS CHRISTI, TEXAS

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

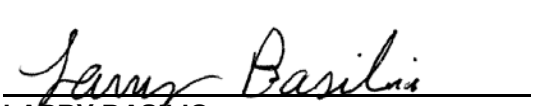
Submitted to:
Naval Facilities Engineering Command Southeast
NAS Jacksonville
Jacksonville, Florida 32212-0030

Submitted by:
TetraTech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406

CONTRACT NUMBER N62470-08-D-1001
CONTRACT TASK ORDER JM65

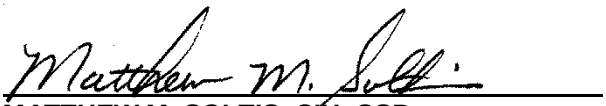
SEPTEMBER 2011

PREPARED UNDER THE SUPERVISION OF:



LARRY BASILIO
PROJECT MANAGER
TETRA TECH NUS, INC.
HOUSTON, TEXAS

APPROVED FOR SUBMITTAL BY:



MATTHEW M. SOLTIS, CIH, CSP
CLEAN HEALTH AND SAFETY MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

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1.0 INTRODUCTION

The objective of this Health and Safety Plan (HASP) is to provide the safety and health requirements, practices, and procedures for Tetra Tech NUS, Inc. (Tetra Tech) personnel participating in remedial investigation at the former Aquadrive Fuel System Site at the Naval Auxiliary Landing Field (NALF) Cabaniss, located in Corpus Christi, Texas. This investigation is being conducted to determine if soil and/or groundwater have been impacted by releases from the Aquadrive Fuel System and to determine if additional investigation is required.

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

1.1 AUTHORITY

This work is authorized under the Comprehensive Long - Term Environmental Action Navy (CLEAN) contract N62470-08-D-1001 Contract Task Order (CTO) JM65, administered through NALF Cabaniss.

1.2 KEY PROJECT PERSONNEL AND ORGANIZATION

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

- The Tetra Tech Project Manager (PM) is responsible for the overall direction and implementation of health and safety for this work.
  - Ensuring timely resolution of project safety questions associated with Tetra Tech operations.
  - Ensuring that Tetra Tech health and safety issues are effectively communicated to personnel.
  - Monitors and evaluates the Tetra Tech subcontractor performance.

- The Project Health and Safety Officer (PHSO) is responsible for developing the HASP in accordance with applicable OSHA regulations. Specific responsibilities include:

- Providing information regarding site contaminants and physical hazards associated with the site.
- Establishing air monitoring and decontamination procedures.
- Assigning personal protective equipment.
- Determining emergency response procedures.
- Stipulating training and appropriate training and medical surveillance requirements for Tetra Tech and subcontractor personnel.
- Identifying relevant standard work practices to minimize potential injuries and exposures associated with the project scope of work.

- The Tetra Tech Field Operations Leader (FOL) is responsible for implementation of this HASP. The FOL manages field activities, executes the Work Plan, and enforces safety procedures as applicable to the Work Plan. Specifically, the FOL will:
  - Verifying training and medical status of on-site personnel in relation to site activities.
  - Assisting and representing Tetra Tech with emergency services (if needed).
  - Providing elements site-specific training for onsite personnel.

- The Site Safety Officer (SSO) supports site activities by advising the FOL on the aspects of health and safety on-site. These duties may include:
  - Coordinating health and safety activities with the FOL.
  - Selecting, applying, inspecting, and maintenance of personal protective equipment.
  - Establishing work zones and control points in areas of operation.
  - Implementing air monitoring program for on-site activities.
  - Verifying training and medical clearance of on-site personnel status in relation to site activities.
  - Implementing Hazard Communication and other associated health and safety programs, as they may apply to site activities.
  - Coordinating emergency services.
  - Providing site-specific training for on-site personnel.
  - Investigating accidents and injuries.
  - Providing input to the PHSO regarding the need to modify this HASP, or applicable health and safety associated documents.

- Compliance with the requirements stipulated in this HASP is monitored by the SSO and coordinated through the CLEAN Health and Safety Manager (HSM).

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

1.3 STOP WORK AUTHORITY

All employees are empowered, authorized, and responsible to stop work at any time when an imminent and uncontrolled safety or health hazard is perceived. In a Stop Work event (immediately after the involved task has been shut down and the work area has been secured in a safe manner) the employee shall contact the 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: NALF Cabaniss
Site Address: Corpus Christi, Texas 78419
Remedial Project Manager: Erico Latham
Site Contact: Linda Riley-Lattimore

Purpose of Site Visit: Perform soil boring, monitoring well installation, soil and groundwater sampling, concrete coring
Proposed Start-up Date: September 2011 until completion

Project Team:

Tetra Tech Personnel:	Discipline/Tasks Assigned:
Larry Basilio	PM
TBD	FOL/SSO
Matthew M. Soltis, CIH, CSP	CLEAN HSM
James K. Laffey	PHSO

Health Assessments (for purposes of 26 CFR 1910.132) and HASP preparation conducted by:
Prepared by: James K. Laffey

2.0 EMERGENCY ACTION PLAN

2.1 INTRODUCTION

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an emergency. In the event of an emergency, the field team will primarily evacuate and assemble to an area unaffected by the emergency and notify the appropriate local emergency response personnel/agencies. When ill or if inflicted with 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. 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, emergencies resulting from chemical, physical, or fire hazards are the types of emergencies which could be encountered during site activities. To minimize or eliminate the potential for these emergency situations, pre-emergency planning activities will include the following:

- Coordinating with NALF Cabaniss Emergency Services 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 may include the following:
  - Onsite personnel medical records (Medical Data Sheets).
  - A log book identifying personnel onsite each day.
  - Hospital route maps with directions (these should also be placed in each site vehicle).
  - Emergency phone numbers.

- Identifying a chain of command for emergency action.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Utilizing the necessary equipment to safely accomplish identified tasks.

2.3 EMERGENCY RECOGNITION AND PREVENTION

2.3.1 Recognition

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. Visual observation will also play a role in detecting potential exposure events to some chemical hazards. 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. Survey findings are documented in the site logbook. Where potential hazards exist, Tetra Tech will initiate control measures to prevent adverse effects to human health and the environment.

2.3.2 Prevention

Tetra Tech will minimize the potential for emergencies by following the Health and Safety Guidance Manual and ensuring compliance with the HASP and applicable OSHA regulations. Daily site surveys of work areas, prior to the commencement of that day's activities, will also assist in prevention of illness/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; fire or explosion; monitoring instrumentation readings which indicate levels of contamination are greater than instituted action levels; and evidence of personnel overexposure to potential site contaminants.

In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification. Because the work site is spread across such a wide area the Safe Places of Refuge will be identified prior to the commencement of the day's activities and will be conveyed to personnel as part of the daily safety meetings. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain

at the refuge location until directed otherwise by the on-site Incident Commander of the Emergency Response.

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate evacuation routes. As a result, assembly points will be selected and communicated to the workers relative to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site.

2.5 EMERGENCY CONTACTS

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

TABLE 2-1

EMERGENCY CONTACTS

NALF CABANISS, CORPUS CHRISTI, TEXAS

EMERGENCY AGENCY/CONTACT	TELEPHONE NUMBER
EMERGENCY	**911**
Christus Spohn Hospital South	(361) 985-5000
NAS Corpus Christi Base Security Dispatch	(361) 961-2375
NAS Corpus Christi Base Security Operations	(361) 961-3491
NAS Corpus Christi Base Security Operations Patrol	(361) 961-2282
Poison Control Center	(800) 222-1222
Utility Clearance	811
National Response Center	(800) 424-8802
Chemtrec	(800) 424-9300
Navy Onsite Representative, NAS Corpus Christi. Linda Riley-Lattimore	(361) 961-5356
NAVFAC RPM, Erico Latham	(904) 542-6827
Project Manager (PM) Larry Basilio	(832) 251-6018
Tetra Tech, Inc., Houston Office	(832) 251-5160
Drilling Company	TBD
Health and Safety Manager (HSM) Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer (PHSO) James K. Laffey	(412) 921-8678

2.6 EMERGENCY ROUTE TO HOSPITAL

Christus Spohn Hospital South
5950 Saratoga Blvd
Corpus Christi, TX 78414
(361) 985-5000

From the site take Saratoga Boulevard to the Southeast for 6 miles.
Hospital is on the left.

FIGURE 2-1

ROUTE TO THE HOSPITAL:

2.7 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Site personnel will be working in close proximity at NALF Cabaniss. As a result, hand signals, voice commands, and line of site communication will be established to alert site personnel of an emergency.

If an emergency 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
- Once non-essential personnel are evacuated, appropriate response procedures will be taken
- Describe to the Incident Coordinator the pertinent incident details.

In the event that site personnel cannot mitigate the hazardous situation site personnel will:

- 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

A first-aid kit, eye wash units (or bottles of disposable eyewash solution) and fire extinguishers (strategically placed) will be maintained onsite and shall be immediately available for use in the event of an emergency. This equipment will be located in the field office as well as in each site vehicle.

2.9 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT

During any site evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site 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 are trained to provide initial medical support for injury/illnesses requiring "Basic First-Aid" level support. Basic First-Aid is considered treatment that can be rendered by a trained first aid provider at the injury location (for example; minor cuts, bruises, stings, scrapes, and burns). At least two persons on the field crew will have adult first-aid/CPR and blood borne pathogen training and will be on site when work is being performed to offer first-aid assistance. The on-site first-aid/CPR responders are trained to stop or control severe

bleeding, immobilize potential fractures and provide CPR in the event a person stops breathing, as with electrical shock, until the local emergency responders arrive.

Medical emergencies such as second or third degree burns, cuts, lacerations requiring stitches or butterfly bandaging, heat exhaustion, severe poisonous plant or insect bite reactions are beyond Basic First-Aid level support. Personnel providing medical assistance are required to be trained in First-Aid and in the requirements of OSHA's Bloodborne Pathogen Standard (29 CFR 1910.1030). Medical attention above First-Aid level support will require assistance from the designated emergency response agencies.

2.9.1 Medical Data Sheet

Attachment I contains a Medical Data Sheet. Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite. If an exposure to hazardous materials has occurred, provide information on the chemical, physical, and toxicological properties of the subject chemical(s) to medical service personnel. If needed and once completed, the appropriate personnel on the incident report form should be notified and their signatures obtained. Once signed, this form should be stored on site and filed. 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.

As soon as possible, the NALF Cabaniss site contact will be informed of any incident or accident that requires medical attention.

2.10 INJURY/ILLNESS REPORTING

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

2.10.1 TOTAL Incident Reporting System

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

TOTAL looks like the incident reporting form in Attachment II. TOTAL is an intuitive system that will guide you through the necessary steps to report an incident within 24 hours of its occurrence.

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

Once on the "My Tetratech" 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.tetratech.com/

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

2.11 SITE DRILL AND AFTER ACTION CRITIQUE

The FOL will conduct a drill/exercise prior to, or at the start of, site work to ensure familiarity of site workers with the HASPs requirements. A critique with the site personnel will be conducted after each drill or incident. This critique provides a mechanism to review the incidents and drills to determine where improvements can be made. For incidents recorded in TOTAL, the FOL will utilize the Lessons Learned component for the critique.

3.0 SITE BACKGROUND

NALF Cabaniss was commissioned in 1941 and currently encompasses a total of 923 acres and is located on the eastern side of Nueces County, Texas, and lies approximately eight miles west of Naval Air Station (NAS) Corpus Christi (NASCC). North of the current boundary are former buildings and recreational areas that were once a part of the installation. These areas were transferred to the General Services Administration (GSA) for disposal in 1958, and are now the property of the local school district. NALF Cabaniss is an outlying field (OLF) with the current primary role of supporting naval air training operations originating from NASCC.

On July 30, 2008, NASCC Environmental received a report of oil coming out of the ground at NALF Cabaniss from two underground vaults that were associated with an abandoned Aquadrive fuel delivery system. The amount of product that seeped out was unknown, but the fuel involved is believed to be aviation gasoline.

The former fuel system at NALF Cabaniss was composed of approximately 40 vaults, 20 underground storage tanks and interconnected fuel, water and air lines. Ten of the vaults and all the USTs are located on property not currently owned by the Navy. They are located on property that was turned over to GSA in 1958 when the base was converted to an OLF.

4.0 SCOPE OF WORK

This section discusses the activities that are to be performed at the sites. The Activity Hazard Analysis (AHAs) found in Attachment III provides information related to each of the tasks that are to be performed as part of the scope of work. As new phases or tasks are to be performed at the sites, the AHAs will be modified accordingly.

The proposed debris removal action consists of the following:

- Mobilization/Demobilization
- Soil boring via Direct push Technology (DPT) or Hollow Stem Auger (HSA)
  - Monitoring well installation
- Concrete coring
- Multi media sampling
  - Groundwater
  - Surface and subsurface soil
  - IDW
- Decontamination
- Land surveying
- IDW Management

If tasks other than those presented in this HASP are performed at the sites, this section of the HASP and the APP will be modified accordingly.

5.0 IDENTIFYING AND COMMUNICATING TASK-SPECIFIC HAZARDS AND GENERAL SAFE WORK PRACTICES

The purpose of this section is to identify 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 (AHA), which are to be reviewed in the field by the SSO with the task participants prior to initiating any task (see Attachment III). Additionally, potential hazard and hazard control matters that are relevant but are not necessarily task-specific are addressed in the following portions of this section.

Section 6.0 presents additional information on hazard anticipation, recognition, and control relevant to the planned field activities.

5.1 GENERAL 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 with soap and water upon leaving a contaminated or suspected contaminated area.

- The use of waterless hand cleaning products is acceptable if followed by actual hand-washing as soon as practicable upon exiting the site.

- Avoid contact with potentially contaminated substances including puddles, pools, mud, or other such areas.

- Avoid kneeling on the ground or leaning or sitting on equipment.

- Keep monitoring equipment away from potentially contaminated surfaces.

- Plan and mark entrance, exit, and emergency evacuation routes.

- Rehearse unfamiliar operations prior to implementation.

- Buddies should maintain visual contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.

- Establish appropriate safety zones including support, contamination reduction, and exclusion zones.

- Minimize the number of personnel and equipment in contaminated areas (such as the exclusion zone).

- 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.

- Investigative areas will be restored to equal or better condition than original to remove any contamination brought to the surface and to remove any physical hazards.
  - In situations where these hazards cannot be immediately removed, the area will be barricaded to limit access.

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

The contaminants of concern (COCs) are based on samples taken from visually contaminated sites. This sampling resulted in low levels of lead and barium. Barium and lead levels were all below the Texas-specific soil background concentration given by the Texas Commission on Environmental Quality (TCEQ). Table 6-1 shows the highest concentration in soils and the amount of dust needed to reach the Occupational Exposure Limit (OEL). Also listed are the current OELs. It is recommended that exposure (via inhalation, ingestion, or skin contact) to these contaminants be minimized through the use of PPE and good work hygiene practices.

TABLE 6-1
COMPARISON OF WORST-CASE LEAD AIR CONCENTRATIONS
WITH CURRENT OCCUPATIONAL EXPOSURE LIMITS

Contaminants of Concern	Highest Concentration in Soils	Amount of Dust-in-Air that would have to be generated before OEL would be reached	Current OELs
Barium	300 mg/kg	417 mg/m^3	0.5 mg/m^3, TWA_8
Lead	15 mg/kg	833 mg/m^3	0.05 mg/m^3, TWA_8

Table Notes:

TWA_8: Average air concentration over an 8-hour work period that is not to be exceeded

2 mg/m^3 – Visible dust

NA – not available

As indicated in this table, from a worst-case scenario, potential site contaminants will not be present at concentrations that could pose an inhalation hazard to site personnel. It is also important to recognize the following:

- The planned work area is outdoors, with ample natural ventilation that will reduce any airborne contaminants through dilution and dispersion.

- The soil value used was the ***highest*** concentration detected during the most recent field investigation monitoring events and may only be present at one location.

As a result of these factors, it is unlikely that workers participating in this activity will encounter airborne concentrations of contaminants that could represent an occupational exposure concern. As a precaution site personnel will follow good personal hygiene and standard good sample collection/sample handling practices, and wear appropriate PPE as specified in this HASP. Examples of onsite practices that are to be observed that will protect workers from exposure via ingestion or skin contact include the following:

- No hand-to-mouth activities on site (eating, drinking, smoking, etc.)
- Washing hands upon leaving the work area and prior to performing any hand to mouth activities.
- Diligently following decontamination procedures to minimize possible transfer into unaffected areas.
- Wearing surgeon's-style gloves whenever handling potentially-contaminated media, including soils, hand tools, and sample containers.
- Area wetting

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
- Heat stress
- Pinch/compression points
- Natural hazards (snakes, ticks, poisonous plants, etc.)
- Vehicular and equipment traffic
- Inclement weather

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

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 and other means suitable for the task at hand. Site activities will be performed using the buddy system.

6.2.2 Heat 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).

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

6.2.2.1 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.

6.2.2.2 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.

6.2.2.3 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.

6.2.2.4 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.

6.2.2.5 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 Load		
Work-Rest Regimen	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.

6.2.2.6 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	> 101.3ºF (38.5º 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

6.2.3 Pinch/Compression Points

Handling of tools, machinery, and other equipment on site may expose personnel to pinch/compression point hazards during normal work activities. Where applicable, equipment will have intact and functional guarding to prevent personnel contact with hazards. Personnel will exercise caution when working around pinch/compression points, using additional tools or devices (e.g., pinch bars) to assist in completing activities.

6.2.4 Vehicular Traffic

Hazards associated with vehicular and equipment traffic is likely to exist during various site activities and whenever site personnel performed work on or near roadways. When working near roadways, site personnel will wear high visibility vests.

6.2.5 Heavy Equipment Hazards

The following precautions will be used when working at or near the heavy equipment:

- Equipment will be inspected using the Equipment Inspection Checklist provided in Attachment IV.
- Heavy equipment will be operated and supported by knowledgeable operator(s).
- Self-propelled equipment with restricted field of vision moving backwards shall be equipped with a back up alarm.
- Personnel will not be present within the swing radius of the excavation equipment.
- Personnel will remain at least four feet away from the edge of any excavation.

6.3 NATURAL HAZARDS

Insect/animal bites and stings, poisonous plants, parasites, and inclement weather are natural hazards that may be present given the location of activities to be conducted. In general, avoidance of areas of known infestation or growth will be the preferred exposure control for insects/animals and poisonous plants. Specific discussion on principle hazards of concern follows:

6.3.1 Indigenous Snakes

Indigenous animals including snakes (poisonous and non-poisonous varieties), raccoons, and other animals native to the region may be present at the site. These animals may be encountered if work locations encroach on nesting or territories claimed by these animals.

To avoid the obvious hazards conveyed as part of a direct encounter, the following actions will be taken to minimize impact on the field crews and/or operations. The FOL/SSO will preview access routes and work locations for nesting areas or signs of animal activities (tracks, foraging areas, etc.). Identified suspect areas will be communicated to the field crews. Snake chaps will be required as a precaution.

6.3.1.1 Venomous Snakes

There are few poisonous snakes in Corpus Christi, Texas. Corpus Christi, Texas's poisonous snakes are very heavy-bodied – they look "fat." They also have broad, spade-shaped heads that are distinctly wider than their narrow necks. The heads of non-venomous snakes are typically about the same width as their bodies. Such distinctions are not completely reliable, as some species such as water snakes can be rather stout, and many species of snakes will flatten their heads when bluffing, giving the head a spade-like shape as well. The pupils of the venomous snakes of Corpus Christi, Texas are vertical slits rather than round. This distinction may not hold elsewhere, but works in this state.

Do not attempt to handle or kill a snake that you believe may be venomous. Simply keep at a safe distance and move on your way. Snakes do not actively seek out people and bite them. Given the chance, snakes will almost always try to escape an encounter. If you leave them alone, they will make every effort to leave you alone as well. Be very careful to avoid the head when handling dead snakes. A snake's reflexes can remain functional hours after death, and supposedly "dead" snakes have bitten people.

Copperhead - The most common venomous species is the copperhead, and even it has a restricted range in Corpus Christi, Texas.

Appearance: The copperhead is a moderately large snake that typically measures 24 to 36 inches in length. Its head is reddish-brown in color and its body is tan. The body is marked with 15 to 19 mahogany lateral bands with darker edges that are wide on the sides and narrow on the back. The lateral bands are occasionally interrupted along the midline. Viewed from above, these bands appear hourglass shaped. Irregular brown spots are often found between the bands. The copperhead has a wedge-shaped head, sensory pits, and vertically elliptical "cat-like" pupils. The young are pale with a yellow tipped tail and are 8 to 9 inches in length.

Ecology: The copperhead is found primarily in high, dry, rocky and well-forested areas dominated by oaks and hickories. This species is very secretive and does not tolerate human presence. The copperhead is active at night the warmest part of the year and is more likely to defend itself during the evening hours. It can be found resting under logs, in cracks of foundations, and under rocks. Small rodents such as mice are its primary prey, but it also eats large moth larvae and lizards.

Timber Rattlesnakes - Timber rattlesnakes are rare and usually restricted to some of the forested hills in south central Texas.

Appearance: These snakes are Corpus Christi, Texas's largest, averaging 48 to 72 inches in length with a rattle on the end of their tail. They can be found in south central Corpus Christi, Texas. The timber rattlesnake is a thick-bodied snake with a wide head distinct from the neck, typical of our venomous snakes. The color pattern of the timber rattler is very variable, ranging from sulfur yellow and buff brown, to dark gray. Regardless of the pattern, a series of wide black cross bands line the back along the length of the body. These cross bands have been described as "blunt chevrons." Its distinctly wedge-shaped head, sensory pit, and elliptical eye slits are characteristic of snakes in the viper family.

Ecology: The timber rattlesnake is native to heavily forested areas in the hills of southern Corpus Christi, Texas. It feeds on small mammals and birds. The timber rattler hibernates inside the cracks and crevices of rocky hillsides. Timber rattlesnakes do not stalk their prey, but rather remain motionless and wait for their prey to move within striking distance. Populations of timber rattlesnakes are mostly limited to areas fairly isolated from human development.

6.3.1.2 Snake Bites

Initial efforts will be directed to avoid, where possible, nesting and territorial areas. However, should field personnel come in contact with these animals and receive a bite, the following actions are necessary.

- Obtain a detailed description of the snake. This and the bite mark will enable medical personnel administering medical aid to provide prompt and correct antidotes, as necessary.

- Immobilize the bite victim to the extent possible. Physical exertion will mobilize the toxins (if poisonous varieties) from the bite point systemically through the body.

- Apply a pressure wrap (for extremities), just above and over the bite area. With a couple wraps of the pressure wrap in place over the bite area, apply a splint, and continue the application of the pressure wrap. The purpose for the splint is to restrict the movement of the extremity, this along with the pressure wrap will aid in restricting the toxins from leaving the site of the bite.

- Seek medical attention immediately.

6.3.2 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. During the control burn activity smoke containing the remnants of burned plants will cause an adverse reaction to site personnel if inhaled. 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. This is not to occur as part of this scope of work and therefore will not be addressed.

6.3.3 Ticks/Spiders/Other Insects

Many of the planned site activities will occur outside in areas that are not improved or maintained. As a result, the potential for encountering natural hazards exists. The following information is provided as a precaution to help recognize and avoid these types of hazards. Insect bites and stings may be difficult to control. However, in an effort to minimize this hazard the following control measures will be implemented where possible.

- Commercially available bug sprays and repellents will be used whenever possible.
- For effective protection, insect repellants should contain at least 10% DEET.
- Follow the manufacturer's label instructions for proper application, re-application and precautions for use.
- Where possible, loose-fitting and light-colored clothing with long sleeves should be worn.
  - This aids in insect control by providing a barrier between the field person and the insects and will aid in visual recognition of crawling insects against the lighter background.
- Pant legs should be secured to the work-boots using duct tape to prevent access by ticks.
- Clothing/limited body checks for ticks and other crawling insects should be conducted upon exiting heavily vegetated areas.
- Perform a more detailed check of themselves when showering in the evening.
  - Ticks prefer moist areas of the body and will migrate to those locations.
- Field crew members who are allergic to bites should have access to an emergency kit containing antihistamine or whatever method of response is recommended by their Doctor/Health Care Provider.

6.3.3.1 Bees, Wasps and Hornets

- Bees, hornets, yellow jackets, wasps and even mosquitoes can sting or bite.
- Though irritating and uncomfortable, in most cases insect bites or stings are harmless. However insect bites can cause allergic reactions in some people.
- If stung, remove the stinger by scraping a card across the wound (do not squeeze).
- Wash the area with warm, soapy water.
- Apply a cold compress to control swelling.
- Take aspirin for pain and an antihistamine, as needed, for minor itching and swelling.
- If you experience a body-wide reaction, severe local swelling, especially around the face or neck, or have difficulty breathing, call 911 immediately.

It is important that if you have allergies (to bee stings, fire ants, etc.) that this information is noted on your medical data sheet provided in Attachment I. In situations where you use Benadryl or Doctor/Health Care Provider recommended antidotes ensure you have these pharmaceuticals with you.

6.3.3.2 Mosquitoes and Sand Flies

The mosquito, *Aedes aegypti*, is a mosquito that can spread the dengue fever, Chikungunya and yellow fever viruses, and other diseases. The mosquito can be recognized by white markings on legs and a marking of the form of a lyre on the thorax. The mosquito originated from Africa but is now found in the tropics worldwide. Sand flies pose a nuisance and physical hazard to field personnel as well as being distracting and leading to accidents and transmitting organisms through their bite. Sand fly bites that are repeatedly scratched can cause secondary infections.

6.3.3.3 Ticks

Tick bites are common and usually harmless, but occasionally may result in Rocky Mountain spotted fever or Lyme disease.

- It usually takes about 24 hours of tick attaching to a "host" for disease to be transmitted.
- The symptoms can begin as early as a few days after a bite or take as long as two weeks before appearing.
- Symptoms include headache, chills, fever and rash - much like the flu.
- If bitten, carefully remove the tick using blunt tweezers. Grasp the tick close to the skin and pull straight out with a steady pressure. Check to see that the entire tick has been removed.
- Clean with warm, soapy water, then apply an antiseptic.
- Be observant of and if any of the above symptoms develop, contact your doctor immediately.

Ticks have been identified in the transmission of diseases including Lyme's disease. Warm months (Spring through early fall) are the most predominant time for this hazard. Information concerning Lyme's Disease including recognition, evaluation, tick removal, and control is provided in Section 4.0 of the Tetra Tech Health and Safety Guidance Manual.

6.3.3.4 Fire Ants

Fire ants present a unique situation when working outdoors in Puerto Rico. Their aggressive behavior and their ability to sting repeatedly can pose a unique health threat. The picture depicts a fire ant mound on a lawn next to a sidewalk.

The bite injects venom that causes an extreme burning sensation. Pustules form, and can become infected if scratched. Allergic reactions of people sensitive to the venom include dizziness, swelling, shock and in extreme cases unconsciousness and death.

6.3.3.5 Black Widow Spider

The female black widow spider has a round, glossy black abdomen one-half inch in diameter with an orange-red hourglass marking her belly. Her painful bite results in redness and warmth at the site as well as muscle cramps, twitching, rigid abdomen, difficulty breathing, weakness, headache, nausea and vomiting. The male black widow spider is solid in color, and his bite is not venomous. If bitten, wash the area with warm, soapy water and call Poison Center immediately

6.3.3.6 Brown Recluse Spider

The brown recluse spider is small, about one-half inch long with an oval body and a dark violin-shaped marking on its back.

- Its bite causes pain, redness, tenderness and a bull's eye appearance, progressing to ulceration.
- Bites may go unnoticed until a lesion develops.
- If bitten wash the area with warm, soapy water and call Poison Center immediately.
- A tetanus booster shot may be needed after a bite from a brown recluse spider.

6.3.4 Parasites

Avoid walking and working in wet or swampy areas unprotected due to the presence of a variety of etiologic (disease-causing) agents. Contact with surface water will be kept to a minimum. There have been several incidents of infection by schistosomes (blood flukes) from contact with surface water. The

aquatic snail vector, Australorbis Glabratus, transmits the schistosomes into surface waters, predominantly drainage ditches. Even momentary contact (especially in the presence of blisters, cuts, and open sores) with contaminated surface water is sufficient to acquire an infection. Accidental skin contact requires that the area be washed with isopropyl alcohol. Symptoms of infection are fever, diarrhea, itchy skin, and CNS damage. Schistosomiasis is hard to treat and, once established in its host, may remain for several years.

6.3.5 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, etc.) conditions arise, activities will be temporarily suspended or terminated until hazardous conditions no longer exist.

7.0 AIR MONITORING

The contaminants at Aquadrive Fuel System Site pose little to no inhalation hazard as the contaminants in soil and groundwater are non-volatile and the metals are detected at very low levels. This is based on the historical data and worst case scenario calculations, which are based on the maximum contamination levels taken from the most recent sampling data. As a result, direct reading instruments will not be required to monitor worker exposures at the site. Should site conditions change to warrant air monitoring, as determined by the FOL and/or SSO, this HASP will be modified accordingly and personnel will be trained on the need for and use of direct reading instrument(s).

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 personnel participating in on site activities. Tetra Tech personnel must complete 40 hours of introductory hazardous waste site training and three days of supervised on-site training prior to performing work at the NALF Cabaniss site. Tetra Tech 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 Tetra Tech introductory, supervisory, and refresher training as well as site-specific training will be maintained at the site. Copies of certificates or other official documentation will be used to fulfill this requirement.

8.2 SITE-SPECIFIC TRAINING

Tetra Tech SSO will provide site-specific training to Tetra Tech 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.

8.3 MEDICAL SURVEILLANCE

Tetra Tech personnel participate in a medical surveillance program meeting the requirements contained in paragraph (f) of Title 29 of the Code of Federal Regulations (CFR) Part 1910.120, entitled "Hazardous Waste Operations and Emergency Response. All personnel working on site have had physical examinations under this program within the past 12 months and that they have been cleared, by a licensed physician, to perform hazardous waste site work and to wear positive- and negative-pressure

respiratory protection. No personnel working on site have any medical restriction that would preclude him/her from working at the NALF Cabaniss facility.

Documentation for medical clearances will be maintained in the Tetra Tech Pittsburgh office and made available, as necessary, and will be documented using Figure 8-1 for every employee participating in onsite work activities at this site.

FIGURE 8-1

SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing field investigation activities at NALF Cabaniss and that I have received site-specific training which included the elements presented below:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Emergency response procedures (evacuation and assembly points)
- Review of the contents of relevant Material Safety Data Sheets
- Review of the use of Activity Hazard Analysis
- Stop Work Procedures

I have been given the opportunity to ask questions and all of my questions have been answered to my satisfaction. The dates of my training and my medical surveillance requirements indicated below are accurate.

Name (Printed and Signature)	Site-Specific Training Date	40-Hour Training (Date)	8-Hour Refresher Training (Date)	8-Hour Supervisory Training (Date)	First Aid	Medical Exam

9.0 SITE CONTROL

The exclusion zone is considered the area of the site of known or suspected contamination. It is anticipated that the areas around intrusive activates have the potential for contaminants brought to the surface. These areas will be marked and personnel will maintain safe distances. The exclusion zone for this project are those areas of the site where active work (drilling, monitoring well installation, test pitting, and sample collection, etc.) is being performed. 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. These distances remove personnel from not only potential chemical hazards but also physical hazards potentially associated with these operations including structural component failure, noise, high pressure lines, etc.

9.1 EXCLUSION ZONE

Personnel working in the exclusion zone are required to wear the required level of PPE as indicated in the Safe Work Permit. If necessary an entry and exit checkpoint will be identified at the periphery of the exclusion zone to regulate movement of personnel and equipment into and out of the zone. Some general Exclusion Zone dimension surrounding operations are as follows:

- Drilling (and concrete coring if using drill rig) – The height of the mast plus 10-feet, or 35-feet whichever is most conservative
- Multi media sampling (and concrete coring if using stand alone unit) – 15 feet
- Surveying– 15-feet
- Low pressure decontamination activities – 10 feet
- High Pressure washing and heavy equipment decontamination operations – 35-feet
- IDW Storage area – Authorized personnel only

Exclusion zones may be posted using signs, barrier tape, cones and/or drive poles, and other postings to inform and direct facility site personnel and visitors, as necessary. In the event that exclusion zone cannot be adequately marked given the configuration work area, Tetra Tech site personnel will be responsible for policing the area and keeping unauthorized personnel from areas where potential exposure concerns may exist.

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. Decontamination will be conducted at a central location. Equipment potentially contaminated will be bagged and taken to that location for decontamination.

9.3 SUPPORT ZONE

The support zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. 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 ANALYSES

Exclusion Zone work conducted in support of this project will be performed using Activity Hazard Analyses (AHAs) to guide and direct field crews on a task by task basis. AHAs for the tasks to be performed and previously described in Section 4.0 are attached to this HASP. Use of the AHAs will provide the communication line for reviewing protective measures and hazards associated with each operation. Where deficient, they will be corrected and that information forwarded to the PHSO for inclusion in future such activities.

9.5 SITE SECURITY

Site security will be accomplished using 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.

9.6 SITE MAP

Once the areas of operation, 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 adjustment of zones and access points.

9.7 BUDDY SYSTEM

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

9.8 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 cellular telephones at approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities at the site, it is strongly recommended that cell signal strength be checked in the work areas and the relevant project phone numbers are programmed on site worker cell phones. Emergency numbers listed in Table 2-1 should be entered into site cell phones prior the beginning of work. The FOL will determine and arrange for telephone communication procedures.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

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

10.2 POTENTIAL SPILL AREAS

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

- Resource deployment
- Waste transfer
- Central staging

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

10.3 LEAK AND SPILL DETECTION

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

10.4 PERSONNEL TRAINING AND SPILL PREVENTION

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

Coordinators for this operation, should the need arise. It is not anticipated that a spill would occur that onsite personnel could not handle.

10.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

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

- Sand, clean fill, or other non combustible absorbent (Oil-Dry)
- Drums (55-gallon UN 1A1 or 1A2)
- Shovels, rakes, and brooms
- Container labels

10.6 SPILL CONTROL PLAN

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

- Notify the SSO or FOL immediately upon detection of a leak or spill.
- Employ the PPE stored at the staging area.
- Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel.
- Spread the absorbent material in the area of the spill, covering it completely.
- Transfer the material to a new drum and or container; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.
- Re-containerize spills, including 2-inch of top cover (if over soils) impacted by the spill. Await test results for treatment or disposal options.

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

10.7 NATIONAL RESPONSE CENTER

The National Response Center (NRC) is the sole Federal point of contact for reporting hazardous spills and discharges, whether they are oil, chemical, radioactive, or other types. The NRC gathers information about the emergency and coordinates the response by government officials. For example, depending on

the nature of the spill or environmental hazard, the NRC typically contacts the EPA for inland oil spills and the United States Coast Guard for marine oil spills. The Hotiline is staffed 24-hours a day. If Tetra Tech or subcontractor personnel are involved in or witness an environmental emergency that presents a sudden threat to public health, the National Response Center must be called at (800) 424-8802.

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 an area which has one or more of the following characteristics:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit (for example, 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 must also have one or more of the following characteristics:

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

12.0 MATERIALS AND DOCUMENTATION

The Tetra Tech 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
- A OSHA Job Safety and Health Poster
- 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.

- **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). The SSO shall ensure that this poster is not defaced, altered, or covered by other material. See Attachment V.

- **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.

- **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 the personnel to be carried on their person.

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

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

13.0 ACRONYMS / ABBREVIATIONS

AHA	Activity Hazard Analyses
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	Contaminent of Concern
CSP	Certified Safety Professional
DOD	Department of Defense
DRI	Direct Reading Instrument
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSGM	Health and Safety Guidance Manual
HSM	Health and Safety Manager
IDW	Investigation Derived Waste
N/A	Not Available
NALF	Navel Auxiliary Landing Field
NAS	Naval Air Station
NASCC	Naval Air Station Corpus Christi
NIOSH	National Institute for Occupational Safety and Health
OEL	Occupational Exposure Limit
OLF	Outlying Field
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PHSO	Project Health and Safety Officer
PM	Project Manager
PPE	Personal Protective Equipment
SOP	Standard Operating Procedures
SSO	Site Safety Officer
SWMU	Solid Waste Management Unit
TBD	To be determined
Tetra Tech NUS	Tetra Tech

ATTACHMENT I
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 _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Person to notify in the event of an emergency: Name: _____

Phone: _____

Drug or other Allergies: _____

Particular Sensitivities : _____

Do You Wear Contacts? _____

What medications are you presently using? _____

_____

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

_____

_____

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

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

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

_____ _____ _____

Name (Print clearly) Signature Date

ATTACHMENT II
INCIDENT REPORT FORM

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Safety Excellence

TETRA TECH
INCIDENT REPORT

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)	☐	Complete IR Form Only
Injury or Illness	☐	Complete Form IR-A; Injury or Illness
Property or Equipment Damage, Fire, Spill or Release	☐	Complete Form IR-B; Damage, Fire, Spill or Release
Motor Vehicle	☐	Complete Form IR-C; Motor Vehicle

INFORMATION ABOUT THE INCIDENT

Description of Incident

_____

_____

_____

Date of Incident	Time of Incident
	_____ AM ☐ PM ☐ *OR* Cannot be determined ☐
Weather conditions at the time of the incident	**Was there adequate lighting?**
	_____ Yes ☐ No ☐

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:**
Tt Supervisor or Project Manager	**Was supervisor on the scene?**
	Yes ☐ No ☐

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	**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. The following events may trigger a Level 1 RCA: ▪ 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	**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. The following events will require a Level 2 RCA: ▪ 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.

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INCIDENT FORM IR-A

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.

Incident Report Number: (From the IR Form)	

EMPLOYEE INFORMATION

Company Affiliation

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

Full Name	**Company (if not Tt employee)**
Street Address, City, State and Zip Code	**Address Type**
_____ _____	Home address (for Tt employees) ☐ Business address (for subcontractors) ☐

Telephone Numbers

Work: _____ Home: _____ Cell: _____

Occupation (regular job title)	**Department**
Was the individual performing regular job duties?	**Time individual began work**
Yes ☐ No ☐	_____ AM ☐ PM ☐ *OR* Cannot be determined ☐

Safety equipment

Provided? Yes ☐ No ☐

Used? Yes ☐ No ☐ If no, explain why

_____
_____
_____

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

_____

NOTIFICATIONS

Name of Tt employee to whom the injury or illness was first reported	**Was H&S notified within one hour of injury or illness?**
	Yes ☐ No ☐
Date of report	**H&S Personnel Notified**
Time of report	**Time of Report**

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

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

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INCIDENT FORM IR-A

INJURY / ILLNESS DETAILS

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

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

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

MEDICAL CARE PROVIDED

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

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

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

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

SIGNATURES

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

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

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

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INCIDENT FORM IR-B

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.

_____

_____

Response Actions Taken:

_____

_____

_____

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

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

Item:	**Extent of damage:**	**Estimated repair cost**

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

Substance	**Estimated quantity and duration**	**Specify Reportable Quantity (RQ)**
		_____ Exceeded? Yes ☐ No ☐ NA ☐

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

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

NOTIFICATIONS

Required notifications	**Name of person notified**	**By whom**	**Date / Time**
Client: _____ Yes ☐ No ☐			
Agency: _____ Yes ☐ No ☐			
Other: _____ Yes ☐ No ☐			

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

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

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INCIDENT FORM IR-C

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.

Incident Report Number: (From the IR Form)	

INCIDENT DETAILS

Name of road, street, highway or location where accident occurred	**Name of intersecting road, street or highway if applicable**

County	**City**	**State**

Did police respond to the accident?	**Did ambulance respond to the accident?**
Yes ☐ No ☐	Yes ☐ No ☐
Name and location of responding police department	**Ambulance company name and location**
Officer's name/badge #	

Did police complete an incident report? Yes ☐ No ☐ If yes, police report number: _____
Request a copy of completed investigation report and attach to this form.

VEHICLE INFORMATION

How many vehicles were involved in the accident? _____ (Attach additional sheets as applicable for accidents involving more than 2 vehicles.)

Vehicle Number 1 – Tetra Tech Vehicle		**Vehicle Number 2 – Other Vehicle**	
Vehicle Owner / Contact Information		**Vehicle Owner / Contact Information**	
Color		**Color**	
Make		**Make**	
Model		**Model**	
Year		**Year**	
License Plate #		**License Plate #**	
Identification #		**Identification #**	
Describe damage to vehicle number 1		**Describe damage to vehicle number 2**	
Insurance Company Name and Address		**Insurance Company Name and Address**	
Agent Name		**Agent Name**	
Agent Phone No.		**Agent Phone No.**	
Policy Number		**Policy Number**	

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INCIDENT FORM IR-C

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 ☐ Female ☐	**Gender**	Male ☐ Female ☐
Was traffic citation issued to Tetra Tech driver? Yes ☐ No ☐		Was traffic citation issued to driver of other vehicle? Yes ☐ No ☐	
Citation #		**Citation #**	
Citation Description		**Citation Description**	

PASSENGERS IN VEHICLES (NON-INJURED)

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

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 ☐ Female ☐			Yes ☐ No ☐	Yes ☐ No ☐	Injured ☐ Died ☐
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 ☐ Female ☐			Yes ☐ No ☐	Yes ☐ No ☐	Injured ☐ Died ☐

OTHER PROPERTY DAMAGE

Describe damage to property other than motor vehicles	
Property Owner's Name	**Property Owner's Address**

COMPLETE AND SUBMIT DIAGRAM DEPICTING WHAT HAPPENED

ATTACHMENT III
ACTIVITY HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NALF Cabaniss Former Aquadrive Fuel System Site

Task: Site Mobilization/Demobilization and Site Land Survey

Prepared by	J. K. Laffey	**Date**	9/21/11	**FOL**	
Reviewed by	J. Carothers PhD	**Date**	9/22/11	**SSO**	

JOB STEPS	HAZARDS	CONTROLS
• Assembling equipment and supplies • Performing initial/exit inspections of the intended work areas • Arranging for utilities, site access, notifying appropriate client contacts • Performing equipment inspections of vehicles and equipment arriving/preparing to depart the site • Conducting site land and GIS surveys	1. Heavy Equipment	1. Conduct heavy initial site acceptance inspection prior to performing any work at this site. 2. Use the equipment inspection checklist for DPT rigs in Attachment IV. Once the equipment passes inspection the AHA for Soil Boring with DPT or HSA will be followed.
	2. Minor cuts, abrasions or contusions	1. Wear cut-resistant gloves when handling items with sharp or rough edges.
	3. Heavy lifting (muscle strains and pulls)	1. Practice safe lifting techniques. Use mechanical lifting devices such as a dolly whenever possible 2. Ensure clear path of travel. 3. Have a good grasp on object. Perform "test lift" to gauge ability to safely make the lift. 4. Lift with legs not back. Obtain help when needed to lift large, bulky, or heavy items).
	4. Vehicular traffic when moving large equipment to the support area	1. Designate and mark vehicle and equipment staging areas. Inform all site personnel of heavy equipment areas and of their responsibility to stay clear of moving vehicles. 2. In high traffic areas, wear a high-visibility vest, shirt or jacket.
	5. Slips, Trips, Falls	1. Watch for tree branches, roots, weeds, limbs and other ground hazards. 2. Wear appropriate foot protection to prevent slips and trips. 3. Use caution when working on uneven and wet ground surfaces.
	6. Intermittent high noise levels	1. Site personnel are to wear hearing protection if noise levels are such that they must raise their voice in order to communicate with someone who is within arm's reach (approx. 2') of them.

JOB STEPS	HAZARDS	CONTROLS
		2. SSO is responsible for determining and designating when hearing protection is required. 3. Hearing protection is to consist of either ear muffs or plugs that have a noise reduction rating (NRR) of at least 25 dB.
	7. Inclement weather	1. The FOL and/or the SSO will temporarily suspend outside activities in the event of electrical storms or high winds. 2. It is preferred that supported systems such as lightning detection devices or emergency weather broadcasts are employed. 3. However, when this is not possible field personnel should use the 30/30 Rule: *"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."*

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.
Personal Protective Equipment: **Minimum**: Safety toe boots, safety glasses. Optional items: Hardhat, hearing protection. **Hazardous, Toxic and Radioactive Waste (HTRW)**: None anticipated for this task.	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.

I have read and understand this AHA:

Name (Printed)	Signature	Date

ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NALF Cabaniss Former Aquadrive Fuel System Site

Task: Soil Boring with DPT/HSA and Monitoring Well Installation

Prepared by	J. K. Laffey	**Date**	9/21/11	**FOL**	
Reviewed by	J. Carothers PhD	**Date**	9/22/11	**SSO**	

JOB STEPS	HAZARDS	CONTROLS
Drill/DPT Rig set up and operation • Positioning Unit (engaging outriggers. etc.) • Assembling equipment and supplies	1. Struck By	1. Hard hats and high visibility vests for all personnel in work area. 2. Control work area (use flaggers, signage, barricades, and/or other means) and restrict all non-essential personnel from the area. 3. Inspect rig and ensure that all equipment, augers, rods and tools will be properly secured during transport.
	2. Tip Over	1. Do not permit rig to attempt to traverse severely sloping terrain. 2. Use a ground guide along with a functioning back-up alarm during equipment backing. 3. Once rig is sited, deploy outriggers to properly block and level the rig and secure parking brake.
	3. Slips, Trips, Falls	1. Clear trees, roots, weeds, limbs and other ground hazards from the Drill/DPT location. 2. Practice good housekeeping to keep the ground around the Drill/DPT site clear of obstructions, equipment and other tripping hazards. 3. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.
	4. Minor cuts, or abrasions	1. When handling equipment and tools wear cut-resistant gloves when handling items with sharp or rough edges.
	5. Heavy lifting (muscle strains and pulls)	1. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible. 2. Ensure clear path of travel, good grasp on object, perform "test lift" to gauge ability to safely make the lift 3. Lift with legs, obtain help to lift large, bulky, or heavy items.
	6. Insect bites	1. Shake out boots before donning. 2. Use insect repellants (products containing DEET should be applied to exposed skin, products containing Permethrin should be applied to clothing only. Follow manufacturer's recommendations for application).

JOB STEPS	HAZARDS	CONTROLS
		3. Tape up pants leg to work boot joints with duct tape. Wear light-colored clothing to better see and remove any insects. Perform close body inspections at least daily upon leaving the site.
	7. Inclement weather	4. The FOL and/or the SSO will temporarily suspend outside activities in the event of electrical storms or high winds. 5. It is preferred that supported systems such as lightning detection devices or emergency weather broadcasts are employed. 6. However, when this is not possible field personnel should use the 30/30 Rule: *"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."*
Drill/DPT Operations	1. Intermittent high noise levels	1. Operators/nearby personnel are to wear hearing protection if noise levels are such that they must raise their voice in order to communicate with someone who is within arm's reach (approx. 2') of them. 2. SSO responsible for determining and designating when hearing protection is required. 3. Hearing protection is to consist of either ear muffs or ear plugs that have an NRR of at least 25 dB,
	2. Contact with equipment moving parts.	1. Ensure that workers are thoroughly trained and competent to perform their assigned task with the equipment used in investigation. 2. Ensure that back-up alarms are functional on equipment. 3. The equipment operators and Site Supervisors are responsible to ensure that the equipment is properly inspection prior to being permitted onsite. (see Equipment Inspection Checklist Attachment IV) 4. Ensure that all moving parts are guarded if such parts are exposed. Check/test all emergency stop controls.
	3. Contact/striking underground or overhead utilities	1. Movement of rig with mast raised will be strictly prohibited. 2. Inspect for buried and overhead utilities in the vicinity of the Drill/DPT location. Verify the location of utility lines in accordance with the Tetra Tech SOP Utility Location and Excavation Clearance located in Section 4.0 of the HSGM. Plan the move with the local utility companies if utility lines must be moved. 3. Pre-survey the height of equipment and height of utility lines to determine which lines must be removed or raised. Equipment should not come within 20 feet of existing overhead utility lines.
	4. Pressurized hydraulic lines could rupture, causing	1. Inspect all hydraulic lines before placing rig in service. Any damaged hoses or connections must be replaced before unit is used.

JOB STEPS	HAZARDS	CONTROLS
	release of hot hydraulic fluid.	2. Immediately shut down equipment if lines rupture. If rupture occurs, as quickly as possible, berm the liquid to minimize the area over which the liquid spreads. 3. Ensure that all pressurized lines have whip checks.
	5. Workers could trip or fall by the borehole.	1. Cap and flag open boreholes. If left unattended, protect all open boreholes as any open excavation.
Handling drill rods and augers	1. Struck by/entanglement	1. Be prepared for sudden shifting when removing rod sections. 2. Restrict non-essential personnel from approaching working area.
	2. Overhead hazards	1. All personnel within the radius of the Drill/DPT rig must wear ANSI approved hard hats.
	3. Slips, Trips, Falls	1. Clear trees, roots, weeds, limbs and other ground hazards from the location. 2. Practice good housekeeping to keep the ground around the site clear of obstructions, equipment and other tripping hazards. 3. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces. Keep a wide base and assure secure footing while attempting to handler auger flights and tooling.
	4. Contusions, cuts, or abrasions	1. When handling auger flights and tools, wear cut-resistant heavy cotton or leather work gloves when handling items with sharp or rough edges.
	5. Heavy lifting (muscle strains and pulls).	1. Practice safe lifting techniques by using mechanical lifting devices such as a dolly whenever possible. 2. Ensure clear path of travel 3. Have a good grasp on object. Perform "test lift" to gauge ability to safely make the lift. 4. Lift with legs not back. Obtain help when needed to lift large, bulky, or heavy items
Subsurface soil sampling from DPT Micro core tubes	1. Chemical exposure to very low concentrations of metals.	1. Wear surgeons gloves when handling potentially-contaminated media and samples. Avoid contact with potentially-contaminated media to the extent possible. 2. 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.). 3. Exposure via dermal contact and ingestion represent some limited concern during this task.

JOB STEPS	HAZARDS	CONTROLS
	2. Cuts and lacerations – when cutting acetate liners without the proper material handling devices.	1. Always cut away from yourself and others. Do not place items to be cut in your hand or on your knee. 2. Change blades as necessary to maintain a sharp cutting edge as many accidents result dull cutting attachments. 3. Wear cut-resistant gloves (leather or heavy cotton) at least on the non-knife/saw hand, where possible. When cutting acetate liners use the tubing retention tub to secure the tube. 4. Use the knife intended for that purpose. Geoprobe® makes a kit for this purpose.
HSA Operations	1. Auger start up and operation	1. Auger will be engaged only when the hot zone is cleared and site personnel notified. 2. Site personnel will not approach a rotating auger. 3. Use a long handled flat head shovel when removing auger cuttings. Stay away from the augers when rotating. 4. Prevent shovel from lodging into the augers and kicking out. 5. Do not wear loose clothing when working with augers.
	2. Cleaning augers	1. Augers will be cleaned only when they are stopped and in neutral. 2. They will not be restarted until the worker has given a verbal “all clear” to the operator, and the operator has visually determined that the worker is clear of the auger. 3. Only long-handled shovels will be used to remove cuttings from the auger.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
HSA Drill and DPT Rig, bore rods, auger flights, acetate cutting device and sharp knives, hand tools (dollies, hand carts, etc.) **Safety Equipment:** 1. A 20-pound dry chemical ABC fire extinguisher readily available. 2. Spill-control kit available at drilling location.	Visual inspection prior to use by user.	1. Review of AHA during pre-task tailgate safety briefing with all intended task participants. 2. Personnel must be trained in use of drilling equipment. 3. The Drill/DPT operator must have current certifications to operate the equipment.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
3. First-aid kit, eyewash, and an emergency air horn nearby. 4. Portable eye wash bottle **Monitoring Instruments:** none		
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**: none	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.

I have read and understand this AHA:

Name (Printed)	Signature	Date

ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NALF Cabaniss Former Aquadrive Fuel System Site

Task: Concrete Coring

Prepared by	J. K. Laffey	**Date**	9/21/11	**FOL**	
Reviewed by	J. Carothers PhD	**Date**	9/22/11	**SSO**	

JOB STEPS	HAZARDS	CONTROLS
Qualified and trained personnel shall utilize a powered coring machine to saw cut and remove concrete cores.	1. Crushing, pinching, cutting, amputation and bruising hazards as well as caught-on and struck-by hazards are associated with powered handheld equipment usage.	1. Workers shall inspect, test, and determine safe operating condition of all power tools prior to use. 2. Continued, periodic inspections shall be performed assure safe operating condition and proper maintenance. 3. Utilize a coring machine in a well ventilated environment. 4. Prior to use, the operator shall check the blade for damage and ensure that the blade arbor is the proper size and is seated securely on the hub. 5. Use the proper blade for the material being cut. 6. The operator shall use the correct size blade guard for the blade in use. 7. Intentional forcing of the coring tool bit may cause the blade to shatter. 8. The operator shall make shallow cuts with the blade to avoid overheating. 9. Overheating may cause the blade to fail resulting in serious injury. 10. The operator shall lift blade from cutting surface before stopping the machine.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Coring tool, concrete coring bit, hand tools.	Visual inspection prior to use by user.	Review of AHA during pre-task tailgate safety briefing with all intended task participants.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Personal Protective Equipment: **Minimum**: Safety toe boots, safety glasses, face shield, and hearing protection, cotton or leather work gloves. Optional items: Hardhat, **HTRW**: metals	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.

I have read and understand this AHA:

Name (Printed)	Signature	Date

ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NALF Cabaniss Former Aquadrive Fuel System Site

Task: Soil and groundwater sampling and monitoring well purging and development

Prepared by	J. K. Laffey	**Date**	9/21/11	**FOL**	
Reviewed by	J. Carothers PhD	**Date**	9/22/11	**SSO**	

JOB STEPS	HAZARDS	CONTROLS
Groundwater site set up	1. Minor cuts, abrasions or contusions handling equipment and tools	1. Wear cut-resistant gloves when handling items with sharp or rough edges.
	2. Slips, Trips, Falls	1. Clear intended work areas and walking paths of roots, weeds, limbs and other ground hazards. 2. Practice good housekeeping to keep the site clear of obstructions, materials, equipment and other tripping hazards. 3. Ensure that work boots have adequately-aggressive sole design. 4. Use caution when working on uneven and wet ground.
	3. Insect bites, snake bites, and contact with poisonous plants.	1. Shake out boots before donning. 2. Use insect repellants. Products containing DEET should be applied to exposed skin. Products containing Permethrin should be applied to clothing only. Follow manufacturer's recommendations. 3. Tape up pants leg to work boot joints with duct tape and wear light-colored clothing to better see and remove any insects. 4. Avoid potential nesting areas (brush, deadfall, etc.) where insects or snakes may be present. Perform close body inspections at least daily upon leaving the site. Review Natural Hazards information in section 4.0 of the Tetra Tech H&S Guidance Manual with field team as appropriate based on site observations and conditions.

JOB STEPS	HAZARDS	CONTROLS
Taking samples using a small battery-operated pump and placing into sample containers	1. Chemical exposure to very low concentrations of metals.	1. Wear surgeons gloves when handling potentially-contaminated media and samples. 2. Avoid contact with potentially-contaminated media to the extent possible. 3. Follow good decontamination and practice good personal hygiene (hands and face washing) when exiting work area. 4. Hand-to-mouth activities in the work area will be prohibited (eating, drinking, smoking, etc.). 5. Exposure via dermal contact and ingestion represent some limited concern during this task.
Surface soil sampling via hand augering	1. Muscle strains, tendon or ligament sprains, back or other soft-tissue injuries	1. Operating a hand auger can be physically demanding depending on the conditions of the soil, the auger tools, and the physical capabilities of the operator. 2. Only personnel who are confident that they can physically perform this activity without injury should operate a hand auger.
	2. Bruises, abrasions, cuts, foot or eye injuries,	1. Ensure that the hand auger tool is properly maintained. 2. Avoid injury by stopping if strong resistance is encountered (such as if impassable rocky conditions are encountered). 3. Secure assistance when needed. 4. Wear appropriate PPE (work gloves, safety toe shoes, and safety impact eye protection)
	3. Contact with utilities	1. Inspect for buried and overhead utilities in the vicinity of the augering location. 2. Verify the location of utility lines in accordance with Tetra Tech SOP Utility Location and Excavation Clearance in the HSGM Section 7.0.

EQUIPMENT	INSPECTION	TRAINING
Peristaltic pump, tubing, sample collection tools and containers (jars, spatulas, spoons, etc.) **Safety Equipment:** Portable eye wash bottle **Monitoring Instruments:** None	Visual inspection prior to use by user.	Training/experience in proper sample collection, handling and chain of custody requirements.

EQUIPMENT	INSPECTION	TRAINING
Personal Protective Equipment: **Minimum**: nitrile surgeon's type gloves, safety toe boots, safety glasses **Optional items**: Hardhat, hearing protection. If sampling done concurrently with DPT, observe DPT AHA PPE as well. If contact with contaminants is likely, wear chemical-resistant coveralls (e.g., Tyvek) or aprons and surgeon's nitrile gloves under leather/cotton work gloves. **HTRW**: Metals	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	OSHA 40 Hazardous Waste Operations and Emergency Response (HAZWOPER) training, plus appropriate 8-hour annual refresher training for all task participants. Supervisors must have completed additional 8 hours of HAZWOPER training. ALSO: Review of AHA during pre-task tailgate safety briefing with all intended task participants. PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

I have read and understand this AHA:

Name (Printed)	Signature	Date

ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NALF Cabaniss Former Aquadrive Fuel System Site

Task: Decontamination

Prepared by	J. K. Laffey	**Date**	9/21/11	**FOL**	
Reviewed by	J. Carothers PhD	**Date**	9/22/11	**SSO**	

JOB STEPS	HAZARDS	CONTROLS
Personal Decontamination • Equipment drop • Segregated removal of PPE (wash and rinse reusable items, dispose of non-reusable items)	1. Slips, Trips, Falls	1. Clear intended decon area location of roots, weeds, limbs and other ground hazards. 2. Practice good housekeeping to keep the site clear of obstructions, materials, equipment and other tripping hazards. 3. Wear appropriate foot protection to prevent slips and trips. 4. Use caution when working on uneven and wet ground surfaces.
	2. Exposure to contaminated media	1. Follow good decontamination practices (work from top down and outside in). 2. Nitrile gloves are to be the last item of PPE removed. 3. Wash hands and face following personal decontamination and prior to performing any hand-to-mouth activity.
Decontamination of heavy equipment and large tooling (e.g., vehicles, etc.) using pressure washer	1. Noise	1. Pressure washer operator must wear hearing protection (muffs or plugs with NRR of at least 25 dB)
	2. Flying projectiles	1. Restrict other personnel from decon pad during pressure washing operations. 2. Pressure washer operator must exercise care when directing the wand so that it is not pointing at himself/herself or at any other worker. 3. Pressure washer operator must wear full face shield over safety glasses with side shields and brow protection. 4. At SSO discretion, additional PPE consisting of hardhat, rainsuit, apron, and or boot covers may be required during heavy equipment decon operations 5. Depending on observations indicating that significant contact with decon overspray and/or windy conditions during washing activities.
	3. Falling objects	1. Place items to be decontaminated on ground or on washing/drying racks in a manner that they are secure and will not fall.

JOB STEPS	HAZARDS	CONTROLS
		2. Wear safety toe safety footwear.
	4. Strains/sprains from heavy lifting	1. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible. 2. Ensure clear path of travel 3. Have a good grasp on object 4. Perform "test lift" to gauge ability to safely make the lift, 5. Lift with legs not back, 6. Obtain help when needed to lift large, bulky, or heavy items.
	5. Slips/trips/falls	1. Keep decon areas orderly, maintain good housekeeping, 2. Spread light coating of sand on decon pad liner to increase traction.
	6. Exposure to contaminated media	1. Follow good decontamination practices (work from top down and outside in). 2. Surgeon's gloves are to be the last item of PPE removed. 3. Wash hands and face following personal decontamination and prior to performing any hand-to-mouth activity.

EQUIPMENT	INSPECTION	TRAINING
Hand tools including hand brushes, garden sprayers and wash basins. Pressure washer **Monitoring Equipment:** Metals	Visual inspection prior to use by user. Check wooden handles for cracks or splinters. Inspect pressure washer prior to putting into service to ensure that it is in good working order, and ensure that fittings are secure.	None required. Review manufacturer's instructions and safety guidelines prior to use. .

EQUIPMENT	INSPECTION	TRAINING
Personal Protective Equipment: <u>Minimum</u>: Safety toe boots, safety glasses Decontamination pad pressure washer operators are to wear full face shield over safety glasses with side shields and brow protection, hearing protection, and nitrile gloves. If contact with overspray cannot be avoided, rain suit or moisture-repellant disposable coveralls may be specified by the SSO. **<u>Optional items</u>**: Hardhat, hearing protection. **<u>HTRW</u>**: none	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	OSHA 40 Hazardous Waste Operations and Emergency Response (HAZWOPER) training, plus appropriate 8-hour annual refresher training for all task participants. Supervisors must have completed additional 8 hours of HAZWOPER training. Also Review of AHA during tailgate safety briefing with the intended task participants. PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees' 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

I have read and understand this AHA:

Name (Printed)	Signature	Date

ACTIVITY HAZARD ANALYSIS (AHA)

Site Name: NALF Cabaniss Former Aquadrive Fuel System Site

Task: IDW Management

Prepared by	J. K. Laffey	**Date**	9/21/11	**FOL**	
Reviewed by	J. Carothers PhD	**Date**	9/22/11	**SSO**	

JOB STEPS	HAZARDS	CONTROLS
Filling, moving 55-gallon drums of IDW	1. Heavy lifting	1. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible. 2. Ensure clear path of travel, 3. Have a good grasp on object and perform "test lift" to gauge ability to safely make the lift. 4. Lift with legs not back 5. Obtain help when needed to lift large, bulky, or heavy items.
	2. Struck by/pinches compressions	1. Exercise caution when handling drums. 2. Position drums so that there is adequate room between them for placement and repositioning.
	3. Falling objects (drums)	1. Do not stack drums on top of each other. 2. Do not place more than 4 drums to a pallet. 3. Leave at least 4 ft. of clearance between pallets for clear access.
	4. Slips, Trips, Falls	1. Maintain good housekeeping in IDW storage areas, keeping it clear of loose debris and other potential tripping hazards. 2. Wear appropriate foot protection to prevent slips and trips. 3. Use caution when working on uneven and wet ground surfaces.
	5. Foot hazards	1. Safety toe foot protection will be required for IDW container handling activities.
	6. Strains/sprains due to heavy lifting	1. Practice safe lifting techniques (use mechanical lifting devices such as a dolly whenever possible, ensure clear path of travel, good grasp on object, lift with legs not back, and obtain help when needed to lift large, bulky, or heavy items).
	7. Minor contusions, abrasions, cuts	1. Wear cut-resistant gloves when handling items with sharp or rough edges.

EQUIPMENT	INSPECTION	TRAINING
Hand tools (drum dollies, wrenches, etc.)	Visual inspection prior to use by user. Check wooden handles for cracks or splinters.	All personnel participating in this activity must be current with HAZWOPER training requirements.
Personal Protective Equipment: <u>Minimum:</u> Safety toe boots, safety glasses **<u>Optional items</u>**: Hardhat, cotton or leather work gloves. **<u>HTRW</u>**: If contact with IDW is likely, wear chemical-resistant coveralls (e.g., Tyvek) or aprons and surgeon's nitrile gloves under leather/cotton work gloves.	Initial PPE inspection performed by SSO. Ongoing (prior to each use) inspections responsibilities of PPE users.	PPE training in proper use, care, storage, and limitations. It is anticipated that this has been covered in employees 40 hour HAZWOPER training, which is to be verified by the SSO through initial training documentation and review prior to permitting personnel to participate in site activities, and will be confirmed by visual observations of worker activities.

I have read and understand this AHA:

Name (Printed)	Signature	Date

ATTACHMENT IV

EQUIPMENT INSPECTION CHECKLIST

Equipment Inspection Checklist for Drill Rigs

Company: _____ **Unit/Serial No#:** _____

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

Project Name: _____ **Project No#:** _____

Yes	No	NA	Requirement	Comments
			Emergency Stop Devices	
☐	☐	☐	• Emergency Stop Devices (At points of operation)	
☐	☐	☐	• Have all emergency shut offs identified been communicated to the field crew?	
☐	☐	☐	• Has a person been designated as the Emergency Stop Device Operator?	
			Highway Use	
☐	☐	☐	• Cab, mirrors, safety glass?	
☐	☐	☐	• Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use?	
☐	☐	☐	• Seat Belts?	
☐	☐	☐	• Is the equipment equipped with audible back-up alarms and back-up lights?	
☐	☐	☐	• Horn and gauges	
☐	☐	☐	• Brake condition (dynamic, park, etc.)	
☐	☐	☐	• Tires (Tread) or tracks	
☐	☐	☐	• Windshield wipers	
☐	☐	☐	• Exhaust system	
☐	☐	☐	• Steering (standard and emergency)	
☐	☐	☐	• Wheel Chocks?	
☐	☐	☐	• Are tools and material secured to prevent movement during transport? Especially those within the cab?	
☐	☐	☐	• Are there flammables or solvents or other prohibited substances stored within the cab?	
☐	☐	☐	• Are tools or debris in the cab that may adversely influence operation of the vehicle (in and around brakes, clutch, gas pedals)	

Unit/Serial No#:_____ **Inspection Date:** ____/____/____

Yes	No	NA	Requirement	Comments
			Fluid Levels:	
☐	☐	☐	• Engine oil	
☐	☐	☐	• Transmission fluid	
☐	☐	☐	• Brake fluid	
☐	☐	☐	• Cooling system fluid	
☐	☐	☐	• Hoses and belts	
☐	☐	☐	• Hydraulic oil	
			High Pressure Hydraulic Lines	
☐	☐	☐	• Obvious damage	
☐	☐	☐	• Operator protected from accidental release	
☐	☐	☐	• Coupling devices, connectors, retention cables/pins are in good condition and in place	
			Mast Condition	
☐	☐	☐	• Structural components/tubing	
☐	☐	☐	• Connection points	
☐	☐	☐	• Pins	
☐	☐	☐	• Welds	
☐	☐	☐	• Outriggers	
☐	☐	☐	• Operational	
☐	☐	☐	• Plumb (when raised)	
			Hooks	
☐	☐	☐	• Are the hooks equipped with Safety Latches?	
☐	☐	☐	• Does it appear that the hook is showing signs of wear in excess of 10% original dimension?	
☐	☐	☐	• Is there a bend or twist exceeding 10% from the plane of an unbent hook?	
☐	☐	☐	• Increase in throat opening exceeding 15% from new condition	
☐	☐	☐	• Excessive nicks and/or gouges	
☐	☐	☐	• Clips	
☐	☐	☐	• Number of U-Type (Crosby) Clips	
			(cable size 5/16 – 5/8 = 3 clips minimum)	
			(cable size 3/4 – 1 inch = 4 clips minimum)	
			(cable size 1 1/8 – 1 3/8 inch = 5 clips minimum)	

Unit/Serial No#:_____ **Inspection Date:** ____/____/____

Yes	No	NA	Requirement	Comments
☐	☐	☐	Power cable and/or hoist cable • Reduction in Rope diameter π (5/16 wire rope>1/64 reduction nominal size -replace) (3/8 to 1/2 wire rope>1/32 reduction nominal size-replace) (9/16 to 3/4 wire rope>3/64 reduction nominal size-replace)	
☐	☐	☐	• Number of broken wires (6 randomly broken wires in one rope lay) (3 broken wires in one strand)	
☐	☐	☐	• Number of wire rope wraps left on the Running Drum at nominal use (≥3 required)	
☐	☐	☐	- Lead (primary) sheave is centered on the running drum	
☐	☐	☐	• Lubrication of wire rope (adequate?)	
☐	☐	☐	• Kinks, bends – Flattened to > 50% diameter	
☐	☐	☐	Hemp/Fiber rope (Cathead/Split Spoon Hammer) • Minimum ¾; maximum 1 inch rope diameter (Inspect for physical damage)	
☐	☐	☐	• Rope to hammer is securely fastened	
☐	☐	☐	Safety Guards – • Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact?	
☐	☐	☐	• Hot pipes and surfaces exposed to accidental contact?	
☐	☐	☐	• High pressure lines	
☐	☐	☐	• Nip/pinch points	
☐	☐	☐	Operator Qualifications • Does the operator have proper licensing where applicable, (e.g., CDL)?	
☐	☐	☐	• Does the operator, understand the equipment's operating instructions?	
☐	☐	☐	• Is the operator experienced with this equipment?	
☐	☐	☐	• Is the operator 21 years of age or more?	

Unit/Serial No#:_____ **Inspection Date:** ____/____/____

Yes	No	NA	Requirement	Comments
			PPE Required for Drill Rig Exclusion Zone	
☐	☐	☐	• Hardhat	
☐	☐	☐	• Safety glasses	
☐	☐	☐	• Work gloves	
☐	☐	☐	• Chemical resistant gloves_____	
☐	☐	☐	• Steel toed Work Boots	
☐	☐	☐	• Chemical resistant Boot Covers	
☐	☐	☐	• Apron	
☐	☐	☐	• Coveralls Tyvek, Saranex, cotton)_____	
			Other Hazards	
☐	☐	☐	• Excessive Noise Levels? _____dBA	
☐	☐	☐	• Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.)	
☐	☐	☐	- MSDSs available?	
☐	☐	☐	• Will On-site fueling occur	
☐	☐	☐	- Safety cans available?	
☐	☐	☐	- Fire extinguisher (Type/Rating -_____ _)	

Approved for Use ☐ Yes ☐ No ☐ See Comments

_____ _____

Site Health and Safety Officer Operator

Equipment Inspection Checklist for DPT Rigs

Company: _____ **Unit/Serial No#:** _____

Inspection Date: ____/____/____ **Time:** _____:_____ **Equipment Type:** _____

Project Name: _____ **Project No#:** _____

Yes	No	NA	Requirement	Comments
☐	☐	☐	Emergency Stop Devices • Emergency Stop Devices (At points of operation)	
☐	☐	☐	• Have all emergency shut offs identified been communicated to the field crew?	
☐	☐	☐	• Has a person been designated as the Emergency Stop Device Operator?	
☐	☐	☐	Highway Use • Cab, mirrors, safety glass?	
☐	☐	☐	• Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use?	
☐	☐	☐	• Seat Belts?	
☐	☐	☐	• Is the equipment equipped with audible back-up alarms and back-up lights?	
☐	☐	☐	• Horn and gauges	
☐	☐	☐	• Brake condition (dynamic, park, etc.)	
☐	☐	☐	• Tires (Tread) or tracks	
☐	☐	☐	• Windshield wipers	
☐	☐	☐	• Exhaust system	
☐	☐	☐	• Steering (standard and emergency)	
☐	☐	☐	• Wheel Chocks?	
☐	☐	☐	• Are tools and material secured to prevent movement during transport? Especially those within the cab?	
☐	☐	☐	• Are there flammables or solvents or other prohibited substances stored within the cab?	
☐	☐	☐	• Are tools or debris in the cab that may adversely influence operation of the vehicle (in and around brakes, clutch, gas pedals)	

Yes	No	NA	Requirement	Comments
☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐	Fluid Levels: • Engine oil • Transmission fluid • Brake fluid • Cooling system fluid • Hoses and belts • Hydraulic oil	
☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	High Pressure Hydraulic Lines • Obvious damage • Operator protected from accidental release • Coupling devices, connectors, retention cables/pins are in good condition and in place	
☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐	Mast Condition • Structural components/tubing • Connection points • Pins • Welds • Outriggers • Operational • Plumb (when raised)	
☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	Safety Guards – • Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? • Hot pipes and surfaces exposed to accidental contact? • High pressure lines • Nip/pinch points	
☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	Operator Qualifications • Does the operator have proper licensing where applicable, (e.g., CDL)? • Does the operator, understand the equipment's operating instructions? • Is the operator experienced with this equipment? • Is the operator 21 years of age or more?	

Yes	No	NA	Requirement	Comments
			PPE Required for Drill Rig Exclusion Zone	
☐	☐	☐	• Hardhat	
☐	☐	☐	• Safety glasses	
☐	☐	☐	• Work gloves	
☐	☐	☐	• Chemical resistant gloves_____	
☐	☐	☐	• Steel toed Work Boots	
☐	☐	☐	• Chemical resistant Boot Covers	
☐	☐	☐	• Apron	
☐	☐	☐	• Coveralls Tyvek, Saranex, cotton)_____	
			Other Hazards	
☐	☐	☐	• Excessive Noise Levels? _____dBA	
☐	☐	☐	• Chemical hazards (Drilling supplies - Sand, bentonite, grout, fuel, etc.)	
☐	☐	☐	- MSDSs available?	
☐	☐	☐	• Will On-site fueling occur	
☐	☐	☐	- Safety cans available?	
☐	☐	☐	- Fire extinguisher (Type/Rating -_____ _)	

Approved for Use ☐ Yes ☐ No ☐ See Comments

_____ _____

Site Health and Safety Officer Operator

ATTACHMENT V
OSHA POSTER

Job Safety and Health

It's the law!

OSHA

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

EMPLOYEES:

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

EMPLOYERS:

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

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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.

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