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NAS KEY WEST
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HEALTH AND SAFETY PLAN FOR TREATABILITY STUDY, MONITORED NATURAL
ATTENUATION AND WELL ABANDONMENT FOR VARIOUS SITES WITH TRANSMITTAL
LETTER NAS KEY WEST FL
9/20/2005
TETRA TECH NUS



TETRA TECHNUS, INC.

AIK-05-0231

September 20, 2005

Project Numbers N5079/N4779

via FedEx

Commander
Department of the Navy
SOUTHDIV NAVFACENGCOM
ATTN: Gabriel Magwood (Code ES24)
P.O. Box 190010
North Charleston, South Carolina 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 0297/0318

Subject: Health and Safety Plan for Treatability Study, Monitored Natural Attenuation Sampling and Well Abandonment at Multiple Sites, Rev. 0, Naval Air Station, Key West, Florida

Dear Mr. Magwood:

TtNUS is pleased to submit the enclosed PDF file for the Health and Safety Plan for Treatability Study, Monitored Natural Attenuation Sampling and Well Abandonment at Multiple Sites, Rev. 0, Naval Air Station (NAS), Key West, Florida. I am not expecting to receive any comments on this plan.

Please call me at (803) 649-7963, extension 345, if you have any questions regarding the enclosed CD.

Sincerely,

C. M. Bryan
Project Manager

CMB:spc

Enclosure

c: Ms. Debra M. Humbert (Cover Letter Only)
Mr. R. Courtright, NAS Key West
Ms. T. Vaught, FDEP

Mr. M. Perry/File
Files: N5079-4.2/N4779-4.2

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-94-D-0888



Health and Safety Plan for Treatability Study, Monitored Natural Attenuation Sampling and Well Abandonment for Multiple Sites

Naval Air Facility Key West
Key West, Florida

Contract Task Orders 0297 and 0318

September 2005



Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

**HEALTH AND SAFETY PLAN
FOR
TREATABILITY STUDY, MONITORED NATURAL
ATTENUATION SAMPLING AND WELL ABANDONMENT
AT
MULTIPLE SITES AT THE NAVAL AIR FACILITY KEY WEST**

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

**Submitted to:
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Naval Facilities Engineering Command
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North Charleston, South Carolina 29406**

**Submitted by:
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**CONTRACT NO. N62467-94-D-0888
CONTRACT TASK ORDERS 0297 & 0318**

September 2005

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1.0 INTRODUCTION

The objective of this Health and Safety Plan (HASP) is to provide the minimum safety practices and procedures to Tech NUS (TtNUS) personnel conducting the following activities at the Naval Air Station (NAS) Key West, located in Key West, Florida:

- Treatability Study involving passive free product recovery at the Geiger Key Hawk Missile Site G-01 (CTO 318)
- Monitored Natural Attenuation (MNA) groundwater sampling at the Boca Chica Tank Farm (CTO 297)
- Abandonment of monitoring wells at Boca Chica Blast Media Disposal Area, Site A-824, and Boca Chica Hawk Missile Site. Abandonment of air sparge and soil vapor extraction wells at the Flying Club will also be performed using over-drilling to remove the casings. (CTO 318).

This HASP has been prepared using the latest available information regarding known or suspected chemical contaminants and potential and foreseeable physical hazards associated with the planned work at NAS Key West. This HASP has been designed to be used in accordance with the Tetra Tech NUS Health and Safety Guidance Manual. The Guidance Manual provides detailed information pertaining to procedures to be performed on site as directed by the HASP, as well as TtNUS standard operating procedures.

This HASP has been written to support proposed tasks and techniques associated with the scope of work as presented in Section 4.0. Should the proposed work site conditions and/or suspected hazards change, or if new information becomes available, this document will be modified. All changes to the HASP will be made with the approval of the TtNUS CLEAN Health and Safety Manager (HSM) and the Task Order Manager (TOM). The TOM will notify all affected personnel of all changes.

The elements of this HASP are in compliance with the requirements established by OSHA 29 Code of Federal Regulations (CFR) 1910.120, "Hazardous Waste Operations and Emergency Response" (HAZWOPER). The information contained in this plan, as well as policies on conducting on site operations, have been obtained from the TtNUS Health and Safety Program and NAS Key West policies and procedures.

1.1 AUTHORITY

This work is authorized under the Comprehensive Long - Term Environmental Action Navy (CLEAN) contract, administered through the U.S. Navy Southern Division Naval Facilities Engineering Command, as defined under Contract No. N62467-94-D-0888; Contract Task Order Numbers 0297 and 0318.

1.2 KEY PROJECT PERSONNEL AND ORGANIZATION

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

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

- The TtNUS Field Operations Leader (FOL) is responsible for implementation of this HASP. The FOL manages field activities, executes the work plan, and enforces safety procedures, as applicable to the work plan. Specifically, the FOL will:
 - Verify training and medical status of on-site personnel in relation to site activities.
 - Assist and represent TtNUS with emergency services (if needed)
 - Provide elements site-specific training for all on site personnel.

- The TtNUS Site Safety Officer or their representative supports the FOL concerning all aspects of health and safety including, but not limited to:
 - Coordinating all health and safety activities
 - Selecting, applying, inspecting, and maintaining personal protective equipment
 - Establishing work zones and control points
 - Implementing air monitoring procedures
 - Implementing hazard communication, respiratory protection, and other associated safety and health programs
 - Coordinating emergency services
 - Providing elements of site-specific training

- Compliance with these requirements is monitored by the Project Health and Safety Officer (PHSO) and is coordinated through the HSM.

1.3 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Naval Air Station (NAS) Key West **Address:** Key West, Florida

Site Point of Contact: Mr. Robert Courtright **Phone Number:** (305) 293-2881

Purpose of Site Visit: TtNUS will conduct a treatability study involving passive free product recovery at the Geiger Key Hawk Missile Site G-01; Monitored Natural Attenuation (MNA) groundwater sampling at the Boca Chica Tank Farm; Abandonment of monitoring wells at Boca Chica Blast Media Disposal Area, Site A-824, and Boca Chica Hawk Missile Site; and abandonment of air sparge and soil vapor extraction wells at the Flying Club using over-drilling to remove the casings.

Project Team:

Tetra Tech NUS Personnel:

Chuck Bryan, P.G.
Gary Braganza
Matthew M. Soltis, CIH, CSP
Donald J. Westerhoff, CSP
TBD
TBD

Discipline/Tasks Assigned:

Task Order Manager (TOM)
Field Operations Leader (FOL)
Health and Safety Manager (HSM)
Project Health and Safety Officer (PHSO)
Site Safety Officer (SSO)
Geologist

Subcontractor Personnel:

Discipline/Tasks Assigned:

Driller / Well Abandonment
IDW Disposal

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

Prepared by: Donald J. Westerhoff, CSP

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. However, given the nature and scope of planned site activities, significant emergency situations are unlikely. In the event of an emergency, TtNUS personnel will provide emergency response support only to the capabilities of on site personnel. Emergency situations that are beyond the capabilities of on site TtNUS personnel will require assistance from outside emergency responders. In the event of emergencies that are beyond the capabilities of on site personnel, an evacuation will be initiated. In an evacuation, site personnel will move to a safe place of refuge and the appropriate emergency response agencies will be notified. The emergency response agencies listed in Table 2-1 of 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 areas of site operations, which ensures adequate emergency response time. This emergency action plan conforms to the requirements of OSHA Standard 29 CFR 1910.38(a), as allowed in OSHA 29 CFR 1910.120(l)(1)(ii).

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

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

2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, there is very minor potential for injury or illnesses resulting from exposure to chemical, physical, or other hazards, and subsequently little likelihood of emergency situations. To further minimize or eliminate potential emergency situations, pre-emergency planning activities associated with this project will be implemented. The FOL is responsible for:

- Coordinating response actions with NAS Key West Emergency Services personnel to ensure that TtNUS emergency action activities are compatible with existing facility emergency response procedures.
- 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.

2.3 EMERGENCY RECOGNITION AND PREVENTION

2.3.1 Recognition

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

2.3.2 Prevention

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

2.4 SAFE DISTANCES AND PLACES OF REFUGE

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

2.5 EVACUATION ROUTES AND PROCEDURES

Once an evacuation is initiated, personnel will terminate site activities and proceed immediately to the designated place of refuge, unless doing so would further jeopardize the welfare of workers. In such an event, personnel will proceed to a designated alternate location and remain there until further notification from the FOL. The use of these locations as assembly points provides communication and a direction point for emergency services, should they be needed.

2.5.1 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 not be performed if the incident warrants immediate evacuation.

TtNUS personnel will perform removal of personnel from emergency situations and may provide initial medical support for injury/illnesses requiring only first-aid level support. Medical attention above that level will require assistance and support from the designated emergency response agencies. Attachment I provides the procedure to follow when reporting an injury/illness, and the form to be used for this purpose. **If the emergency involves personnel exposures to chemicals, follow the steps provided in Figure 2-1.**

FIGURE 2-1 EMERGENCY RESPONSE PROTOCOL

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

In the event of a personnel exposure to a hazardous substance or agent:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this HASP by suitable and appropriate conveyance (i.e. ambulance for serious events)
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- If the exposed person is a TtNUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. The care of the victim will be monitored by WorkCare physicians. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 (enter Ext. 109), or follow the voice prompt for after hours and weekend notification, and be prepared to provide:
 - 1) Any known information about the nature of the exposure.
 - 2) As much of the exposure history as was feasible to determine in the time allowed.
 - 3) Name and phone number of the medical facility to which the victim(s) has/have been taken.
 - 4) Name(s) of the exposed Tetra Tech NUS, Inc. employee(s).
 - 5) Name and phone number of an informed site officer who will be responsible for further investigations.
- Fax appropriate information (e.g., MSDS) to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety Department (Matt Soltis) and Human Resources Manager Marilyn Duffy at 1-800-245-2730.

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

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

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

**FIGURE 2-1 (continued)
POTENTIAL EXPOSURE REPORT**

Name: _____ Date of Exposure: _____

Social Security No.: _____ Age: _____ Sex: _____

Client Contact: _____ Phone No.: _____

Company Name: _____

I. Exposing Agent

Name of Product or Chemicals (if known): _____

Characteristics (if the name is not known)

Solid Liquid Gas Fume Mist Vapor

II. Dose Determinants

What was individual doing? _____

How long did individual work in area before signs/symptoms developed? _____

Was protective gear being used? If yes, what was the PPE? _____

Was there skin contact? _____

Was the exposing agent inhaled? _____

Were other persons exposed? If yes, did they experience symptoms? _____

III. Signs and Symptoms (check off appropriate symptoms)

Immediately With Exposure:

Burning of eyes, nose, or throat

Tearing

Headache

Cough

Shortness of Breath

Chest Tightness / Pressure

Nausea / Vomiting

Dizziness

Weakness

Delayed Symptoms:

Weakness

Nausea / Vomiting

Shortness of Breath

Cough

Loss of Appetite

Abdominal Pain

Headache

Numbness / Tingling

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

Burning of eyes, nose, or throat

Tearing

Headache

Cough

Shortness of Breath

Chest Tightness / Pressure

Cyanosis

Nausea / Vomiting

Dizziness

Weakness

Loss of Appetite

Abdominal Pain

Numbness / Tingling

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

Improved: _____ Worsened: _____ Remained Unchanged: _____

V. Treatment of Symptoms (check off appropriate response)

None: _____ Self-Medicating: _____ Physician Treated: _____

2.6 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

Since TtNUS personnel will be working in close proximity to each other, voice commands will comprise the mechanisms to alert site personnel of an emergency. If an incident occurs, site personnel will initiate the following procedures:

- Initiate incident alerting procedures (if needed) verbally.
- Describe to the FOL (who will serve as the Incident Coordinator) what has occurred and provide as many details as possible.
- If the FOL determines that the situation is beyond the capabilities of the site personnel emergency services will be contact using the emergency reference information listed in Table 2-1. Explain the situation and the appropriate emergency services will be dispatched. **Stay on the phone and follow the instructions of the emergency contact.**

2.7 EMERGENCY CONTACTS

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

**TABLE 2-1
EMERGENCY REFERENCE
NAS KEY WEST
KEY WEST, FLORIDA**

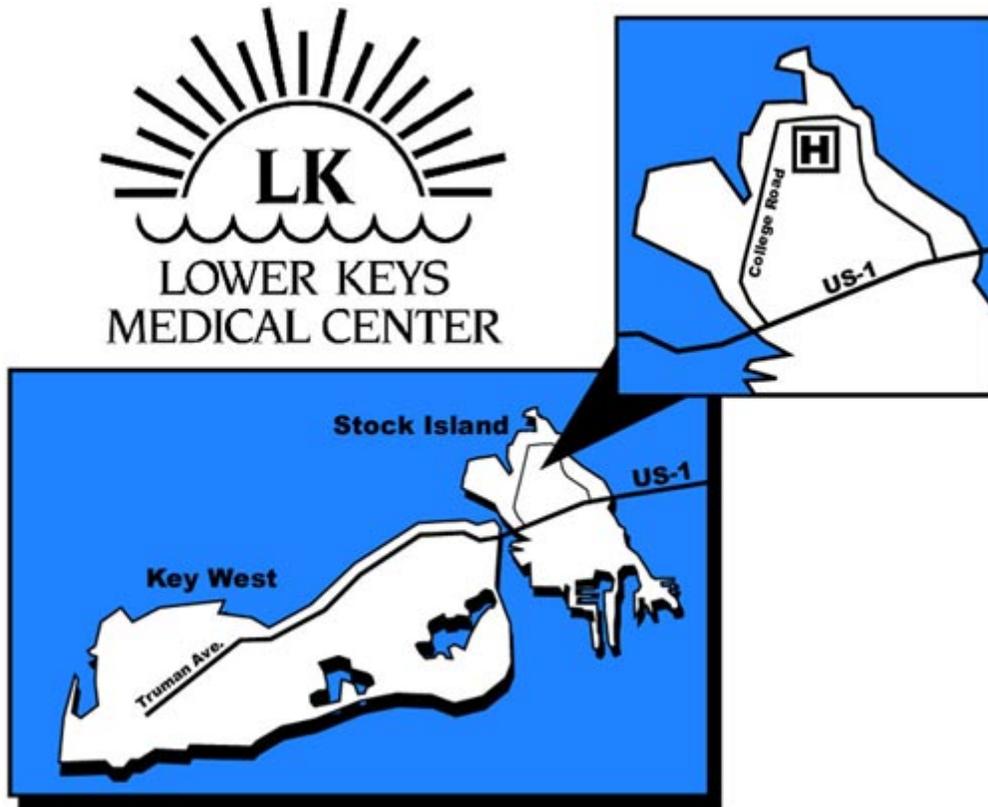
AGENCY	TELEPHONE
Key West Police/Rescue Services	911 or (305) 293-2971
NAS Key West Point of Contact Robert Courtright	(305) 293-2881
Base Police	(305) 293-2114
Base Fire Department Boca Chica	(305) 293-3333
Hospital: Lower Florida Keys Health System	(305) 294-5531
Base Officer of the Day (OOD)	(305) 293-2971
Sunshine State One-Call (utility clearance)	(800) 432-4770
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
Poison Control Center	(800) 222-1222
TtNUS, Aiken Office	(803) 649-7963
Poison Control Center	(800) 222-1222
Task Order Manager Chuck Bryan	(803) 649-7963 x345
Field Operations Leader Gary Braganza	(954) 570-5225 X227
TtNUS, Pittsburgh Office	(800) 245-2730
Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer Donald J. Westerhoff, CSP	(412) 921-7281

2.8 EMERGENCY ROUTE TO HOSPITAL

The closest hospital to NAS Key West is Lower Florida Keys Health System. An area map showing the proximity of NAS Key West to the hospital is incorporated into this HASP as Figure 2-2. Directions are as follows:

From Boca Chica go south on U.S. 1. Proceed to first traffic light at JUNIOR COLLEGE ROAD. Turn RIGHT and Proceed on JUNIOR COLLEGE ROAD and you will see HOSPITAL SIGN. Follow road to HOSPITAL which will be on the RIGHT. Hospital is located at 5900 COLLEGE ROAD ON STOCK ISLAND.

FIGURE 2-2
Route to Hospital



2.9 INJURY AND ILLNESS REPORTING

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical service personnel. This information is listed on Medical Data Sheets (see Attachment II) filed onsite. If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel. As soon as possible, the Navy contact must be informed of any incident or accident that requires medical attention.

2.10 PPE AND EMERGENCY EQUIPMENT

First-aid kits, eye wash units (or bottles of disposable eyewash solution) and fire extinguishers 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 or site vehicles. Personnel will only provide first-aid assistance to the level of their training.

3.0 SITE BACKGROUND

NAS Key West is in southern Monroe County, Florida. The U.S. Navy manages 6,323 acres of land divided into 20 separate tracts in the lower Florida Keys, concentrated around Key West and Boca Chica Key. The Naval Facility at Key West was disestablished in 1974, resulting in the relocation of several units. At present, NAS Key West is proceeding with realignment of aviation operations, a research laboratory, communications intelligence; counternarcotics air surveillance operations, a weather service, and several other activities on Key West. In addition to the Naval activities and units, other Department of Defense (DOD) and Federal agencies at NAS Key West include the U.S. Air Force, U.S. Army, and U.S. Coast Guard.

Several installations in various parts of the lower Florida Keys comprise the Naval Complex at Key West. Most of these are on Key West or Boca Chica Key. Key West, one of the two westernmost major islands of the Florida Keys, is approximately 150 miles southwest of Miami and 90 miles north of Havana, Cuba. Key West is connected to the mainland by the Overseas Highway (U.S. Highway No. 1). The topography at the NAS Key West is generally flat.

3.1 SITE HISTORY

The following are brief descriptions for each site. A more detailed description is found in the Site Work Plan.

3.1.1 Geiger Key Hawk Missile Site G-01

Geiger Key Hawk Missile Site G-01 is located in Section 27, Township 67 South, Range 26 East. The site is located south of State Road S-941 (Old Boca Chica Road) on the southwest end of Geiger Key. The site topography is level and the elevation of the site is less than 5 feet above mean sea level (msl). The site is approximately one-quarter-mile from the Atlantic Ocean.

Two aboveground storage tanks (ASTs) used to store diesel fuel for emergency generators were located at the Geiger Key Hawk Missile Site. The tanks also reportedly stored jet propellant (JP-5) fuel on occasion. The 2,000-gallon and 500-gallon tanks were closed in place on April 27, 1996. The Closure Report indicated that the groundwater in the vicinity of the 2,000-gallon tank AST showed signs of petroleum hydrocarbon contamination and recommended that a Contamination Assessment be performed.

Petroleum contamination was identified during a site assessment in soil and groundwater extending from the 2,000-gallon AST to the north end of the study area. The Site Assessment Report (SAR) concluded that the horizontal extent of contamination at the Geiger Key Hawk Missile Site G-01 was not fully defined. Monitored Natural Attenuation (MNA) was recommended for the site, following the installation of additional monitoring wells. FDEP approved the SAR on May 2, 2002, concurring with the recommendation to continue further field investigation to delineate the extent of the petroleum hydrocarbons (BBL, 2002). TtNUS performed a Supplemental Site Assessment with additional screening of soil and groundwater resulting in the installation of six additional monitoring wells. Free product was detected in one monitoring well at the site. The Supplemental Site Assessment Report (SSAR) recommended active remediation and the preparation of a Remedial Action Plan (RAP).

3.1.2 Boca Chica Tank Farm

The Boca Chica Tank Farm is located on Boca Chica Key. The tank farm has been used to store jet fuel, aviation gasoline, waste oil, diesel fuel, and unleaded gasoline for various base activities since 1942. There have been several petroleum discharges at the Boca Chica Tank Farm over several years. There was an earlier site contamination assessment and soil initial remediation performed in the mid-1990s. The site was issued a no further action (NFA) order from FDEP on July 16, 1999. After that investigation and remediation, new evidence of discharges was discovered upon removal of a pipeline and tank at the Boca Chica Tank Farm. Jet fuel was discovered in the soil and groundwater during a fuel pipeline removal near the entrance gate. Fuel was also discovered in the soil and groundwater during closure of Tank A-929, a 1,500-gallon UST. The two sites and their soil and groundwater plumes intermingle.

The first round of sampling under the MNA Plan indicated that one well had petroleum hydrocarbon concentrations exceeding Poor Quality Aquifer Criteria. The second round of sampling performed in September 2001 produced similar results. Based on the results of the two MNA events, the Navy requested that monitoring be restricted to six monitoring wells: the source well and five perimeter wells.

TtNUS began MNA sampling at Boca Chica Tank Farm in May 2003. Groundwater samples were collected during both high and low tide in August 2003. These results are reported in the May 2003 MNA Report for Valve Pit No. 8 and Boca Chica Tank Farm and the August 2003 MNA Report for Truck Fill Stand, Valve Pit No. 8, and Boca Chica Tank Farm. A third MNA event was performed in July 2004, with exceedances observed in monitoring well BCTF-PMW-18 (source well). VOC concentrations, in particular xylenes, have decreased since August 2003. PAH concentrations have remained essentially the same as in previous sampling events (TtNUS, 2004).

3.1.3 Boca Chica Hawk Missile Site B-01

Boca Chica Hawk Missile Site B-01 is located on the northern end of Boca Chica Key, in Section 19, Township 67 South, Range 26 East. The site has been abandoned and no activities are conducted with the exception of a tower operated by the National Oceanic and Atmospheric Administration (NOAA) and an associated emergency generator with 1,000-gallon AST containing jet propellant fuel (JP-5), located approximately 250 feet from the study area.

A 2,000-gallon AST and a 500-gallon AST were removed from the site on April 14, 1996. These tanks were used to store diesel fuel for the site's emergency generators. They may have also been used to store JP-5 fuel on occasion. The Closure Report indicated that the soil and groundwater in the vicinity of the 2,000-gallon AST exhibited signs of petroleum contamination, and recommended that a Contamination Assessment be performed. The Navy submitted a Closure Assessment Form to FDEP on June 17, 1996.

A site assessment was conducted by BBL and a SAR was submitted to FDEP in February 2002. Concentrations of contaminants of concern (COCs) in soil were below soil cleanup target levels (SCTLs), and organic vapor analyzer (OVA) readings did not exceed 10 parts per million (ppm). Polynuclear aromatic hydrocarbons (PAHs) were detected above Groundwater Cleanup Target Levels (GCTLs) in groundwater from the Boca Chica Hawk Missile Site B-01. However, no other Kerosene Analytical Group (KAG) constituents were detected above GCTLs. BBL recommended that MNA take place at the site at two monitoring wells for one to two years and that groundwater from the site be analyzed for PAHs only. FDEP approved the SAR and issued a Natural Attenuation Monitoring Plan Approval Order on May 3, 2002.

TtNUS began MNA sampling at the Boca Chica Hawk Missile Site in November 2003. Subsequent events were performed in February and May 2004. No PAHs were detected above GCTLs in groundwater for three consecutive monitoring events. NFA was proposed for the site and a Site Rehabilitation Completion was issued because NFA criteria have been met.

3.1.4 Site A-824

Building A-824 is located within the boundaries of Solid Waste Management Unit (SWMU) 7. This building was previously used to store supplies and small electrical transformers. It was also used for temporary staging of 55-gallon drums of hazardous waste. Although no reported release of petroleum hydrocarbon contaminants was recorded, fuel contamination identified to the east of the building during the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI)/Remedial Investigation (RI) suggested a possible roadside diesel spill. Fuel constituents were also discovered in the area

between the access roads to the east of Building A-824 during the Supplemental RFI/RI performed by Brown and Root Environmental, Inc. Additional investigation under the NAS Key West Underground Storage Tank (UST) program was recommended in the Supplemental RFI/RI because the contamination was deemed a petroleum issue that should not be associated with the RCRA activities at SWMU 7.

Soil samples were collected from two locations in the area now known as Site A-824. Multiple PAHs were detected in samples collected from the surface and subsurface at these two locations; however, only benzo(a)pyrene in one surface soil sample exceeds current residential SCTLs.

During the Supplemental RFI/RI performed in 1997, surface soil samples were collected from four additional locations in the Site A-824 area. Three PAHs, benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene, detected in one surface soil sample exceed current residential SCTLs. Soil data from the RFI/RI and Supplemental RFI/RI are included as Appendix A. No prior groundwater investigation has been performed at Site A-824.

TtNUS performed a Site Assessment at Site A-824 in 2004. A slight exceedance of ethylene dibromide (EDB) was detected in groundwater, but additional sampling did not produce the same results. The SAR recommended no further action and FDEP issued a Site Rehabilitation Completion Order.

3.1.5 Flying Club

The former Flying Club area includes a former motor pool refueling point that used USTs to store and dispense gasoline. An aviation gasoline aboveground storage tank (AST) area was located approximately 50 feet south of the former motor pool refueling area. The area is currently used as an electrical repair and maintenance facility (Building A126) and a hazardous waste storage area (Building A133).

Building A126 was formerly used as a transportation facility and is currently used as an electrical maintenance and repair facility for arresting gear. Building A133 is part of the former motor pool refueling point. It has been used to store electrical equipment in the past, including transformers that contained PCBs. It is now used as a hazardous waste storage facility. Interviews with NAS Key West personnel indicate that the area in the vicinity of Building A133 may also have been used as an auto hobby shop and staging area. The Boca Chica Flying Club was in operation until the late 1960s; however, no operations at the Flying Club itself are believed to have contributed to the chemicals detected on site. Four ASTs were located adjacent to the Flying Club building and reportedly stored aviation fuel. Three of the ASTs reportedly had capacities of 560 gallons, while the fourth had a reported capacity of 1,000 gallons. The ASTs, fuel dispensers and associated piping were removed from the site in February 1992.

Past practices such as overfilling and possible leaks from these tank systems were the suspected cause of contamination at the site. Discussions with site personnel indicated that USTs were associated with the motor pool refueling point and are believed to have contained motor fuel. They were reportedly removed circa 1990, but physical details of the tanks and their exact location are unknown.

A Contamination Assessment was completed in April 1994, including soil screening with an organic vapor analyzer (OVA) to detect contaminated soil. OVA screening results indicated the presence of excessively contaminated soils (greater than 50 parts per million [ppm]) in four areas. The largest of these areas measured approximately 70 feet by 40 feet and was located immediately to the southeast of Building A133. Three smaller areas of contaminated soil were identified near the former AVGAS dispenser, north of Building A-133, and northwest of Building A-133 (ABB, 1994).

Groundwater was sampled again in August 1996, as part of the Remedial Action Plan (RAP) preparation. The data indicated significant changes in the degree and extent of contamination originally defined in the Contamination Assessment Report (CAR). Based on the 1996 sampling results, the RAP recommended the removal of 2,126 cubic yards of contaminated soil. The largest volume of soil recommended for excavation was in the vicinity of the former motor pool USTs, near Building A-133.

In 1998, based on recommendations in the RAP, approximately 983 cubic yards of soil were removed from the Flying Club site. The amount excavated was less than scoped in the RAP because natural attenuation had reduced soil contamination since the contamination assessment was performed, and cleanup goals had been revised since production of the RAP. The ion collider process was used to treat the contaminated soil. The excavated areas at the Flying Club site were then backfilled with the treated soil.

A monitoring program presented in the RAP for the Flying Club Site was implemented in August 1999. At the end of the program, only one monitoring well had concentrations that exceeded FDEP Groundwater Cleanup Target Levels. Monitoring was continued at this well and at a perimeter well. In October 2001, the second year of monitoring began at the Flying Club. Contaminant concentrations (volatile organic compounds in particular) unexpectedly increased. The Navy determined that a more aggressive approach to remediation should be implemented at the site.

In May 2002, an air sparging (AS)/soil vapor extraction (SVE) Treatability Study was initiated at the site to remediate residual hydrocarbon contaminants in the soil and groundwater. The remedial system operated effectively from June 2002 through January 2003. Groundwater monitoring continued to determine if the AS/SVE was successful. The groundwater results revealed that dissolved-phase volatile organic constituents had decreased in the source well but elevated concentrations of nonvolatile

constituents were observed in the perimeter well. These fluctuations in the groundwater contaminant levels prompted the need for additional assessment activities at the site.

A Site Assessment was performed between July 2004 and January 2005. A direct-push technology (DPT) investigation was conducted to define the horizontal and vertical extent of contamination at the site. Six monitoring wells were also installed at the former Flying Club. The assessment uncovered areas of contamination within the site; however, a single source was not identified. Additional assessment and possibly remediation is planned for the Flying Club. However, the AS/SVE well system is no longer needed.

3.1.6 Boca Chica Blast Media Disposal Area

The Former Boca Chica Blast Media Disposal Area was used to dispose of sandblasting material produced during the removal of paint from surfaces of ground-handling and ground-support vehicles and equipment, aircraft parts, and other metal objects and pieces of equipment. The sandblasting activities took place at SWMU 5, the Boca Chica Aircraft Intermediate Maintenance Department (AIMD) Sandblasting Building A-990. SWMU 5 was used as a sandblasting area from the early 1970s until 1995. A conservative assumption is that the sandblasting material was disposed at the site during this entire time period. The Supplemental RCRA Facility Investigation (RFI)/Remedial Investigation (RI) and Corrective Measures Study (CMS) at SWMU 5 identified metals in the soil and groundwater [Brown and Root Environmental]. A RCRA Facility Assessment (RFA) was performed in 2002 and 2003. The RFA Report was issued in October 2003, followed by an addendum prepared to report additional sample results. Both reports recommended no further action for the Former Boca Chica Blast Media Disposal Area.

4.0 SCOPE OF WORK

This section of the HASP identifies the planned site activities that are to be conducted at NAS Key West under CTO 297 and 318. If tasks other than those identified are to be performed at this site this HASP will be modified accordingly.

- Mobilization/Demobilization
- Treatability Study (passive free product recovery using absorbent socks) and groundwater sampling at the Geiger Key Hawk Missile Site G-01.
- Natural Attenuation groundwater sampling and related activities (water level measurements, monitoring well development/purging, etc.) at the Boca Chica Tank Farm.
- Monitoring well abandonment at the Boca Chica Blast Media Disposal Area, Site A-824, and Boca Chica Hawk Missile Site.
- AS/SVE well abandonment using over-drilling techniques at the Flying Club
- Decontamination of sampling equipment
- Investigative-Derived Waste (IDW) management and disposal

Any additional tasks not identified above will be considered a change in scope requiring modification of this document. All requested modifications to this document will be submitted to the HSM by the TOM or a designated representative.

5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES SUMMARIZATION

Table 5-1 of this section serves as the primary portion of the site-specific HASP which identifies the tasks that are to be performed as part of the scope of work. This table will be modified and incorporated into this document as new or additional tasks are performed at the site. The anticipated hazards, recommended control measures, air monitoring recommendations, required Personal Protective Equipment (PPE), and decontamination measures for each site task are discussed in detail. This table and the associated control measures shall be changed, if the scope of work, contaminants of concern, or other conditions change.

Through using the table, site personnel can determine which hazards are associated with each task and at each site, and what associated control measures are necessary to minimize potential exposure or injuries related to those hazards. The table also assists field team members in determining which PPE and decontamination procedures to use based on proper air monitoring techniques and site-specific conditions.

As discussed earlier, a Health and Safety Guidance Manual accompanies this table and HASP. The manual is designed to further explain supporting programs and elements for other site -specific aspects as required by 29 CFR 1910.120. The Guidance Manual should be referenced for additional information regarding air monitoring instrumentation, decontamination activities, emergency response, hazard assessments, hazard communication and hearing conservation programs, medical surveillance, PPE, respiratory protection, site control measures, standard work practices, and training requirements. Many Tetra Tech NUS SOPs are also provided in this Guidance Manual.

Safe Work Permits issued for all activities (See Section 10.10 and Attachment III) will use elements defined in Table 5-1 as its primary reference. The FOL and/or the SSO completing the Safe Work Permit will add additional site-specific information. In situations where the Safe Work Permit is more conservative than the direction provided in Table 5-1 due to the incorporation of site-specific elements, the Safe Work Permit will be followed.

5.1 GENERAL SAFE WORK PRACTICES

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

- Eating, drinking, chewing gum or tobacco, taking medication, or smoking is prohibited in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. A thorough shower and washing must be conducted as soon as possible if excessive skin contamination occurs.
- Avoid contact with potentially contaminated substances. Avoid puddles, pools, mud, or other such areas. Avoid, whenever possible, kneeling on the ground or leaning or sitting on equipment. Keep monitoring equipment away from potentially contaminated surfaces.
- Obey all instructions in the site-specific HASP.
- Take note of the location of the nearest telephone and all emergency telephone numbers. See Section 2.0, Table 2-1.
- Attend briefings on anticipated hazards, equipment requirements, safe work permits, emergency procedures, and communication methods before going on site.
- Plan and mark entrance, exit, and emergency escape routes. See Section 2.0.
- Rehearse unfamiliar operations prior to implementation.
- Buddies should maintain visual contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.
- Establish appropriate Safety Zones including Support, Contamination Reduction, and Exclusion Zones.
- Minimize the number of personnel and equipment in contaminated areas (such as the Exclusion Zone). Non-essential vehicles and equipment should remain within the Support Zone.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report all injuries, illnesses, and unsafe conditions, practices, and equipment to the Site Safety Officer (SSO).

- Matches and lighters are restricted from entering in the Exclusion Zone or Contamination Reduction Zone.
- Observe coworkers for signs of toxic exposure and heat or cold stress.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

5.2 OVER DRILLING OPERATIONS - SAFE WORK PRACTICES

The following Safe Work Practices are to be followed when working in or around drilling equipment.

5.2.1 Before Drilling Operations

- All motorized equipment will be fueled prior to the commencement of the day's activities.
- Since over drilling of existing AS/SVE wells will be performed and previous utilities clearances were obtained during initial well installment activities, it is unlikely that underground utilities and buried structures will have to be identified before drilling. If deemed necessary, use the TtNUS Utility Locating and Excavation Clearance Standard Operating Procedure.
- A Competent Person (the SSO or designee) will inspect all drill rigs, prior to the acceptance of the equipment at the site and prior to the use of the equipment.
- All repairs or deficiencies identified will be corrected prior to use.
- The inspection will be accomplished using the Equipment Inspection Checklist provided in Attachment IV.
- Inspection frequencies will be once every 10-day shift or following repairs.
- The work area around the point of operation will be graded to the extent possible to remove any trip hazards near or surrounding operating equipment.
- An equipment staging and lay-down plan will be established. The purpose of this area is to keep the work area clear of clutter and slips, trips, and fall hazards.

- All potentially contaminated tooling will be wrapped in polyethylene sheeting for storage and transport to the centrally located decontamination unit.

5.2.2 During Drilling Operations

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

5.2.3 After Drilling Operations

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

TABLE 5-1

TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM FOR
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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>Italicize text represents optional equipment to be worn when conditions require.</i>	Decontamination Procedures
<p>Monitored Natural Attenuation Groundwater Sampling at the Boca Chica Tank Farm</p> <p>Other related site activities include:</p> <p>Water level measurements and monitoring well purging since similar hazards exist for all these site activities.</p>	<p>Chemical Hazards:</p> <p>1) Site history and analytical data from previous site investigations have indicated the presence of petroleum related contaminants [particularly BETX compounds and Polyaromatic Hydrocarbons (PAHs)] in groundwater. Subsequent MNA sampling has indicated decreased concentrations of VOCs (particularly xylenes) while PAH concentrations have remained consistent. Site contaminants are not anticipated to be encountered at concentrations that will pose a significant exposure threat to site personnel.</p> <p>Additional information on sources of contamination and specific contaminants of concern are presented in Table 6-1.</p> <p>MNA sampling kit reagents and products as well as sample preservatives such as sulfuric acid, hydrochloric acid, nitric acid, sodium hydroxide</p> <p>2) Transfer of contamination into clean areas</p> <p>Physical hazards:</p> <p>3) Lifting (muscle strains and pulls)</p> <p>4) Slip, trips, and falls</p> <p>5) Natural hazards (Insect/animal bites and stings)</p> <p>6) Inclement weather</p> <p>7) Heat stress</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated groundwater. Avoiding potentially contaminated groundwater will be used as the primary control method for preventing potential exposures. Use of PPE, decontamination, and good personal hygiene practices will also be used to minimize the potential for contract or exposure to site contaminants.</p> <p>Refer to manufacturer MSDS regarding the hazards associated with MNA sampling kit chemicals and sample preservatives. Minimize contact through the use of safe work practices and PPE.</p> <p>2) Decontaminate all equipment and supplies between sampling locations and prior to leaving the site.</p> <p>3) Use proper lifting techniques when handling heavy equipment or supplies (sample coolers). Obtain assistance when handling heavy loads.</p> <p>4) Preview work locations for unstable/uneven terrain. Barricade all excavations and other associated drop off points at least 3 feet from the edge.</p> <p>5) Avoid nesting areas, use commercially available repellents. Tape pant legs to ankles and openings of shoes to prevent ticks from entering pants. If necessary, wear tyveck coveralls to provide a barrier to prevent ticks from enter cloths.</p> <p>6) Suspend or terminate operations until directed otherwise by SSO</p> <p>7) Control measures for inclement and hot weather are addressed in Section 6.3.3 of this document and in Section 4.0 of the Health & Safety Guidance Manual.</p>	<p>Based on available analytical data, none of the contaminants of concern are anticipated to be present at detectable concentrations in worker breathing zones.</p> <p>A Flame Ionization or Photoionization Detector w/ 10.6 eV UV lamp source, will be used to detect VOCs as follows:</p> <p>Source (moinitoring well) monitoring will be conducted initially when the well cap is removed and periodically during purging. Any elevated readings collected from source areas will require that the breathing zones(BZ) of workers in the area around the well be monitored using the following guidance:</p> <p>- Any sustained (>1 minute in duration) readings above background in the BZ requires evacuation to a safe area. Work may only resume when readings in worker breathing zones return to background levels.</p>	<p>Level D protection will be utilized for the initiation of all sampling and monitoring well activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (sleeved shirt; long pants) - Nitrile surgical style inner gloves for groundwater sampling - Steel toe safety shoes - Safety glasses - Hardhat (when overhead hazards exists, or identified as a operation requirement) - Rubber boots for muddy or saturated ground - Reflective vest for high traffic areas - Hearing protection will be required when excessive noise levels are observed. <p>Note: The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination will consist of:</p> <ul style="list-style-type: none"> - Equipment drop and soap/water wash and rinse for outer protective equipment (if applicable). - Disposable PPE will be removed and placed in a bag for disposal. - Site workers will use handywipes or other hand sanitizers to clean hands – leave contamination reduction zone. - Prior to performing hand to mouth activites, site workers shall wash their hands and face. <p>Equipment Decontamination will consist of:</p> <ul style="list-style-type: none"> - Bagging disposable sampling equipment (tubing, bailers, etc.) and disposing as regular municipal waste. - Thoroughly wash reusable sampling equipment with alconox/water solution. - Rinse - Spray surfaces of reusable sampling equipment wth reagent grade isopropyl alcohol - Rinse with reagent grade deionized water. - Let air dry

TABLE 5-1

TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM FOR
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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>Italicize text represents optional equipment to be worn when conditions require.</i>	Decontamination Procedures
<p>Treatability Study activities including passive free product recovery (adsorbent socks) and baseline and follow-up groundwater sampling at the Geiger Key Hawk Missile Site G-01.</p>	<p>Chemical Hazards:</p> <p>1) Site history and analytical data from previous site investigations have indicated the presence of petroleum related contamination resulting from ASTs containing diesel fuel and JP-5. Potential site contaminants include BETX compounds, Polyaromatic Hydrocarbons (PAHs] and to a lesser extent metals. Site contaminants are not anticipated to be encountered at concentrations that will pose a significant exposure threat to site personnel. It should be noted that free product was detected in one monitoring well at the site and activities involving the handling of free product present an increased potential for exposure to site contaminants.</p> <p>Additional information on sources of contamination and specific contaminants of concern are presented in Table 6-1.</p> <p>Sample preservatives such as sulfuric acid, hydrochloric acid, nitric acid, sodium hydroxide</p> <p>2) Transfer of contamination into clean areas</p> <p>Physical hazards:</p> <p>3) Lifting (muscle strains and pulls)</p> <p>4) Slip, trips, and falls</p> <p>5) Natural hazards (Insect/animal bites and stings)</p> <p>6) Inclement weather</p> <p>7) Heat stress</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated groundwater. Avoiding potentially contaminated groundwater will be used as the primary control method for preventing potential exposures. Use of PPE, decontamination, and good personal hygiene practices will also be used to minimize the potential for contract or exposure to site contaminants.</p> <p>Refer to manufacturer MSDS regarding the hazards associated with sample preservatives. Minimize contact through the use of safe work practices and PPE.</p> <p>2) Decontaminate all equipment and supplies between sampling locations and prior to leaving the site.</p> <p>3) Use proper lifting techniques when handling heavy equipment or supplies (sample coolers). Obtain assistance when handling heavy loads.</p> <p>4) Preview work locations for unstable/uneven terrain.</p> <p>5) Avoid nesting areas, use commercially available repellents. Tape pant legs to ankles and openings of shoes to prevent ticks from entering pants. If necessary, wear tyveck coveralls to provide a barrier to prevent ticks from enter cloths.</p> <p>6) Suspend or terminate operations until directed otherwise by SSO</p> <p>7) Control measures for inclement and hot weather are addressed in Section 6.3.3 of this document and in Section 4.0 of the Health & Safety Guidance Manual.</p>	<p>Based on available analytical data, none of the contaminants of concern are anticipated to be present at detectable concentrations in worker breathing zones.</p> <p>A Flame Ionization or Photoionization Detector w/ 10.6 eV UV lamp source, will be available if contaminants are suspected to be present. The FID/PID will be used to detect VOCs as follows:</p> <p>Source (moinitoring well) monitoring will be conducted initially when the well cap is removed and periodically during sampling. Any elevated readings collected from source areas will require that the breathing zones (BZ) of workers in the area around the well be monitored using the following guidance:</p> <p>- Any sustained (>1 minute in duration) readings above background in the BZ requires evacuation to a safe area. Work may only resume when readings in worker breathing zones return to background levels.</p>	<p>Level D protection will be utilized for the initiation of all treatability study and groundwater monitoring well activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (sleeved shirt; long pants) - Nitrile surgical style inner gloves for groundwater sampling and Nitrile gloves for handling adsorbent socks. - Steel toe safety shoes - <i>Chemical resistant coveralls when handling adsorbent socks if the potential for contact with free product or contaminants of concern exists.</i> - <i>Safety glasses</i> - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Rubber boots for muddy or saturated ground</i> - <i>Reflective vest for high traffic areas</i> - <i>Hearing protection will be required when excessive noise levels are observed.</i> <p>Note: The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination will consist of:</p> <ul style="list-style-type: none"> - Equipment drop and soap/water wash and rinse for outer protective equipment (if applicable). - Disposable PPE will be removed and placed in a bag for disposal. - Site workers will use handywipes or other hand sanitizers to clean hands – leave contamination reduction zone. - Prior to performing hand to mouth activites, site workers shall wash their hands and face. <p>Equipment Decontamination will consist of:</p> <ul style="list-style-type: none"> - Bagging disposable sampling equipment (tubing, bailers, etc.) and disposing as regular municipal waste. - Thoroughly wash reusable sampling equipment withalconox/water solution. - Rinse - Spray surfaces of reusable sampling equipment wth reagent grade isopropyl alcohol - Rinse with reagent grade deionized water. - Let air dry

TABLE 5-1

TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM FOR
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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>Italicize text represents optional equipment to be worn when conditions require.</i>	Decontamination Procedures
<p>Abandonment of monitoring wells at the Boca Chica Blast Media Disposal Area, Site A-824, and Boca Chica Hawk Missile Site.</p> <p>If abandonment activities involve the use of heavy equipment – follow guidance identified in the task summary for abandonment at the Flying Club.</p>	<p>Chemical Hazards:</p> <p>1) Site contaminants are unlikely to be encountered during well abandonment activities. Wells will be abandoned by filling them with a grout mixture. Historical information suggests the following contaminants of concern for each of the sites:</p> <p><u>Boca Chica Blast Media Disposal Area</u> – various metals none of which were detected at concentrations that would present an exposure threat to site personnel.</p> <p><u>Site A-824</u> – PAHs and some petroleum-related contamination was determined to exist in site soils however none of these contaminants are likely to be present at concentrations that pose a threat to site workers.</p> <p><u>Boca Chica Hawk Missile Site</u> – Petroleum (diesel fuel and JP-5) related contamination consisting of VOCs (including BETX) and PAHs.</p> <p>Additional information on sources of contamination and specific contaminants of concern are presented in Table 6-1.</p> <p>1a) Grout mixtures that contain caustic materials. These materials may cause irritation of the skin, eyes, and upper respiratory tract. Contact with the skin may cause burns.</p> <p>Physical hazards:</p> <p>2) Lifting (muscle strains and pulls)</p> <p>3) Slip, trips, and falls</p> <p>4) Natural hazards (Insect/animal bites and stings)</p> <p>5) Inclement weather</p> <p>6) Heat stress</p> <p>7) Noise and flying projectiles</p>	<p>1) Site contaminants are not anticipated to be encountered during well abandonment activities. However, if site contaminants are suspected of being present, air monitoring instruments will be used to detect the presence of airborne concentrations at source areas or within worker breathing zones. Avoid contact with materials that may contain or have in contact with site contaminants.</p> <p>1a) Avoid creating airborne dusts when mixing grout mixtures. Refer to manufacturer MSDS regarding the hazards associated with grout constituents. Minimize contact through the use of safe work practices and PPE.</p> <p>2) Use proper lifting techniques when handling heavy equipment or supplies (bags of grout). Obtain assistance when handling heavy loads.</p> <p>3) Preview work locations for unstable/uneven terrain.</p> <p>4) Avoid nesting areas, use commercially available repellents. Tape pant legs to ankles and openings of shoes to prevent ticks from entering pants. If necessary, wear tyvek coveralls to provide a barrier to prevent ticks from enter cloths.</p> <p>5) Suspend or terminate operations until directed otherwise by SSO</p> <p>6) Control measures for inclement and hot weather are addressed in Section 6.3.3 of this document and in Section 4.0 of the Health & Safety Guidance Manual.</p> <p>7) Abandonment activities may require the use of sledge hammers, pneumatic hammers, or similar equipment to remove concrete pads or other structures associated with monitoring wells. This type of equipment creates elevated noise levels and requires the use of hearing protection. Additionally, flying projectiles may exist which will require the use of safety glasses.</p>	<p>Based on available analytical data, none of the contaminants of concern are anticipated to be present at detectable concentrations in worker breathing zones.</p> <p>As a precautionary measure, a Flame Ionization or Photoionization Detector w/ 10.6 eV UV lamp source, will be available to detect VOCs (if suspected to be present) and will be used as follows:</p> <p>Source (monitoring well being abandoned) monitoring may be conducted initially when the well cap is removed and periodically during abandonment. Any elevated readings collected from source areas will require that the breathing zones (BZ) of workers in the area around the well be monitored using the following guidance:</p> <p>- Any sustained (>1 minute in duration) readings above background in the BZ requires evacuation to a safe area. Work may only resume when readings in worker breathing zones return to background levels.</p>	<p>Level D protection will be utilized for the initiation of all treatability study and groundwater monitoring well activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (sleeved shirt; long pants) - Nitrile surgical style inner gloves for groundwater sampling and Nitrile gloves for handling adsorbent socks. - Steel toe safety shoes - Safety glasses or goggles - <i>Chemical resistant coveralls when handling grout mixtures.</i> - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Rubber boots for muddy or saturated ground</i> - <i>Reflective vest for high traffic areas</i> - <i>Hearing protection will be required when excessive noise levels are observed.</i> <p>Note: The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination will consist of:</p> <ul style="list-style-type: none"> - Equipment drop and soap/water wash and rinse for outer protective equipment (if applicable). - Disposable PPE will be removed and placed in a bag for disposal. - Site workers will use handwipes or other hand sanitizers to clean hands – leave contamination reduction zone. - Prior to performing hand to mouth activities, site workers shall wash their hands and face. <p>Equipment Decontamination will consist of:</p> <ul style="list-style-type: none"> - Bagging disposable sampling equipment (tubing, bailers, etc.) and disposing as regular municipal waste. - Thoroughly wash reusable sampling equipment with alconox/water solution. - Rinse - Spray surfaces of reusable sampling equipment with reagent grade isopropyl alcohol - Rinse with reagent grade deionized water. - Let air dry

TABLE 5-1

TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM FOR
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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>Italicize text represents optional equipment to be worn when conditions require.</i>	Decontamination Procedures
<p>Abandonment of AS/SVE wells using over-drilling methods at the Flying Club.</p>	<p>Chemical Hazards:</p> <p>1) Site history and analytical data from previous site investigations have indicated the presence of petroleum related contamination resulting from ASTs containing gasoline. Potential site contaminants include BETX compounds, Polyaromatic Hydrocarbons (PAHs] and to a lesser extent metals. Site contaminants are not anticipated to be encountered at concentrations that will pose a significant exposure threat to site personnel during abandonment activities</p> <p>Additional information on sources of contamination and specific contaminants of concern are presented in Table 6-1.</p> <p>1a) Grout mixtures that contain caustic materials. These materials may cause irritation of the skin, eyes, and upper respiratory tract. Contact with the skin may cause burns.</p> <p>Physical hazards:</p> <p>2) Lifting (muscle strains and pulls)</p> <p>3) Heavy equipment hazards</p> <p>4) Slip, trips, and falls</p> <p>5) Natural hazards (Insect/animal bites and stings)</p> <p>6) Inclement weather</p> <p>7) Heat stress</p>	<p>1) Site contaminants are not anticipated to be encountered during well abandonment activities. However, if site contaminants are suspected of being present, air monitoring instruments will be used to detect the presence of airborne concentrations at source areas or within worker breathing zones. Avoid contact with materials that may contain or have in contact with site contaminants.</p> <p>1a) Avoid creating airborne dusts when mixing grout mixtures. Refer to manufacturer MSDS regarding the hazards associated with grout constituents. Minimize contact through the use of safe work practices and PPE.</p> <p>2) Use proper lifting techniques when handling heavy equipment or supplies (bags of grout). Obtain assistance when handling heavy loads. If available use equipment to move heavy items.</p> <p>3) All equipment will be:</p> <ul style="list-style-type: none"> - Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600.601.602), and manufacturer's design, as applicable. All inspections will be documented using the Equipment Inspection - (See Attachment IV) - Operated and supported by knowledgeable operators and ground crew. - Personnel not directly supporting this operation will remain at least 35-feet for drill rigs from the point of operation or the height of the mast plus 5-feet, whichever is greater. - All personnel will be instructed in the location and operations of the emergency shut-off device(s). This device will be tested initially (and then daily) to ensure its operational status. - One person will be designated as the Emergency Shut Off Device Operator. - Prior to engaging the augers, the driller will announce, loud enough for all to hear that he is engaging the augers. He will visually confirm that all personnel are removed from the rotating equipment then engage the augers. - Areas will be inspected prior to the movement of the drill rig and support vehicles to eliminate any physical hazards. This will be the responsibility of the FOL and/or SSO. - See additional safe work procedures for drilling in Section 5.2 of this HASP as well as in Section 4.0 of the <p>4) Preview work locations for unstable/uneven terrain.</p> <p>5) Avoid nesting areas, use commercially available repellents. Tape pant legs to ankles and openings of shoes to prevent ticks from entering pants. If necessary, wear tyveck coveralls to provide a barrier to prevent ticks from enter cloths.</p> <p>6) Suspend or terminate operations until directed otherwise by SSO</p> <p>7) Control measures for inclement and hot weather are addressed in Section 6.3.3 of this document and in Section 4.0 of the Health & Safety Guidance Manual.</p>	<p>Based on available analytical data, none of the contaminants of concern are anticipated to be present at detectable concentrations in worker breathing zones.</p> <p>As a precautionary measure, a Flame Ionization or Photoionization Detector w/ 10.6 eV UV lamp source, will be available to detect VOCs (if suspected to be present) and will be used as follows:</p> <p>Source (moinitoring well being abandoned) monitoring may be conducted initially when the well cap is removed and periodically during abandonment. Any elevated readings collected from source areas will require that the breathing zones (BZ) of workers in the area around the well be monitored using the following guidance:</p> <ul style="list-style-type: none"> - Any sustained (>1 minute in duration) readings above background in the BZ requires evacuation to a safe area. Work may only resume when readings in worker breathing zones return to background levels. 	<p>Level D protection will be utilized for the initiation of all treatability study and groundwater monitoring well activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (sleeved shirt; long pants) - Nitrile surgical style inner gloves for groundwater sampling and Nitrile gloves for handling adsorbent socks. - Steel toe safety shoes - Safety glasses or goggles - Hardhat (when overhead hazards exists, or identified as a operation requirement) - Hearing protection will be required when excessive noise levels are observed. - <i>Chemical resistant coveralls if the potential for contacting contaminated media exists</i> - <i>Rubber boots for muddy or saturated ground</i> - <i>Reflective vest for high traffic areas</i> <p>Note: The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination will consist of:</p> <ul style="list-style-type: none"> - Equipment drop and soap/water wash and rinse for outer protective equipment (if applicable). - Disposable PPE will be removed and placed in a bag for disposal. - Site workers will use handwipes or other hand sanitizers to clean hands – leave contamination reduction zone. - Prior to performing hand to mouth activites, site workers shall wash their hands and face. <p>Equipment Decontamination – Heavy equipment decontamination will take place at a centralized decontamination pad utilizing pressure washers. Heavy equipment such as drill rigs will have the wheels or tracks cleaned along with any loose debris removed, prior to transporting to the central decontamination area. All site vehicles will have restricted access to exclusion zones, and also have their wheels/tires sprayed off as not to track mud onto the roadways servicing this installation. Roadways shall be cleared of any debris resulting from the on-site activity.</p> <p>All equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site.</p> <p>The FOL or the SSO will be responsible for evaluating equipment arriving on site and that which is to leave the site. No equipment will be authorized access or exit without this authorization.</p>

TABLE 5-1

TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM FOR
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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>Italicize text represents optional equipment to be worn when conditions require.</i>	Decontamination Procedures
Mobilization/ Demobilization and Site Reconnaissance and Surveying activities	<p>Chemical hazards: Exposure to potential site contaminants during these activities is unlikely given the nature of the work and the limited contact with potentially contaminated media (soils, sediments, surface water, groundwater, etc.).</p> <p>Physical Hazards:</p> <ol style="list-style-type: none"> 2) Lifting (muscle strains and pulls) 3) Pinches and compressions 4) Slip, trips, and falls 5) Moving machinery 6) Natural hazards (Insect/animal bites and stings) 7) Vehicular and foot traffic 	<ol style="list-style-type: none"> 1) To reduce the potential for exposure, site personnel performing these activities will minimize contact with potentially contaminated media and will avoid areas where chemical hazards may exist. 2) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 3) Use pinch bars or other equipment to avoid being caught in the machine point of operation. 4) Preview work locations for unstable/uneven terrain. Barricade all excavations from access closer than two feet from the edge. 5) All equipment will be <ul style="list-style-type: none"> - Inspected in accordance with OSHA, and manufacturers design. (See Attachment II of this HASP or Section 10.0 of the TtNUS Health and Safety Guidance Manual). - Operated by qualified operators, and knowledgeable ground crew. 6) Avoid nesting areas, use commercially available repellents. Tape pant legs to ankles and openings of shoes to prevent ticks from entering pants. If necessary, wear tyveck coveralls to provide a barrier to prevent ticks from enter cloths. 7) Traffic and equipment considerations are to include the following: <ul style="list-style-type: none"> - Establish safe zones of approach (i.e. Boom + 3 feet). - Secure all loose articles to avoid possible entanglement. - All self-propelled equipment shall be equipped with movement warning systems. - Employ safety belts and follow the site traffic rules. Traffic patterns will be required supporting onsite activities. However, regulated patterns in and about the work zones and support thereof will be established to safely control moving equipment, vehicles, and pedestrians around the area of operation. 	Not required	<p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (Sleeved shirt; long pants) - Steel toe safety shoes - <i>Safety glasses</i> - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Reflective vest for high traffic areas</i> - <i>Hearing protection for high noise areas, or as required based on the noise level at each operation.</i> <p>Note: The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	Not required

TABLE 5-1

TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM FOR
NAVAL AIR FACILITY KEY WEST, KEY WEST, FLORIDA
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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>Italicize text represents optional equipment to be worn when conditions require.</i>	Decontamination Procedures
<p>Decontamination and IDW handling activities.</p>	<p>Chemical Hazards:</p> <p>1) Site contaminants associated with each of these sites are related to previous spills or releases of fuels. As a result, contaminants of concern consist of various VOCs (particularly BETX compounds); Polyaromatic Hydrocarbons (PAHs) including acenaphthalene, fluoranthene, methylnaphthalene, phenanthrene, and naphthalene; and metals (primarily lead). None of these contaminants were previously detected at concentrations that would pose an inhalation hazard to site workers.</p> <p>Further information on these contaminants is presented in Table 6-1.</p> <p>2) Transfer of contamination into clean areas or onto persons</p> <p>Physical hazards:</p> <p>3) Pinch/compression points</p> <p>4) Noise</p> <p>5) Lifting (muscle strains and pulls)</p>	<p>1) For VOCs, use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media (air, water, soils, etc.). Avoiding potentially contaminated media (dirt, groundwater, mud, sediments, etc.) will be used as the primary control method for preventing potential exposures. Use of PPE, decontamination, and good personal hygiene practices will also be used to minimize the potential for contact or exposure to site contaminants.</p> <p>2) Decontaminate all equipment and supplies between boreholes and prior to leaving the site.</p> <p>3) Use appropriate equipment and tools for the intended job. Wear leather gloves to provide protection against sharp objects or pinches between drum lids and retainer rings. If equipment is to be used:</p> <ul style="list-style-type: none"> - Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600, 601, 602), and manufacturers design. (See Section 10.0 of the TiNUS Health and Safety Guidance Manual). - Operated by qualified operators, and knowledgeable ground crew. - Used within established safe zones and routes of approach - Only manufacturer approved equipment may be used in conjunction with equipment repair procedures (i.e. pins, etc.). <p>In addition, to equipment considerations the following safe operating procedures will be incorporated:</p> <ul style="list-style-type: none"> - Personnel not directly supporting this operation will remain at least 40 feet from the point of operation. - Hand signals will be established prior to the commencement of the operation. - Work areas will be kept clear of clutter. - Self-propelled equipment shall be equipped with movement warning systems. - Personnel working in high equipment traffic areas are required to wear reflective vests for high visibility, and to establish unimpeded work areas around the operation. <p>4) Hearing protection during well development and IDW handling activities will be determined on a case by case scenario. As a general rule of thumb, if you have to raise your voice to talk to someone who is within 2 feet of your location, noise levels may be becoming excessive.</p> <p>5) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</p>	<p>Based on available analytical data, none of the contaminants of concern are anticipated to be present at detectable concentrations in worker breathing zones. Additionally, any detectable concentrations at source areas (monitoring wells) will likely be dispersed via natural wind currents and dilution prior to reaching worker breathing zones.</p> <p>Photoionization Detector w/ 10.6 eV UV lamp source, or a Flame Ionization Detector, will be used to detect VOCs as follows:</p> <p>Source (monitoring well) monitoring will be conducted initially when the well cap is removed and periodically during purging. Any elevated readings collected from source areas will require that the breathing zones (BZ) of workers in the area around the well be monitored using the following guidance:</p> <ul style="list-style-type: none"> - Any sustained (>1 minute in duration) readings above background in the BZ requires evacuation to a safe area. Work may only resume when readings in worker breathing zones return to background levels. <p>Some of the contaminants of concern are solids, or are difficult or unable to be detected using PID/FID direct reading instruments. Also, other site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Although unlikely to be generated based on site activities, airborne dusts will be minimized to the greatest extent possible to avoid inhalation of potentially contaminated dusts or particulates.</p>	<p>Level D protection will be utilized for the initiation of all IDW activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> - Standard field attire (long sleeve shirt; long pants) - Nitrile gloves with surgical style inner gloves for sampling - Leather gloves is potential cut hazards or pinch hazards exist when handling drums - Steel-toe safety shoes - Safety glasses - Hardhat (when overhead hazards exist, or when identified as a operation requirement) - Tyvek coveralls and disposable boot covers, if surface contamination is present or if the potential for soiling work attire exists - Reflective vest for high traffic areas - Hearing protection under control measures. <p>Note: The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination will consist of a soap/water wash and rinse for outer protective equipment (boots, gloves, PVC splash suits, etc.). This function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"> - Equipment drop - Soap/water wash and rinse of outer boots and gloves - Soap/water wash and rinse of the outer splash suit, as applicable - Outer suit, boot covers, outer glove removal - Wash hands and face, leave contamination reduction zone

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. Table 6-1 provides information related to the primary sources of site contamination (jet and diesel fuel) as well as some of the specific contaminants of concern. Specifically, toxicological information, exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data are discussed in the table.

6.1 CHEMICAL HAZARDS

Analytical data from previous site investigations indicates the presence of various petroleum related contamination in subsurface soils, sediment, and groundwater at several of the sites addressed within this HASP. This data is consistent with historical information that indicated various releases or spills of fuels. Based on the available data, the following exposure determinations and primary contaminants of concern have been identified for each of the sites to be investigated:

SITE	ANTICIPATED EXPOSURE THREAT	CONTAMINANTS OF CONCERN
Geiger Key Hawk Missile Site G-01	Moderate	The primary contaminants of concern are associated with past petroleum spills/releases and include volatile organic compounds (VOCs) such as BETX compounds. Polynuclear Aromatic Hydrocarbons (PAHs) may also be present but are unlikely to pose an exposure concern. The potential for exposure to site contaminants may increase in areas where free product is encountered.
Boca Chica Tank Farm	Low-moderate	VOC concentrations (associated with petroleum) have decreased during subsequent sampling events and data suggests that they are unlikely to present an exposure concern. MSDSs for chemicals used during MNA sampling must be reviewed to determine potential hazards.
Boca Chica Blast Media Disposal Area	Low	Contaminants (metals from sandblasting operations) were not detected at concentrations that are likely to pose an occupational exposure concern. Grout materials used during well abandonment may cause skin and eye irritation.
Site A-824	Low	Contaminants (petroleum-related) were not detected at concentrations that are likely to pose an occupational exposure concern. Grout materials used during well abandonment may cause skin and eye irritation.

SITE	ANTICIPATED EXPOSURE THREAT	CONTAMINANTS OF CONCERN
Boca Chica Hawk Missile Site	Low	Contaminants (petroleum-related) were not detected at concentrations that are likely to pose an occupational exposure concern. Grout materials used during well abandonment may cause skin and eye irritation.
Flying Club	Moderate	Site contaminants (metals, PAHs, and VOCs) that may be present are unlikely to be encountered at hazardous concentrations during AS/SVE abandonment activities.

Potential exposures to site contaminants will be prevented through the use of air monitoring instruments to detect potential airborne concentrations of VOCs. Additionally, safe work practices, personal protective equipment (PPE), and appropriate decontamination and personal hygiene practices will be used to further minimize potential exposures.

TABLE 6-1

**CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
FOR NAVAL AIR FACILITY KEY WEST
KEY WEST, FLORIDA
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Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
Primary Source Contaminants							
Diesel Range Organics (represented as Diesel Fuel)	Mixture	Components of this substance will be detected readily however no documentation exists as to the relative response ratio of either PID or FID.	Air sampling use charcoal tube as a collection media; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with NIOSH Method #1550.	OSHA/NIOSH/ACGIH: 5 mg/m ³ as mineral oil mist. In addition NIOSH and ACGIH establish 10 mg/m ³ as a STEL.	Kerosene odor Recommended Air Purifying cartridges: Organic vapor Recommended gloves: Nitrile	Boiling Pt: <170-400°F; 77-204° C Melting Pt: Not available Solubility: Negligible Flash Pt: 125°F; 52°C LEL/LFL: 0.6% UEL/UFL: 7.5% Vapor Density: >5 Vapor Pressure: <1 mmHg @ 70 °F; 21°C Specific Gravity: 0.86 Incompatibilities: strong oxidizers, halogens, and hypochlorites Appearance and odor: Colorless to amber with a kerosene odor	Prolonged or repeated exposures to this product may cause skin and eye irritation. Due to the defatting capabilities this exposure may lead to a dermatitis condition. High vapor concentrations are irritating to the eyes and respiratory tract. Exposure to high airborne concentrations may result in narcotic effects including dizziness, headaches, and anesthetic to unconsciousness. High concentrations in a confined space may adequately displace oxygen thereby resulting in suffocation.
JP-5 (Jet Petroleum – 5) Components: Petroleum distillates, hydrotreated light (64742-47-8) (100%) and antioxidant and metal deactivator <100 ppm	64742-47-8	PID (10.6 eV Lamp Strength Correction factor = 0.6 FID = response unknown LEL Meter = 0.85	Air sample using charcoal tube. Sampling and analytical protocol shall proceed in accordance with NIOSH Method #1501. See also OSHA CSI Method application.	Manufacturer's Recommendation – 100 ppm (750 mg/m ³) for 8-Hour work day. No regulatory or advisory limits have been set.	Petroleum odor threshold ~ 800 ppm Rating - Poor to Adequate Recommended Air Purifying cartridges: Organic vapor Recommended gloves: NitrilSolve 727 (>480 minutes) or Neporene 6780 (287 minutes)	Characteristics vary by fuel blending, grade, and manufacturer (e.g., impurities and additives) Boiling Pt: 338-554°F, 170-290°C Melting Pt: -51° F; -46°C Molecular Weight: ~185 Flash Pt: 140°F, 60°C LEL: 0.9% UEL: 7% Autoignition Temp.: 475°F; 246°C Vapor Density: >1 - 5 Vapor Density: <5 @ 20°C SG: 0.788 to 0.845 Solubility in water: Negligible (<0.1%) @ 77°F; 25°C Viscosity: 8.5 cST @ -4°F -20°C Appearance and Odor: Clear water-white liquid with faint petroleum odor Avoid contact with heat, sparks and flame Avoid contact with strong oxidizing agents.	JP-5 is irritating to the eyes, skin, and respiratory tract (This through direct contact or reaching concentrations >700 ppm). Direct contact may result in mild irritation with a possible drying and defatting of the skin. Ingestion may result in gastrointestinal irritation, nausea, and vomiting and may be harmful or even fatal. Inhalation of vapors or mists of JP-5 may result in headache, nausea, confusion, narcotic effect, and drowsiness. Acute exposures to extreme airborne concentration can result in death. Chronic inhalation of jet fuel vapors may produce symptoms such as fatigue, anxiety, mood changes, liver and kidney damage, and memory difficulties in exposed workers. Repeated exposures to the skin may cause skin cancer.

TABLE 6-1

**CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
FOR NAVAL AIR FACILITY KEY WEST
KEY WEST, FLORIDA
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Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
Individual Contaminants of Concern							
Benzene	71-43-2	PID: I.P 9.24 eV, 100% response with PID and 10.2 eV lamp. FID: 150% relative response ratio with FID.	Air sample using charcoal tube; carbon disulfide desorption; Sampling and analytical protocol in accordance with OSHA 07 or NIOSH Method #1500.	OSHA: 1 ppm ACGIH: 0.5 ppm NIOSH: 0.1 ppm IDLH: 500 ppm	Inadequate - Odor threshold 34-199 ppm. OSHA accepts the use of air-purifying respirators with organic vapor cartridge up to 10 ppm despite the inadequate warning properties providing cartridges are changed at the beginning of each shift. Recommended gloves: Butyl/neoprene blend - >8.00 hrs; Silver shield as a liner - >8.00 hrs; Viton - >8.00 hrs	Boiling Pt: 176°F; 80°C Melting Pt: 42°F; 5.5°C Solubility: 0.07% Flash Pt: 12°F; -11°C LEL/LFL: 1.3% UEL/UFL: 7.9% Vapor Density: 2.77 Vapor Pressure: 75 mmHg Specific Gravity: 0.88 Incompatibilities: Strong oxidizers, fluorides, perchlorates, and acids Appearance and Odor: Colorless to a light yellow liquid with an aromatic odor	Overexposure may result in irritation to the eyes, nose, throat, and respiratory system. CNS effects include giddiness, lightheadedness, headaches, staggered gait, fatigue, and lassitude and depression. Additional effects may include nausea. Long duration exposures may result in respiratory collapse. Regulated as an OSHA carcinogen. May cause damage to the blood forming organs and may cause a form of cancer called leukemia.
Ethylbenzene	100-41-4	PID: I.P 8.76, High response with PID and 10.2 eV lamp. FID: 100% response with FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with OSHA Method #07 or NIOSH Method #1501 Aromatic Hydrocarbon.	ACGIH & NIOSH: 100 ppm; 125 ppm STEL OSHA: 100 ppm IDLH: 800 ppm	Adequate - Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm. Recommended gloves: Neoprene or nitrile w/ silver shield when potential for saturation; Teflon >3.00 hrs	Boiling Pt: 277°F; 136°C Melting Pt: -139°F; -95°C Solubility: 0.01% Flash Pt: 55°F; 13°C LEL/LFL: 1.0% UEL/UFL: 6.7% Vapor Density: 3.66 Vapor Pressure: 10 mmHg @ 79°F; 26°C Specific Gravity: 0.87 Incompatibilities: Strong oxidizers Appearance and odor: Colorless liquid with an aromatic odor. Odor Threshold of 0.092-0.60.	Regulated primarily because of its potential to irritate the eyes and respiratory system. In addition, effects of overexposure may include headaches, narcotic effects, CNS changes (i.e., coordination impairment, impaired reflexes, tremoring) difficulty in breathing, possible chemical pneumonia, and potentially respiratory failure or coma.

TABLE 6-1

**CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
FOR NAVAL AIR FACILITY KEY WEST
KEY WEST, FLORIDA
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Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Toluene	108-88-3	PID: I.P. 8.82 eV, High response with PID and 10.2 eV lamp. FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption. Sampling and analytical protocol shall proceed in accordance with OSHA Method #07, or NIOSH Method #1500.	OSHA: 200 ppm 300 ppm (Ceiling) ACGIH: 50 ppm (skin) NIOSH: 100 ppm 150 ppm STEL IDLH: 500 ppm	Adequate - Odor threshold 1.6 ppm is considered good. Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm. Recommended gloves: Teflon >15.00 hrs; Viton >16.00 hrs; silver shield >6,00 hrs; supported nitrile (Useable time limit 0.5 hr, complete submersion for the nitrile selection); PV alcohol >25.00 hrs	Boiling Pt: 232°F; 111°C Melting Pt: -139°F; -95°C Solubility: 0.05% (61°F;16°C) Flash Pt: 40°F; 4°C LEL/LFL: 1.2% UEL/UFL: 7.1% Vapor Density: 3.14 Vapor Pressure: 20 mmHg @ 65°F; 18°C Specific Gravity: 0.87 Incompatibilities: Strong oxidizers Appearance and odor: Colorless liquid with a sweet pungent aromatic odor.	Overexposure to this substance may result in mild to moderate irritation at all points of contact, and CNS changes including euphoria, confusion, nervousness, and possibly paresthesia characterized by an abnormal burning sensation, pricking, or numbness. At 200-500 ppm exposure has resulted in headaches, nausea, eye irritation, loss of appetite, bad taste, impair coordination, fatigue, and weariness. Chronically, toluene overexposure may result in dermatitis, liver, and kidney damage.
Xylene All isomers o-,m-, p-	1330-20-7	PID: I.P. 8.56 eV, High response with PID and 10.2 eV lamp. FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol shall proceed in accordance with OSHA 07, or NIOSH Method 1500.	ACGIH, & NIOSH: 100 ppm, 150 ppm STEL OSHA: 100 ppm IDLH: 900 ppm	Adequate - Odor thresholds for the following isomers: 0.6 m-; 5.4 p-; 20 o- ppm. Can use air-purifying respirator with organic vapor cartridge up to 1,000 ppm concentrations. Recommended gloves: PV Alcohol >12.67 hrs; Viton >8.00 hrs; CPE >1.00 hr; Butyl 0.87 hrs; Nitrile is acceptable for limited operations and contact (>0.20 hrs)	Boiling Pt: 269-281°F; 132-138°C Melting Pt: -53°F; -47°C Solubility: 0.02 % Flash Pt: 81-90°F;27-32°C LEL/LFL: 0.9% UEL/UFL: 7.0% Vapor Density: 3.66 Vapor Pressure: 7-9 mmHg @ 70°F; 21°C Specific Gravity: 0.86-0.88 Incompatibilities: Strong oxidizers and strong acids Appearance and odor: Colorless liquid with an aromatic odor.	Effects may of overexposure include irritation at all points of contact, CNS changes (i.e. dizziness, excitement, drowsiness, incoherent, staggering gait), difficulty in breathing, pulmonary edema, and possibly respiratory failure. Chronic effects may include dermatitis and cornea vacuolization.
Lead	7439-92-1	Particulate form - Unable to be detected by either PID or FID.	Air sample using a mixed cellulose ester filter; or HNO ₃ or H ₂ O ₂ desorption; or Atomic absorption detection. NIOSH Method #7082 or #7300.	OSHA: 0.05 mg/m ³ ACGIH: 0.05 mg/m ³ NIOSH: 0.10 mg/m ³ IDLH: 100 mg/m ³ as lead	The use of a air purifying, full-face respirator with high efficiency particulate air filter for up to 2.5 mg/m ³ . Recommended gloves: This is in the particulate form. Therefore any glove suitable to prevent skin contact (Nitrile has been the one most widely used for the other substances).	Boiling Pt: 3164°F; 1740°C Melting Pt: 621°F; 327°C Solubility: Insoluble Flash Pt: Not applicable (Airborne dust may burn or explode when exposed to heat, flame, or incompatible chemicals) LEL/LFL: Not applicable UEL/UFL: Not applicable Vapor Density: Not available Vapor Pressure: 0 mmHg Specific Gravity: 11.34 Incompatibilities: Strong oxidizers, peroxides, sodium acetylide, zirconium, and acids Appearance and Odor: Metal: A heavy ductile, soft gray solid.	Overexposure to this substance via ingestion or inhalation may result in metallic taste in the mouth, dry throat, thirst, Gastrointestinal disorders (burning stomach pain, nausea, vomiting, possible diarrhea sometimes bloody or black, accompanied by severe bouts of colic), CNS effects (muscular weakness, pain, cramps, headaches, insomnia, depression, partial paralysis possibly coma and death. Extended exposure may result in damage to the kidneys, gingival lead line, brain, and anemia.

6.2 PHYSICAL HAZARDS

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

- Slips, trips, and falls
- Lifting (strain/muscle pulls)
- Noise in excess of 85 decibels on the A-weighted scale (dBA)
- Heavy equipment hazards (pinch/compression points, rotating equipment, etc.).
- Heat Stress (Ambient temperature extremes)

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

6.2.1 Slip, Trip and Fall Hazards

Various potential slip, trip and fall hazards may be encountered during the performance of planned site activities. These hazards are associated with working outdoors where uneven or wet terrain may be encountered. To minimize the potential for worker injury from these hazards, the following requirements must be observed:

- Maintain proper housekeeping in work areas.
- Preview and inspect work areas to identify and eliminate slip, trip, or fall hazards. In outdoor locations, pay particular attention to sink holes or other depressions that may be encountered. Ensure steps leading to the trailer have non-skid coatings on the tread areas. When constructing temporary decontamination facilities, care should be taken when using polyethylene sheeting or tarps to contain wash waters. These surfaces can become extremely slippery. Where necessary, apply a light coating of sand to provide necessary traction.
- Any work that is to be done on structures that are more than 6-feet above floor or ground level will require fall protection training and the use of 100% fall protection equipment.
- Cover, guard, barricade, and or place warning postings over/at holes or openings that personnel may fall into or step into. Stairs leading to elevated structures (such as a trailer or elevated work platform greater than 4-feet shall be protected by handrails in accordance with OSHA 29 CFR 1910.23.

- Use footwear with adequate traction.
- Prepare work areas by removing tripping hazards (ruts, roots, debris). This is especially critical concerning approach pathways leading to or around rotating/advancing equipment. A fall into the rotating auger flights/apparatus could be life threatening.

6.2.2 Strains/Muscle Pulls

This hazard potential is greatest during mobilization/demobilization activities or when handling sampling coolers when most of the physical lifting is accomplished. Other activities which present this hazard include handling heavy objects and bags of Portland cement (~94 pounds) and bags of sand during well installation and construction.

Worker injuries resulting from improper manual material handling activities are easily prevented through observation of proper lifting and carrying methods. These types of injuries are not limited to merely the factor of the weight of the load. Other considerations include:

- How many lifts will be involved (i.e., repetitive lifting of even small loads),
- The size, shape, and/or configuration of the load to be lifted,
- Whether or not the load will need to be lifted to another height or carried to another location,
- The area available to maneuver the lift.

Workers involved with these types of activities are to be instructed by the SSO in the following manner:

- First estimate the weight and configuration of the load. This means determine if it is too bulky or hard to safely grasp/lift/control alone. If so, either use a mechanical lifting device or obtain help from another employee to lift the load. (Note: The use of mechanical lifting devices is **always** preferable over manual lifting).
- Bend at the knees (not at the waist) when attempting a lift.
- Ensure that a firm hold is obtained, and keep the load as close to the body as possible.

- Lift the load using your legs, and not the back.
- Avoid turning or twisting while holding a load.
- If the load is to be moved, preview the path of travel first to identify and eliminate any tripping hazards.
- Do not attempt to carry loads that obstruct the line of sight.
- When setting a load down, again use the leg muscles and do not bend at the waist.
- Take rest breaks as necessary to prevent fatigue and injury.

You are most vulnerable to hazards of this nature early in the day prior to limbering and stretching and late in the day due to fatigue. Additional care should be exercised during these periods.

6.2.3 Noise in Excess of 85 dBA

Worker exposure to noise that can approach hazardous levels is a common hazard on most project work sites. Workers who must work in areas or who must perform operations where noise levels can approach an 8-hour time weighted average of 85 decibels on the A-weighted scale (dBA) must have received hearing conservation training within the past 12 month period (this is normally provided as part of the 8-hour refresher training). If personnel have not had this training within the last twelve months they will be provided such training by the SSO at the project site prior to participating in high noise level activities. On this project, high noise levels may be encountered when working near the drill rig, and during decontamination operations when using a pressure washer,

As a general rule-of-thumb to prevent worker exposure to high noise levels, workers will be informed to observe the following:

If ambient noise levels are loud enough that they have to raise their voice in order to communicate with another person who is less than 2 feet away, hearing protection will be required.

Also, if any existing base operations are posted as high noise areas or that hearing protection is required in that area, then hearing protection will be used.

Site boundaries for exclusion zone demarcation have included sufficient distances to accommodate potential noise hazards associated with the identified operations.

Hearing protection will be the primary control measure for personnel who must work within the vicinity of excessive noise levels. Those activities anticipated to have excessive noise levels have been identified in Table 5-1.

6.2.4 Exposure to Pinch or Compression Points and/or Entanglement or Contact With Moving or Rotating Equipment/Machinery

Moving and operating machinery present potential hazards of entanglement, caught in or between, and/or to be struck by machines or machine parts. Hazards of this nature are considered a predominant hazard associated with over-drilling operations associated with the abandonment of AS/SVE wells. Many of the recorded fatalities within the drilling industry have been associated with entanglement within spinning/rotating augers. The factors associated with this hazard include snag points on the rotating apparatus, as well as the existence of loose clothing, jewelry and long hair. This hazard is often compounded by inoperable emergency stop devices. Recognition and control shall focus on identification to minimize these risks. The following measures shall be instituted

- Equipment that is to be operated must first be closely inspected to ensure that adequate machine guarding is in place.
- Maintenance activities are to be performed only when the machines are shut down. Also, employees whose duties places them in proximity to moving machinery items are to avoid wearing jewelry, or have long (unrestricted) hair, or loose fitting clothing that could become entangled in rotating equipment.
- Also, the use of home-made or jury-rigged machine parts is strictly prohibited. Equipment parts must be manufacturer-provided or approved.

In addition, to further minimize hazards of this nature and as this activity shall take place within a light industrial area, the following additional precautions shall be employed:

Traffic Patterns in and around the drill rig operations – Traffic for heavy equipment and pedestrians shall be separated by flow patterns. Heavy equipment (drill rigs and support vehicles) shall be routed in a singular direction to minimize backing, U-turns, and other maneuvers that could result in an accident. A

demarcation area shall be established in plain view, so personnel recognize the boundary of potential physical hazards. Boundaries established to control hazards of this nature are as follows:

- Drilling Operations – Establish an exclusion zone equal to the height of the mast plus five feet (but not less than 35 feet). Non-essential personnel will be restricted from being within this area.

The positioning of drill rig and support vehicles will utilize a ground spotter. Flag persons, barriers, and high visibility vests will be used in areas where operations may impede or impact vehicle and/or pedestrian traffic, to provide visual recognition and control of the work zone.

6.2.5 Contact with Energized Sources, Including Operating Processes and Utilities (Aboveground and Underground)

Contact with energized sources can result in severe injury and even death. There are two areas of concern with this potential hazard: contact with energized processing equipment and contact with energized utilities including underground utilities (including electrical transmission lines, gas lines, water lines, etc.) and overhead utilities (i.e., power lines).

To protect against contact with energized processing equipment, any work on or near these types of items will be required to follow the Company Safe Work Practice on the Control of Hazardous Energy Sources (Lockout/Tag out).

Contact with Energized Systems – Much of the work to be done at the facility will be within light industrial areas that may be serviced by underground and overhead energy sources. Preliminary efforts to control hazards of this nature will include:

- Use Standard Operating Procedure (SOP) for Utility Locating and Excavation Clearance. This procedure provides step by step instructions for clearance of underground utilities, as well as, avoidance techniques, and required documentation.
- Establishing a suitable clearance distance (20-feet) from overhead utilities will be the primary method to control hazards conveyed through contact with these power sources.

6.3 NATURAL HAZARDS

Insect/animal bites and stings, poisonous plants, and inclement weather are natural hazards that may be present given the location of activities to be conducted. In general, avoidance of areas of known

infestation or growth will be the preferred exposure control for insects/animals and poisonous plants. Specific discussion on principle hazards of concern follows:

6.3.1 Insect/Animal Bites and Stings

Fire Ants

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

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

Alligators

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

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

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

Ticks

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

6.3.2 Inclement Weather

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

6.3.3 Heat Stress

Given the geographic location of the site and the project schedule, overexposure to high ambient temperatures (heat stress) may exist during performance of this work depending on the project schedule. (extremely cold temperatures are not expected to be encountered due to project location). Work performed when ambient temperatures exceed 70 °F may result in varying levels of heat stress (heat

rash, heat cramps, heat exhaustion, and/or heat stroke) depending on variables such as wind speed, humidity, and percent sunshine, as well as physiological factors such as metabolic rate and skin moisture content. Additionally, work load and level of protective equipment will affect the degree of exposure. Site personnel will be encouraged to drink plenty of fluids to replace those lost through perspiration. Additional information such as Work-Rest Regimens and personnel monitoring may be found in Section 4.0 of the Health & Safety Guidance Manual.

Many of these physical hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual. Additional information regarding physical hazards associated with the site is provided in Table 5-1 of this HASP.

7.0 AIR MONITORING

Direct reading instruments will be used at the site to detect and evaluate the presence of site contaminants and other potentially hazardous conditions. As a result, specific air monitoring measures and requirements are established in Table 5-1 pertaining to the specific hazards and tasks of an identified operation. Additionally, the Health and Safety Guidance Manual, Section 1.0, contains detailed information regarding direct reading instrumentation, as well as general calibration procedures of various instruments.

7.1 INSTRUMENTS AND USE

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

7.1.1 Flame Ionization Detector or Photoionization Detector

Based on available analytical data, it is unlikely that elevated airborne concentrations of VOCs will be present in the work area. However, a Flame Ionization or Photoionization Detector (PID) using a lamp energy of 10.6 eV or higher or will be used to evaluate the presence of detectable contaminants of concern. This instrument will be used to monitor potential source areas (monitoring wells, free product recovery, and well abandonment) and to screen the breathing zones of employees during site activities. The FID/PID has been selected because it is capable of detecting the organic vapors of concern (NOTE: A Flame Ionization Detector [FID] may be used as an alternative to the PID).

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

7.1.2 Hazard Monitoring Frequency

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

7.2 INSTRUMENT MAINTENANCE AND CALIBRATION

Hazard monitoring instruments will be maintained and pre-field calibrated by the TtNUS Equipment Manager. Operational checks and field calibration will be performed on all instruments each day prior to their use. Field calibration will be performed on instruments according to manufacturer's recommendations (for example, the PID must be field calibrated daily and an additional field calibration must be performed at the end of each day to determine any significant instrument drift). These operational checks and calibration efforts will be performed in a manner that complies with the employees health and safety training, the manufacturer's recommendations, and with the applicable manufacturer standard operating procedure (copies of which can be found in the Health & Safety Guidance Manual which will be maintained on site for reference). All calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook, provided that all of the information specified in Figure 7-1 is recorded. This required information includes the following:

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

8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS

8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING

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

Documentation of TtNUS 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.

8.1.1 Requirements for Subcontractors

Identified TtNUS subcontractor personnel must have completed introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120(e) and 8 hours of refresher training meeting the requirements of 29 CFR 1910.120(e)(8) prior to performing field work at the NAS Key West. TtNUS subcontractors must certify that each employee has had such training by sending TtNUS a letter, on company letterhead, containing the information in the example letter provided in Figure 8-1. This letter will be accompanied by training certificates or some other form of official documentation for all subcontractor personnel participating in site activities.

8.2 SITE-SPECIFIC TRAINING

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

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Work practices to minimize risks from hazards

FIGURE 8-1
TRAINING LETTER

The following statements must be typed on company letterhead and signed by an officer of the company and accompanied by copies of personnel training certificates:

LOGO

XYZ CORPORATION
555 E. 5th Street
Nowheresville, Kansas 55555

Month, day, year

Mr. Chuck Bryan
Task Order Manager
Tetra Tech NUS, Inc.
900 Tail Ridge Road
Aiken, South Carolina 29803

Subject: HAZWOPER Training for Naval Air Facility Key West, Florida

Dear Mr. Bryan:

As an officer of XYZ Corporation, I hereby state that I am aware of the potential hazardous nature of the subject project. I also understand that it is our responsibility to comply with all applicable occupational safety and health regulations, including those stipulated in Title 29 of the Code of Federal Regulations (CFR), Parts 1900 through 1910 and Part 126.

I also understand that Title 29 CFR 1910.120, entitled "Hazardous Waste Operations and Emergency Response," requires an appropriate level of training for certain employees engaged in hazardous waste operations. In this regard, I hereby state that the following employees have had 40 hours of introductory hazardous waste site training or equivalent work experience as requested by 29 CFR 1910.120(e) and have had 8 hours of refresher training as applicable and as required by 29 CFR 1910.120(e)(8) and that site supervisory personnel have had training in accordance with 29 CFR 1910.120(e)(4).

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555.

Sincerely,

(Name and Title of Company Officer)

- Medical surveillance requirements
- Contents of the Health and Safety Plan
- Signs and symptoms of overexposure to site contaminants
- Contents of the Health and Safety Plan
- Emergency response procedures (evacuation and assembly points)
- Spill response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Emergency response procedures (evacuation and assembly points)
- Associated hazards and restricted areas within the NAS Key West.

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

8.3 MEDICAL SURVEILLANCE

All TtNUS personnel participating in project field activities will have had a physical examination meeting the requirements of TtNUS medical surveillance program. Documentation for medical clearances will be maintained in the TtNUS Aiken office and made available, as necessary.

8.3.1 Medical Surveillance Requirements for Subcontractors

Identified subcontractors are required to obtain a certificate of their ability to perform hazardous waste site work and to wear respiratory protection. The "Subcontractor Medical Approval Form" provided in Figure 8-3 shall be used to satisfy this requirement, providing it is properly completed and signed by a licensed physician.

Subcontractors who have a company medical surveillance program meeting the requirements of paragraph (f) of OSHA 29 CFR 1910.120 can substitute "Subcontractor Medical Approval Form" with a letter, on company letterhead, containing all of the information in the example letter presented in Figure 8-4 of this HASP.

Figure 8-3
Medical Letter

The following statements must be typed on company letterhead and signed by an officer of the company and accompanied by copies of personnel training certificates:

LOGO

XYZ CORPORATION
555 E. 5th Street
Nowheresville, Kansas 55555

Month, day, year

Mr. Chuck Bryan
Task Order Manager
Tetra Tech NUS, Inc.
900 Tail Ridge Road
Aiken, South Carolina 29803

Subject: HAZWOPER for Naval Air Facility Key West, Florida

Dear Mr. Bryan:

As an officer of XYZ Corporation, I hereby state that the persons listed below 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: Final Rule." I further state that the persons listed below 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. I also state that, to my knowledge, no person listed below has any medical restriction that would preclude him/her from working at the NAS Jacksonville site.

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555.

Sincerely,

(Name and Title of Company Officer)

Figure 8-4
Subcontractor Medical Approval Form
Page 1 of 2

For employees of _____
Company Name

Participant Name: _____ Date of Exam: _____

Part A

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA Standard 29 CFR 1910.120, paragraph (f) and found to be medically -
 qualified to perform work at the NAS Key West work site
 not qualified to perform work at the NAS Key West work site
and,
2. Undergone a physical examination as per OSHA 29 CFR 1910.134(b)(10) and found to be medically -
 qualified to wear respiratory protection
 not qualified to wear respiratory protection

My evaluation has been based on the following information, as provided to me by the employer.

- A copy of OSHA Standard 29 CFR 1910.120 and appendices.
- A description of the employee's duties as they relate to the employee's exposures.
- A list of known/suspected contaminants and their concentrations (if known).
- A description of any personal protective equipment used or to be used.
- Information from previous medical examinations of the employee which is not readily available to the examining physician.

Part B

I, _____, have examined _____

Physician's Name (print)

Participant's Name (print)

and have determined the following information:

Figure 8-4
Subcontractor Medical Approval Form
Page 2 of 2

1. Results of the medical examination and tests (excluding finding or diagnoses unrelated to occupational exposure):

2. Any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health:

3. Recommended limitations upon the employee's assigned work:

I have informed this participant of the results of this medical examination and any medical conditions which require further examination or treatment.

Based on the information provided to me, and in view of the activities and hazard potentials involved at the NAS Key West work site, this participant

- may
 may not

perform his/her assigned task.

Physician's Signature _____

Address _____

Phone Number _____

NOTE: Copies of test results are maintained and available at:

Address

8.3.2 Requirements for All Field Personnel

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

8.4 SUBCONTRACTOR EXCEPTIONS

In situations in which the exclusion zone is not entered or when there is no potential for exposure to site contaminants, subcontractor personnel may be exempt from some of the training and medical surveillance requirements. All subcontractors and visiting personnel are required to receive site-specific training (as discussed in Section 8.2) regarding information provided in this HASP. Examples of subcontractors who may be exempt from training and medical surveillance requirements may include surveyors who perform surveying activities at the site perimeters or in areas where there is no potential for exposure to site contaminants.

The use of the subcontractor exception is strictly limited to the authority of the CLEAN Health and Safety Manager.

9.0 SITE CONTROL

This section outlines the means by which TtNUS will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is anticipated that a fractured three-zone approach will be used during work at this site. This three zone approach will utilize an exclusion zone, a contamination reduction zone, and a support zone. It is also anticipated that this control measure will be used to control access to site work areas. Use of such controls will restrict the general public, minimize the potential for the spread of contaminants, and protect individuals who are not cleared to enter work areas.

9.1 EXCLUSION ZONE

The Exclusion Zone will be considered those areas of active operations plus an established safety zone depending on the task. The following represent the Exclusion Zone boundaries for the following identified tasks:

- Well Development / Purging– 10 feet surrounding the well head and discharge point.
- Groundwater / Natural Attenuation / Treatability Study Activities / Sampling and associated activities (water level measurements, etc.) – 10 feet surrounding the well head.
- IDW Handling – 10 feet surrounding the well head.
- Well abandonment – 10 feet surrounding the well or if over-drilling is required (at AS/SVE wells at the Flying Club), an exclusion zone of 35 feet surrounding the point of operations will be used.
- Decontamination – Since limited decontamination will be performed with planned site activities the exclusion zone will include a distance of 10 feet surrounding the decontamination area.

Where appropriate and necessary to direct facility personnel, exclusion zones will be delineated using barrier tape, cones and/or drive poles, and postings.

9.1.1 Exclusion Zone Clearance

A pre-startup site visit will be conducted by members of the identified field team in an effort to identify proposed subsurface investigation locations, determine potential impacts to traffic, and provide upfront notices concerning scheduled activities within the facility.

No subsurface intrusive operations are planned within the SOW. As a result, utility clearance are not anticipated to be necessary. In the event that intrusive operations are performed as part of the SOW, this HASP will be modified to include utility clearance procedures.

When base personnel are working within the proximity of this investigation, they will be moved or their operation temporarily discontinued to remove them from potential hazards associated with this operation.

9.2 CONTAMINATION REDUCTION ZONE

The contamination reduction zone (CRZ) will be a buffer area between the exclusion zone and any area of the site where contamination is not suspected. This area will also serve as a focal point in supporting exclusion zone activities. Whenever possible, this area will be delineated using barrier tape, cones, and postings to inform and direct facility personnel. Given the nature of the planned work, decontamination efforts will consist of bagging disposable sampling equipment (tubing, bailers, etc.) and PPE in garbage bags and disposing in accordance with federal, state, and local requirements. Given the limited potential for contact with contaminated media, personnel decontamination will consist of using handwipes or other hand sanitizers to remove any contaminants and cleanse the hands. Workers should wash their hands and face more thoroughly before performing any hand to mouth activities such as eating, smoking, or taking medications.

9.3 SUPPORT ZONE

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

9.4 SAFE WORK PERMITS

All exclusion zone activities conducted in support of this project will be done so using this HASP as a reference guide and Safe Work Permits to incorporate site-specific information to guide and direct field crews on a task by task basis. An example of the Safe Work Permit to be used during site activities is illustrated in Figure 9-1. All permits will be issued by the SSO in the morning prior to the beginning of on site activities. Partially completed Safe Work Permits are included in Attachment II of this HASP.

**FIGURE 9-1
SAFE WORK PERMIT**

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

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

II. Primary Hazards: Potential hazards associated with this task: _____

III. Field Crew: _____

IV. On-site Inspection conducted Yes No Initials of Inspector _____ TtNUS

Equipment Inspection required Yes No Initials of Inspector _____ TtNUS

V. Protective equipment required **Respiratory equipment required**

Level D Level B Yes Specify on the reverse

Level C Level A No

Modifications/Exceptions: _____

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
_____	_____	_____	_____
_____	_____	_____	_____

Primary Route(s) of Exposure/Hazard: _____

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

- | | | | |
|-----------------------------------|--|---------------------------------------|--|
| Hard-hat..... | <input type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs)..... | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Chemical/splash goggles..... | <input type="checkbox"/> Yes <input type="checkbox"/> No | Radio/Cellular Phone..... | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Shield..... | <input type="checkbox"/> Yes <input type="checkbox"/> No | Barricades | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash suits/coveralls | <input type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type – Work)..... | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Impermeable apron | <input type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe work shoes or boots ... | <input type="checkbox"/> Yes <input type="checkbox"/> No | Chemical Resistant Boot Covers | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| High Visibility vest..... | <input type="checkbox"/> Yes <input type="checkbox"/> No | Tape up/use insect repellent | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| First Aid Kit | <input type="checkbox"/> Yes <input type="checkbox"/> No | Fire Extinguisher..... | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Shower/Eyewash | <input type="checkbox"/> Yes <input type="checkbox"/> No | Other | <input type="checkbox"/> Yes <input type="checkbox"/> No |

Modifications/Exceptions: _____

VIII. Site Preparation

	Yes	No	NA
Utility Locating and Excavation Clearance completed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. Special instructions, precautions: _____

Permit Issued by: _____ Permit Accepted by: _____

Safe Work Permits are to be completed in accordance with the specifications contained in Table 5-1, and the other sections of the HASP as appropriate.

All personnel identified on the permit as participating in the task will be made aware of its contents by the supervisor accepting the permit. Any problems which occurred throughout the task will be documented by the supervisor on the permit.

All permits will be returned to the FOL or the SSO at the end of the day.

9.5 SITE VISITORS

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

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

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

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

- All site visitors will be routed to the FOL, who will sign them into the field logbook. Information to be recorded in the logbook will include the individual's name (proper identification required), the entity which they represent, and the purpose of the visit.
- All site visitors will be required to produce the necessary information supporting clearance to the site. This shall include information attesting to applicable training and medical surveillance as stipulated in Section 8.0 of this document. In addition, to enter the site operational zones during planned activities, all visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this HASP.

Once the site visitors have completed the above items, they will be permitted to enter the operational zone. All visitors are required to observe the protective equipment and site restrictions in effect at the site at the time of their visit. All visitors entering the exclusion zones during ongoing operations will be accompanied by a TtNUS representative. Any and all visitors not meeting the requirements, as stipulated in this plan, for site clearance will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause the termination of all on site activities until the unauthorized visitor is removed from the premises. Removal of unauthorized visitors will be accomplished with support from the Base Contact. If necessary, the Base Contact will be notified of any unauthorized visitors.

9.6 SITE SECURITY

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

9.7 BUDDY SYSTEM

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

9.8 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS

TtNUS and subcontractor personnel will provide MSDSs for all chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of all chemicals used on site will be developed using the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request.

9.9 COMMUNICATION

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

External communication will be accomplished by using the telephones at predetermined and approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities at the NAS Key West, the FOL will determine and arrange for telephone communications.

10.0 SPILL CONTAINMENT PROGRAM

10.1 SCOPE AND APPLICATION

It is not anticipated that quantities of bulk potentially hazardous materials (greater than 55-gallons) will be handled during the site activities. It is possible, however, that as the job progresses disposable PPE and other non-reusable items may be generated. As needed, 55-gallon drums will be used to contain unwanted items generated during sampling activities. The drum(s) will be labeled with the site name and address, the type of contents, and the date the container was filled as well as an identified contact person. As warranted, samples will be collected and analyzed to characterize the material and determine appropriate disposal measures. Once characterized the drum(s) will be removed from the staging area and disposed of in accordance with Federal, State and local regulations. Given the likely solid nature of drum contents, a comprehensive Spill Containment Program is not necessary. The following discussion is provided as contingency information only.

10.2 POTENTIAL SPILL AREAS

Should drums contain liquid wastes, potential spill areas will be monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Areas designated for handling, loading, and unloading of potentially contaminated waters and debris present limited potential for leaks or spills.

10.2.1 Site Drums/Containers

All drums/containers used for containing liquids will be sealed, labeled, and staged within a centralized area awaiting shipment or disposal.

10.3 LEAK AND SPILL DETECTION

To establish an early detection of potential spills or leaks, periodic inspections by the SSO will be conducted during working hours to visually determine that containers are not leaking. If a leak is detected, the first approach will be to transfer the container contents using a hand pump into a new container. Other provisions for the transfer of container contents will be made and appropriate emergency contacts will be notified, if necessary. In most instances, leaks will be collected and contained using absorbents such as Oil-dry, vermiculite, and/or sand, which may be stored at the staging area in a conspicuously marked drum. This material too, will be containerized for disposal pending analyses. All inspections will be documented in the Project Logbook.

10.4 PERSONNEL TRAINING AND SPILL PREVENTION

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

10.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT

The following represents the types of equipment that may be maintained at the staging area for the purpose of supporting this Spill Containment Program (depending on the likelihood that drums and/or liquid wastes are generated):

- Sand, clean fill, vermiculite, or other noncombustible absorbent (oil-dry);
- Drums (55-gallon U.S. DOT 17-E or 17-H)
- Shovels, rakes, and brooms
- Labels

10.6 SPILL CONTROL PLAN

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

- Notify the SSO or FOL immediately.
- Take immediate actions to stop the leak or spill by plugging or patching the drum or raising the leak to the highest point. Avoid contacting drum contents. Spread the absorbent material in the area of the spill covering completely.

It is not anticipated that a spill will occur in which the field crews cannot handle. Should this occur; however, the FOL or SSO will notify appropriate emergency response agencies.

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, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

A Permit-Required Confined Space is one that:

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

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

12.0 MATERIALS AND DOCUMENTATION

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

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

12.1 MATERIALS TO BE POSTED OR MAINTAINED AT THE SITE

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

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

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

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

Site Clearance (maintained) - This list is found within the training section of the HASP (See Figure 8-2). This list identifies all site personnel, dates of training (including site-specific training), and medical surveillance. The lists 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 all phone communications points and in each site vehicle.

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

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

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

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

The purpose 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 objection is accomplished.

13.0 ACRONYMS / ABBREVIATIONS

AST	Aboveground Storage Tank
BGS	Below Ground Surface
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CLEAN	Comprehensive Long Term Environmental Action Navy
CRZ	Contamination Reduction Zone
CSP	Certified Safety Professional
dB	Decibel
DOD	Department of Defense
DOT	Department of Transportation
EPA	Environmental Protection Agency
eV	Electron Volts
FID	Flame Ionization Detector
FOL	Field Operations Leader
FS	Feasibility Study
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
IDW	Investigation Derived Waste
LEL/LFL	Lower Explosive Limits / Lower Flammable Limits
mg/kg	milligrams per kilogram
MSDS	Material Safety Data Sheet
NAF	Naval Air Facility
NIOSH	National Institute for Occupational Safety and Health
OOD	Officer of the Day
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PAH	Polynuclear Aromatic Hydrocarbon
PID	Photo Ionization Detector
PHSO	Project Health and Safety Officer
PPE	Personal Protective Equipment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
SMWU	Solid Waste Management Unit
SSO	Site Safety Officer
SVOCs	Semi-Volatile Organic Compounds

TBD	To be determined
TOM	Task Order Manager
TtNUS	Tetra Tech NUS
UEL / UFL	Upper Explosive Limits / Upper Flammable Limits
USDA	United States Department of Agriculture
VOCs	Volatile Organic Compounds

ATTACHMENT I

ILLNESS/INJURY PROCEDURE AND REPORT FORM

TETRA TECHNUS, INC.

INJURY/ILLNESS PROCEDURE WORKER'S COMPENSATION PROGRAM

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

- Stop work as needed to ensure no further harm is done.
- If injury is minor, obtain appropriate first aid treatment.
- If injury or illness is severe or life threatening, obtain professional medical treatment at the nearest hospital emergency room. Check with your office location or project health and safety plan for specific instructions.
- If incident involves an injury, illness, or chemical exposure on a project work site, follow instructions in the Health & Safety Plan.
- Immediately report any injury or illness to your supervisor or office manager. In addition, you must contact your Human Resources representative, Marilyn Duffy at (412) 921-8475, and the Corporate Health and Safety Manager, Matt Soltis at (412) 921-8912 within 24 hours of the injury. You will be required to complete an [Injury/Illness Report](#). You may also be required to participate in a more detailed investigation with the Health Sciences Department.
- In the event of a serious near-miss incident, a "Serious Near Miss Report" (Form AR-2, available online at <https://go2.tetratech.com> under "Departments", "Health and Safety", "Accident Reporting Procedures", hyperlink for "Serious Near Miss Report") must be completed and faxed to the Corporate Health and Safety Manager within 48 hours.
- If further medical treatment is needed, our insurance carrier, ACE, will provide information on the authorized providers customized to the location of the injured employee. You can find this information by accessing the website of ACE's claims handler, ESIS, at : www.esis.com. These providers are to be used for treatment of Worker's Compensation injuries subject to the laws of the state in which you work.

ADDITIONAL QUESTIONS REGARDING WORKER'S COMPENSATION:

Contact your local Human Resources representative (Marilyn Duffy), Corporate Health and Safety Manager (Matt Soltis), or Corporate Administration in Pasadena, California, at (626) 351-4664.

Worker's compensation is a state-mandated program that provides medical and disability benefits to employees who become disabled due to job related injury or illness. Tetra Tech, Inc. and its subsidiaries pay premiums on behalf of their employees. This program is based on a no-fault system, and benefits are provided for covered events as an exclusive remedy to the injured employee regardless of fault. The types of injuries or illnesses covered and the amount of

benefits paid are regulated by the state worker's compensation boards and vary from state to state. Corporate Administration in Pasadena is responsible for administering the Company's worker's compensation program. The following is a general explanation of worker's compensation provided in the event that you become injured or develop an illness as a result of your employment with Tetra Tech or any of its subsidiaries. Please be aware that the term used for worker's compensation varies from state to state.

WHO IS COVERED:

All employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits from the first day of work. All employees must follow the above injury/illness reporting procedures. If you are working out-of-state and away from your home office, you are still eligible for worker's compensation benefits.

Consultants, independent contractors, and employees of subcontractors and employees from temporary employment agencies are not covered by Tetra Tech's Worker's Compensation plan.

WHAT IS COVERED:

If you are injured or develop an illness caused by your employment, worker's compensation benefits are available to you subject to the laws of the state you work in. Injuries do not have to be serious; even injuries treated by first aid practices are covered and must be reported.



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT

To: _____
Subsidiary Health and Safety Representative

Prepared by: _____

Position: _____

cc: _____
Workers Compensation Administrator

Office: _____

Project name: _____

Telephone number: _____

Project number: _____

Fax number: _____

Information Regarding Injured or Ill Employee

Name: _____

Office: _____

Home address: _____

Gender: M F No. of dependents: _____

Marital status: _____

Home telephone number: _____

Date of birth: _____

Occupation (regular job title): _____

Social security number: _____

Department: _____

Date of Accident: _____

Time of Accident: _____ a.m. p.m.

Time Employee Began Work: _____

Check if time cannot be determined

Location of Incident

Street address: _____

City, state, and zip code: _____

County: _____

Was place of accident or exposure on employer's premises? Yes No

Information About the Incident

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

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

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



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

Information About the Incident (Continued)

What was the injury or illness? Describe the part(s) of the body affected and how it was affected. Be more specific than "hurt," "pain," or "sore." Examples "Strained back"; "Chemical burn, right hand"; "Carpal tunnel syndrome, left wrist"

Describe the Object or Substance that Directly Harmed the Employee: Examples: "Concrete floor"; "Chlorine"; "Radial arm saw." If this question does not apply to the incident, write "Not applicable."

Did the employee die? Yes [] No [] Date of death: _____

Was employee performing regular job duties? Yes [] No []

Was safety equipment provided? Yes [] No [] Was safety equipment used? Yes [] No []

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

Witness (Attach additional sheets for other witnesses.)

Name: _____

Company: _____

Street address: _____

City: _____ State: _____ Zip code: _____

Telephone number: _____

Medical Treatment Required? [] Yes [] No [] First aid only

Name of physician or health care professional: _____

If treatment was provided away from the work site, provide the information below.

Facility name: _____

Street address: _____

City: _____ State: _____ Zip code: _____

Telephone number: _____

Was the employee treated in an emergency room? [] Yes [] No

Was the employee hospitalized over night as an in-patient? [] Yes [] No

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



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

Corrective Action(s) Taken by Unit Reporting the Accident:

Corrective Action Still to be Taken (by whom and when):

Name of Tetra Tech employee the injury or illness was first reported to: _____

Date of Report: _____ **Time of Report:** _____

I have reviewed this investigation report and agree, to the best of my recollection, with its contents.

Printed Name of Injured Employee

Telephone Number

Signature of Injured Employee

Date

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

Title	Printed Name	Signature	Telephone Number	Date
Office Manager				
Project Manager				
Site Safety Coordinator or Office Health and Safety Representative				

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



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

To Be Completed by the Subsidiary Health and Safety Representative

Classification of Incident:
 Injury Illness

Result of Incident:
 First aid only
 Days away from work
 Remained at work but incident resulted in job transfer or work restriction
 Incident involved days away and job transfer or work restriction
 Medical treatment only

No. of days away from work _____
 Date employee left work _____
 Date employee returned to work _____
 No. of days placed on restriction or job transfer: _____

OSHA Recordable Case Number _____

To Be Completed by Human Resources

Social security number: _____
 Date of hire: _____ Hire date for current job: _____
 Wage information: \$ _____ per Hour Day Week Month
 Position at time of hire: _____
 Current position: _____ Shift hours: _____
 State in which employee was hired: _____
 Status: Full-time Part-time Hours per week: _____ Days per week: _____
 Temporary job end date: _____

To Be Completed during Report to Workers Compensation Carrier

Date reported: _____ Reported by: _____
 Confirmation number: _____
 Name of contact: _____
 Field office of claims adjuster: _____

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

ATTACHMENT II

MEDICAL DATA SHEET

MEDICAL DATA SHEET

This Medical Data Sheet must be completed by all 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 _____

Name of Next Kin _____

Drug or other Allergies _____

Particular Sensitivities _____

Do You Wear Contacts? _____

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals _____

What medications are you presently using? _____

Do you have any medical restrictions? _____

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

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

Signature

Date

ATTACHMENT III

SAFE WORK PERMITS

**SAFE WORK PERMIT
MOBILIZATION AND DEMOBILIZATION
NAVAL AIR FACILITY, KEY WEST
KEY WEST, FLORIDA**

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

I. Work limited to the following (description, area, equipment used): Mobilization / Demobilization, site reconnaissance, and surveying activities.

II. Primary Hazards: Potential hazards associated with this task: lifting; pinches and compressions; slip, trip and falls; moving machinery; insect and animal bites, and vehicular foot traffic

III. Field Crew: _____

IV. On-site Inspection conducted Yes No Initials of Inspector _____ TtNUS

Equipment Inspection required Yes No Initials of Inspector _____ TtNUS

V. Protective equipment required

Level D Level B

Level C Level A

Modifications/Exceptions: _____

Respiratory equipment required

Yes Specify on the reverse

No

VI. Chemicals of Concern

None expected during this task

Hazard Monitoring

Action Level(s)

Response Measures

Primary Route(s) of Exposure/Hazard: NA

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

Hard-hat..... Yes No

Safety Glasses Yes No

Chemical/splash goggles Yes No

Splash shield..... Yes No

Splash suits/coveralls Yes No

Impermeable apron..... Yes No

Steel toe work shoes or boots.... Yes No

High visibility vest..... Yes No

First Aid Kit..... Yes No

Safety Shower/Eyewash Yes No

Modifications/Exceptions: Various tasks performed as part of mobilization/demobilization require additional PPE. Tasks and site conditions will determine the need for additional PPE (hard hats, safety glasses, protective gloves, hearing protection, reflective vests, etc.).

Hearing Protection (Plugs/Muffs) Yes No

Safety belt/harness Yes No

Radio/Cellular Phone Yes No

Barricades..... Yes No

Gloves (Type – Work) Yes No

Work/rest regimen..... Yes No

Chemical resistant boot covers Yes No

Tape up/use insect repellent Yes No

Fire extinguisher Yes No

Other Yes No

VIII. Site Preparation

Utility Locating and Excavation Clearance completed..... Yes No NA

Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place Yes No NA

Physical Hazards Identified and Isolated (Splash and containment barriers)..... Yes No NA

Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.) Yes No NA

IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... Yes No

If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. Special instructions, precautions: Use safe lifting/carrying techniques. Use additional PPE based on the hazards that are associated with each task. Use work gloves when cutting boxes or handling sharp tools/cutting devices. Safety glasses will be required whenever eye hazards are present. Reflective vests will be used when working near roadways or areas of operating vehicles/equipment. Identify/remove potential physical hazards and mark areas or hazards that cannot be removed. Keep work area free of ground clutter.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
AS/SVE WELL ABANDONMENT AT THE FLYING CLUB
NAVAL AIR FACILITY, KEY WEST
KEY WEST, FLORIDA**

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

I. Work limited to the following (description, area, equipment used): AS/SVE well abandonment at the Flying Club using over-drilling methods.

II. Primary Hazards: Potential hazards associated with this task: contact with site contaminants; transfer of contamination; heavy equipment hazards; heavy lifting; slip, trip and fall; ambient temperature extremes; insect/animal bites and stings, inclement weather

III. Field Crew: _____

IV. On-site Inspection conducted Yes No Initials of Inspector _____ TtNUS
Equipment Inspection required Yes No Initials of Inspector _____ TtNUS

V. Protective equipment required

Level D Level B
 Level C Level A

Respiratory equipment required

Yes Specify on the reverse
 No

Modifications/Exceptions: _____

VI. Chemicals of Concern

BTEX, PAHs

Hazard Monitoring

FID/PID (precautionary)

Action Level(s)

Any elevated reading above background

Response Measures

Evacuate area until readings subside or contact the PHSO

Primary Route(s) of Exposure/Hazard: Skin contact. Inhalation of airborne dusts generated by site activities may be possible if airborne dusts are present – use area wetting methods. Incidental ingestion and contact with contaminants will be prevented through the use of PPE and safe work practices.

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

Hard-hat Yes No
 Safety Glasses Yes No
 Chemical/splash goggles Yes No
 Splash shield..... Yes No
 Splash suits/coveralls..... Yes No
 Impermeable apron..... Yes No
 Steel toe work shoes or boots.... Yes No
 High visibility vest..... Yes No
 First Aid Kit..... Yes No
 Safety Shower/Eyewash Yes No

Hearing Protection (Plugs/Muffs) Yes No
 Safety belt/harness Yes No
 Radio/Cellular Phone Yes No
 Barricades..... Yes No
 Gloves (Type – nitrile/work) Yes No
 Work/rest regimen..... Yes No
 Chemical resistant boot covers Yes No
 Tape up/use insect repellent Yes No
 Fire extinguisher Yes No
 Other..... Yes No

Modifications/Exceptions: Coveralls if the potential for soiling work clothing exists. Other PPE is possible based on conditions (rain gear, rubber boots, etc.)

VIII. Site Preparation

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.) Yes No
If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. Special instructions, precautions: VOCs are not anticipated to be present at detectable concentrations at the site. The use of a FID/PID is as a precaution. Any sustained readings in workers breathing zones will suggest an unanticipated condition that will require that site activities be suspended until the source of elevated readings is determined. Use safe lifting/carrying techniques. Inspect equipment prior to use. Ensure emergency stop devices are functional and test daily.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
TREATABILITY STUDY, GROUNDWATER SAMPLING AND
MONITORED NATURAL ATTENUATION SAMPLING
NAVAL AIR FACILITY, KEY WEST
KEY WEST, FLORIDA**

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

- I. Work limited to the following (description, area, equipment used):** Multimedia sampling including soils, groundwater and IDW
- II. Primary Hazards:** Potential hazards associated with this task: contact with site contaminants; transfer of contamination; heavy lifting; slip, trip and fall; ambient temperature extremes; insect/animal bites and stings, inclement weather.
- III. Field Crew:** _____
- IV. On-site Inspection conducted** Yes No Initials of Inspector TtNUS
Equipment Inspection required Yes No Initials of Inspector TtNUS

- V. Protective equipment required**
 Level D Level B
 Level C Level A
 Modifications/Exceptions: _____
- Respiratory equipment required**
 Yes Specify on the reverse
 No

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
<u>BTEX, PAHs</u>	<u>FID/PID</u>	<u>Any elevated reading above Background in worker Breathing zones</u>	<u>Evacuate area until readings subside or contact the PHSO</u>
_____	_____	_____	_____

Primary Route(s) of Exposure/Hazard: Contact and incidental ingestions as a result of hand to mouth activities. Airborne dusts that may present an inhalation hazard are unlikely to be generated during planned site activities.

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

- | | |
|--|---|
| Hard-hat..... <input type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety Belt/Harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/Splash Goggles..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio/Cellular Phone <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Shield..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades..... <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Suits/Coveralls <input type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type – Nitrile) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Impermeable Apron..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Work/rest regimen..... <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel Toe Work Shoes or Boots. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Chemical Resistant Boot Covers <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| High Visibility Vest..... <input type="checkbox"/> Yes <input type="checkbox"/> No | Tape/Insect Repellent <input type="checkbox"/> Yes <input type="checkbox"/> No |
| First Aid Kit..... <input type="checkbox"/> Yes <input type="checkbox"/> No | Fire Extinguisher <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Shower/Eyewash <input type="checkbox"/> Yes <input type="checkbox"/> No | Other..... <input type="checkbox"/> Yes <input type="checkbox"/> No |
- Modifications/Exceptions: _____

VIII. Site Preparation

- | | Yes | No | NA |
|---|--------------------------|--------------------------|--------------------------|
| Utility Locating and Excavation Clearance completed..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Identified and Isolated (Splash and containment barriers)..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- IX. Additional Permits required** (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

- X. Special instructions, precautions:** Elevated airborne VOC readings in worker breathing zones are unlikely to be encountered during these site activities. Site contaminants may vary from site to site but none are anticipated to be present at concentrations that may pose an exposure threat to site personnel. Use safe lifting/carrying techniques. Assume media is contaminated and avoid contact through the use of safe work practices, PPE and decontamination.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
 DECONTAMINATION AND IDW HANDLING
 NAVAL AIR FACILITY, KEY WEST
 KEY WEST, FLORIDA**

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

- I. Work limited to the following (description, area, equipment used):** Decontamination of the sampling and heavy equipment
- II. Primary Hazards:** Potential hazards associated with this task: contact with site contaminants; transfer of contamination; elevated noise; heavy lifting; slip, trip and fall; pinch/compression points
- III. Field Crew:** _____
- IV. On-site Inspection conducted** Yes No Initials of Inspector _____ TtNUS
Equipment Inspection required Yes No Initials of Inspector _____ TtNUS

- V. Protective equipment required**
 Level D Level B
 Level C Level A
 Modifications/Exceptions: _____
- Respiratory equipment required**
 Yes Specify on the reverse
 No

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
<u>BTEX, PAHs</u>	<u>FID/PID (precautionary)</u>	<u>Any elevated reading above background</u>	<u>Evacuate area until readings subside or contact the PHSO</u>
_____	_____	_____	_____
_____	_____	_____	_____

Primary Route(s) of Exposure/Hazard: absorption

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

- VII. Additional Safety Equipment/Procedures**
- | | |
|--|--|
| Hard-Hat <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety Belt/Harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/Splash Goggles <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio/Cellular Phone <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Splash Shield <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Barricades <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash Suits/Coveralls <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type – Nitrile) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Impermeable apron <input type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest Regimen <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel Toe Work Shoes or Boots. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Chemical Resistant Boot Covers <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| High Visibility Vest <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Tape/Insect Repellent <input type="checkbox"/> Yes <input type="checkbox"/> No |
| First Aid Kit <input type="checkbox"/> Yes <input type="checkbox"/> No | Fire Extinguisher <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Shower/Eyewash <input type="checkbox"/> Yes <input type="checkbox"/> No | Other <input type="checkbox"/> Yes <input type="checkbox"/> No |
- Modifications/Exceptions: _____

- VIII. Site Preparation**
- | | Yes | No | NA |
|---|--------------------------|--------------------------|--------------------------|
| Utility Locating and Excavation Clearance completed..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Identified and Isolated (Splash and containment barriers)..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- IX. Additional Permits required** (Hot work, confined space entry, excavation etc.)..... Yes No
If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

- X. Special instructions, precautions:** Review and follow the instructions on the MSDS for the decontamination fluids. Follow guidance in Table 5-1 for PPE for different decontamination tasks.

Permit Issued by: _____ Permit Accepted by: _____

**SAFE WORK PERMIT
ABANDONMENT OF MONITORING WELLS
NAVAL AIR FACILITY, KEY WEST
KEY WEST, FLORIDA**

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

- I. Work limited to the following (description, area, equipment used):** Well abandonment at Boca Chica Blast Disposal Area, Site A-824, and Boca Chica Hawk Missile Site using grouting methods.
- II. Primary Hazards:** Potential hazards associated with this task: contact with site contaminants; heavy lifting; slip, trip and fall; ambient temperature extremes; insect/animal bites and stings, inclement weather.
- III. Field Crew:** _____
- IV. On-site Inspection conducted** Yes No Initials of Inspector TtNUS
Equipment Inspection required Yes No Initials of Inspector TtNUS

V. Protective equipment required

Level D Level B
 Level C Level A

Respiratory equipment required

Yes Specify on the reverse
 No

Modifications/Exceptions: _____

VI. Chemicals of Concern

BTEX, PAHs

Hazard Monitoring

FID/PID

Action Level(s)

Any elevated reading above
Background in worker
Breathing zones

Response Measures

Evacuate area until
readings subside or
contact the PHSO

Primary Route(s) of Exposure/Hazard: Contact and incidental ingestions as a result of hand to mouth activities. Airborne dusts that may present an inhalation hazard are unlikely to be generated during planned site activities.

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. Additional Safety Equipment/Procedures

Hard-hat Yes No
 Safety Glasses Yes No
 Chemical/Splash Goggles Yes No
 Splash Shield Yes No
 Splash Suits/Coveralls Yes No
 Impermeable Apron Yes No
 Steel Toe Work Shoes or Boots. Yes No
 High Visibility Vest Yes No
 First Aid Kit Yes No
 Safety Shower/Eyewash Yes No

Hearing Protection (Plugs/Muffs) Yes No
 Safety Belt/Harness Yes No
 Radio/Cellular Phone Yes No
 Barricades Yes No
 Gloves (Type – Nitrile) Yes No
 Work/rest regimen Yes No
 Chemical Resistant Boot Covers Yes No
 Tape/Insect Repellent Yes No
 Fire Extinguisher Yes No
 Other Yes No

Modifications/Exceptions: _____

VIII. Site Preparation

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.) Yes No
If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090

X. Special instructions, precautions: Elevated airborne VOC readings in worker breathing zones are unlikely to be encountered during these site activities. Site contaminants may vary from site to site but none are anticipated to be present at concentrations that may pose an exposure threat to site personnel. Use safe lifting/carrying techniques. Assume media is contaminated and avoid contact through the use of safe work practices, PPE and decontamination. Avoid contact and exposure to grout mixtures that contain caustic materials.

Permit Issued by: _____ Permit Accepted by: _____

ATTACHMENT IV

EQUIPMENT INSPECTION CHECKLIST

EQUIPMENT INSPECTION

COMPANY: _____ **UNIT NO.** _____

FREQUENCY: Inspect daily, document prior to use and as repairs are needed.

Inspection Date: ____/____/____ Time: _____ Equipment Type: _____
 (e.g., bulldozer)

	Good	Need Repair	N/A
Tires or tracks	π	π	π
Hoses and belts	π	π	π
Cab, mirrors, safety glass	π	π	π
- Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use?	π	π	π
- Is the equipment equipped with audible back-up alarms and back-up lights?	π	π	π
Horn and gauges	π	π	π
Brake condition (dynamic, park, etc.)	π	π	π
Fire extinguisher (Type/Rating - _____)	π	π	π
Fluid Levels:			
- Engine oil	π	π	π
- Transmission fluid	π	π	π
- Brake fluid	π	π	π
- Cooling system fluid	π	π	π
- Windshield wipers	π	π	π
- Hydraulic oil	π	π	π
Oil leak/lube π	π	π	
Coupling devices and connectors	π	π	π
Exhaust system	π	π	π
Blade/boom/ripper condition	π	π	π
Accessways: Frame, hand holds, ladders, walkways (non-slip surfaces), guardrails?	π	π	π
Power cable and/or hoist cable	π	π	π
Steering (standard and emergency)	π	π	π

Safety Guards:

	Yes	No
- Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? _____	π	π
- Hot pipes and surfaces exposed to accidental contact? _____	π	π
- Emergency shut offs switches have been identified and communicated to the field crew? _____	π	π
- Have emergency shutoff switches been field tested? _____	π	π
- Results? _____	π	π
- Are any structural members bent, rusted, or otherwise show signs of damage? _____	π	π
- Are fueling cans used with this equipment approved type safety cans? _____	π	π
- Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? _____	π	π

Portable Power Tools:

- Tools and Equipment in Safe Condition? _____ π π
- Saw blades, grinding wheels free from recognizable defects (grinding wheels have been sounded)? _____ π π
- Portable electric tools properly grounded? _____ π π
- Damage to electrical power cords? _____ π π
- Blade guards in place? _____ π π
- Components adjusted as per manufacturers recommendation? _____ π π

Cleanliness:

- Overall condition (is the decontamination performed prior to arrival on-site considered acceptable)? _____
- Where was this equipment used prior to its arrival on site? _____
- Site Contaminants of concern at the previous site? _____
- Inside debris (coffee cups, soda cans, tools and equipment) blocking free access to foot controls? _____

Operator Qualifications (as applicable for heavy equipment):

- Does the operator have proper licensing where applicable, (e.g., CDL)? _____
- Does the operator, understand the equipments operating instructions? _____
- Is the operator experienced with this equipment? _____
- Does the operator have emotional and/or physical limitations which would prevent him/her from performing this task in a safe manner? _____
- Is the operator 21 years of age or more? _____

Identification:

- Is a tagging system available, for positive identification, for tools removed from service? _____

Additional Inspection Required Prior to Use On-Site

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

Approved for Use: π Yes π No _____

Site Safety Officer Signature