

N62604.AR.000526  
NCBC GULFPORT  
5090.3a

SITE EVALUATION POST IRA SITE 10 NCBC GULFPORT MS  
12/1/2001  
TETRA TECH NUS

**Site Evaluation Post IRA**  
for  
**Site 10**

**NCBC Gulfport**  
Gulfport, Mississippi



**Southern Division**  
**Naval Facilities Engineering Command**  
**Contract Number N62467-94-D-0888**  
**Contract Task Order 0193**

December 2001

**SITE EVALUATION POST IRA  
FOR  
SITE 10**

**NCBC GULFPORT  
GULFPORT, MISSISSIPPI**

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

**Submitted to:  
Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive  
North Charleston, South Carolina 29406**

**Submitted by:  
Tetra Tech NUS, Inc.  
661 Andersen Drive  
Foster Plaza 7  
Pittsburgh, Pennsylvania 15220**

**CONTRACT NO. N62467-94-D-0888  
CONTRACT TASK ORDER 0193**

**DECEMBER 2001**

**PREPARED UNDER THE SUPERVISION OF:**



**ROBERT FISHER  
TASK ORDER MANAGER  
TETRA TECH NUS, INC.  
TALLAHASSEE, FLORIDA**

**APPROVED FOR SUBMITTAL BY:**



**DEBBIE WROBLEWSKI  
PROGRAM MANAGER  
TETRA TECH NUS, INC.  
PITTSBURGH, PENNSYLVANIA**

# TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
ACRONYMS.....	iii
<b>1.0 INTRODUCTION .....</b>	<b>1-1</b>
1.1 PURPOSE .....	1-1
1.2 OBJECTIVE.....	1-1
<b>2.0 INSTALLATION BACKGROUND AND SETTING.....</b>	<b>2-1</b>
2.1 SITE LOCATION AND DESCRIPTION .....	2-1
2.2 SITE HISTORY AND PREVIOUS INVESTIGATIONS .....	2-1
<b>3.0 SCREENING LEVELS.. .....</b>	<b>3-1</b>
3.1 OVERVIEW ....	3-1
3.1.1 Chemicals of Concern .....	3-1
3.1.2 Media of Concern.....	3-1
3.1.3 SCREENING LEVELS.....	3-1
<b>4.0 SCREENING LEVELS.. .....</b>	<b>4-1</b>
4.1 FIELD INVESTIGATION METHODS .....	4-1
4.1.1 General Site Operations .....	4-1
4.2 FIELD INVESTIGATION ACTIVITIES .....	4-3
4.2.1 Direct-Push Sampling .....	4-4
4.2.2 Surface Water and Sediment Sampling .....	4-7
4.2.3 Drilling and Installation of Monitoring Wells .....	4-7
4.2.3.1 Well Installation.....	4-9
4.2.4 Groundwater Sampling .....	4-12
4.2.5 Water Level Measurement.....	4-12
4.2.6 Land Surveying.....	4-13
4.2.7 Investigation-Derived Waste Management.....	4-13
4.2.8 Demobilization .....	4-14
<b>5.0 DATA QUALITY OBJECTIVE.....</b>	<b>5-1</b>
5.1 INTRODUCTION .....	5-1
5.2 PROJECT OBJECTIVE .....	5-2
<b>6.0 SAMPLE ANALYSIS AND VALIDATION</b>	
6.1 DATA VALIDATION .....	6-1
6.1.1 Sample Analysis .....	6-1
6.2 DATA EVALUATION.....	6-1
6.3 DATA MANAGEMENT.....	6-2
<b>REFERENCES. ....</b>	<b>R-1</b>

## TABLE OF CONTENTS (Continued)

**SECTION** **PAGE**

**APPENDICES**

A	PROJECT SCHEDULE .....	A-1
B	HEALTH & SAFETY PLAN.....	A-2

**TABLES**

**NUMBER** **PAGE**

4-1	Analytical Program Summary for Environmental Samples .....	4-6
5-1	Data Quality Objectives. ....	5-3

**FIGURES**

**NUMBER** **PAGE**

2-1	Vicinity Map.....	2-2
2-2	Site Location Map .....	2-3
2-3	Site Map.....	2-4
2-4	Post Excavation Soil Sampling .....	2-6
4-1	Proposed DPT Boring Locations.....	4-5
4-2	Proposed Surface Water/Sediment Locations.....	4-8
4-3	Proposed Monitoring Well Locations .....	4-9

## ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
CCI	CH2MHill Constructors, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CLP	Contract Laboratory Program
COC	chemical of concern
COMPQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
DO	dissolved oxygen
DPT	direct-push technology
DQO	data quality objective
EISOPQAM	Environmental Investigations Standard Operating Procedures and Quality Assurance Manual
FID	flame ionization detector
FOL	Field Operations Leader
HHRA	human health risk assessment
HSA	hollow-stem auger
HxCDF	Hexachlorinated-Dibenzo-Furans
IDW	investigation-derived waste
MDEQ	Mississippi Department of Environmental Quality
MSL	mean sea level
Navy	U.S. Navy
NCBC	Naval Construction Battalion Center
NGVD	National Geodetic Vertical Datum
NPL	National Priorities List
NTU	Nephelometric Turbidity Unit
PCB	polychlorinated biphenyl
ppm	parts per million
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
OCPE	octachlorinated-biphenyl-ethers
Redox	oxidation-reduction
RSE	Removal Site Evaluation

## ACRONYMS AND ABBREVIATIONS (continued)

ROD	Record of Decision
SCTL	soil cleanup target level
SOP	Standard Operating Procedure
SOUTHNAV- FACENCOM	Southern Division, Naval Facilities Engineering Command
SOW	Scope of Work
TCL	target compound list
TRG	target remediation goal
TSCA	Toxic Substances Control Act
TTNUS	Tetra Tech NUS, Inc.
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

## 1.0 INTRODUCTION

### 1.1 PURPOSE

Tetra Tech NUS, Inc. (TTNUS), under contract to the U.S. Department of the Navy, Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), has prepared a Removal Site Evaluation (RSE) for the performance of a Non-Time Critical Removal Action at Site 10, Naval Construction Battalion Center (NCBC) Gulfport, in Gulfport, Mississippi. This RSE has been prepared under the Comprehensive Long-Term Environmental Action Navy (CLEAN) contract number N62467-94-D-0888, Contract Task Order (CTO) 0193, Statement of Work (SOW) #214, using guidance documentation including the *Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA*, EPA/540/R-93/057. TTNUS will work with NCBC Gulfport, SOUDIVNAVFACENGCOM, and the Mississippi Department of Environmental Quality (MDEQ) throughout this investigation, insuring all guidelines, rules, and regulations are met.

Section 1 of this document includes a purpose and RSE objective. Section 2 describes the history and previous investigations at Site 10. Section 3 presents information on media of concern and their associated site screening levels. Section 4 discusses field activities and data collection. Section 5 presents Data Quality Objectives. Section 6 presents sample analysis and validation requirements. Section 7 provides information on the baseline schedule and project management.

### 1.2 OBJECTIVE

The objective of this RSE is to delineate the vertical and horizontal extent of Polychlorinated Biphenyl (PCB) contamination in the soil and groundwater at Site 10 remaining from an Interim Removal Action completed in FY00. As part of this effort, TTNUS will conduct field sampling, evaluate analytical data, and prepare a RSE, in accordance with the requirements of the April 16, 2001 CTO 0193 SOW. Section 4 of this document identifies the proposed tasks to be conducted to accomplish this objective.

## 2.0 INSTALLATION BACKGROUND AND SETTING

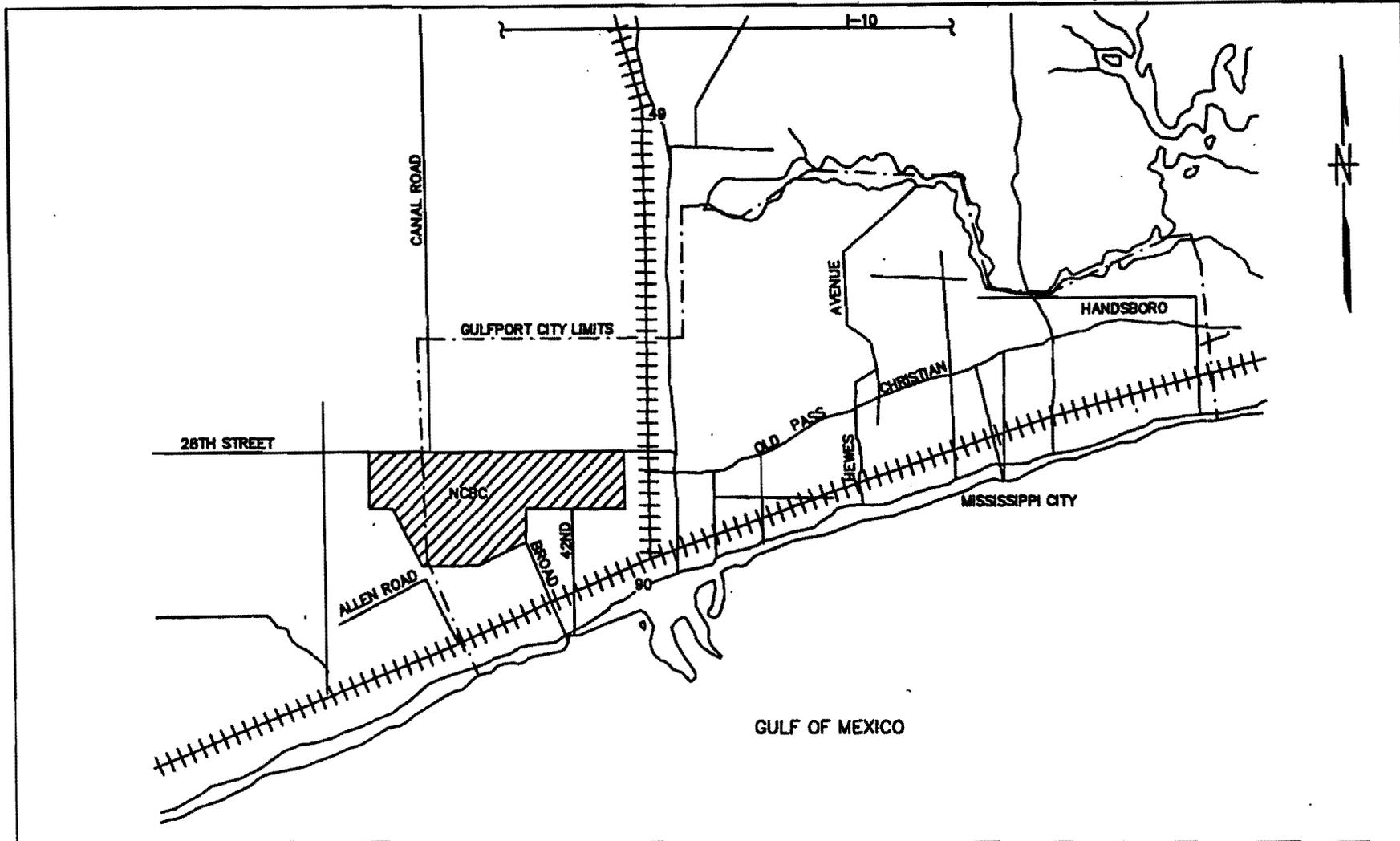
### 2.1 SITE LOCATION AND DESCRIPTION

Site 10 is located within and below a ditch in the south-central section of NCBC Gulfport (Figure 2-1) adjacent to the Parade Field (Figure 2-2). It is bounded to the north by the Dispensary and to the south by Building 130 (Figure 2-3). The ditch at Site 10 a 10-foot wide, primary drainage ditch carrying surface water runoff in a westerly direction, eventually emptying into Canal No. 1. The site topography is relatively flat. Stormwater runoff from the paved areas surrounding Site 10 flow to adjacent tributary ditches, which then contributes to the volume of the primary ditch. A footpath, leading south from the Dispensary, intersects the ditch at Site 10. This footpath includes a bridge across the primary ditch.

### 2.2 SITE HISTORY AND PREVIOUS INVESTIGATIONS

Contamination at Site 10 was first discovered during an onsite Phase I Dioxin Delineation study in April 1997 (ABB, 1997). Sample results from this investigation indicated high levels of Dioxins and Furans, particularly Hexachlorinated-Dibenzo-Furans (HxCDFs). Further study led to the discovery that the elevated levels of HxCDFs were actually Octachlorinated-Biphenyl-Ethers (OCPEs), commonly found in transformer oils manufactured in the 1940's and 1950's. In this instance, the release is most likely associated with the spill of electrical transformer oil adjacent to or directly into the ditch. Two samples collected during the Phase I study were analyzed for PCBs, with results showing the singular presence of 1260-PCB at levels of 180 and 120 parts per million (ppm), total PCB concentration. VOC samples were also collected and yielded elevated levels of Chlorobenzene – a common ingredient in transformer oil. This presence of Aroclor 1260-PCB contamination further supports the case for electrical transformer oil as the source of contamination.

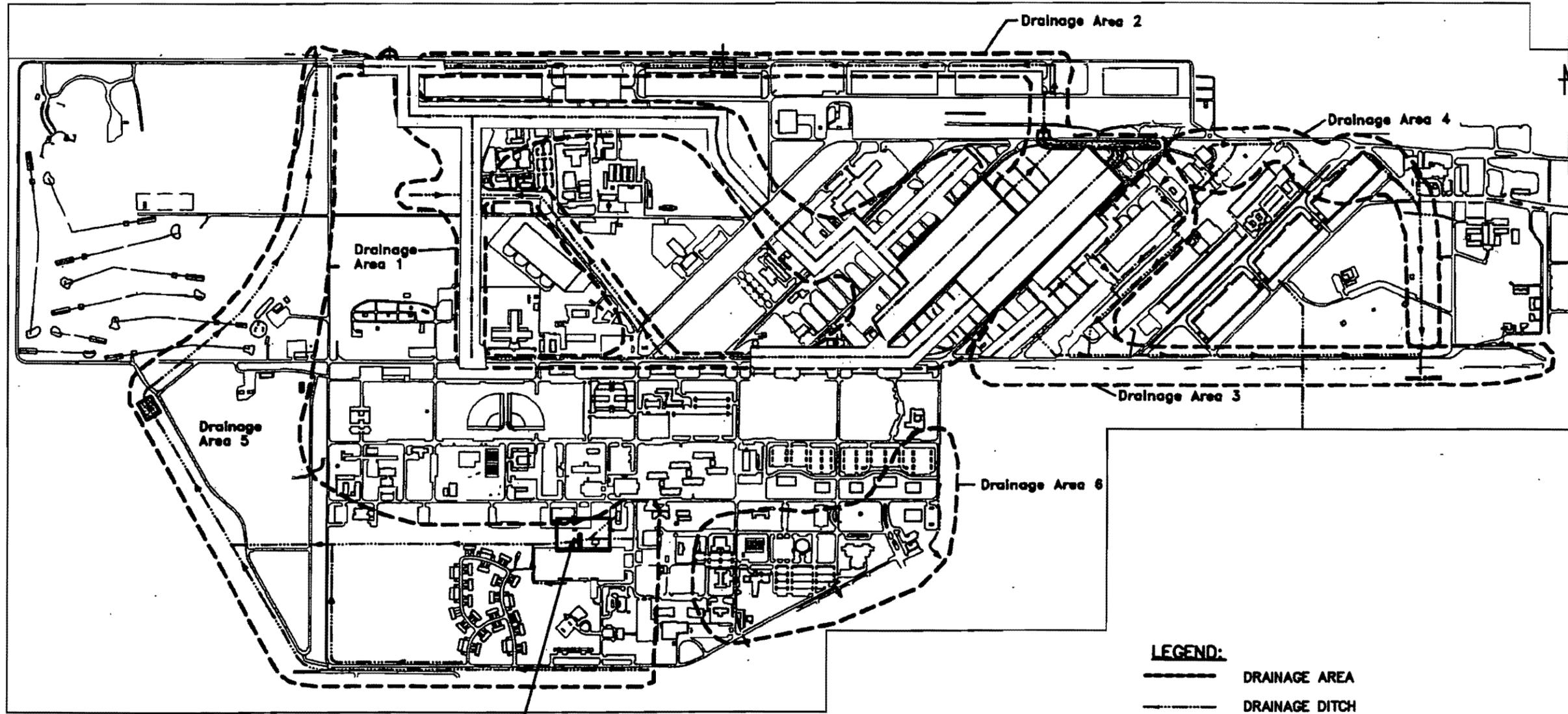
Based on the above results, further delineation studies were prepared and initiated in July 1997 by ABB Environmental Services, Inc. (ABB). The field screening and sediment sample collection identified the horizontal extent of contamination as an area approximately 100 feet along the length of the primary ditch and approximately 10 feet across the width of the primary ditch. The vertical extent of contamination was less than 3 feet below the bed of the ditch. These dimensions were based on a soil cleanup target level (SCTL) of 1 ppm; a level established by the Toxic Substances Control Act (TSCA) standards set forth in TSCA Verification of PCB Spill Cleanup, United States Environmental Protection Agency (USEPA) (1985 and 1986). The highest contaminant levels were found within a 15-foot linear area near the footbridge. SCTL exceedances continued, at decreasing concentrations, for almost 80 feet downstream of the



DRAWN BY HJP	DATE 8/27/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE NOT TO SCALE	

VICINITY MAP  
SITE 10 SITE REMOVAL EVALUATION  
NAVAL CONSTRUCTION BATTALION CENTER  
GULFPORT, MISSISSIPPI

CONTRACT NO. 4046	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2-1	REV. 0



SITE 10 AND  
LOCATION OF BRIDGE



SOURCE: REMEDIATION GUIDANCE DOCUMENT, HARDING LAWSON ASSOCIATES, MARCH 2000.

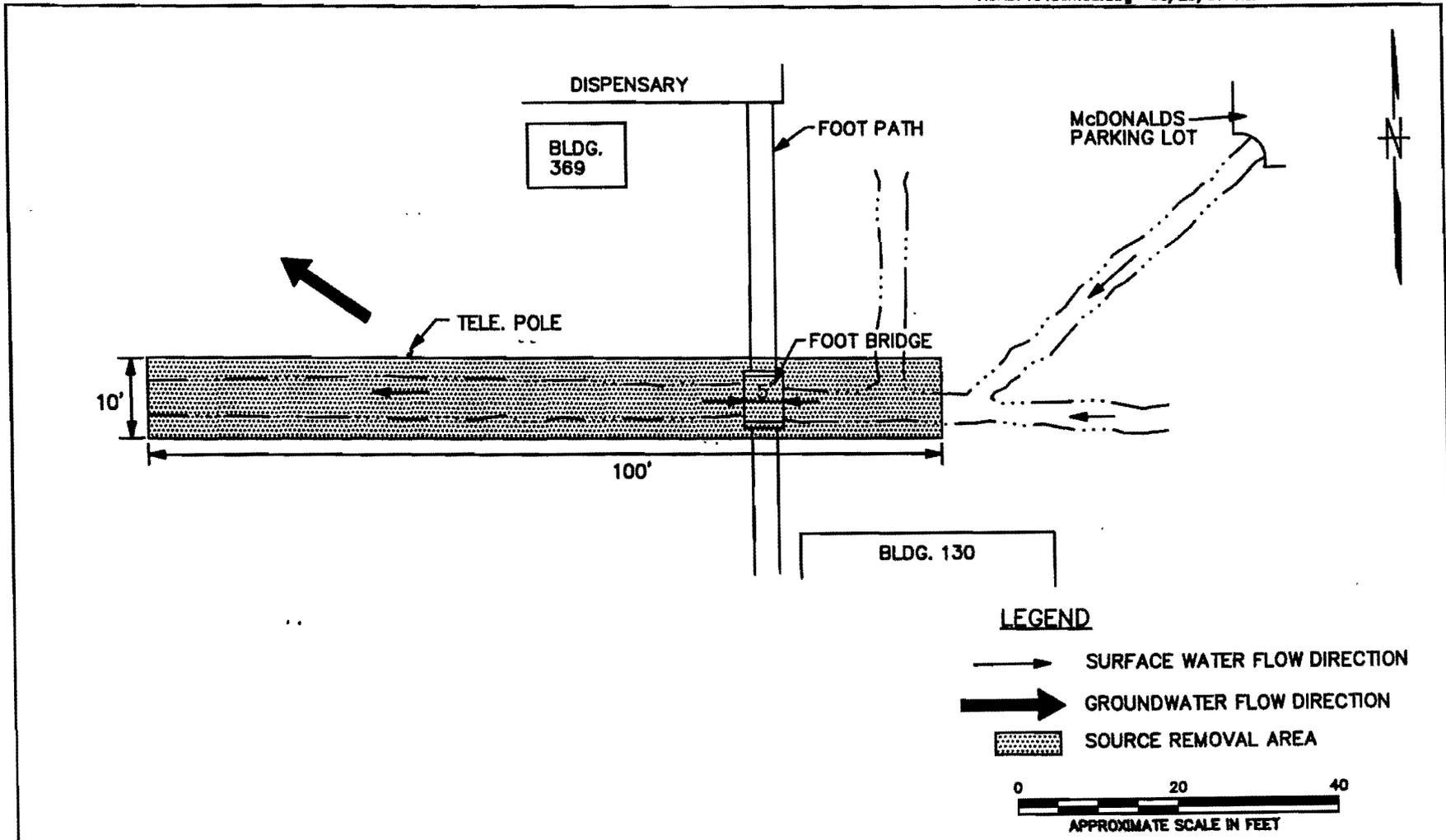
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	DATE
HJP	8/27/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	

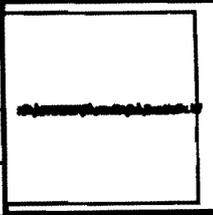


SITE 10 REMOVAL SITE EVALUATION  
NAVAL CONSTRUCTION  
BATTALION CENTER  
GULFPORT, MISSISSIPPI

CONTRACT NO. 4046	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2-2	REV. 0



DRAWN BY HJP	DATE 8/28/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

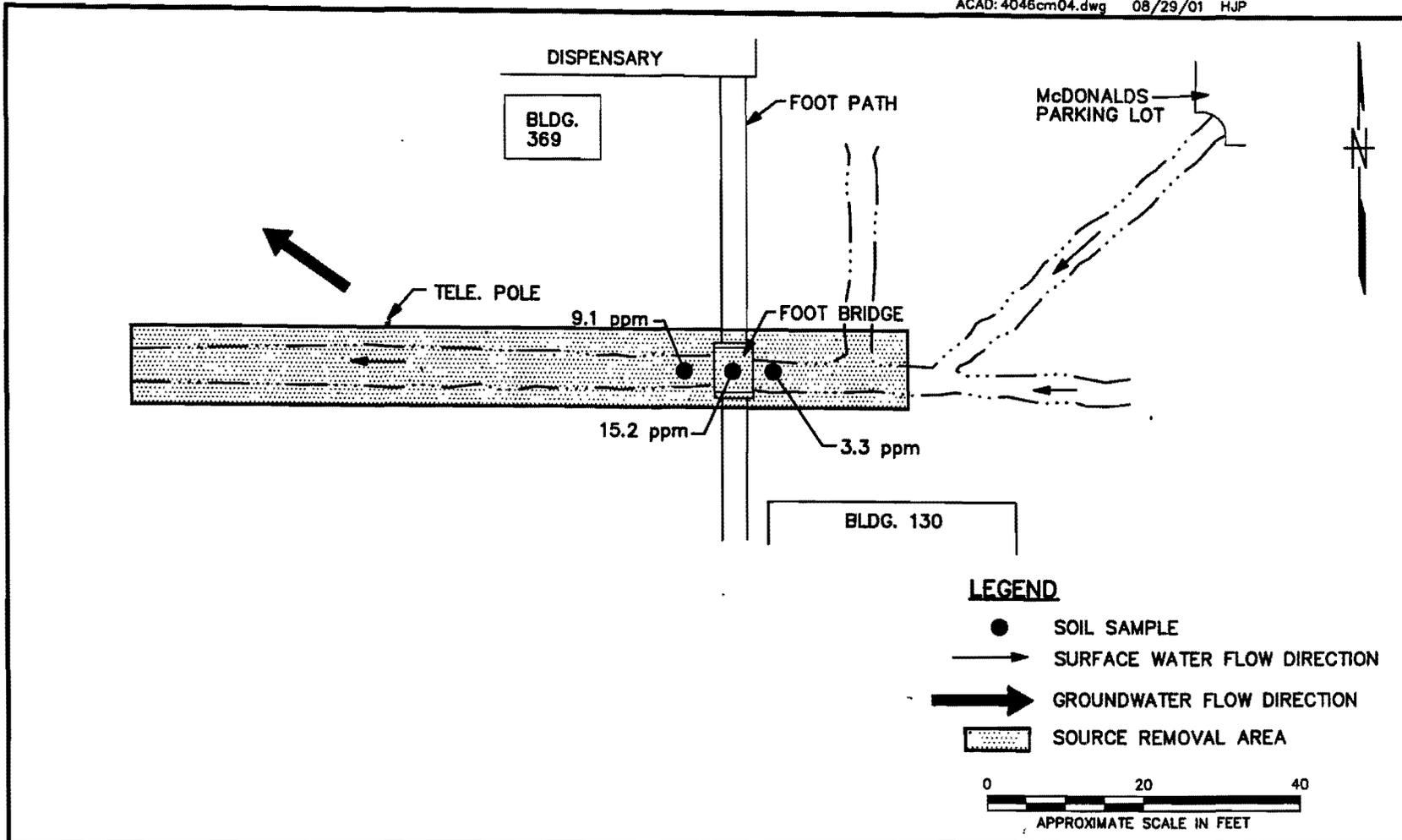


SITE 10 REMOVAL SITE EVALUATION  
NAVAL CONSTRUCTION BATTALION CENTER  
GULFPORT, MISSISSIPPI

CONTRACT NO. 4046	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2-3	REV. 0

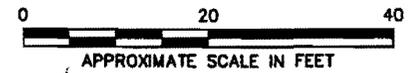
footbridge. The maximum level of PCB contamination measured during this event was 140 ppm. The Investigation Report (prepared by ABB, October 1997) summarized the results of the investigation and provided recommendations for soil removal strategies.

The levels of PCB and Chlorobenzene contamination in the sediments in the primary ditch at Site 10 prompted a source removal excavation, contaminant disposal, and site restoration by CH2M Hill Constructors, Inc (CCI) in August, 1999. Approximately 80 cubic yards (120 tons) of sediment was removed, from the area identified as exceeding the SCTL of 1 ppm. However, the Source Removal Report (SRR) (CCI, 2000) indicated that additional PCB contamination, at levels up to 1,260 ppm, remained in the soil below the area of excavation. Therefore, an additional 1.5-foot layer of sediment was removed and the area was re-sampled. Results of this post excavation sampling identified PCB contamination at levels up to 16,300 ppm. Excavation activities were discontinued and further delineation studies via DPT sampling were instituted. Results showed that although PCB contamination continued to a depth of 22 feet below land surface (bls), concentration levels declined significantly as the depth increased. Based on these results, a third and final phase of excavation was instituted. Due to the increased need for accessibility to the contaminated soil within the ditch, the pedestrian footbridge was removed. An additional 3 feet of soil was removed from an area approximately 25 feet downstream of the former footbridge bringing the aggregate depth of removal in this area to 10 feet bls. Also, an additional 6 feet of soil was removed from an area approximately 25 feet upstream of the former footbridge resulting in a total excavation depth in this area of 14.5 feet. Laboratory sample analysis following this final removal action found residual PCB contamination at levels above the SCTLs at only three sample locations. The location of these areas is shown in Figure 2-4.



**LEGEND**

- SOIL SAMPLE
- SURFACE WATER FLOW DIRECTION
- GROUNDWATER FLOW DIRECTION
- ▨ SOURCE REMOVAL AREA



DRAWN BY HJP	DATE 8/28/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



POST EXCAVATION SOIL SAMPLING  
ANALYTICAL RESULTS  
SITE 10 REMOVAL SITE EVALUATION  
NAVAL CONSTRUCTION BATTALION CENTER  
GULFPORT, MISSISSIPPI

CONTRACT NO. 4046	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2-4	REV. 0

## 3.0 SCREENING LEVELS

### 3.1 OVERVIEW

The MDEQ has established a three-tiered risk-based process for evaluating human health and environmental risks. A table (Tier I) of chemical-specific target remediation goals (TRGs) is used to assist in the evaluation of appropriate remedial options for site-specific conditions. The TRGs are based on either (1) a  $1 \times 10^{-6}$  target risk level for each carcinogenic chemical, (2) a hazard index not to exceed 1 for each systemic toxicant, or (3) constituent TRG concentrations established through federal/state programs. Specific TRG concentrations have been determined to be protective of human health and the environment. Currently no humans reside at Site 10, and surface water is not used for any potable or non-potable purposes. However, if Site 10 were developed for residential use in the future, residents could potentially be exposed to contaminants.

#### 3.1.1 Chemicals Of Concern

The chemicals of concern for Site 10 are Chlorobenzene and PCBs (Aroclor-1260).

#### 3.1.2 Media Of Concern

The media of concern at Site 10 include groundwater, surface water, sediment, and sub-surface soil.

### 3.2 SCREENING LEVELS

The Tier 1 screening level in groundwater for Chlorobenzene is  $1.00\text{E}+02$  ug/l. The unrestricted Tier 1 screening level in soil for Chlorobenzene is  $1.19\text{E}+00$  mg/kg. The Tier 1 screening level in groundwater for PCBs (Aroclor-1260) is  $3.35\text{E}-02$  ug/l. The unrestricted Tier 1 screening level in soil for PCBs (Aroclor-1260) is  $1.00\text{E}+00$  mg/kg.

## 4.0 FIELD INVESTIGATION

### 4.1 FIELD INVESTIGATION METHODS

The planned work for the RSE at Site 10 will focus on defining the remaining extent of sediment, groundwater, and soil contamination associated with the primary ditch. Analysis of previous investigation data suggests additional information is needed to define the concentrations of constituents in soil, sediment and groundwater to risk-based concentrations and to improve the certainty of data interpretation in support of future removal actions.

The Work Plan has been prepared based on a review of the existing data, regulatory guidance [e.g., Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA and USEPA Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM)], and in consultation with USEPA, MDEQ, and Navy personnel. Adjustments to the Work Plan may be necessary, however, as new data become available. If new field investigation methods become necessary as a result of adjustments to the Work Plan, then the proposed revisions will be presented by TTNUS to the SOUTHNAVFACENCOM, MDEQ, USEPA, and NCBC Gulfport's Environmental Coordinator for review and approval.

A variety of field investigation activities will be conducted at NCBC Gulfport in order to meet the objectives of the Remedial Site Evaluation. To ensure all data are consistent with regulatory requirements, all data collection activities will primarily follow the Standard Operating Procedures (SOPs) issued by the MDEQ and secondarily, the USEPA in Environmental Investigations Standard Operating Procedures Quality Assurance Manual (1996b).

A copy of the above-referenced guidance documents along with this work plan will be maintained in the TTNUS field office at NCBC Gulfport and will be reviewed with the field team before the commencement of the field investigation. Project-specific SOPs that are prepared by TTNUS for the field investigation at NCBC Gulfport are presented in this Work Plan and are discussed in the following sections.

#### 4.1.1 General Site Operations

The TTNUS field team will consists of staff members who will be assigned temporary duty at NCBC Gulfport and who will conduct the field activities. The organization of the field team is described below.

- The Field Operations Leader (FOL) is responsible for the day-to-day direction of personnel in the field. The FOL will assign tasks to field team personnel, direct the sequence of activities, coordinate with NCBC Gulfport personnel, coordinate subcontractors, and review tasks in progress and those completed. The FOL will ensure project-specific plans are implemented and activities are in compliance with appropriate guidelines.
- The Project Safety Officer is responsible for ensuring proper health and safety procedures are identified and implemented for the project and project-related health and safety incidents are properly investigated. In the event only a small number of project staff are required on site, the duties of the Project Safety Officer may be assigned to the FOL or another member of the field team. The Project Safety Officer or designee will report directly to the TTNUS Corporate Director of Health and Safety.
- The Field Geologist will oversee soil and monitoring well installation activities and may conduct various environmental sampling activities. Duties will include logging and documentation of drilling and well construction, environmental sample collection and handling, and ensuring the approved methods are implemented. The field geologist may also conduct tests for identifying subsurface conditions and characterizing the groundwater flow regime.
- The Sampling Personnel will be responsible for properly locating, collecting, preserving, packaging, documenting, and shipping environmental samples to the laboratory.

#### **4.1.1.1 Mobilization**

Field mobilization activities will take place over a two-day period and will include travel and onsite preparatory activities. These activities will include the marking of sample locations, locating and setting up decontamination facilities, and the receiving, storage and testing of field equipment. Drilling permits will be obtained through the Environmental Office at NCBC Gulfport.

#### **4.1.1.2 Field Documentation**

##### **4.1.1.2.1 Field Logbooks**

Dedicated field logbooks will be used to record pertinent field activities. The project manager's name, the FOL's name, the project name and location, and the project number will be recorded on the inside of the front cover of all logbooks. Entries will be recorded with waterproof, non-erasable ink. Each page of the logbook will be numbered and dated. All entries must be legible and contain accurate and complete information about an individual's project activities. At the end of all entries for a particular day, or a

particular event if appropriate, the investigator will draw a diagonal line across the page below the last entry and initial indicating the conclusion of entries. All entries will be objective, factual and free of personal feelings or other inappropriate language. Corrections should be made by drawing a single line through the error and entering the correct data. All corrections will be initialed and dated.

#### 4.1.1.2.2 Sample Labels

Sample labels will be completed with waterproof, non-erasable ink and will contain the following information:

- Project number
- Sample ID (in accordance with Section 5, Subsection 5.3.2, TTNUS CompQAP)
- Date and time of sample collection
- Designation of sample as a grab or composite
- Sample type (soil, groundwater, etc.)
- The signature of the sampler(s)
- Indicate whether sample is preserved or unpreserved
- Analyses to be performed

Once completed the label will be placed on the appropriate sample container and covered with clear packing tape to help protect the label.

#### 4.1.1.3 **Utility Clearance**

Base personnel will conduct utility clearance at all required locations. All intrusive sample locations will be cleared by reviewing existing record and with magnetic location devices. Once cleared, each location will be clearly marked (i.e. wooden stake, pin flag, etc) indicating that the location has been cleared for underground utilities. The FOL will accompany the Base utility clearance personnel to the Site to review any restrictions to drilling and monitoring well installation activities.

## 4.2 **FIELD INVESTIGATION ACTIVITIES**

The planned field investigation activities include the following general categories:

- Collection of surface water and sediment samples.
- Installation of soil borings and collection of subsurface soil samples using direct-push techniques.
- Drilling and installation of groundwater monitoring wells.
- Collection of groundwater samples.

- Measurement of groundwater potentiometric level.
- Location survey.

In addition, the following activities will take place throughout the implementation of field investigation activities.

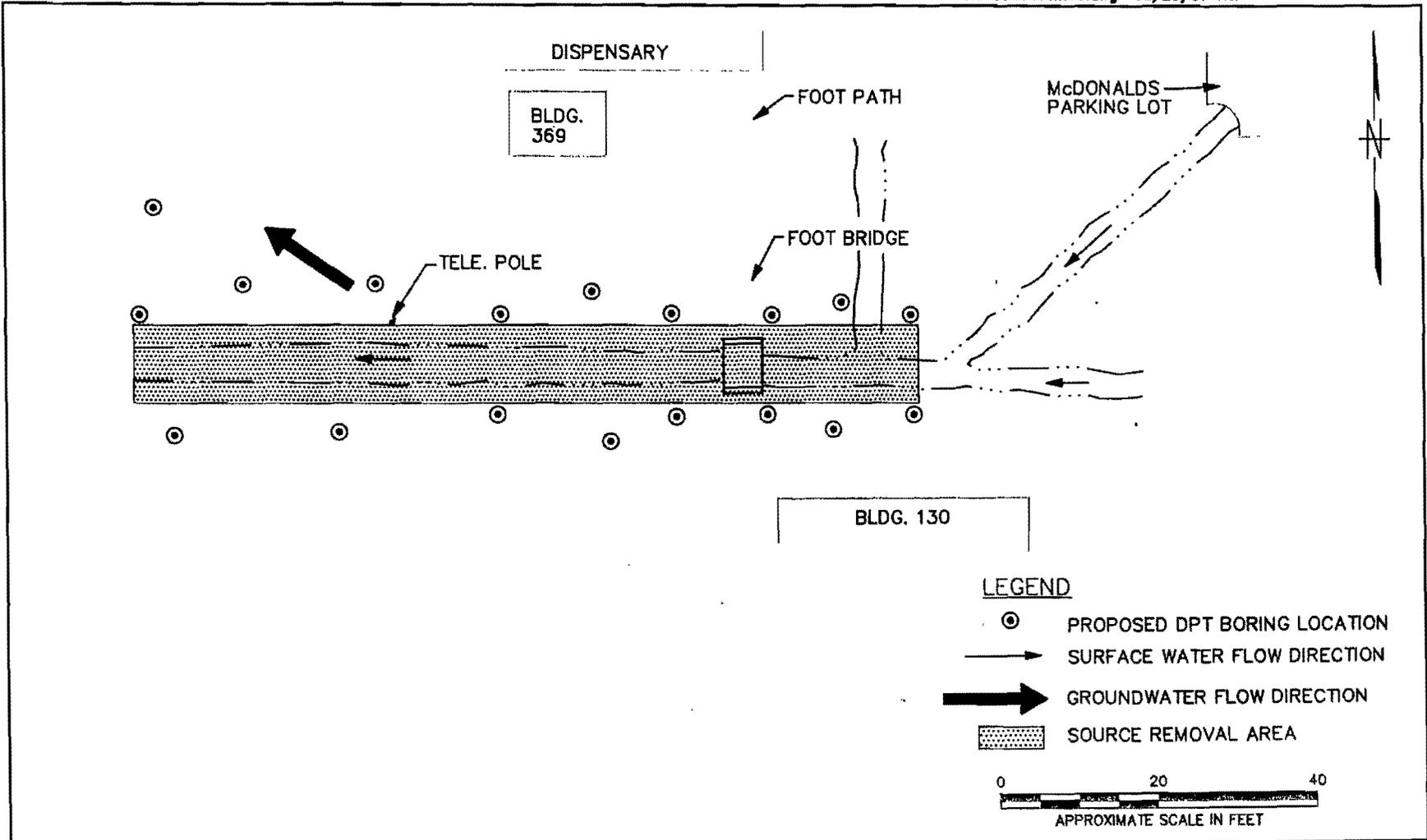
- Decontamination of investigation equipment.
- Sample management.
- Field Quality Control (QC), documentation, and record keeping.
- IDW management.

As described in Section 4.1, all field investigation activities listed above will be performed in accordance with the appropriate regulatory and project-specific SOPs. Copies of all guidance documents will be located in the TTNUS field office at NCBC Gulfport. The following subsections provide detailed descriptions of proposed field activities.

#### **4.2.1 Direct-Push Sampling**

A direct-push technology (DPT) soil-sampling device (e.g. Geoprobe<sup>®</sup> system) will be used to obtain subsurface soil samples at Site 10. Unlike conventional drilling techniques, DPT probing tools do not create an open borehole into which soil sampling devices are inserted. DPT allows investigators to push a closed sampler to depth, open the sampler, and obtain a discrete soil sample that is relatively undisturbed. For this project, a DPT sampler will be used for collecting shallow soil samples (typically less than 40 feet).

An initial DPT investigation will be used to delineate the vertical and horizontal extent of contamination at Site 10. The initial investigation will include approximately 18 soil borings, with locations shown in Figure 4-1. Three samples will be collected from each boring at (1) 5-feet, (2) 15-feet, and (3) 35-feet. The subsurface soil samples will be collected following the procedures outlined in Section 12 of the EISOPQAM, May 1996. Once collected, samples will be properly labeled and placed in a cooler on ice. All subsurface soil samples will be analyzed for the chemicals of concern (VOCs and PCBs) as shown in Table 4-1



DRAWN BY HJP	DATE 8/28/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

PROPOSED DPT BORING LOCATION  
 SITE 10 REMOVAL SITE EVALUATION  
 NAVAL CONSTRUCTION BATTALION CENTER  
 GULFPORT, MISSISSIPPI

CONTRACT NO. 4046	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 4-1	REV. 0

**TABLE 4.1**

**ANALYTICAL PROGRAM SUMMARY FOR ENVIRONMENTAL SAMPLES  
RSE WORK PLAN FOR  
SITE 10  
NCBC GULFPORT, MISSISSIPPI, FLORIDA**

Sample Identification	Sample Locations	CLP/TCL VOCs	CLP/TCL Pesticides/PCBs	EDB	Duplicate	MS/MSD	IDW Disposal Samples
<b>Analysis Method</b>		<b>SW8260</b>	<b>SW8081</b>	<b>SW8260/ 504.1</b>			
<b>SUB-SURFACE SOIL</b>	54	54	54	54	6	3	1
<b>GROUNDWATER</b>	5	5	5	5	1	1	1
<b>SURFACE WATER</b>	3	3	3	3	1	1	N/A
<b>SEDIMENT</b>	3	3	3	3	1	1	N/A
<b>SUB-TOTAL SAMPLES</b>	65	65	65	65	9	6	
<b>QC SAMPLES</b>		(a) Trip blanks will be collected at one per sample shipment. (b) Equipment blanks will be collected at one per week during sampling operations. (c) Field blanks will be collected at one per week during sampling operations.					
Trip Blanks <sup>a</sup>	5						
Equipment Blanks <sup>b</sup>	1						
Field Blanks <sup>c</sup>	1						
<b>TOTAL SAMPLES</b>	72						

#### **4.2.2 Surface Water and Sediment Sampling**

A surface water and sediment sampling investigation will be completed to examine surface and shallow site conditions. Three co-located surface water/sediment samples will be collected. Proposed locations are illustrated in Figure 4-2. In addition, approximately three QA/QC samples will be collected for laboratory utilization. The surface water at each location will also be analyzed for field analytical parameters including pH, specific conductance, turbidity, temperature, and dissolved oxygen.

The surface water samples will be collected prior to their associated sediment sample, thus eliminating the possibility of media cross-contamination. Whenever possible, the sampler will wade into the stream, approaching the sample location from a downstream direction in order to minimize sediment disturbance. The surface water samples will be collected following the procedures described in Section 10 of the EISOPQAM, May 1996. Once collected, samples will be properly labeled and placed in a cooler on ice. Samples will then be sent to an offsite laboratory to be analyzed for parameters listed in Table 4-1.

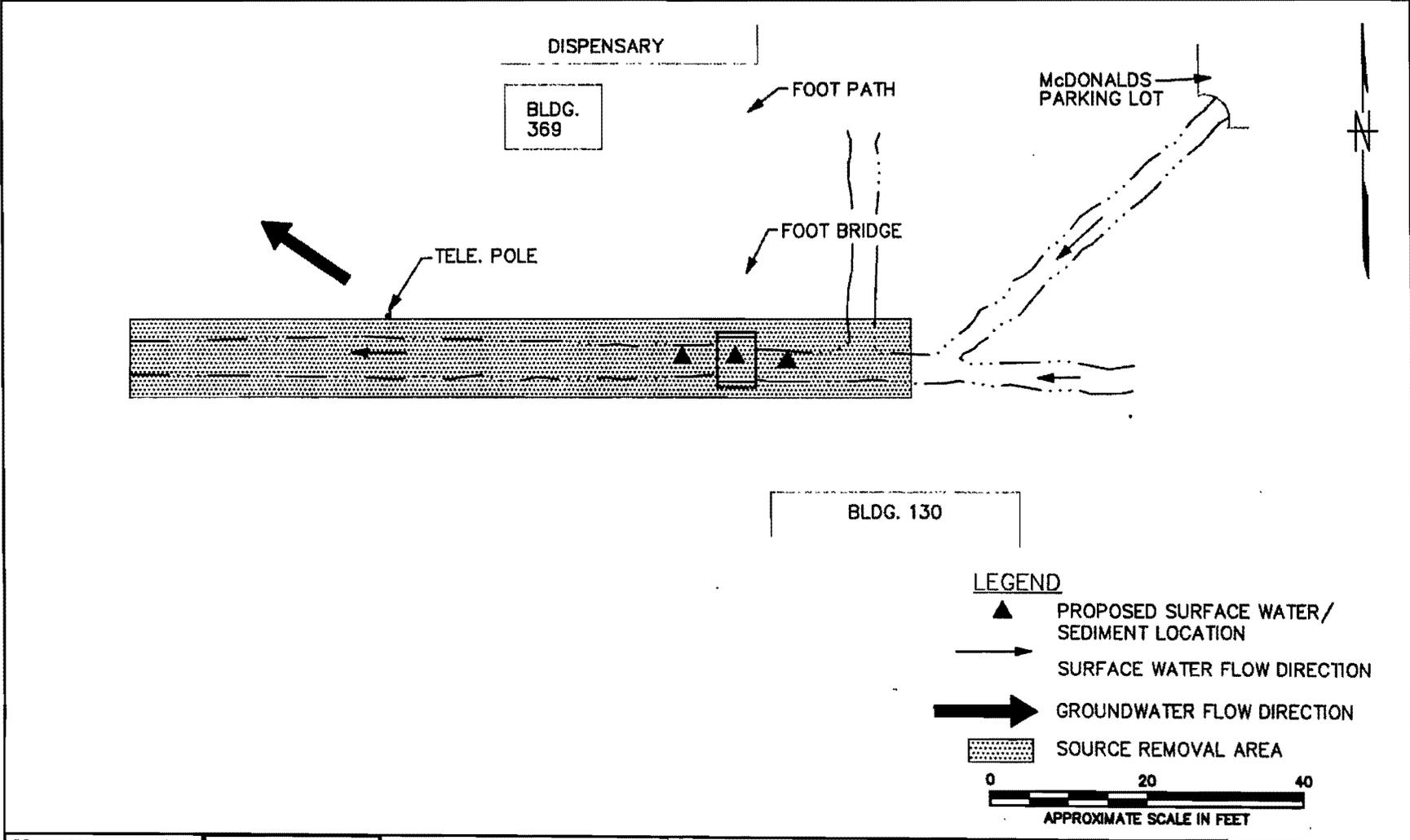
Sediment samples will be collected from approximately the same location as their associated surface water sample. Sediment samples will be collected from a depth of 0 to 6 inches. The sediment samples will be collected following the procedures described in Section 11 of the EISOPQAM, May 1996. Once collected, samples will be properly labeled and placed in a cooler on ice. Samples will then be sent to an offsite laboratory to be analyzed for parameters listed in Table 4-1.

#### **4.2.3 Drilling and Installation of Monitoring Wells**

##### **4.2.3.1 Well Installation**

The installation of permanent monitoring wells will allow for the continued monitoring of groundwater conditions at Site 10. Five monitoring wells will be installed, with locations shown in Figure 4-3. Four shallow water table monitoring wells (20 feet) will be established, allowing for the continuous, horizontal observation of any contamination at the water table. Additionally, one deep vertical extent (40 feet) monitoring well will be installed. This well will be set just above the first clay layer and will be used to determine the vertical impact to groundwater conditions. All soil cuttings and development water will be containerized on site and properly managed as IDW.

The monitoring wells at Site 10 will be installed using a hollow-stem auger (HSA) drilling techniques. The wells will be constructed of 2-inch-diameter, Schedule 40 PVC, flush-threaded casing with 15-foot, 0.01-in. slotted, PVC screens. The shallow well screens will be placed such that the screens bracket the water table. The deep well will be installed on top of the first significant clay layer at approximately 35 feet.

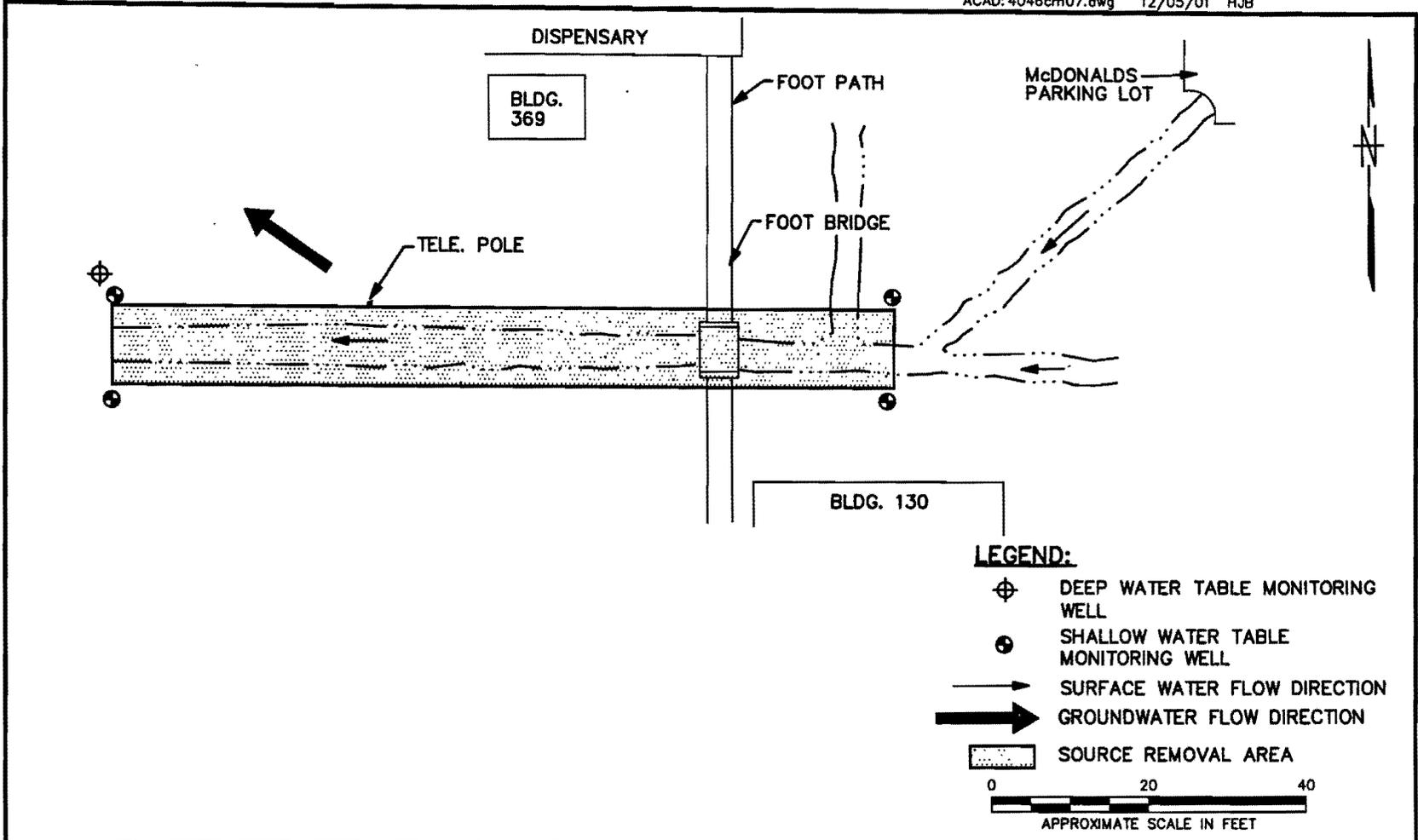


DRAWN BY	DATE
HJP	8/28/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	



PROPOSED SURFACE WATER/SEDIMENT LOCATIONS  
 SITE 10 REMOVAL SITE EVALUATION  
 NAVAL CONSTRUCTION BATTALION CENTER  
 GULFPORT, MISSISSIPPI

CONTRACT NO. 4046	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO.	REV.
FIGURE 4-2	0



DRAWN BY HJP	DATE 8/28/01
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



PROPOSED MONITORING WELL LOCATIONS  
 SITE 10 REMOVAL SITE EVALUATION  
 NAVAL CONSTRUCTION BATTALION CENTER  
 GULFPORT, MISSISSIPPI

CONTRACT NO. 4046	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 4-3	REV. 0

Once the screen and riser pipe are in place, the annulus of the boring will be backfilled with clean, 20/60, silica sand from the bottom of the borehole to 2 feet above the top of the screen. A bentonite pellet seal or fine sand seal at least 4 feet thick, will be installed on top of the 20/60 silica sand. The remainder of the annulus of the borehole will be grouted by pumping cement/bentonite slurry through a tremie pipe up to 2 feet below land surface (bls).

#### **4.2.3.2 Well Surface Completion**

The surface completion of the monitoring wells, as specified in the Southern Division Specifications for Monitoring Well Completion and Abandonment (NFESO, 1999), will be either flush mount vaults or aboveground protective posts. Surface completions will be constructed of galvanized steel or aluminum casing with a diameter at least 4-inches greater than the diameter of the well riser. The steel protective casing will be painted with exterior enamel paint. Well identification will be permanently marked on the well lid and protective casing.

#### **4.2.3.3 General Drilling Requirements**

The only drilling fluids used will be potable water or drilling mud. The drilling subcontractor, in accordance with the NCBC Gulfport IDW SOPs, will dispose of all trash, waste, grout, cuttings, and drilling fluids associated with the drilling activities.

##### **4.2.3.3.1 Well Development**

Monitoring wells will be developed to remove fine-grained sediments and to break down any filter cake or smearing along the borehole well. The preferred method of development will be surging alternating with pumping. All development equipment will be decontaminated before being placed in the well. Throughout the development procedure, the color and volume of water removed shall be documented. Wells will be developed until the following criteria are achieved:

- A minimum of three well volumes will be removed during well development.
- Turbidity remains within a 10 nephelometric turbidity unit (NTU) range for 2 consecutive readings.

- Stabilization of the following parameters occurs.
  - temperature plus or minus 1°C
  - pH plus or minus 1 unit
  - electrical conductivity plus or minus 5 percent of scale
- Accumulated sediment is removed from the well.

In general, the following will be conducted or considered during the well development process:

- Development will begin no sooner than 24 hours after well installation.
- If drilling mud is used during drilling, the total drilling fluid volume will be removed.
- No detergents, bleaches, soaps, or other such items will be used to develop a well.

After development and after the water levels have been allowed to stabilize a minimum of 24 hours, the static water level will be measured and recorded. All data related to well development, including alternate development methodologies and their justification, will be written on the well development sheet or in the field logbook.

#### 4.2.3.3.2 Decontamination Procedures

The decontamination of major equipment (e.g., drilling rigs, dump trucks, backhoes) and sampling equipment is necessary to minimize the spread of contamination to clean zones, to reduce exposure to personnel, and to reduce cross-contamination of samples when equipment is used at more than one sampling location. Decontamination procedures will take place in accordance with Appendix B of the EISOPQAM, May 1996.

Major equipment will be decontaminated in a vehicle wash rack. Sampling equipment will be decontaminated in tubs or drainage pans so solvents can be collected and disposed of properly. Rinsate samples will be collected, as required, from the decontaminated sampling equipment by rinsing the clean equipment with analyte-free water. The sampling equipment will then be wrapped in aluminum foil and stored in a clean area until use. Clean sampling equipment will not be allowed to come into contact with the ground or any potentially contaminated surfaces before use at the sampling location. Disposable material (e.g., gloves, Tyvek™ suits) generated during decontamination will be bagged and disposed of in the dumpster.

#### **4.2.4 Groundwater Sampling**

Sampling of monitoring wells at Site 10 will first involve purging the well of stagnant water. Total well depth and groundwater level measurements are needed to determine the volume of water in the well casing prior to purging. An adequate purge of a monitoring well will be achieved when three to five volumes of standing water in the well have been removed. An adequate purge is achieved when the pH, specific conductance, and temperature of the groundwater have stabilized and the turbidity has either stabilized or is at or below 10 Nephelometric Turbidity Units (NTU). The purging of monitoring wells at Site 10 will be performed in accordance with Section 7.2 of the EISOPQAM, May 1996.

Wells will be sampled upon immediate completion of the purging using a low-flow process. One aqueous sample will be collected from each of the five monitoring wells. The groundwater samples will be collected following the procedures outlined in Section 7 of the EISOPQAM, May 1996. Once collected, samples will be properly labeled and placed in a cooler on ice. Samples will then be sent to an offsite laboratory to be analyzed for parameters listed in Table 4-1.

#### **4.2.5 Water Level Measurement**

Measurement of the depth to water in monitoring wells will be performed according to Section 15.8 of the EISOPQAM, May 1996. A minimum of one complete round of water level measurements will be obtained from the monitoring wells installed during the investigation. All measurements will be collected within a 4-hour period of consistent weather conditions to minimize atmospheric/precipitation effects on groundwater conditions. Measurements will be collected using an electronic water level indicator at least 24 hours after well development. A permanent reference point on the top of each well casing will be used for determining the depth to water. Water level measurements will be recorded in the field logbook to the nearest 0.01-foot. Static water levels will be measured in each well before any fluid is withdrawn. If floating hydrocarbon is detected in the monitoring wells, the thickness of the free product will be measured with an electronic interface probe.

Groundwater level measurements will be collected in conjunction with groundwater sampling to determine the "free" water surface. This potentiometric surface measurement will also be used to establish general groundwater flow direction. Additionally, observations of the immediate, surrounding topography and the flow of the primary drainage ditch will aid in determining potential contaminant movement.

#### **4.2.6 Land Surveying**

The locations of monitoring wells installed during the field investigation at Site 10 will be measured by a certified land surveyor. The Mississippi licensed surveyor will seal and sign all deliverables attesting to their specified accuracy. An X-Y coordinate system shall be used to identify locations. The X coordinate will be the east-west axis; the Y coordinate will be the north-south axis. The reference location will be the origin.

All surveyed locations will be reported using the Mississippi State Plane Coordinate System (East Sheet). Existing installation benchmarks will serve as the horizontal and vertical datums for the survey. Elevations and horizontal locations will be recorded to the nearest hundredth of a foot. The elevations of all monitoring wells will be surveyed at the water level measuring reference point on the top of the well casing and on the undisturbed ground surface adjacent to the well pad. In addition, the horizontal location and ground surface elevation for all sampling locations will be surveyed. Horizontal and vertical survey locations will be based on established control points. It is assumed that sufficient survey control is present within 1 mile of the site

#### **4.2.7 Investigation-Derived Waste Management**

The management of IDW for Site 10 will be completed during field operations and will be performed in accordance with Section 5.15 of the EISOPQAM, May 1996. IDW management includes labeling, record keeping, and staging of materials. Materials, considered IDW, include, but are not limited to: Personal Protective Equipment (PPE), disposable equipment, soil cuttings from drilling, drilling mud or water used for monitoring well installation, groundwater obtained through well development or well purging, cleaning fluids such as spent solvents and wash water, and packing and shipping materials. Approximately five, 55-gallon drums of IDW will be generated during this investigation.

Soil and water IDW produced from drilling and sampling activities at Site 10 will be placed in drums and will remain on site until the results of a chemical analysis are completed. All PPE will be double bagged and placed in activity dumpsters. One composite soil sample and one composite aqueous sample will be collected for site characterization. However, QA/QC samples of IDW are not required. NCBC Gulfport personnel will sign all waste manifests and Bills of Lading and will dispose of all IDW generated during this investigation.

**4.2.8            Demobilization**

Demobilization will occur at the conclusion of all other field activities related to this investigation. In the interest of future investigation, monitoring wells installed at Site 10 will not be abandoned. Well tags will be installed on the new, permanent monitoring wells. The well tags will provide detailed information including total well depth, screened interval, water level measurement (post-development), and date of installation. Verification of proper IDW documentation, the return of all rental equipment, and the securing of the site is also included in demobilization activities.

## 5.0 DATA QUALITY OBJECTIVES

### 5.1 INTRODUCTION

Data quality objectives (DQOs) are qualitative or quantitative statements developed by the data user to specify the quality of data needed from a particular data activity to support specific decisions. The DQOs are the starting points in the design of an investigation. The DQO development process matches sampling and analytical capabilities to the data targeted for specific uses and ensures the quality of the data satisfies project requirements. USEPA has identified five general levels of analytical data quality as being potentially applicable to field investigations under CERCLA at potential hazardous waste sites. The Navy has adopted three of the analytical levels as quality control (QC) requirements. They are C, D, and E, which correlate to Levels III, IV, and V described in *Data Quality Objectives for Remedial Response Activities Development Process* (USEPA 1987). These levels are based on the type of site to be investigated, the level of accuracy and precision required, and the intended use of the data. Analytical requirements for USEPA Levels I and II have not yet been defined by the Navy. For health and safety breathing zone monitoring USEPA Level I data quality is sufficient. However, Data Quality Level C is intended for the laboratory sample analysis.

USEPA Level I: Field Screening. This level of data quality is the lowest, but provides the most rapid results. It is used to assist in the optimization of sampling locations and for health and safety support. Data generated provide information on the presence or absence of certain constituents and are generally qualitative rather than quantitative.

Navy Level C QC. A site requiring Level C QC would be a site near a populated area, not on the NPL, and not likely to be undergoing litigation. Level C QC includes review and approval of the laboratory quality assurance (QA) plan and of the site Work Plan. The laboratory must successfully analyze a performance sample, undergo an audit, correct deficiencies found during the audit, and provide monthly progress reports on QA. The laboratory that performs Level C QC must have passed the performance sample furnished by the Superfund Contract Laboratory Program (CLP) in the past year. The laboratory does not need to be receiving CLP bid lots of samples. Level C allows the use of non-CLP methods, but requires the methods be accepted USEPA methods or be equivalent to such methods. The Navy audit and performance samples are required in addition to any specified by the USEPA Superfund Program.

Specifics regarding QA/QC, validation, and uses of each level of data are described in the Navy's *Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program* (Energy Systems 1988), the *Navy Installation Restoration Laboratory Quality Assurance Guide* [Naval Facilities Engineering Service Center (NFESC) 1996] and in the USEPA Office of Emergency and Remedial Response and Office of Waste Programs Environmental Enforcement Guidance's *Data Quality Objectives for Remedial Response Activities Development Process* (USEPA 1987).

## 5.2 PROJECT OBJECTIVE

The data generated during the investigation will be used to:

- to determine the extent of the contamination in the soil by using DPT sampling in locations most likely to be impacted.
- to determine the extent of the contamination plume in the groundwater by installing monitoring wells in areas where groundwater is most likely to be impacted by contamination.
- to confirm the nature of the contamination by analyzing the environmental samples for Chlorobenzene and PCBs.

Table 5-1 summarizes the analytical parameters, DQOs, and data use for each task to be undertaken during RSE activities at NCBC Gulfport.

TABLE 5-1

DATA QUALITY OBJECTIVES  
 REMOVAL SITE EVALUATION FOR  
 SITE 10  
 NCBC GULFPORT  
 GULFPORT, MISSISSIPPI

Activity	Objectives	Data Quality Objective	
		QC Level	Rationale
Groundwater & Surface Water Analysis	Data will be used to characterize and define extent of groundwater and surface water contamination.	C	Data necessary for Human Health Risk Assessment and Removal Site Evaluation
Soil Analysis (sediment and subsurface soil)	Data will be used to evaluate exposure potential and to characterize and define the vertical and horizontal extent of soil contamination.	C	Data necessary for Human Health Risk Assessment and Removal Site Evaluation
Air Survey	Health and safety breathing space monitoring	I	Health and Safety

## 6.0 SAMPLE ANALYSIS AND VALIDATION

### 6.1 DATA VALIDATION

The approach to providing reliable data that meet the DQOs will include QA/QC requirements for each type of analytical data generated during the field investigation. The QA/QC efforts for laboratory analyses will include collection and submittal of QC samples and the assessment and validation of data from the subcontract laboratories. Analytical data will be subjected to independent data validation in accordance with the following guidelines:

- *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA 1999d).*
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA 1999e).*
- *Navy Installation Restoration Laboratory Quality Assurance Guide (NFESC 1996).*

#### 6.1.1 Sample Analysis

Samples collected during the field activities will be analyzed in accordance with the DQOs established in Section 5.0. The number of samples (including QA/QC samples) and analyses planned for the NCBC Gulfport field investigation are summarized in Section 4.0.

Data quality indicators include the precision, accuracy, representativeness, comparability, and completeness parameters. These parameters will be used within the data validation process to evaluate data quality. The achievable limits for these parameters vary with the DQO level of the data. The limits used for laboratory analytical data in this program will be those set by the CLP for Level C DQOs.

### 6.2 DATA EVALUATION

The purpose of this task is to assess the usability of validated data results based upon data comparisons to non-site-related conditions. Results that meet the DQO requirements and are considered usable will be

compared to background sampling results. Results of the data evaluation will be documented in the report. The following data evaluations and comparisons will be made:

- Evaluation of detection limits
- Evaluation of counting errors
- Evaluation of equilibrium data
- Evaluation of qualified data
- Comparison of laboratory and field blanks to sample results
- Comparison of laboratory and field duplicate results

COPCs will be evaluated through evaluation of the following criteria:

Contaminants of potential concern (COPC)

- Comparison with screening levels
- Frequency of detection
- Extent of contamination

### **6.3 DATA MANAGEMENT**

The purpose of this task is to track and manage environmental and QC data collected during the field investigation from the time the data are obtained through data analysis and report evaluation. Coordination and management of environmental and QC sample analysis by the contracted laboratories is also part of this task. Field activities generate data including sample locations, measurements of field parameters, and the results of laboratory analyses. Reports regarding the collection and analyses of sample data will also be generated. The process entails the flow of data collected in the field and generated by the analytical laboratory work to those involved in project evaluation and decision making. Management of data collected during field activities will ensure accessibility of data to support environmental data analysis, risk assessments, and the evaluation of remedial action alternatives.

Samples will be tracked from field collection activities to analytical laboratories following standard chain-of-custody procedures. Sample information recorded on the chain-of-custody forms will be transferred (electronically or manually) into the sample tracking portion of the database management system (DMS), thereby enabling the samples to be tracked through final disposition.

Analytical results, applicable QA/QC data, validation flags, chain-of-custody information, and any other applicable information will be incorporated into the DMS. All data will be verified after uploading to ensure completeness and accuracy.

## REFERENCES

ABB-ES (ABB Environmental Services, Inc.) 1997. *Polychlorinated Biphenyl (PCB) Investigation Adjacent to the Parade Field, Naval Construction Battalion Center Gulfport, Gulfport, Mississippi, Comprehensive Long-Term Environmental Action, Navy (CLEAN) Contract, Charleston, South Carolina.*

CCI (CH2MHill Constructors, Inc.) 2000. *Source Removal Report for the Excavation of PCB Contaminated Soil from the Drainage Ditch Adjacent to the Parade Field, Naval Construction Battalion Center Gulfport, Gulfport, Mississippi, Atlanta, Georgia.*

MDEQ (Mississippi Department of Environmental Quality) 1999. *Tier I TRG Table, Office of Pollution Control, Jackson, Mississippi*

NEESA (Naval Energy and Environmental Support Activity) 1988. *Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, Port Hueneme, California.*

NFESC (Naval Facilities Engineering Service Center) 1996. *Navy Installation Restoration Laboratory Quality Assurance Guide (Interim Document), Port Hueneme, California.*

NFESO (Naval Facilities Engineering Services Office) 1999. *Southern Division Specifications for Monitoring Well Completion and Abandonment, Port Hueneme, California.*

TTNUS (Tetra Tech NUS, Inc.) 1999. *Comprehensive Quality Assurance Plan, Tallahassee, Florida.*

USEPA (U.S. Environmental Protection Agency) 1987. *Data Quality Objectives for Remedial Response Activities Development Process, EPA 540/G-87/003A, Office of Emergency and Remedial Response, Directive 9355.0-7B, Washington, D.C.*

USEPA (U.S. Environmental Protection Agency) 1993. *Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA, 540/R-93/057, Office of Emergency and Remedial Response, Washington, D.C.*

USEPA (U.S. Environmental Protection Agency) 2000. *Close Out Procedures for National Priorities List Sites*, EPA/540/R/98/016, Office of Emergency and Remedial Response, Washington, D.C.

USEPA (U.S. Environmental Protection Agency) 1996b. *Environmental Investigations Standard Operating Procedure Quality Assurance Manual (EISOPQAM)*, Environmental Compliance Branch, Region 4, Science and Ecosystems Support Division, Athens, Georgia.

USEPA (U.S. Environmental Protection Agency) 1999d. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, EPA/540/R-94/012, Office of Emergency and Remedial Response, Washington, D.C.

USEPA (U.S. Environmental Protection Agency) 1994e. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA/540/R-94/013, Office of Emergency and Remedial Response, Washington, D.C.

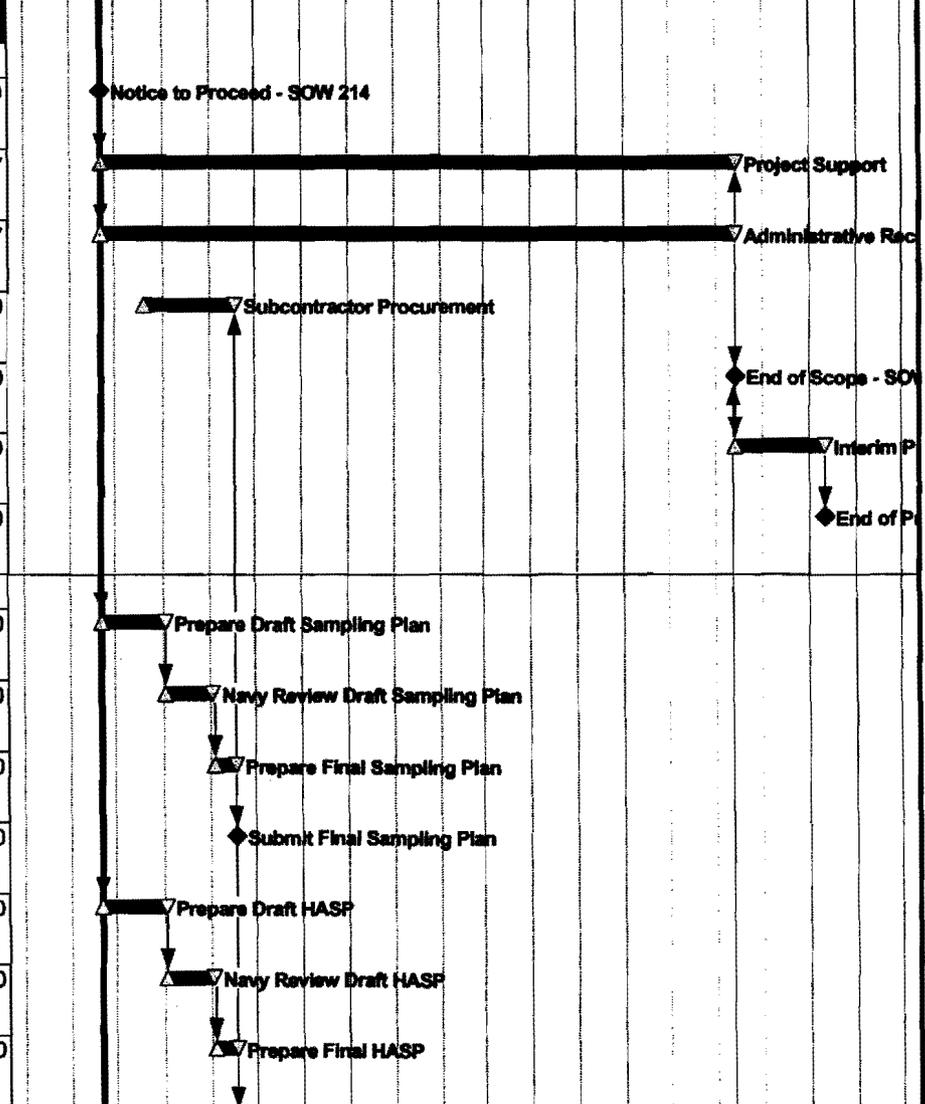
**APPENDIX A**  
**PROJECT SCHEDULE**

Act# ID	Activity Description	Cal ID	Early start	Early finish	D	2001												2002											
						P	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	E			

**SOW 214 NCBC GULFPORT SI @ SITE 10**

PROJECT MANAGEMENT					
KL0010100	Notice to Proceed - SOW 214	1	21JUN01*		0
KL0010105	Project Support	1	21JUN01	12AUG02	415*
KL0010115	Administrative Record	1	21JUN01	12AUG02	415*
KL0010120	Subcontractor Procurement	1	20JUL01	17SEP01	60
KL0010165	End of Scope - SOW 214	1		12AUG02	0
KL0010250	Interim Project Close-Out	1	13AUG02	11OCT02	60
KL0010255	End of Project	1		11OCT02	0

WORK PLANS					
KL0040100	Prepare Draft Sampling Plan	2	21JUN01	02AUG01	30
KL0040105	Navy Review Draft Sampling Plan	1	03AUG01	01SEP01	30
KL0040110	Prepare Final Sampling Plan	2	04SEP01	17SEP01	10
KL0040115	Submit Final Sampling Plan	2		17SEP01	0
KL0040120	Prepare Draft HASP	2	21JUN01	02AUG01	30
KL0040125	Navy Review Draft HASP	1	03AUG01	01SEP01	30
KL0040135	Prepare Final HASP	2	04SEP01	17SEP01	10



						P	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	E
--	--	--	--	--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---



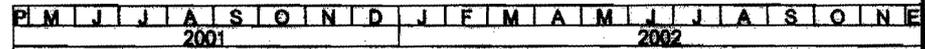
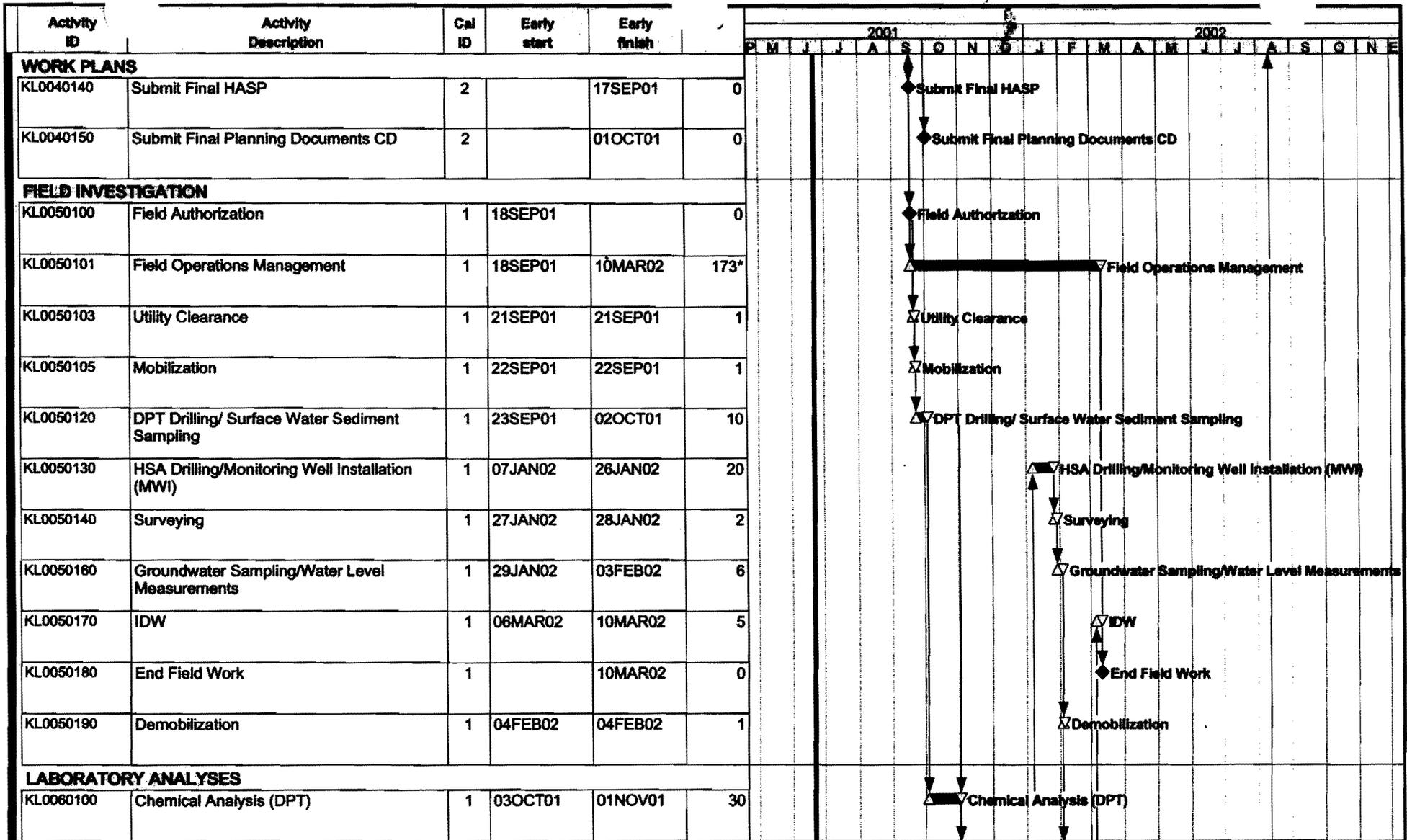
Start Date 21JUN01  
 Finish Date 11OCT02  
 Data Date 21JUN01  
 Run Date 16MAY01 12:39

PORW - KL01

Sheet 1 of 3

**NAVY CLEAN III  
 POA SCHEDULE**





Start Date 21JUN01  
 Finish Date 11OCT02  
 Data Date 21JUN01  
 Run Date 16MAY01 12:40

PORW - KL01

Sheet 2 of 3

**NAVY CLEAN III  
 POA SCHEDULE**



**TetraTech NUS**

Activity ID	Activity Description	Cal ID	Early start	Early finish	2001												2002											
					P	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	E			
<b>LABORATORY ANALYSES</b>																												
KL0060110	Chemical Analysis (MWI)	1	04FEB02	05MAR02	30																							
<b>DATA MANAGEMENT</b>																												
KL0070100	Validation (DPT)	2	02NOV01	15NOV01	10																							
KL0070110	Database (DPT)	2	16NOV01	03DEC01	10																							
KL0070120	EGIS (DPT)	2	04DEC01	17DEC01	10																							
KL0070130	Validation (MWI)	1	06MAR02	15MAR02	10																							
KL0070140	Database (MWI)	1	16MAR02	25MAR02	10																							
KL0070150	EGIS (MWI)	1	26MAR02	04APR02	10																							
<b>MISCELLANEOUS</b>																												
KL0370100	Prepare Draft Site Evaluation Report	2	05APR02	16MAY02	30																							
KL0370110	Navy Review Draft Site Evaluation Report	1	17MAY02	15JUN02	30																							
KL0370120	Prepare Final Site Evaluation Report	2	17JUN02	08JUL02	15																							
KL0370130	Submit Final Site Evaluation Report	2		29JUL02	0																							
KL0370140	Submit Final Site Evaluation Report CD	2		12AUG02	0																							

2001												2002											
P	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	E			



Start Date 21JUN01  
 Finish Date 11OCT02  
 Data Date 21JUN01  
 Run Date 16MAY01 12:40

PORW - KL01

Sheet 3 of 3

**NAVY CLEAN III  
 POA SCHEDULE**



**TetraTech NUS**

**APPENDIX B**  
**HEALTH & SAFETY PLAN**

**HEALTH AND SAFETY PLAN**  
For  
**SITE 10 FIELD INVESTIGATION**  
At the  
**NAVAL CONSTRUCTION BATTALION CENTER**  
**GULFPORT**  
**GULFPORT, MISSISSIPPI**



**Southern Division**  
**Naval Facilities Engineering Command**  
Contract Number N62467-94-D-0888  
Contract Task Order 0193

October 2001

HEALTH AND SAFETY PLAN  
FOR  
SITE 10 FIELD INVESTIGATION  
AT THE  
NAVAL CONSTRUCTION BATTALION CENTER GULFPORT  
GULFPORT, MISSISSIPPI

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

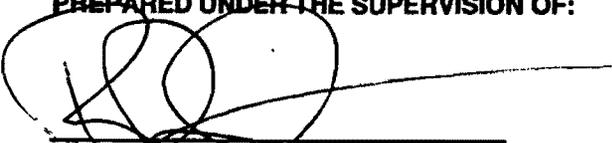
Submitted to:  
Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive  
North Charleston, South Carolina 29406

Submitted by:  
TETRA TECH NUS  
661 Andersen Drive Foster Plaza 7  
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888  
CONTRACT TASK ORDER 0193

OCTOBER 2001

PREPARED UNDER THE SUPERVISION OF:

  
ROBERT FISHER  
TASK ORDER MANAGER  
TETRA TECH NUS  
TALLAHASSEE, FLORIDA

APPROVED FOR SUBMITTAL BY:

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

## TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
<b>1.0 INTRODUCTION.....</b>	<b>1-1</b>
1.1 AUTHORITY.....	1-1
1.2 KEY PROJECT PERSONNEL AND ORGANIZATION .....	1-1
1.3 SITE INFORMATION AND PERSONNEL ASSIGNMENTS .....	1-3
<b>2.0 EMERGENCY ACTION PLAN.....</b>	<b>2-1</b>
2.1 INTRODUCTION.....	2-1
2.2 EMERGENCY PLANNING .....	2-1
2.3 EMERGENCY RECOGNITION AND PREVENTION .....	2-2
2.4 SAFE DISTANCES AND PLACES OF REFUGE.....	2-3
2.5 DECONTAMINATION PROCEDURES/EMERGENCY MEDICAL TREATMENT... ..	2-4
2.6 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES.....	2-5
2.7 PPE AND EMERGENCY EQUIPMENT .....	2-6
2.8 EMERGENCY CONTACTS.....	2-7
2.9 INJURY/ILLNESS REPORTING.....	2-7
2.10 EMERGENCY ROUTE TO HOSPITAL.....	2-9
<b>3.0 SITE BACKGROUND .....</b>	<b>3-1</b>
3.1 SITE DESCRIPTION .....	3-1
3.2 SITE HISTORY.....	3-1
<b>4.0 SCOPE OF WORK.....</b>	<b>4-1</b>
<b>5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES SUMMARIZATION.....</b>	<b>5-1</b>
5.1 GENERAL SAFE WORK PRACTICES .....	5-1
5.2 DPT OPERATIONS-SAFE WORK PRACTICES .....	5-3
5.2.1 Before DPT Operations .....	5-3
5.2.2 During DPT Operations .....	5-3
5.2.3 After DPT Operations .....	5-4
<b>6.0 HAZARD ASSESSMENT .....</b>	<b>6-1</b>
6.1 CHEMICAL HAZARDS .....	6-1
6.2 PHYSICAL HAZARDS.....	6-5
6.2.1 Slips, Trips, and Falls .....	6-5
6.2.2 Cuts or Other Injuries Associated with Hand Tools.....	6-6
6.2.3 Energized Systems (Contact with Underground or Overhead Utilities).....	6-6
6.3 NATURAL HAZARDS.....	6-7
6.3.1 Insect/Animal Bites and Stings .....	6-7
6.3.1.1 Tick and Mosquito Transmitted Illnesses and Diseases .....	6-8
6.3.2 Snakes and Other Wild Animals.....	6-9
6.3.2.1 Snake Bites.....	6-9
6.3.2.2 Alligators .....	6-10
6.3.3 Poisonous Plants .....	6-10
6.3.4 Inclement Weather .....	6-11

**TABLE OF CONTENTS (CONT'D)**

<u>SECTION</u>		<u>PAGE</u>
<b>7.0</b>	<b>HAZARD MONITORING-TYPES AND ACTION LEVELS.....</b>	<b>7-1</b>
	7.1 TASKS TO BE CONDUCTED.....	7-1
	7.2 ASSOCIATED HAZARDS.....	7-1
	7.3 INSTRUMENTS TO BE USED FOR HAZARD MONITORING.....	7-2
	7.4 INSTRUMENT PREPARATIONS FOR FIELD SERVICE.....	7-3
	7.5 INSTRUMENT MAINTENANCE.....	7-3
	7.6 INSTRUMENT CALIBRATION.....	7-4
<b>8.0</b>	<b>TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS.....</b>	<b>8-1</b>
	8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING.....	8-1
	8.1.1 Requirements for All Field Personnel.....	8-1
	8.2 SITE-SPECIFIC TRAINING.....	8-1
	8.3 MEDICAL SURVEILLANCE.....	8-2
	8.3.1 Medical Surveillance Requirements for TtNUS and Subcontractor Personnel.....	8-2
	8.3.2 Requirements for All Field Personnel.....	8-2
	8.4 SUBCONTRACTOR EXCEPTIONS.....	8-2
<b>9.0</b>	<b>SPILL CONTAINMENT PROGRAM.....</b>	<b>9-1</b>
	9.1 SCOPE AND APPLICATION.....	9-1
	9.2 POTENTIAL SPILL AREAS.....	9-1
	9.3 CONTAINMENT AREAS.....	9-1
	9.3.1 IDW.....	9-2
	9.3.2 Flammable/POL Storage.....	9-2
	9.4 MATERIALS HANDLING.....	9-3
	9.5 LEAK AND SPILL DETECTION.....	9-3
	9.6 PERSONNEL TRAINING AND SPILL PREVENTION.....	9-3
	9.7 SPILL PREVENTION AND CONTAINMENT EQUIPMENT.....	9-3
	9.8 SPILL CONTAINMENT/CONTROL RESPONSE PLAN.....	9-4
<b>10.0</b>	<b>SITE OPERATIONS AND CONTROL.....</b>	<b>10-1</b>
	10.1 WORK ZONES.....	10-1
	10.1.1 Exclusion Zone.....	10-1
	10.1.2 Contamination Reduction Zone.....	10-2
	10.1.3 Support Zone.....	10-3
	10.2 SAFE WORK PERMITS.....	10-3
	10.3 SITE MAPS.....	10-4
	10.4 BUDDY SYSTEM.....	10-4
	10.5 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS.....	10-6
	10.6 COMMUNICATION.....	10-6
	10.7 SITE VISITORS.....	10-7
	10.8 SITE SECURITY.....	10-8
	10.9 SANITATION AND BREAK AREAS.....	10-8
	10.9.1 Toilets.....	10-9
	10.9.2 Potable Water.....	10-9
	10.9.3 Showers and Change Rooms.....	10-9
	10.9.4 Break Areas.....	10-10
<b>11.0</b>	<b>CONFINED SPACE ENTRY.....</b>	<b>11-1</b>

## TABLE OF CONTENTS (CONT'D)

<u>SECTION</u>		<u>PAGE</u>
12.0	<b>MATERIALS AND DOCUMENTATION</b> .....	12-1
12.1	MATERIALS TO BE POSTED or MAINTAINED AT THE SITE .....	12-1
13.0	<b>GLOSSARY</b> .....	13-1

### ATTACHMENTS

I	INJURY/ILLNESS PROCEDURE AND REPORT FORM
II	STANDARD OPERATING PROCEDURE FOR UTILITY LOCATING AND EXCAVATION CLEARANCE
III	EQUIPMENT INSPECTION CHECK LIST
IV	SAFE WORK PERMITS
V	MEDICAL DATA SHEET

### TABLES

<u>NUMBER</u>		<u>PAGE</u>
2-1	Emergency Reference .....	2-8
5-1	Tasks/Hazards/Control Measures Compendium .....	5-5
6-1	Chemical, Physical and Toxicological Data .....	6-2

### FIGURES

<u>NUMBER</u>		<u>PAGE</u>
2-2	Emergency Response Protocol .....	2-10
2-3	Hospital Map .....	2-12
7-1	Documentation of Field Calibration .....	7-5
8-1	Site-Specific Training Documentation .....	8-4
10-1	Safe Work Permit .....	10-5
10-2	Site Map .....	10-6

## 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 well installation and media sampling activities which support Site Evaluation activities at the Naval Construction Battalion Center, located in Gulfport Mississippi.

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 NCBC Gulfport. This HASP is to be used in conjunction 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 NCBC Gulfport 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 Number 0193.

### 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.

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



## 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 incidental or emergency release or occurrence. Tetra Tech NUS will, through necessary services, include incidental response measures for incidents such as:

- Initial stage fire fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Provide initial medical support for injuries or illnesses requiring only first-aid level support
- Provide site control and security measures as necessary

Incidental response measures will only be provided to the capabilities of on-site personnel and available resources. Incidental response measures are not considered an emergency response as per 29 CFR 1910.120 (b). Incidents and situations that are deemed to be an emergency response as defined by 29 CFR 1910.120 (b) will be handled by outside resources. It has been determined that these off-site response agencies are capable of providing the most effective response and will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. These agencies will be contacted through NCBC Gulfport Emergency Dispatch. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(l)(1)(ii).

### 2.2 EMERGENCY PLANNING

Based on planned activities, the potential for field personnel to encounter significant emergency situations is minimal. However, based on the initial hazard/risk assessment effort, some potential exists for injuries or illnesses resulting from exposure to chemical and/or physical hazards or fire could be encountered during site activities. To minimize and eliminate these potential emergency situations, emergency planning activities associated with this project, the following responsibilities are assigned to the FOL and/or the SSO:

- Coordinating response actions with NCBC Gulfport Emergency Services personnel to ensure that TtNUS emergency action activities are compatible with facility emergency response procedures. This will serve as the initial review of the Emergency Action Plan.

- Establishing and maintaining information at the project staging area (Support Zone) for easy access in the event of an emergency. This information includes the following:
  - Chemical Inventory (for substances used on-site), with Material Safety Data Sheets.
  - On-site personnel medical records (medical data sheets).
  - A logbook identifying personnel on-site each day.
  - Emergency notification phone numbers in all site vehicles

**Note:** It is the responsibility of the TtNUS FOL and/or the SSO to ensure that this information is available and present at the site.

- 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.
- Preview work areas to remove physical hazards where identified.

### **2.3 EMERGENCY RECOGNITION AND PREVENTION**

The primary focus of this section is the ability to recognize and control factors, which could contribute to an emergency situation/condition. The FOL, and/or the SSO will preview all site work location prior to committing personnel or resources. Their actions will be as follows:

- Identify, remove, and/or barricade physical hazards within the estimated work area.
  - Ensure that approach paths to monitoring wells are maintained (cleared, mowed, etc.)
  - Inspect monitoring well protective casings are cleared of spider and insect nests.
  - Inspect remote sample locations for signs of natural hazards (i.e., heavy brush – ticks; snakes, etc.)
- Provide the necessary equipment to control potential emergencies (i.e., safety cans for flammable liquid storage, spill containment equipment, PPE, and emergency equipment such as portable fire extinguishers).
- Evaluate operations to ensure that necessary measures are taken to control and/or minimize the impact of emergency situations/conditions. This includes actions such as, but not limited to, securing the necessary permits and clearances such as Utility and Excavation Clearances provided by the Base and Mississippi One Call Systems; Ensuring equipment and resources are at the ready for response to incidental measures; All personnel are adequately trained in the provisions of this HASP and this Emergency Action Plan.

- Complete site characterization for all predetermined work contaminated areas to quantify and qualify the hazards associated with those areas. Based on the results obtained the areas will be demarcated and restricted to only approved personnel.

Field Crew shall:

- Identify, remove, or barricade physical hazards within the estimated work area identified by the FOL and/or the SSO.
- Follow the guidelines for control of emergency conditions
- Report any potential emergency situation to the FOL and/or the SSO.

#### **2.4 SAFE DISTANCES AND PLACES OF REFUGE**

Upon activation of the on-site emergency alarm system the following actions will occur:

- All operations will cease.
- Field personnel will note the direction of the wind based on the position of wind socks or other wind direction indicator placed at the top of the mast or excavation equipment or other elevated points within the work area (i.e., streamer, flag, etc.).
- Based on the wind direction, personnel will move cross and up wind to either the primary or secondary safe place of refuge as identified in Figure 2-1.
- All personnel will remain at this location until directed otherwise by the FOL and/or the SSO.

The safe place of refuge (in the event of an emergency) will be the Tetra Tech NUS, Inc. Field Trailer. This location has been selected and will be conveyed to all Field Crew members. Selection was based on the following considerations:

- A location providing telephone communications and or shelter.
- A location from which the field crews can provide site security restricting access to the emergency area, however, a point from which the field crew may direct emergency crews (i.e., intersection or gate, etc.).
- This location should be positioned a safe distance from the operation so not to be impacted by the emergency.

This distance is impacted by a number of conditions (i.e., tasks being conducted; chemical, physical, and toxicological properties; potential for fire and explosion; meteorological conditions; terrain).

## 2.5 DECONTAMINATION PROCEDURES/EMERGENCY MEDICAL TREATMENT

During an evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. However, it is unlikely that an emergency would occur which would require workers to evacuate the site without first performing decontamination procedures. Decontamination of medical emergencies will proceed in the following manner.

**Note:** One person from the field team will accompany the injured to the hospital with his/her medical data sheet, appropriate MSDSs, a copy of this HASP, and the incident forms. This person will collect as much information as possible and transfer that information to the HSM and Work Care as per the Incident Response Protocol provided in Figure 2-2. All other personnel will engage site control/site security measures.

Tetra Tech NUS and subcontractor personnel are only permitted to provide treatment to the level of their First-Aid Training.

Emergency medical treatment will be initiated under the following guarded restrictions:

- Notify the FOL and/or the SSO of the incident.
- Take the necessary precautions to prevent direct contamination with the injured person's body fluids.
  - Use surgeons gloves when handling cuts, abrasions, bites, punctures, etc. or any part of the injured person. The use of safety glasses and surgeons masks maybe necessary, if there is the potential for uncontrolled spread of body fluids.
  - Should Cardio-Pulmonary Resuscitation (CPR) be required, use a CPR Micro-Shield mouthpiece when administering CPR.

## 2.6 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

If an emergency occurs on Base, the following procedures are to be initiated:

- Initiate an emergency notification by hand signals, voice commands, air horn, or two-way radios to the FOL/SSO. Describe to the SSO (who will serve as the Incident Coordinator) what has occurred and provide as many details as possible.
- Evacuate non-essential persons from the incident scene, engage initial response measures given the emergency type (i.e., spill response, fire extinguisher, first-aid, site control and security).

In the event that site personnel cannot control the incident through offensive and defensive measures, the FOL and/or SSO will enact the emergency notification procedures to secure additional outside assistance in the following manner:

- Call NCBC Gulfport Emergency Number
- Give the emergency operator the location of the emergency and a brief description of what has occurred.
- Stay on the phone and follow the instructions given by the operator
- The appropriate agency will be notified and dispatched
- Call Navy On-Site Representative
- Call the TOM and the HSM

If an incident occurs at outside of our designated operating areas impacting field personnel, the following procedures are to be initiated:

- Initiate an evacuation (if needed) by voice commands, hand signals, air horns, or two-way radio.
- Call Navy On-Site Representative
- Proceed to the assembly points as directed by NCBC Gulfport or other Navy personnel.

## **2.7 PPE AND EMERGENCY EQUIPMENT**

A first aid kit, eye wash units (as necessary), stretcher, and fire extinguishers will be maintained on-site at an easily accessible location and shall be immediately available for use in the event of an emergency. Based on the hazards anticipated, these incident response abatement items may be maintained at the exclusion zone of on-going operations as determine and communicated to the field crew through the Safe Work Permit. This will be at the discretion of the SSO.

The FOL and/or the SSO should ensure the First-Aid Kits are provided stocked with the necessary equipment. All first-aid kits purchased for the job-site shall be American National Standards Institute (ANSI) approved for industrial applications. Additional provisions if not included in the First-Aid Kit such as a Micro-Shield CPR mask identified within this plan will have to be secured in addition to the kit. The SSO will determine the number of kits necessary based on the number of personnel and the number of remote operations being conducted under the scope of work. It is the SSO's responsibility to assess work site applications for specific first-aid needs based on operations being conducted.

PPE levels to be used in an emergency will not exceed those items used in the completion of identified tasks.

## 2.8 EMERGENCY CONTACTS

Prior to performing work at the site, all personnel will be briefed on the emergency procedures to be followed in the event of an incident. A mobile phone shall be available on site. Table 2-1 provides a list of emergency contacts and their corresponding telephone numbers. This table must be posted on site where it is readily available to all site personnel.

**TABLE 2-1  
EMERGENCY REFERENCE  
NCBC Gulfport**

<b>AGENCY</b>	<b>TELEPHONE</b>
<b>EMERGENCY</b>	
Police	(228) 871-2222
Fire/Hazardous Materials Release	(228) 871-2333
Ambulance Services	(228) 871-2444
Base Contact, Mr. Gordon Crane	(228) 871-2485
Pager	1(800) 343-3472
Memorial Hospital at Gulfport 4500 13 <sup>th</sup> Street Gulfport, Mississippi 39501-2569	(228) 867-4000
Task Order Manager Robert Fisher	(850) 510-2743
CLEAN Health and Safety Manager Matthew Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer James K. Laffey	(412) 921-8678
Utilities (On Base) (Utility Clearances and Emergencies) Public Works Maintenance Division	(228) 871-2244
Utilities (Public Utility Locating Service) Mississippi One Call System Inc.	1(800) 227-6477
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
Mississippi Regional Poison Control Center	(601) 354-7660
Tetra Tech NUS, Tallahassee Office	(850) 359-9899
Tetra Tech NUS, Pittsburgh Office	(412) 921-7090
Tetra Tech NUS, Gulfport, Mississippi Office	(288) 575-6287

## 2.9 INJURY/ILLNESS REPORTING

In addition, TtNUS personnel who are injured or become ill on the job must notify appropriate company representatives. Figure 2-2 and Attachment I presents the procedure for reporting an injury/illness, and the form to use for this purpose. **If the emergency involves personnel exposures to chemicals, follow the steps in Figure 2-2.**

## 2.10 EMERGENCY ROUTE TO HOSPITAL

Directions from NCBC Gulfport:

From Site 5 at the intersection of 4<sup>th</sup> Street and Colby Avenue go south on Colby.

Start at:

Turn Left on Engram Drive.

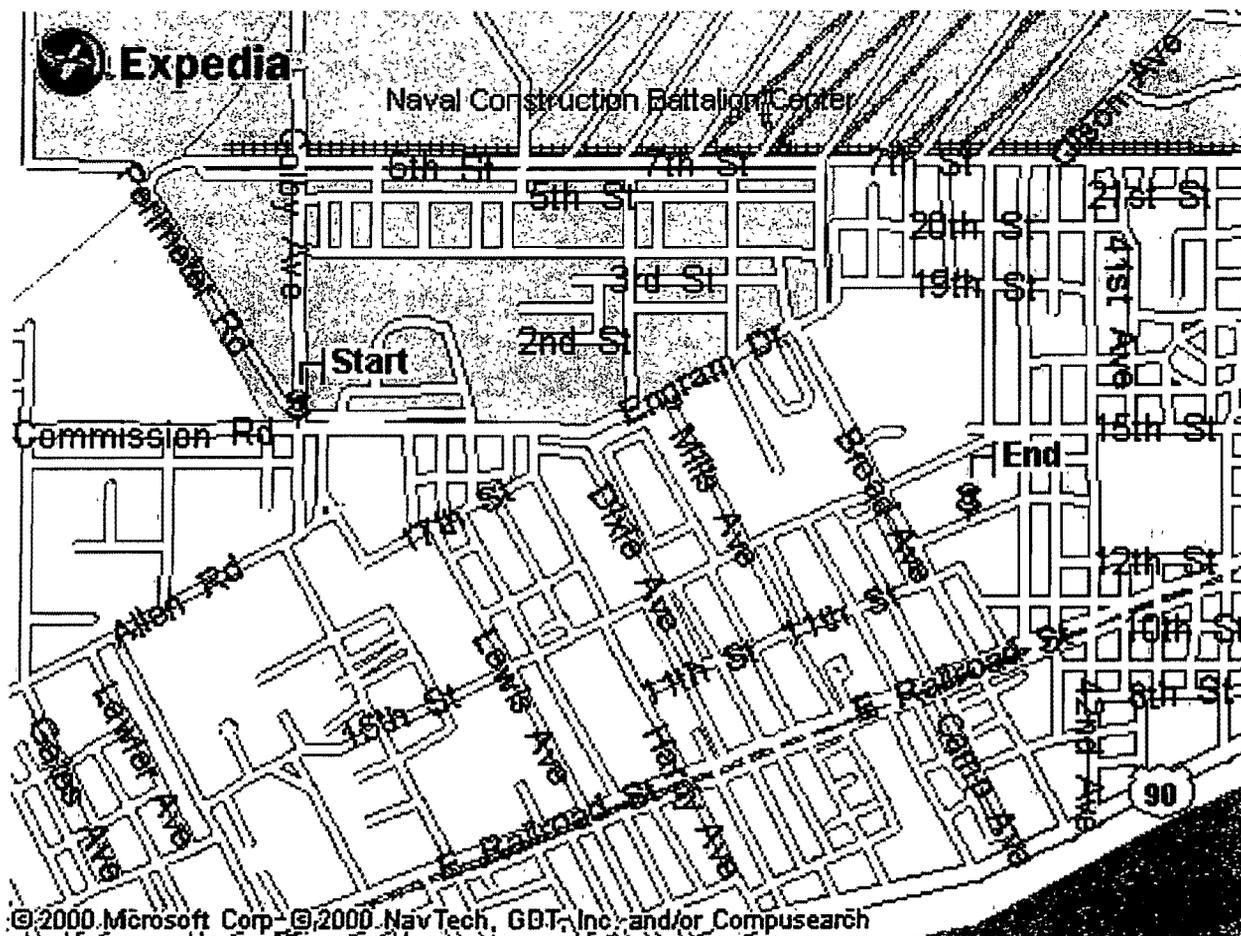
Turn Right on Broad Avenue.

Turn Left on 13<sup>th</sup> Street

End at:

Memorial Hospital at Gulfport  
4500 13<sup>th</sup> Street  
Gulfport, Mississippi 39501-2569

**Figure 2-1**  
**Route to Hospital**



## FIGURE 2-2 EMERGENCY RESPONSE PROTOCOL

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

In the event of a personnel injury or accident:

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

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

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

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

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

**I. Exposing Agent**

Name of Product or Chemicals (if known): \_\_\_\_\_

Characteristics (if the name is not known)

Solid      Liquid      Gas      Fume      Mist      Vapor

**II. Dose Determinants**

What was individual doing? \_\_\_\_\_

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

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

Was their skin contact? \_\_\_\_\_

Was the exposing agent inhaled? \_\_\_\_\_

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

**III. Signs and Symptoms (check off appropriate symptoms)**

**Immediately With Exposure:**

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

Chest Tightness / Pressure  
Nausea / Vomiting  
Dizziness  
Weakness

**Delayed Symptoms:**

Weakness  
Nausea / Vomiting  
Shortness of Breath  
Cough

Loss of Appetite  
Abdominal Pain  
Headache  
Numbness / Tingling

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

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

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

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

Improved: \_\_\_\_\_ Worsened: \_\_\_\_\_ Remained Unchanged: \_\_\_\_\_

**V. Treatment of Symptoms (check off appropriate response)**

None: \_\_\_\_\_ Self-Medicating: \_\_\_\_\_ Physician Treated: \_\_\_\_\_

## 3.0 SITE BACKGROUND

### 3.1 SITE DESCRIPTION

The Naval Construction Battalion Center (NCBC) Gulfport, Mississippi was commissioned as the homeport of the Atlantic Fleet Seabees in 1966. The Base occupies approximately 1,100 acres in the western part of Gulfport in the southeastern coastal area of Mississippi. The Navy previously used the property as a Naval Training Center and Naval Storehouse starting in 1942. Presently, four Naval Mobile Construction Battalions (NMCB) are based at Gulfport.

### 3.2 SITE LOCATION AND HISTORY

Site 10 is located within and below a ditch in the south-central section of NCBC Gulfport adjacent to the Parade Field. It is bounded to the north by the Dispensary and to the south by Building 130. The ditch at Site 10 a 10-foot wide, primary drainage ditch carrying surface water runoff in a westerly direction, eventually emptying into Canal No. 1. The site topography is relatively flat. Storm water runoff from the paved areas surrounding Site 10 flow to adjacent tributary ditches, which then contributes to the volume of the primary ditch. A footpath, leading south from the Dispensary, intersects the ditch at Site 10. This footpath includes a bridge across the primary ditch.

Site 10 was discovered during the 1996 Surface Water and Sediment investigation for dioxins and furans in the on-base ditch systems. High levels of PCBs in the sediments in the ditch immediately behind Building 130, near the Parade field, prompted source removal activities in 1999. The Source Removal Report indicates that additional PCB contamination remains in the soil below the area of excavation at levels that exceed Mississippi Department of Environmental Quality (MDEQ) action levels.

## 4.0 SCOPE OF WORK

The following subsections discuss the specific tasks that are to be conducted as part of this scope of work as identified by CTO 0193. These tasks as identified by the scope of work are the only ones addressed by this HASP. Any tasks to be conducted outside of the elements listed here will be considered a change in scope requiring modification of this document. The TOM or a designated representative will submit all requested modifications to this document to the HSM.

Specific tasks to be conducted include, but are not necessarily limited to, the following:

- Mobilization/demobilization activities
- Soil boring including Direct Push Technology (DPT)
- Monitoring well installation and development
- Multi-media Sampling
  - Surface water sampling
  - Sediment sampling
  - Groundwater sampling
  - Subsurface Soil sampling
  - Decontamination
- Geographic Surveying
- IDW Management

For more detailed description of the associated tasks, refer to the Work Plan (WP).

## 5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES SUMMARIZATION

Table 5-1 of this section serves as the primary portion of the site specific HASP. This table is intended to assist project personnel in the recognition of hazards and recommended procedures necessary to minimize potential exposure or injuries related to those hazards. The table also assists field team members in determining which personal protective equipment (PPE) and decontamination procedures to be used as well as appropriate air monitoring techniques and site-specific conditions. The evaluation of each task provides detailed information including anticipated hazards, recommended control measures, air monitoring recommendations, required PPE, and decontamination measures. This table must be updated if the scope of work, contaminants of concern, or pertinent conditions change.

Table 5-1 and the HASP are not meant to be stand alone documents and must be accompanied by the TtNUS Health and Safety Guidance Manual. This manual is designed to further explain supporting elements for any site specific operations 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.

Safe Work Permits will be issued for all exclusion zone activities (See Section 10.2). The FOL and/or the SSO will use the elements defined in Table 5-1 as the primary reference. The FOL and/or the SSO completing the Safe Work Permit will add additional site-specific information as warranted. 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 **only** in the support zone or in areas where there is no possibility of transferring contamination.

- 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).
- 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 DPT OPERATIONS - SAFE WORK PRACTICES

The following Safe Work Practices are to be followed when working in or around Direct Push Technology (DPT) Operations.

### 5.2.1 Before DPT Operations

- Identify all underground utilities and buried structures before DPT. Use the Utility Locating and Excavation Clearance Standard Operating Procedure provided in Attachment II. See notes for the time lines required on and off-Base utility clearances under mobilization/demobilization Section 4.1.
- All DPT rigs will be inspected by a Competent Person (the SSO or designee), prior to the acceptance of the equipment at the site and prior to the use of the equipment. All repairs or deficiencies identified will be corrected prior to use. The inspection will be accomplished using the Equipment Inspection Checklist provided in Attachment III. 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.
- All potentially contaminated tooling will be wrapped in polyethylene sheeting for storage and transport to the centrally located decontamination unit.

### 5.2.2 During DPT 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 DPT 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 DPT 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.

- 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 DPT Operations

- All equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the SSO to determined cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.
- All motorized equipment will be fueled prior to the commencement of the day's activities. During fueling operations all equipment will be shutdown and bonded to the fuel provider.
- When not in use all direct push 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  
Revision 0  
October 2001

TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM  
NAVAL CONSTRUCTION BATTALION CENTER, GULFPORT, MISSISSIPPI

Task/Operation/Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	Personal Protective Equipment (Items in italics are optional as determined by the FOL or SSO.)	Decontamination Procedures
Mobilization/ Demobilization	<p><b>Chemical hazards:</b></p> <p>1) The on-site Hazard Communication Program (Section 5.0 TtNUS Health and Safety Guidance Manual) will be followed. All chemicals brought onto the site by Tetra Tech NUS and subcontractor personnel will be inventoried and have an MSDS on site, on file. This effort shall include</p> <p>Accurate Chemical Inventory List (Entries will match chemicals brought on-site, as the names appear on the MSDS) This list, which also includes quantities and storage locations will be provided to NCBC Gulfport Emergency Response Units.</p> <p>MSDS's will be maintained in a central location, accessible to all personnel.</p> <p>All containers will have labels specifying the following information: Chemical Identity (As it appears on the label, MSDS, and Chemical Inventory List) Appropriate Warning (i.e., Eye and skin irritation, flammable, etc.) Manufacturer's Name Address and Phone Number</p> <p>It will be the FOL and/or the SSO's responsibility to insure this is completed.</p> <p><b>Physical hazards:</b></p> <p>2) Lifting (strain/muscle pulls) 3) Pinches and compressions/Struck by 4) Slips, trips, and falls 5) Heavy equipment hazards (rotating equipment, hydraulic lines, etc.) 6) Vehicular and foot traffic 7) Ambient temperature extremes (heat/cold stress)</p> <p><b>Natural hazards:</b></p> <p>8) Insect/animal bites and stings, poisonous plants, etc. 9) Inclement weather</p>	<p><b>Chemical hazards:</b></p> <p>1) All personnel will be required to review the appropriate MSDS's, prior to the use of a specified chemical substance. This direction should also be communicated on the Safe Work Permit completed for this task.</p> <p><b>Physical hazards:</b></p> <p>2) Use machinery or multiple personnel for heavy lifts.</p> <ul style="list-style-type: none"> <li>- Use proper lifting techniques</li> <li>- Lift with your legs, not your back, bend your knees move as close to the load as possible, and ensure good hand holds are available.</li> <li>- Minimize the horizontal distance to the center of the lift to your center of gravity.</li> <li>- Minimize turning and twisting when lifting as the lower back is especially vulnerable at this time.</li> <li>- Break lifts into steps if the vertical distance (from the start point to the placement of the lift) is excessive.</li> <li>- Plan your lifts – Place heavy items on shelves between the waist and chest; lighter items on higher shelves.</li> <li>- Periods of high frequency lifts or extended duration lifts should provide sufficient breaks to guard against fatigue and injury.</li> </ul> <p>In determining whether you can lift an item several factors must be considered, these are as follows: Maximum weight lifted by a single person should not exceed 70 pounds. Items over 70 pounds or the amount you feel you can confidently lift up to 70 pounds should define a point where assistance in the lift is sought. Other considerations defining lifting hazards</p> <ul style="list-style-type: none"> <li>- Area available to maneuver the lift.</li> <li>- Area of the lift – Work place clutter, slippery surfaces</li> <li>- Overall physical condition</li> </ul> <p>3) Keep any machine guarding in place. Do not modify tooling without manufacturer's expressed permission.</p> <ul style="list-style-type: none"> <li>- Avoid moving parts.</li> <li>- Use tools or equipment where necessary to avoid contacting pinch points.</li> <li>- Adjust machine guarding as necessary to minimize distance between guards and point of operation.</li> <li>- When staging equipment, insure all stacked loads, shelving, are adequately secure to avoid creating a hazard from falling objects.</li> <li>- All equipment will undergo a thorough equipment inspection. Mechanized and powered equipment inspections will be documented on the Equipment Inspection Checklist provided in Attachment III. All hand tools will be inspected (handle condition, cutting attachment, as applicable) to insure acceptable condition.</li> </ul> <p>4) Preview work locations for unstable/uneven terrain.</p> <ul style="list-style-type: none"> <li>- Cover, guard and barricade all open pits, ditches, and floor opening as necessary.</li> <li>- The FOL and the SSO during site surveys and site preparation should identify these potential hazards.</li> </ul> <p>5) All equipment will be</p> <ul style="list-style-type: none"> <li>- Inspected in accordance with OSHA and manufacturer's design.</li> <li>- Operated by knowledgeable operators and ground crew.</li> </ul> <p>6) Traffic and equipment considerations are to include the following:</p> <ul style="list-style-type: none"> <li>- Establish safe zones of approach (i.e. Boom or mast + 5 feet).</li> <li>- Foot and vehicular traffic routes shall be well defined</li> <li>- All self-propelled equipment shall be equipped with movement warning systems.</li> <li>- All activities are to be conducted consistent with the site requirements.</li> <li>- The FOL and/or the SSO as a precautionary measure to remove or demarcate physical hazards shall preview traffic routes (foot and vehicular) before the commitment of personnel and resources.</li> </ul> <p>7) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat and cold stress is provided in Section 4.0 of the TtNUS Health and Safety Guidance Manual.</p> <p><b>Natural hazards:</b></p> <p>8) Avoid nesting areas; Tape pant legs to work boots when in high brush (knee high) (tick hazards); Use repellents – Apply Permonone over clothing articles to avoid skin irritation. Application of repellants should concentrate where ticks and other insects will gain entry. Pant to boots, shirt to pants, collar; Perform close body inspections upon exiting high brush areas to facilitate and remove ticks and other insects; Report potential hazards to the SSO. Follow guidance presented in Section 4.0 of the TtNUS Health and Safety Guidance Manual.</p> <p>9) Suspend or terminate operations until directed otherwise by SSO.</p>	Visual observation of work practices by the SSO to minimize potential physical hazards (i.e., improper lifting, unsecured loads, noise, etc.).	Level D - (Minimum Requirements) - Standard field attire (Sleeved shirt; long pants) - Safety shoes (Steel toe/shank) - Safety glasses - Hardhat (when overhead hazards exists, or identified as a operation requirement) - Reflective vest for high traffic areas - Hearing protection for high noise areas, or as directed on an operation by operation scenario.	Not required.  However, to minimize the potential for the ticks or other insects to attach themselves to human hosts, persons exiting woods or high brush areas should perform a close body inspection to identify and remove these vectors as soon as possible. This should be conducted prior to entering site vehicles, trailers, etc. where the ticks or other insects may detach impacting other whose use this equipment or facilities.

TABLE 5-1  
Revision 0  
October 2001

TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM  
NAVAL CONSTRUCTION BATTALION CENTER, GULFPORT, MISSISSIPPI

Tasks/Operation/Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	Personal Protective Equipment (Items in Italics are optional as determined by the FOL or SSO)	Decontamination Procedures
Soil borings using Direct Push Technology (DPT)	<p><b>Chemical hazards:</b></p> <ol style="list-style-type: none"> <li>1) Previous analytical data identified the following compounds as contaminants of concern: Chlorobenzene and PCBs (Aroclor-1260)</li> </ol> <p>It is recommended that exposure (via inhalation, ingestion, or skin contact) to this contaminant be minimized. Further information on these contaminants is presented in Figure 6-1.</p> <ol style="list-style-type: none"> <li>2) Transfer of contamination into clean areas or onto persons</li> </ol> <p><b>Physical hazards:</b></p> <ol style="list-style-type: none"> <li>3) Heavy equipment hazards (pinch/compressions points, rotating equipment, hydraulic lines, etc.)</li> <li>4) Noise in excess of 85 dBA</li> <li>5) Energized systems (contact with underground or overhead utilities)</li> <li>6) Lifting (strain/muscle pulls)</li> <li>7) Slips, trips, and falls</li> <li>8) Vehicular and foot traffic</li> <li>9) Ambient temperature extremes (heat/cold stress)</li> <li>10) Flying projectiles</li> <li>11) Cuts and Lacerations</li> </ol> <p><b>Natural hazards:</b></p> <ol style="list-style-type: none"> <li>12) Insect/animal bites and stings, poisonous plants, etc.</li> <li>13) Inclement weather</li> </ol>	<p><b>Chemical hazards:</b></p> <ol style="list-style-type: none"> <li>1) Always avoid contact with contaminated media (air, water, soils, etc.). As these materials are most likely bound to particulates, keep dust/particulate levels down. Handle all potentially contaminated equipment with caution. Avoid contact and screen for volatiles.</li> <li>2) Restrict the cross use of equipment and supplies between locations and activities without first going through a suitable decontamination. Use a rigid decontamination procedure between locations to prevent the spread of contamination.</li> </ol> <p><b>Physical hazards:</b></p> <ol style="list-style-type: none"> <li>3) All equipment will be: <ul style="list-style-type: none"> <li>- Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600.601.602), and manufacturer's design. All inspections will be documented using the Equipment Inspection Checklist found in Attachment III of this HASP.</li> <li>- Operated and supported by knowledgeable operators and ground crew.</li> <li>- Used within safe work zones, with routes of approach clearly marked. All personnel not directly supporting this operation will remain at least 25 feet from the point of operation. See Section 9.0 of this HASP. This will be the area identified as the exclusion zone.</li> </ul> </li> </ol> <p>In addition to equipment considerations, the following safe operating procedures will be incorporated:</p> <ul style="list-style-type: none"> <li>- Hydraulic masts or other projecting devices shall be at least 20 feet from overhead power sources and a minimum of 3 feet from underground utilities.</li> <li>- Hand signals will be established prior to the commencement of the operation.</li> <li>- A remote sampling device must be used to sample cuttings near rotating tools</li> <li>- Only manufacturer-approved equipment may be used in conjunction with equipment repair procedures (e.g., flight connectors).</li> <li>- Work areas will be kept clear of clutter.</li> <li>- Secure all loose articles to avoid possible entanglement during coring activities.</li> <li>- All self-propelled equipment shall be equipped with movement warning systems.</li> <li>- All personnel will be instructed in the location and operations of the emergency shut-off device(s). This device will be tested initially (and then periodically) to ensure its operational status.</li> <li>- Areas will be inspected prior to the movement of any vehicles to eliminate physical hazards. This will be the responsibility of the FOL and/or SSO.</li> </ul> <ol style="list-style-type: none"> <li>4) Hearing protection will be used during all subsurface activities using DPT when noise levels are &gt; 85 dBA. (during operation). Boundaries will be established to limit noise hazard. Excessive noise levels are being approach when you have to raise your voice to talk to someone within 2 feet of your location.</li> <li>5) All DPT activities will proceed in accordance with the Utility Locating and Excavation Clearance SOP in Attachment II of this HASP. All utility clearances will be obtained, in writing, and locations identified and marked prior to activities. Overhead utilities will also be identified.</li> <li>6) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</li> <li>7) Preview work locations for unstable/uneven terrain.</li> <li>8) Use traffic-warning signs, flag persons, and high visibility vests as determined by the SSO when working in or along traffic thoroughfares.</li> <li>9) Wear appropriate clothing for weather conditions. Acceptable shelter and liquids for field crews.</li> <li>10) Wear eye protection and hard hat when the DPT rig is operating. Restrict all others from the area.</li> <li>11) Cuts and Lacerations - To prevent cuts and lacerations associated with extracting samples from the acetate liners of the Macro-Core Sampler, the following provisions are required: <ul style="list-style-type: none"> <li>- Obtain and use the knife and acetate tube retention tub recommended by Geoprobe to prevent accidents of this nature. These items have been engineered to allow sample acquisition without putting the sampler at risk.</li> <li>- Always cut away from yourself and others.</li> <li>- Do not place items to be cut in your hand or on your knee.</li> <li>- Change the blades as necessary to maintain a sharp cutting edge.</li> </ul> </li> </ol> <p><b>Natural hazards:</b></p> <ol style="list-style-type: none"> <li>12) Avoid nesting areas, use repellents. Report potential hazards to the SSO. See Section 6.3 of this HASP and Section 4.0 of the TtNUS Health and Safety Guidance Manual for additional information concerning natural hazards.</li> <li>13) Suspend or terminate operations until directed otherwise by SSO.</li> </ol>	<p>It is anticipated that potential contaminant concentrations at outdoor locations will 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 (borehole and DPT sampler) monitoring will be conducted at regular intervals determined by the SSO. The SSO will also monitor the breathing zone of all potentially affected employees, with the following guidance:</p> <ul style="list-style-type: none"> <li>- Any sustained reading greater than one minute above background in the BZ requires evacuation to a safe area.</li> </ul> <p>Other site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be minimized to the greatest extent possible to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be qualitative by observing work conditions for visible dust clouds or accumulations. Potential exposure to contaminants attached to dust particles will be controlled by using water to suppress dusts, by avoiding dust plumes, or by upgrading the level of protection.</p> <p>Where the utility clearance cannot be obtained in a reasonable period, or not located, intrusive activities shall proceed with extreme caution using a magnetometer for periodic downhole surveys every 2 feet to a depth of at least 6 feet. See Attachment II Utility Locating And Excavation Clearance of this HASP.</p>	<p>All DPT operations will be performed in Level D protection, including the following articles:</p> <ul style="list-style-type: none"> <li>- Standard field dress (long pants, Sleeved shirts)</li> <li>- Steel toe safety shoes or work boots</li> <li>- Safety glasses</li> <li>- Hard hat</li> <li>- Tyvek or washable cotton coveralls</li> <li>- Impermeable boot covers</li> </ul> <ul style="list-style-type: none"> <li>- Impermeable outer garments such as PVC Rain-suit or Saranex<sup>®</sup>, PE coated Tyvek<sup>®</sup> due to contact with contaminated tooling. An impermeable apron is acceptable due to heat stress.</li> <li>- Hearing protection for high noise areas</li> <li>- <i>Reflective vest for traffic areas</i></li> </ul> <p><b>Note:</b> The Safe Work Permit for this task (see Attachment IV of this HASP) 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. Protective levels may require modification should this activity be required to be conducted within a controlled zone due to an on-going operation.</p>	<p>Personnel Decontamination will consist of a soap/water wash and rinse for reusable and non-reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). In addition to the soap and water wash and rinse a vacuum equipped with a HEPA filter may be used to remove dust and dirt from cotton coveralls. This decontamination function may be subdivided into two locations. Gross contamination of outer boots and outer gloves will be removed at a satellite location near the operation. Final wash and rinse will take place at the centralized decontamination pad.</p> <p>The sequential procedure is as follows:</p> <p>Stage 1: Equipment drop, remove outer protective wrapping; Decon personnel will wipe down the outer shell and pass hand equipment through as necessary.</p> <p>Stage 2: Soap/water wash and rinse of outer boots and gloves</p> <p>Stage 3: Soap/water wash and rinse of the outer splash suit, as applicable. If personnel are wearing cotton coveralls these may be vacuumed at this point.</p> <p>Stage 4: Disposable PPE will be removed and bagged.</p> <p>Stage 5: Wash face and hands</p> <p>Stage 6: Depending on ambient conditions, you may be required to report for medical evaluation. This evaluation consists of pulse, breathing rate, oral temperature, and body weight. This medical screening will be performed when ambient conditions dictate and during periods of acclimatization.</p> <p><b>Equipment Decontamination</b> - All heavy equipment decontamination will take place at a centralized decontamination pad utilizing a steam cleaner. Heavy equipment will have the wheels and tires 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 have their wheels/tires sprayed off as not to track mud onto the roadways servicing this installation. Roadways shall be cleared of any debris resulting from the onsite activity.</p> <p><b>Sampling Equipment Decontamination</b></p> <p>Sampling equipment will be decontaminated as per the requirements in the Sampling and Analysis Plan and/or Work Plan. All equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site. The FOL or the SSO will be responsible for evaluating equipment arriving on-site, leaving the site, and between locations.</p>

**TABLE 5-1**  
**Revision 0**  
**October 2001**  
**TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM**  
**NAVAL CONSTRUCTION BATTALION CENTER, GULFPORT, MISSISSIPPI**

Tasks/Operation/Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type and Action Levels	Personal Protective Equipment <i>(Items in italics are optional as determined by the FOL or SSO.)</i>	Decontamination Procedures
<p>Multi-media sampling, including groundwater, surface water, sediment, and subsurface soil.</p>	<p><b>Chemical hazards:</b></p> <p>1) Previous analytical data identified the following compounds as contaminants of concern: Chlorobenzene and PCBs (Aroclor-1260)</p> <p>It is recommended that exposure (via inhalation, ingestion, or skin contact) to this contaminant be minimized. Further information on these contaminants is presented in Figure 6-1.</p> <p>2) Transfer of contamination into clean areas</p> <p><b>Physical hazards:</b></p> <p>3) Noise in excess of 85 dBA  4) Lifting (strain/muscle pulls)  5) Pinches and compressions  6) Slips, trips, and falls  7) Ambient temperature extremes (heat/cold stress)  8) Vehicular and foot traffic  9) Site Characterization</p> <p><b>Natural hazards:</b></p> <p>10) Insect/animal bites and stings, sion zone.  In addition  11) Inclement weather</p>	<p>1) Avoid contact with contaminated media (air, water, soils, etc.). As most of the materials in question are likely to be bound to particulates, dust/particulate suppression will be used to minimize potential exposure. Although this is unlikely even in the absence of any control measures, monitoring will be conducted to provide quantitative data regarding emissions.</p> <p>2) Decontaminate all equipment and supplies between sampling locations and prior to leaving the site. See decontamination of heavy and sampling equipment for direction in this task.</p> <p>3) When sampling at an operating DPT use hearing protection. The use of hearing protection outside of 25 feet from the DPT rig should be incorporated under the following condition:  If you have to raise your voice to talk to someone who is within 2 feet of your location, you may be approaching excessive noise levels (&gt;85dBA) and hearing protection should be worn until the noise source may be positively quantified.</p> <p>4) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques (See Lifting Mobilization/Demobilization, Page 1 of 6, Table 5-1).</p> <p>5) Avoid moving parts, do not remove any machine guarding.</p> <ul style="list-style-type: none"> <li>- Use tools or equipment where necessary to avoid contacting pinch points.</li> <li>- A remote sampling device must be used to sample cuttings near rotating tools. The equipment operator shall shutdown machinery if the sampler is near moving machinery parts.</li> <li>- Remove any snag points</li> <li>- Follow Safe Work Permit and Safe Work Practices for DPT procedures when working in and around the DPT rigs(See Section 5.1 &amp; 5.2).</li> </ul> <p>6) Preview work locations for unstable/uneven terrain.</p> <ul style="list-style-type: none"> <li>- Ruts, roots, and other tripping hazards should be eliminated from around the rotating apparatus to minimize trips and falls when approaching the rotating tooling.</li> <li>- Use multiple persons and small loads to pack sampling resources to remote locations.</li> <li>- Construct rope ladders and other engineered assistance for traversing hills and inclines &gt; 45°.</li> </ul> <p>7) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat/cold stress is provided in Section 4.0 of the Health and Safety Guidance Manual.</p> <p>8) Traffic and equipment considerations are to include the following:</p> <ul style="list-style-type: none"> <li>- Establish safe zones of approach (i.e. Mast or Boom + 5 feet). See Section 9 of the HASP for specific safety zones and established clearance recommendations.</li> <li>- All self-propelled equipment shall be equipped with movement warning systems.</li> <li>- When sampling along roadways, use signs to indicate men working as well flag persons, as necessary. Personnel working in and around any established traffic patterns should wear high visibility vests to increase visual recognition.</li> </ul> <p>9) Work areas will be surveyed prior to committing personnel or resources. The survey will be conducted by the FOL and/or the SSO. The purpose is to identify physical and natural hazards that may impact the proposed work area. These hazards are to be identified, barricaded, or eliminated to the extent possible to minimize potential effect to field crew.</p> <p>10) Avoid nesting areas, use repellents approved by the FOL. Report potential hazards to the SSO. Follow guidance presented in Appendix F, Hazard Assessment.</p> <p>11) Suspend or terminate operations until directed otherwise by the SSO.</p>	<p>It is anticipated that potential contaminant concentrations at outdoor locations will 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 (borehole and DPT Rig sampler) monitoring will be conducted at regular intervals determined by the SSO. The SSO will also monitor the breathing zone of all potentially affected employees, with the following guidance:</p> <ul style="list-style-type: none"> <li>- Any sustained reading greater than one minute above background in the BZ requires evacuation to a safe area.</li> </ul> <p>Most of the contaminants of concern are solid, and non-detectable 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. Generation of dusts should be minimized to the greatest extent possible to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be qualitative by observing work conditions for visible dust clouds or accumulations. Potential exposure to contaminants attached to dust particles will be controlled by using water to suppress dusts, by avoiding dust plumes, or by upgrading the level of protection.</p> <p>Where the utility clearance cannot be obtained in a reasonable period, or not located, intrusive activities shall proceed with extreme caution using a magnetometer for periodic downhole surveys every 2 feet to a depth of at least 6 feet. See Attachment II Utility Locating And Excavation Clearance of this HASP.</p>	<p>Level D protection will be utilized for the following sampling activities</p> <p>Surface soils, subsurface soils, surface water, groundwater, and sediments</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (Sleeved shirt; long pants)</li> <li>- Safety shoes (steel toe/shank)</li> <li>- Safety glasses</li> <li>- Surgical style gloves (<i>double-layered if necessary</i>)</li> <li>- <i>Reflective vest for high traffic areas</i></li> <li>- <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i></li> <li>- <i>Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists.</i></li> <li>- <i>Hearing protection for high noise areas, or as directed on an operation by operation scenario.</i></li> </ul> <p>Note: The Safe Work Permit(s) for this task (See Attachment IV) 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><b>Personnel Decontamination</b></p> <p>Personal decontamination will vary based on the type of sampling conducted. These are as follows:</p> <p>Supporting subsurface investigations at the DPT rig.</p> <ul style="list-style-type: none"> <li>- Decontamination will be the same as prescribed for the DPT activity</li> </ul> <p>Sampling surface water, groundwater, and sediments, the following provisions will apply</p> <ul style="list-style-type: none"> <li>- Upon completion of the sampling dedicated trowels, tubing, etc. will be bagged for transport back to the central decontamination area.</li> <li>- PPE (gloves) will be removed and also bagged for disposal.</li> <li>- Handi-Wipes or similar product will be used to clean hands prior to moving to the next location.</li> </ul> <p><b>Equipment Decontamination</b></p> <p>All equipment used in remote sampling locations will be brought back to the central decontamination area for decontamination and re-use or decontamination and gross removal of contamination prior to disposal.</p> <p>Note: Field screening instruments will be wrapped to minimize the necessary decontamination except for wiping down parts which are necessary to expose to the external environment. The equipment reference above is largely directed at hand tools.</p> <p>Decontamination of equipment (sampling and hand tools) will proceed as indicated in the Sampling and Analysis Plan and/or Work Plan.</p>

**TABLE 5-1**  
**Revision 0**  
**October 2001**  
**TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM**  
**NAVAL CONSTRUCTION BATTALION CENTER, GULFPORT, MISSISSIPPI**

Task/Operation/Location	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type And Action	Personal Protective Equipment - Items Which Are Optional As Determined By The Task	Decontamination Procedures
<p><b>Geographical Surveying</b></p> <p>This activity is proposed for improved areas. The likelihood of encountering some of the natural hazards discussed is negligible. However, the information provided in the event that benchmarks (horizontal and vertical control) has to be carried from a remote location.</p>	<p><b>Chemical hazards:</b></p> <p>Significant exposure to site contaminants is anticipated to be unlikely given the nature of this task.</p> <p><b>Physical hazards:</b></p> <p>1) Slips, trips, and falls</p> <p>2) Struck by</p> <p>3) Ambient temperature extremes (heat stress)</p> <p><b>Natural hazards:</b></p> <p>4) Inclement weather</p> <p>5) Insect/animal bites or stings, poisonous plants, etc.</p>	<p><b>Physical hazards:</b></p> <p>1) Preview work locations and site lines for uneven and unstable terrain. Clear necessary vegetation, establish temporary means for traversing hazardous terrain (i.e., rope ladders, etc.)</p> <p>2) If hand tools (brush hooks, machetes, etc.) are necessary to clear and carry lines and bench marks to the area of operation the following precautions are recommended</p> <ul style="list-style-type: none"> <li>- Insure handles are of good construction (no cracks, splinters, loose heads/cutting apparatus.</li> <li>- Insure all cutting tools are maintained. Blades shall be sharp without nicks and gouges in the blade.</li> <li>- All hand tools (brush hooks, machetes, etc.) with cutting blades shall be provided with a sheath to protect individuals when not in use.</li> <li>- All personnel will maintain a 10-foot perimeter around persons clearing brush.</li> </ul> <p><b>Note:</b> It is not anticipated that trees will be required to be dropped as part of this operation and therefore will not be addressed. The additional use of chainsaws and chippers will require this HASP to be modified.</p> <p>3) Wear appropriate clothing for weather conditions. Acceptable shelter and liquids for field crews.</p> <p><b>Natural hazards:</b></p> <p>4) Suspend or terminate operations until directed otherwise by SSO</p> <p>5) To combat the potential impact of natural hazards, the following actions are recommended</p> <ul style="list-style-type: none"> <li>- Avoid nesting – Preview routes, monitoring well protective casings for nests. Avoid if at all possible.</li> <li>- Wear light color clothes. This will allow easier detection of ticks and insects crawling on your body. It will also assist in heat stress control.</li> <li>- Tape pant legs to work boots to block direct access.</li> <li>- Use repellents – Permanone should be applied liberally to the clothing, but not the skin as it may cause irritation. Concentrate on areas where ticks and other insects may access your body such as pant cuffs, shirt to pants, and collars.</li> <li>- Upon exiting the high brush and wooded areas perform a close body inspection to remove any ticks or other insects that have attached to your clothing or skin.</li> <li>- If clearing lines in snake infested areas surveyors are recommended to wear snake chaps as a precaution.</li> <li>- Report potential hazards or signs and symptoms to the SSO.</li> </ul> <p>See Section 4.0 of the TINUS Health and Safety Guidance Manual and Section 6.3 of this HASP for additional information concerning natural hazards.</p>	<p>No air monitoring is needed given the unlikely that airborne contaminants will be present. The potential for exposure to site contaminants during this activity is considered minimal. As most of this activity is conducted either before or after the intrusive aspect of this operation, therefore, minimizing potential exposure.</p>	<p>Surveying activities shall be performed in Level D protection</p> <p>Level D Protection consists of the following:</p> <ul style="list-style-type: none"> <li>- Standard field dress including sleeved shirt and long pants</li> <li>- Safety shoes (Steel toe/shank)</li> <li>- Work gloves shall be worn when clearing brush.</li> <li>- Safety glasses, hard hats (if working near machinery, or overhead hazards)</li> <li>- Snake chaps for heavily wooded area where encounters are likely.</li> <li>- Tyvek coveralls may be worn to provide additional protection against poisonous plants and insects, particularly ticks.</li> </ul> <p><b>Note:</b> The Safe Work Permit(s) for this task (See Attachment IV) 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. Protective levels may require modification should this activity be required to be conducted within a controlled zone due to an on-going operation.</p>	<p><b>Personnel Decontamination - A structured decontamination is not required as the likelihood of encountering contaminated media is considered remote. However, survey parties should inspect themselves and one another for the presence of ticks when exiting wooded areas, grassy fields, etc. This action will be employed to stop the transfer of these insects into vehicles, homes, and offices.</b></p>

**TABLE 5-1**  
**Revision 0**  
**October 2001**  
**TASKS/HAZARDS/CONTROL MEASURES COMPENDIUM**  
**NAVAL CONSTRUCTION BATTALION CENTER, GULFPORT, MISSISSIPPI**

Task/Activity	Hazard(s)	Control Measure(s)	Monitoring	Personal Protective Equipment (PPE) Requirements	Decontamination
<p><b>Decontamination of Sampling and Heavy Equipment</b></p> <p>It is anticipated that this activity will take place at centralized locations. Gross contamination will be removed to the extent possible at the site. Contaminated tooling then will be wrapped in polyethylene sheeting for transport to the centralized location for a full decontamination and evaluation.</p>	<p><b>Chemical hazards:</b></p> <p>1) Previous analytical data identified the following compounds as contaminants of concern: Chlorobenzene and PCBs (Aroclor-1260)</p> <p>It is recommended that exposure (via inhalation, ingestion, or skin contact) to this contaminant be minimized. Further information on these contaminants is presented in Figure 6-1.</p> <p>2) Decontamination fluids - Liquinox (detergent); isopropanol (decontamination solvent)</p> <p><b>Physical hazards:</b></p> <p>3) Lifting (strain/muscle pulls)            4) Noise in excess of 85 dBA            5) Flying projectiles            6) Struck by            7) Slips, trips, and falls</p> <p><b>Natural hazards:</b></p> <p>8) Inclement weather</p>	<p>1) and 2) Use protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Control potential non-occupational exposures through good work hygiene practices (i.e., avoid hand to mouth contact; wash hands and face before breaks and lunch; minimize contact with contaminated media). Obtain manufacturer's MSDS for any decontamination fluids used on-site. Solvents may only be used in well-ventilated areas, such as outdoors. Use appropriate PPE as identified on MSDS or within this HASP. All chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication Program provided in Section 5.0 of the T1NUS Health and Safety Guidance Manual.</p> <p>3) Use multiple persons where necessary for lifting and handling heavy equipment, such as auger flights for decontamination purposes.</p> <ul style="list-style-type: none"> <li>- Employ proper lifting techniques as described in Table 5-1, Mobilization/Demobilization.</li> </ul> <p>4) Wear hearing protection when operating the pressure washer and/or steam cleaner. Sound pressure levels measured during the operation of similar pieces of equipment indicate a range of 87 to 93 dBA.</p> <p>5) Use eye and face protective equipment when operating the pressure washer and/or steam cleaner, due to flying projectiles. All other personnel must be restricted from the area. In addition to minimize hazards (flying projectiles, water lacerations and burns) associated with this operation, the following controls will be implemented</p> <ul style="list-style-type: none"> <li>- A Fan Tip 25° or greater will be used on pressurized systems over 3,000 psi. This will reduce the possibility of water lacerations or punctures.</li> <li>- Thermostat control will be in place and operational to control the temperature levels of the water where applicable.</li> <li>- Visual evaluations of hoses and fittings for structural defects</li> <li>- Construct deflection screens as necessary to control overspray and to guard against dispersion of contaminants driven off by the spray.</li> </ul> <p>6) Struck by – Insure wash and drying racks are suitable construction to support heavier items such as auger flights and will secure them against falling during this process.</p> <p>7) The decontamination pad should be constructed to contain wash waters generated during decontamination procedures. Temporary decontamination pads are usually 10-30 mil polyethylene or polyvinyl chloride tarp construction. Although these items when used as a liner offer containment, they also present a slipping hazard. When these temporary liners are employed, it is recommended that a light coating of sand be spread over the walking surface to provide traction.</p> <ul style="list-style-type: none"> <li>- In addition, adequate slope should be provided to the pad to permit drainage away from the object being cleaned. The collection point for wash waters should be of adequate distance that the decontamination workers do not have to walk through the wash waters while completing their tasks.</li> <li>- Hoses should be gathered when not in use to eliminate potential tripping hazards.</li> </ul> <p>8) Suspend or terminate operations until directed otherwise by SSO.</p>	<p>Use visual observation and real-time monitoring instrumentation to ensure all equipment has been properly cleaned of contamination and dried.</p>	<p><b>For heavy equipment</b></p> <p>This applies to pressure washing and/or steam cleaning operations and soap/water wash and rinse procedures.</p> <p>Level D Minimum requirements:</p> <ul style="list-style-type: none"> <li>- Standard field attire (Long sleeve shirt; long pants)</li> <li>- Safety shoes (Steel toe/shank)</li> <li>- Chemical resistant boot covers</li> <li>- Nitrile outer gloves over nitrile inner gloves</li> <li>- Safety glasses underneath a splash shield</li> <li>- Hearing protection (plugs or muffs)</li> <li>- Hooded PVC Rainsuits or PE or PVC coated Tyvek</li> </ul> <p><b>For sampling equipment</b> (trowels, Macro-Core Samplers, bailers, etc.), the following PPE is required</p> <p><b>Note:</b> Consult MSDS for PPE guidance. Otherwise, observe the following.</p> <p>Level D Minimum requirements -</p> <ul style="list-style-type: none"> <li>- Standard field attire (Long sleeve shirt; long pants)</li> <li>- Safety shoes (Steel toe/shank)</li> <li>- Nitrile outer gloves over nitrile inner gloves</li> <li>- Safety glasses</li> <li>- Impermeable apron</li> </ul> <p>In the event of overspray of chemical decontamination fluids, employ PVC Rainsuits or PE or PVC coated Tyvek as necessary.</p> <p><b>Note:</b> The Safe Work Permit(s) for this task (See Attachment IV) 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><b>Personnel Decontamination</b> will consist of a soap/water wash and rinse for reusable and non-reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). This decontamination function may be subdivided into two locations.</p> <p>Gross contamination of outer boots and outer gloves will be removed at a satellite location near the operation.</p> <p>Final wash and rinse will take place at the centralized decontamination pad.</p> <p>The sequential procedure is as follows:</p> <p>Stage 1: Equipment drop, remove outer protective wrapping; personnel will wipe down the outer shell and pass hand equipment through as necessary.</p> <p>Stage 2: Soap/water wash and rinse of outer boots and gloves</p> <p>Stage 3: Soap/water wash and rinse of the outer splash suit, as applicable</p> <p>Stage 4: Disposable PPE will be removed and bagged.</p> <p>Stage 5: Wash face and hands</p> <p>Stage 6: Depending on ambient conditions, you may be required to report for medical evaluation. This evaluation consists of pulse, breathing rate, oral temperature, and body weight. This medical screening will be performed when ambient conditions dictate and during periods of acclimatization.</p> <p><b>Equipment Decontamination</b> - All heavy equipment decontamination will take place at a centralized decontamination pad utilizing a steam cleaner. Heavy equipment will have the wheels and tires 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 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><b>Sampling Equipment Decontamination</b></p> <p>Sampling equipment will be decontaminated as per the requirements in the Sampling and Analysis Plan and/or Work Plan.</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, leaving the site, and between locations. No equipment will be authorized access, exit, or movement to another location without this evaluation. This will include the screening process for radiological contaminants.</p>

## 6.0 HAZARD ASSESSMENT

The following section provides information regarding the chemical, physical, and natural hazards associated with the sites to be investigated and the activities that are to be conducted as part of the scope of work. Figure 6-1, which is included as part of this HASP, provides information on potential chemical contaminants, including exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data.

### 6.1 CHEMICAL HAZARDS

The potential health hazards associated with work to be conducted at NCBC Gulfport include inhalation, ingestion, and dermal contact with contaminants that may be present in soil. Based on the site history and prior sampling efforts, the following have been identified as the primary contaminants:

- Chlorobenzene
- PCBs (Aroclor-1260).

Figure 6-1 provides information on these chemicals including information on the toxicological, chemical, and physical properties of this substance. It is anticipated that the greatest potential for exposure to site contaminants is during intrusive activities (soil borings, sampling, etc.). Exposure to these compounds is most likely to occur through inhalation or dermal contact of contaminated soil or water, or through ingestion via hand-to-mouth contact during soil disturbance activities. For this reason, PPE and basic hygiene practices (e.g., washing face and hands before leaving site) will be extremely important. Inhalation exposure will be avoided by using appropriate PPE and engineering controls where necessary. Given the nature of planned activities and that work will be conducted outside in the open air, however, it is highly unlikely that any appreciable airborne concentrations will be present.

Other sources of potential chemical exposure are decontamination fluids (e.g., Liquinox, isopropanol), and analytical preservatives. For any substances brought onto the site, the SSO is responsible for instituting a site-specific Hazard Communication Program (see Section 5.0 of the TtNUS Health and Safety Guidance Manual) and for collecting the appropriate Material Safety Data Sheets (MSDS) from the chemical manufacturers/suppliers. The SSO is also responsible for completing the Safe Work Permit for the decontamination task using the appropriate MSDS and for reviewing the contents of the MSDSs and Safe Work Permit with anyone who will use these substances.

**Table 6-1  
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA  
NAVAL CONSTRUCTION BATTALLION CENTER – GULFPORT, MISSISSIPPI**

Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
Chlorobenzene	108-90-7	<p>PID: I.P. 9.07 eV, High response with PID and 10.2 eV lamp.</p> <p>FID: Relative response ratio for FID detection is unknown, however, is considered to be detectable as this substance will burn.</p>	<p>Air sample using charcoal sorbent tubes with carbon disulfide desorption and gas chromatography-flame ionization detector analysis. Sampling and analytical protocol in accordance with NIOSH Method #1003.</p>	<p>OSHA/NIOSH: 75 ppm</p> <p>ACGIH: 10 ppm</p> <p>IDLH: 1000 ppm</p>	<p>Adequate - Odor threshold 0.1 - 1.3 ppm. Can use air-purifying respirator with organic vapor cartridge up to 500 ppm.</p> <p><b>Recommended glove:</b> Viton - &gt;8.00 hrs PV Alcohol &gt;8.00 hrs</p>	<p><b>Boiling Pt:</b> 268°F; 131°C <b>Melting Pt:</b> -49°F; -45°C <b>Solubility:</b> 0.05% <b>Flash Pt:</b> 82°F; 28°C <b>LEL/LFL:</b> 1.3% <b>UEL/UFL:</b> 9.6% <b>Vapor Density:</b> 3.88 <b>Vapor Pressure:</b> 11.8 mmHg @ 77°F; 22°C <b>Specific Gravity:</b> 1.11 <b>Incompatibilities:</b> Strong oxidizers <b>Appearance and Odor:</b> Colorless liquid with an almond-like odor.</p>	<p>Chlorobenzene is a fairly strong narcotic and can cause CNS depression. Symptoms of exposure include headache, eye and respiratory tract irritation, dizziness, drowsiness, incoordination, and loss of consciousness. Irritating to the eyes, nose, and skin. Chronic exposure may cause liver, kidney, and lung damage.</p> <p>NTP, IARC, and OSHA do not list chlorobenzene as a carcinogen.</p>
Aroclor-1260 (Polychlorinated Biphenyl, PCB) It should be noted that this substance is representative of the more common isomers Aroclor - 1242, 1254, which may be encountered.	<p>11096-82-5</p> <p>53469-21-9 (42%)</p> <p>11097-69-1 (54%)</p>	<p>Substance is not volatile (VP=0.00006 mmHg), I.P. is unknown however is anticipated to be elevated, therefore, PID is not anticipated to detect this substance.</p> <p>Substance is non combustible and as a result will not be detected by FID.</p>	<p>Air sample using a particulate filter, Florisil sorbent tube with glass fiber filter; hexane desorption; gas chromatography-electron capture detector. Sampling and analytical protocol shall proceed in accordance with NIOSH Method #5503 (PCBs).</p>	<p>OSHA; ACGIH: 0.5 mg/m<sup>3</sup> (skin)</p> <p>NIOSH: 0.001 mg/m<sup>3</sup></p> <p>IDLH: 5 mg/m<sup>3</sup></p>	<p>Inadequate - However due to the low volatility it is assumed unless agitated this substance does not present a volatile vapor or gas respiratory threat. For dusty conditions where this material may cling to particulates, use a HEPA filter.</p> <p>APRs are approved for escape only when concentrations exceed the exposure limits. Concentrations greater than the exposure limits require PAPR or supplied air respirators.</p> <p><b>Recommended glove:</b> Butyl rubber &gt;24 hrs; Neoprene rubber &gt;24.00 hrs; Silver shield or Viton (for pure product).</p>	<p><b>Boiling Pt:</b> distillation range 689- 734°F; 365-390°C <b>Melting Pt:</b> -2 to 50°F; -19 to 10°C <b>Solubility:</b> Insoluble <b>Flash Pt:</b> Not applicable <b>LEL/LFL:</b> Not applicable <b>UEL/UFL:</b> Not applicable Nonflammable liquid, however, exposure to fire results in black soot containing PCBs, dibenzofurans, &amp; chlorinated dibenzo-p-dioxins <b>Vapor Density:</b> Not available <b>Vapor Pressure:</b> 0.00006 - 0.001 mmHg <b>Specific Gravity:</b> 1.566 @ 60°F; 15.5°C <b>Incompatibilities:</b> Strong oxidizers <b>Appearance and Odor:</b> Colorless to pale yellow, viscous liquid or solid (Aroclor 54 below 50°F) with a mild, hydrocarbon odor</p>	<p>This substance is irritating to the eyes and skin. Chronic effects of overexposure may include potential to cause liver damage, chloracne, and reproductive effects. Recognized as possessing carcinogenic properties by NIOSH, and NTP.</p>

## 6.2 PHYSICAL HAZARDS

In addition to the chemical hazards discussed above, the following physical hazards may be present during the performance of the site activities.

- Slips, trips, and falls
- Cuts (or other injuries associated with hand tool use)
- Lifting (strain/muscle pulls)
- Ambient temperature extremes (cold and heat stress)
- Pinches and compressions
- Heavy equipment hazards (rotating equipment, hydraulic lines, etc.)
- Energized systems (contact with underground or overhead utilities)
- Vehicular and foot traffic
- Noise in excess of 85 dBA
- Flying projectiles

Each of these physical hazards is discussed in greater detail in Section 4.0 of the TtNUS health and Safety Guidance Manual. Additionally, information on the associated control measures for these hazards are discussed in Table 5-1 of this HASP. Some of these hazards and the associated control measures are discussed below due to the emphasis on incident and injury history.

### 6.2.1 Slips, Trips, and Falls

Conditions such as steep terrain and/or heavy vegetation may create an increased potential for slip, trip, and fall hazards.

- The safest approach to sample points will be identified and cleared to permit field crew access to sample locations.
- Establish anchor points and rope handrails for traversing/ascending/descending angles and slopes greater than 45% grade.
- Footwear with an adequate traction.
- Prepare work areas by removing tripping hazards (ruts, roots, debris). This is especially critical around rotating equipment, where a fall into the rotating apparatus could be life threatening.

### **6.2.2 Cuts or Other Injuries Associated with Hand Tool Use**

The clearing of brush and vegetation will be performed using hand tools that may include machetes, and brush axes. However, the use of hand tools has only briefly discussed. The control measures presented below will help minimize the potential for physical and cutting hazards.

- Wear leather or heavy cotton work gloves when using tools to protect against blisters, cuts, or other hand injuries.
- Wear eye protection (safety glasses with side shields) to protect the eyes from twigs, sticks, or flying debris.
- Clear the immediate cutting area of all personnel (radius of the tool swing area).
- Wear long pants and long-sleeved shirts to protect against abrasions.
- Wear hard hats if work will involve areas with overhead hazards (e.g., overhanging branches).
- Wear sturdy work boots.
- Inspect all hand tools [i.e., shovel handles (cracks, splinters, etc.), brush hook handles and blade attachment points, etc.)
- Ensure all hand tools are sharp to facilitate cutting action. This will avoid persons forcing the tool to cut and increasing potential hazards.
- Use the proper tool for the intended purpose. The proper tool is the acetate tube retention tub recommended by Geoprobe. This will avoid potential injury possibly created through improper cutting procedures.

### **6.2.3 Energized Systems (Contact with Underground or Overhead Utilities)**

Underground utilities such as pressurized lines, water, telephone, buried utility, and high voltage power lines may be present throughout the facility. **Therefore, all subsurface activities must be conducted following the requirements of the Tetra Tech NUS SOP for "Utility Locating and Excavation Clearance (HS-1.0)".** A copy of this SOP is provided as Attachment II. Clearance of underground and overhead utilities for each location will be coordinated with the NCBC Gulfport Public Works Department – Maintenance Division through Mr. Gordon Crane giving them a 10-Day advance notification.

Additionally, DPT operations will be conducted at a safe distance from overhead power lines as discussed in Attachment II. In certain cases, there may be a need to de-energize electrical cables using facility lockout/tagout procedures to insure electrical hazards are eliminated. For this assistance from the Public Works Maintenance Division will be sought.

### 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. As previously discussed, some portions of the site include vegetated areas which increases the potential for field crews to encounter ticks, bees, mosquitoes/insects, snakes, and poisonous vegetation.

#### 6.3.1 Insect Bites and Stings

Various insects and animals may be present and should be considered. For example, fire ants present a unique situation when working outdoors in the southern portion of the United States. 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.

Insect/animal bites and stings are difficult to control given the climate and environmental setting of NCBC Gulfport. However, in an effort to minimize this hazard the following control measures will be implemented where possible.

- Commercially available bug sprays and repellents will be used whenever possible – Pesticides analytical screening includes chlordane, endrin, lindane, methoxychlor, toxaphene and heptachlor. Commercially available repellants may be used providing they don't contain substances which appear on the analytical list for pesticide analysis. Products such as DEET should not be applied directly to the skin due to potential irritation. This product, when permitted for use, should be applied over clothing articles.
- Where possible, loose-fitting and light-colored clothing with long sleeves should be worn. This will also aid in insect control by providing a barrier between the field person and the insects and to provide easy recognition of crawling insects against the lighter background. Pant legs should be secured to the work-boots using duct tape to prevent access by ticks. Mosquito nets are also recommended for use when commercially available repellents are not permitted.
- Clothing/limited body checks for ticks and other crawling insects should be conducted upon exiting heavily vegetated areas. Workers should perform a more detailed check of themselves when showering

in the evening. Ticks prefer moist areas of the body (arm-pits, genitals, etc.) and will migrate to those locations.

- The FOL/SSO will preview all access routes and work areas in an effort to identify physical hazards including nesting areas in and around the work sites. These areas will be flagged and communicated to all site personnel.
- The FOL/SSO must determine if site personnel (through completion of Medical Data Sheets), suffer allergic reactions to bee and other insect stings and bites. Field crew members who are allergic to bites should have their emergency kit containing antihistamine and a preloaded syringe of epinephrine readily available.

Any allergies (insect bites, bee stings, etc.) must be reported on the Medical Data Sheet and to the SSO.

#### **6.3.1.1 Tick and Mosquito Transmitted Illnesses and Diseases**

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

Malaria may occur when a mosquito or other infected insect sucks blood from an infected person, and the insect becomes the carrier to infect other hosts. The parasite reproduces within the mosquito, and is then passed on to another person through the biting action. Acute symptoms include chills accompanied by fever and general flu like symptoms. This generally terminates in a sweating stage. These symptoms may recur every 48 to 72 hours.

#### **West Nile Virus (WNV)**

The WN is a type of virus that causes encephalitis or inflammation of the brain. The virus is transmitted by mosquitoes that acquire it from infected birds. To date the West Nile virus has claimed 7 people and has infected at least 55 others. Mississippi public health and animal health officials recently announced the first identification of WNV in Mississippi.

Symptoms generally occur five to 15 days following the bite of an infected mosquito, and range from a slight fever or headache to rapid onset of severe headache, high fever, stiff neck, muscle weakness, disorientation and death.

WN encephalitis has no specific treatment. In northern areas of the world, WN encephalitis cases occur primarily in the late summer or early fall. In southern climates, where temperatures are milder, WN encephalitis can occur year round. There is no vaccine.

No human case of WNV infection has been identified so far in Mississippi. However, St. Louis Encephalitis (SLE), Eastern Equine Encephalitis (EEE), and LaCrosse Encephalitis (LAC) viruses, also transmitted by mosquitoes, have all been identified in Mississippi previously. Human cases of all three have occurred in previous years.

### **6.3.2 Snakes and Other Wild Animals**

Indigenous animals including snakes (poisonous and non-poisonous varieties), raccoons, and other animals native to the region may be present at the site. These animals may be encountered if work locations encroach on nesting or territories claimed by these animals. This is not generally considered to be a problem at this location as most of the activities will take place in improved areas. It is however addressed as part some tasks that may take personnel off of improved areas.

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

#### **6.3.2.1 Snakes of Mississippi**

The poisonous snakes found in Mississippi are the coral snake, cottonmouth or water moccasin, copperhead, and the pygmy, timber, and diamondback rattlesnakes. All initial efforts will be directed to avoid, where possible, nesting and territorial areas.

##### **Coral Snake**

Coral Snakes are extremely poisonous snakes with small, blunt heads and brightly colored bodies. They do not strike as effectively as other venomous snakes, but they bite. They are dangerous if stepped on or handled. The *eastern* coral snake generally ranges from 20 to 40 inches in length. Its body is encircled by broad black and red bands separated by narrow yellow ones. Just behind the snake's black snout is a wide yellow band followed by a black band. Some are covered with black pigment that hides much of the red color. Some nonpoisonous snakes look like coral snakes because they have similar coloring. But coral snakes have red bands next to yellow ones. The harmless snakes have red bands next to black ones.

### **Cotton Mouth or Water Moccasin**

The water moccasin is a pit viper. It has a hollow, or pit, in the side of its head, between and slightly below the eye and nostril. Several harmless water snakes have a broad head like the moccasin, but they all lack the pit. Adult water moccasins are about 3 ½ feet long, though some grow to more than 5 feet long. They usually have broad dark bands across their bodies. Water moccasins feed on a wide variety of animals, including frogs, fish, small mammals, and birds. Water moccasins are most often seen in watery places, in the swampy backwaters of rivers and streams, and on marshy lakeshores. The bite of the water moccasin is highly dangerous and may be fatal. This snake is also called a cottonmouth because when threatened it throws back its head and flashes its white-lined mouth as a warning signal.

### **Copperhead**

Copperhead is also a poisonous pit viper. Its body has broad chestnut-red bands. Most copperheads are about 2 ½ feet long while the largest grow to about 4 feet. The copperhead bites people more often than most rattlesnakes, partly because it is silent and smaller, and is not so quickly noticed. The bite is seldom fatal to adults. This reptile usually eats rodents and other small mammals by killing them with their poison and swallowing them whole. Sometimes the snake eats insects and frogs. The copperhead can be identified by the presence of a pit in front of and below each eye. The snake's nostril is in front of the pit.

### **Rattlesnake**

The rattlesnake is a pit viper with a rattle on the end of its tail. The rattle is used to warn enemies to stay away. However, sometimes they give no warning before they bite. The rattlesnake always lifts its tail when it sounds where as harmless snakes that mimic the rattlesnake move their tail back and forth on top of dry leaves or grass.

The diamondback rattler is the heaviest of all poisonous snakes, though not the longest. It gets its name because diamond-shaped blotches edged with yellow cover its body. Diamondbacks rarely grow over 7 1/3 feet long.

Pigmy rattlesnakes are short, relatively thick-bodied snakes. They have a dark line through the eye on each side of the face and a series of dark, roughly circular spots running down the center of the back. These dorsal spots interrupt a thin reddish-orange stripe that runs along the midbody line. Pigmy rattlesnakes first line of defense is to remain motionless. Their color pattern makes them hard to see in grass or leaf litter, especially when they are coiled. They almost never warn approaching people by sounding their rattle. They are likely to remain motionless until stepped on or over.

The Timber Rattlesnake has a large body and ranges in length of five to six feet. It has a broad triangular head, vertical pupils and heat sensitive pits. The body color may be yellow, gray, dark brown or black, with dark, V-shaped crossbands across the back. The head is usually unpatterned and is covered with many small scales. A distinct rattle on the end of a darkly colored tail produces a buzzing sound when vibrated.

All rattlesnakes send out poison through two long hollow fangs, in its upper jaw. The poison forms in a pair of glands behind each eye on the upper jaw. The rattlesnake's fangs are folded back in the mouth when not in use. When an angry rattlesnake strikes, the fangs are erected and the mouth opened wide. Most rattlesnakes eat birds, small mammals, amphibians and reptiles. The larger rattlers rank among the most dangerous of snakes and should be avoided

#### **6.3.2.2 Snake Bite**

However, should field personnel come in contact with these animals and receive a bite, the following actions are necessary:

- Obtain a detailed description of the snake. This and the bite mark will enable medical personnel administering medical aid to provide prompt and correct antidotes, as necessary.
- Immobilize the bite victim to the extent possible. Physical exertion will mobilize the toxins (if poisonous varieties) from the bite point systemically through the body.
- Apply a pressure wrap (for extremities), just above and over the bite area. With a couple wraps of the pressure wrap in place over the bite area, apply a splint, and continue the application of the pressure wrap. The purpose for the splint is to restrict the movement of the extremity, this along with the pressure wrap will aid in restricting the toxins from leaving the site of the bite.
- Seek medical attention immediately.

#### **6.3.2.2 Alligators**

Alligators are indigenous to southeastern portion of the United States including southern Mississippi and may be present in ponds, swamps, drainage channels, and other wet areas. Alligators are fairly inactive in the winter months when the water temperatures are cool; their metabolism slows down and there is little need for food. The breeding season is mostly during April and May (but may begin as early as mid-February); male and female move around more during this time. Nests are constructed by the female

during June and July. The female will build a nest of leaves and vegetation up to 6 feet across and several feet high. She lays and buries her eggs in the center of this mound, allowing the warmth of the pile to incubate the eggs. Females typically lay over 50 eggs and each egg is about 3 inches long. The eggs incubate for about 9 weeks, and the female will watch and defend the nest during this time. As the young hatch, they "peep" and the female will assist them by digging them out of the nest. Newborn alligators are about 9 inches long and will stay near the female for up to a year. The female will continue to protect the young during this period.

Alligators are very protective of their domain during courtship and nesting. Alligators can outrun humans for short distances.

Other indication of their presence includes slides (areas marked by entering and exiting the water) and areas of cleared access for purposes of sunning (internal thermal regulation).

### **Control Measures**

- Treat alligators with extreme caution. Never approach an alligator, either on land or in the water.
- If sampling involves entering areas where alligators may be present, use an "alligator-watch" as a lookout.
- Use a remote sampling device (such as a sample jar/vial on a long pole) to reach into surface water and along waters edge, **Never Use Your Hand.**
- When accessing sample locations always insure you have left yourself a clear means of retreat. Obtain the sample as quickly as possible and immediately leave the area.

### **6.3.3 Poisonous Plants**

Various plants which can cause allergic reactions may be encountered during field work. These include, poison ivy, poison oak, and poison sumac. Contact with these plants may occur when clearing vegetation for access to work areas, or as a result of movement through these plants. An irritating, allergic reaction can occur after direct contact with the plant or indirect contact through some piece of equipment or clothing article. Oils are transferred from the plant to exposed skin, clothing, or piece of equipment. The degree of the irritating, allergic reaction can vary significantly from one person to the next.

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

- Identify plants for field personnel.

- Poison Ivy - Characterized by climbing vines, three leaf configuration ovate to elliptical in shape, deep green leaves with a reddish tint, greenish flowers, and white berries.
  - Poison Sumac - Characterized as a tall bush of the sumac family bearing compound leaves (7-13 entire leaflets), branched from a central axis, drooping, with axillary clusters of white fruit: However, these white fruits and berries may exist only during pubescent stages.
  - Poison oak - Characterized as similar to poison ivy consisting of a shrub, stems erect, 0.3 to 2.0 meters tall, leaflets consist of broad thick lobes coarsely serrated configuration, denser at the base, less so than the top.
- Protective measures may include wearing disposable garments such as Tyvek when clearing brush. These may be carefully removed and disposed of along with any oils accumulated from the plants.
  - Personal Hygiene - The oils obtained from the plants will only elicit an allergic response when the person's bare skin layer is contacted. This can be aggravated when skin pores are open (perspiring), or through breaks in the skin such as cuts, nicks, scratches, etc. This can also be accomplished when using excessively hot water for cleaning the skin, which also causes pores to open. Prior to break time, lunchtime, etc. personnel should wash with cool water and soap to remove as much of the oils as possible. In heavily vegetated areas of these plants, additional measures including barrier creams and blocks may be used to prevent the oils from accessing and penetrating the skin.

All of these plants present an airborne sensitization hazard when burned. This is not to occur as part of this scope of work and therefore will not be addressed.

#### **6.3.4 Inclement Weather**

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

#### **Tropical Storms and Hurricanes**

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

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

- High winds
- Excessive rainfall
- Storm surge

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

### HIGH WINDS

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

**Table 6-2  
TROPICAL STORM/HURRICANE RATING SCALE**

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

NA – Not Applicable

\* Based on the Saffir-Simpson scale

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

## EXCESSIVE RAINFALL

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

### Storm Surge

The storm surge is an abnormal rise in sea level accompanying a hurricane or tropical storm. The height of the storm surge (usually measured in feet) is the difference in sea level from the observed level (during the storm) and the level that would have occurred in the absence of the storm or hurricane. The more intense the storm or hurricane the higher the storm surge. Storm surges become even higher if they occur during periods of high tide.

The following table defines some of the terminology and possible calls to action regarding tropical cyclones:

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

<b>STORM DESCRIPTION</b>	<b>DEFINITION</b>	<b>ACTION</b>
Tropical Storm Watch	Tropical storm conditions are possible in the specified area of the watch, usually within 36 hours	Weather conditions should be monitored for further advisories.  Prepare for possible evacuation by local officials
Tropical Storm Warning	Tropical storm conditions are expected in the specified area of the warning, usually within 24 hours.	Work should be suspended in areas where lightning, high winds and rainfall could pose a threat to life.  Mandatory evacuations may be enforced by local officials.
Hurricane Watch	Hurricane conditions are possible in the specified area of the watch, usually within 36 hours.	Weather conditions should be monitored for further advisories.  Prepare for possible evacuation by local officials
Hurricane Warning	Hurricane conditions are expected in the specified area of the warning, usually within 24 hours.	Mandatory evacuations will most likely be enforced by local officials.

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

## 7.0 HAZARD MONITORING – TYPES AND ACTION LEVELS

Direct reading instruments will be used at the sites to evaluate the presence of detectable 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 Photoionization Detector or Flame Ionization Detector

In order to accurately monitor for any substances which may present an exposure potential to site personnel, a Photoionization Detector (PID) using a lamp energy of 10.6 eV or higher will be used. This instrument will be used to monitor potential source areas (boreholes, monitoring wells, free product recovery, etc.) and to screen the breathing zones of employees during site activities. The PID has been selected because it is capable of detecting potential 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 Tetra Tech NUS 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 specifies health and safety training and medical surveillance requirements for both Tetra Tech NUS and subcontractor personnel participating in on site activities.

#### 8.1.1 Requirements For All Field Personnel

All Tetra Tech NUS and subcontractor personnel who will engage in field associated activities as described in this HASP must have:

- Completed 40 hours of introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120(e).
- Completed 8-Hour Refresher Training, if the identified persons had introductory training more than 12 months prior to site work.
- Completed 8-hour Supervisory training in accordance with 29 CFR 1910.120(e)(4), if their assigned function will involve the supervision of subordinate personnel.

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

### 8.2 SITE-SPECIFIC TRAINING

Tetra Tech NUS will provide site-specific training to all Tetra Tech NUS employees and subcontractor personnel who will perform work on this project.

Figure 8-1 will be used to document the provision and content of the project-specific and associated training. All site personnel will be required to sign this form prior to commencement of site activities.

TtNUS will conduct a pre-activities training session prior to initiating site work. Additionally, a brief meeting will be held daily to discuss operations planned for that day. At the end of the workday, a short meeting may be held to discuss the operations completed and any problems encountered. This activity will be supported through the use of a Safe Work Permit System (See Section 10.10).

### **8.3 MEDICAL SURVEILLANCE**

#### **8.3.1 Medical Surveillance Requirements for Tetra Tech NUS and Subcontractor Personnel**

All Tetra Tech NUS and subcontractor personnel participating in project field activities will have had a physical examination. All physical examinations shall meet the minimum requirements of paragraph (f) of OSHA 29 CFR 1910.120. The physical examinations will be performed to ensure all personnel are medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained at the job site and made available, as necessary. Subcontractor personnel may use an alternative documentation for this purpose. The "Subcontractor Medical Approval Form" can be used to satisfy this requirement, or a letter from an officer of the company. The letter should state that the persons listed in the letter 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." The letter should further state the following:

- The persons listed have had physical examinations under this program within the frequency as determined sufficient by their occupational health care provider
- Date of the exam
- The persons identified have been cleared, by a licensed physician, to perform hazardous waste site work and to wear positive- and negative- pressure respiratory protection.

A sample Subcontractor Medical Approval Form and form letter have been provided to all eligible subcontractors in the Bid Specification package.

#### **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 that is available in Attachment V of this HASP. 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 EXCEPTION**

If through the execution of their contract elements the subcontractor will not enter the exclusion zone and there is no potential for exposure to site contaminants, subcontractor personnel may be exempt from the training and medical surveillance requirements with the exception of Section 8.2. Examples of

subcontractors who may qualify as exempt from training and medical surveillance requirements may include surveyors who perform surveying activities in site perimeter areas or areas where there is no potential for exposure to site contaminants and support or restoration services. **Use of this Subcontractor Exception is strictly limited to the authority of the CLEAN Health and Safety Manager.**



## **9.0 SPILL PREVENTION AND CONTAINMENT PROGRAM**

### **9.1 SCOPE AND APPLICATION**

This program applies to the single or aggregate accumulation of bulk storage materials (over 55-gallons). As the classification of certain materials such as IDW is unknown, all materials will be treated as hazardous, pending laboratory certification to the contrary. The types of materials for which this program will apply are as follows:

- Investigative Derived Wastes (IDW) such as decontamination fluids, soil cuttings, and purge and well development waters
- Resource Storage – Limited fuel and lubricant storage

The spill containment and control will be engaged any time there is a release of the above-identified materials from a containment system or vessel. This spill containment program will be engaged in order to minimize associated hazards.

### **9.2 POTENTIAL SPILL AREAS**

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

- Resource deployment
- Waste transfer
- Central staging

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

### **9.3 CONTAINMENT AREAS**

In order to facilitate leak and spill inspection and response, and to minimize potential hazards which may impact the integrity of the storage containers, the staging area for these substances will be structured as follows:

### 9.3.1 IDW

- 55 Gallon Drums (United Nations 1A2 configurations) – 4 Drums to a Pallet; labels and the retaining ring bolt and nut on the outside of each drum to facilitate easy access; Minimum 3 feet between each row of pallets. The decision to construct a bermed and lined area will be the decision of project management .
- Storage Tank – Polyethylene Construction – Tank shall be placed into a bermed enclosure of sufficient size to accommodate 110% of anticipated volume (Largest container plus 10% for rainwater and container displacement).

Regardless of container types selected, the staging area will be identified as a Satellite Storage Area with proper signage, points of contact in the event of an emergency, alternate contacts, and identification of stored material (i.e, Purge or decontamination waters, soil cuttings, etc.).

An Inventory Log will be maintained by the FOL regarding types of IDW and volumes generated. An updated Inventory List will be provided by the FOL to the designated Emergency Response Agency or Base Contact during days off and between shifts or phases of operations.

### 9.3.2 Flammable/POL Storage

Flammable Storage [i.e., fuels, decontamination solvents (Isopropanol)] and Petroleum/oil/lubricants (POL) will require proper dispensing containers and necessary storage for cumulative volumes in excess of 25 gallons. Storage and dispensing will comply with the following requirements:

- All fuels, which will be stored and dispensed from portable containers, will utilize safety cans.
- All portable hand held storage containers will be labeled per Hazard Communication requirements.
- Larger volumes stored for fueling equipment will be stored in approved mobile Above Ground Storage Tanks with secondary containment capable of holding the tank volume plus 10%.
- All portable flammable liquid storage tanks will be properly grounded and will have bonding capabilities for the transfer of loading and off-loading of its contents.
- All dispensing locations will be supported by a Fire Extinguisher positioned no closer than 50 feet from the storage tank, properly mounted and identified.
- The storage location will be well marked with proper signage, protective bumper poles and will have straight through access/egress for vehicles.

#### **9.4 MATERIALS HANDLING**

To minimize the hazards associated with moving drums and containers (i.e, lifting, pinch and compression points) material handling will be supported in the following manner:

- A drum cart with pneumatic tires will be required, if drums are used for IDW storage. This cart will be used to relocate drums within the staging and satellite storage location.
- In addition, a mechanized means such as a suitably equipped skid loader or back-hoe will be provided to move IDW containers from the field location to the staging and satellite storage location. This piece of equipment will also be used in site clearance and restoration as deemed appropriate and necessary.

Other means of material handling will be evaluated by the SSO based on their ability to minimize or eliminate material handling hazards.

#### **9.5 LEAK AND SPILL DETECTION**

To establish an early detection of potential spills or leaks, a periodic walk-around by the personnel staging or disposing of drums or in the Resource Deployment area will be conducted during working hours to visually determine that storage vessels are not leaking. If a leak is detected, the FOL will be notified and the Spill Containment/Control Response Plan as specified in Section 9.8 will be engaged. All inspections will be documented in the project logbook.

#### **9.6 PERSONNEL TRAINING AND SPILL PREVENTION**

All personnel will be instructed in the procedures for incipient spill prevention, containment, and collection of hazardous materials in the site-specific training. The FOL and/or the SSO will serve as the Spill Response Coordinators for this operation, should the need arise. Personnel through the course of this project will be drilled as part of testing the EAP.

#### **9.7 SPILL PREVENTION AND CONTAINMENT EQUIPMENT**

The following represents the minimum equipment that will be maintained at the staging areas at all times for the purpose of supporting this Spill Containment/Control Plan.

- Sand, clean fill, vermiculite, or other non combustible absorbent (Oil-dry)
- Extra Drums (55-gallon U.N. 1A2) should the need to transfer material from leaking containers arise.

- Pumps (Gas or Electric necessary for transferring liquids from leaking containers)/tubing
- Drum Repair Kit
- Shovels, rakes, and brooms
- Container labels
- Personal Protective Equipment
  - Nitrile outer gloves
  - Splash Shield
  - Impermeable over-boots
  - Rain suit

#### **9.8 SPILL CONTAINMENT/CONTROL RESPONSE PLAN**

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

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

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

## 10.0 SITE OPERATIONS AND CONTROL

Site operations and control will be facilitated through the use of established work zones and security and control of those zones. These activities will minimize the impact and spread of contaminants brought to the surface through subsurface investigative methods as well as protect personnel and visitors within these zones during ongoing operations.

### 10.1 WORK ZONES

Tetra Tech NUS will delineate and use work zones in conjunction with decontamination procedures to prevent the spread of contaminants to other areas of the site. A three-zone approach will be used for work at this site; an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. These will be used to control access to the work areas, restricting the general public, avoiding potentials to spread any contaminants, and to protect individuals who are not cleared to enter by way of training and/or medical surveillance qualifications.

#### 10.1.1 Exclusion Zone

An Exclusion Zone will be established at each sampling point/location. The purpose of the exclusion zone is to define a area where a more rigorous protocol for workers within what is determined to be an impact area. The impact area is that area which could be adversely impacted by either chemical or physical hazards. Exclusion zone size and dimensions will vary based on activities. Impact areas dimensions will be influenced by the following considerations:

- Physical and topographical features of the site
- Weather conditions
- Field and analytical measurements of air and environmental contaminants
- Air dispersion calculations
- Potential for explosion and dispersion
- Physical, chemical and toxicological properties of the contaminants being investigated
- Tasks to be conducted
- Decontamination procedures
- Potential for exposure

As conditions change the dimensions of the exclusion zone will change. However, the following dimension represent a starting point from which the exclusion zones will be expanded:

- Soil Boring. The exclusion zone for this activity will be set at the height of the mast, plus five feet surrounding the point of operation, with a minimum of 25 feet. This distance will also apply when subsurface soil sampling from behind these type rigs.
- Monitoring well development and sampling. The exclusion zone for this activity will be set at 10 feet surrounding the well head and discharge collection container.
- Surface soils and surface/groundwater sampling. The exclusion zone for this activity will be set at five feet surrounding the point of operation.
- Clearing and grubbing. The exclusion zone for this activity will be set at 10 feet surrounding someone with a brush hook or machete.
- Decontamination operation. The exclusion zone for this activity will be set at 25 feet surrounding the gross contamination wash and rinse as well as 25 feet surrounding the heavy equipment decontamination area.
- Investigative Derived Waste (IDW) area will be constructed and barricaded. Only authorized personnel will be allowed access.

All exclusion zones shall remain marked until the SSO has evaluated the restoration effort and has authorized changing the zone status.

Exclusion zones will be marked using barrier tape, traffic cones and/or drive poles. Signs will be posted to inform and direct site personnel and site visitors.

#### **10.1.2 Contamination Reduction Zone**

The contamination reduction zone will be split to represent two separate functions. The first function will be a control/supply point for supporting exclusion zone activities. The second function, which may take place a sufficient distance from the exclusion zone is the decontamination of personnel and heavy equipment.

In order to move from the exclusion zone to a separate location the following activities will be used:

- As samplers move from location to location during sampling activities, dedicated sampling devices and PPE will be washed of gross contamination, removed, separated, and bagged. Personnel will use hygienic wipes, such as Handy Wipes, as necessary for personnel decontamination until they can access the centralized decontamination unit. At the first available opportunity personnel will wash their face and hands. This is critical prior to breaks and lunch when contamination can be transferred to the mouth through hand to mouth contact.
- Muddy over-boots and gloves may be required to go through a gross contamination wash at the exclusion zone. These items will then be cleaned thoroughly at the centralized decontamination unit.
- Potentially contaminated tooling along with PPE will be wrapped, when necessary, for transport to the decontamination area.
- Upon completion of the assigned tasks all personnel will move through the central decontamination area to clean reusable PPE and field equipment. Based on ambient conditions medical evaluations may take place at the termination point of the decontamination line. These evaluations will include pulse rate, oral temperature, breathing rate to evaluate physiological demands on site personnel. As stated earlier, these evaluations will be based on ambient conditions and acclimation periods.

### 10.1.3 Support Zone

The Support Zone will consist of a field trailer, storage, lay-down areas, or some other uncontaminated, controlled point. The Support Zone for this project will include a staging area where site vehicles can be parked, equipment will be unloaded, and where food and drink containers will be maintained. In all cases, the support zones will be established in clean areas of the site.

## 10.2 **SAFE WORK PERMITS**

All Exclusion Zone work conducted in support of this project will be performed using Safe Work Permits to guide and direct field crews on a task by task basis. An example of the Safe Work Permit is included in Figure 10-1. The daily meetings conducted by the FOL/SSO will further support these work permits. The use of these permits will ensure that site-specific considerations and changing conditions are incorporated into the planning effort. All Safe Work Permits will require the signatures of either the FOL or the SSO.

All personnel engaged in on-site activities must be made aware of the elements indicating levels of protection and precautionary measures to be used.

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

Upon completion of the work for which the Safe Work Permit was assigned, the Safe Work Permit will be turned into the FOL or the SSO. Concerns, complaints, and suggestions may be made on the reverse of the Safe Work Permit for consideration by the FOL and/or the SSO. All permit turned in with suggestions, difficulties, or complaints will be forwarded to the PHSO for review.

The Safe Work Permit and the HASP will serve as the primary reference for work place evaluations and audits conducted to determine if the task is being conducted under the direction conveyed by the HASP and the Safe Work Permit.

### **10.3 SITE MAP**

Once the areas of contamination, access routes, topography, dispersion routes are determined, a site map will be generated and adjusted as site conditions change. This map will be posted to illustrate up-to-date information of contaminants and adjustment of zones and access points. This map will be posted at the field support trailer. Figure 10-2 will serve as the preliminary version until investigation reveals more information.

### **10.4 BUDDY SYSTEM**

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

**FIGURE 10-1  
SAFE WORK PERMIT**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

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

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

II. Names: \_\_\_\_\_

III. On-site Inspection conducted  Yes  No Initials of Inspector \_\_\_\_\_

TINUS

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

IV. Protective equipment required  
 Level D  Level B   
 Level C  Level A

Respiratory equipment required  
 Full face APR  Escape Pack   
 Half face APR  SCBA   
 SKA-PAC SAR  Bottle Trailer   
 Skid Rig  None

Modifications/Exceptions: \_\_\_\_\_

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


VI. Additional Safety Equipment/Procedures

Hardhat..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs)..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Chemical/splash goggles..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Radio..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash Shield..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Barricades..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash suit/coveralls (Type: _____) .... <input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type)..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe/shank Workboots..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Chemical Protective Over-boots (Type: _____) <input type="checkbox"/> Yes <input type="checkbox"/> No	

Modifications/Exceptions: \_\_\_\_\_

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

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

VIII. Additional Permits required (Hot work, confined space entry, excavation, etc.).  Yes  No  
*If yes, See SSO for appropriate permit*

IX. Special instructions, precautions: \_\_\_\_\_

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

## **10.5 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS**

Tetra Tech NUS 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. The MSDSs will be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request. The SSO will be responsible for implementing a site-specific Hazard Communication Program (See Section 5.0 of the TtNUS Health and Safety Guidance Manual). This includes collection of MSDSs, creation and maintenance of an accurate Chemical Inventory Listing, addressing container labeling and personnel training issues, and other aspects of Hazard Communication.

## **10.6 COMMUNICATION**

It is anticipated that site personnel will be working in close proximity during proposed field activities. In the event that site personnel are in isolated areas or are separated by significant distances, a supported means of communication between field crews will be utilized. Two-way radio communication devices, if needed, will be used only with NCBC Gulfport approval.

External communications will be accomplished utilizing telephones at predetermined and approved locations or through cellular phones. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of site activities, the FOL will determine and arrange for telephone communications, if it is determined a cellular means will not be used.

## **10.7 SITE VISITORS**

Potential site visitors that may be encountered during the performance of the field work could include the following:

- Personnel invited to observe or participate in operations by Tetra Tech NUS.
- Regulatory personnel (i.e., DOD, MDEQ, EPA, OSHA, etc.)
- 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 TOM or designee and following established base access procedures.

Once access to the base is obtained, all personnel who require access to Tetra Tech NUS work sites (areas of ongoing operations) will be required to obtain permission from the FOL and the Base Contact. Upon gaining access to the work site, all site visitors wishing to observe operations in progress will be required to meet the minimum requirements as stipulated 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 individuals name (proper identification required), who they represent, and the purpose for the visit. **The FOL is responsible for ensuring that site visitors are escorted at all times.**
- All site visitors will be required to produce the necessary information supporting clearance on to the site. This includes information attesting to applicable training (40-hours of HAZWOPER training required for all Southern Division Navy Personnel), and medical surveillance as stipulated in Section 8.3, of this document. In addition, to enter the sites 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 site and applicable operational areas. All visitors are required to observe the protective equipment and site restrictions in effect at the work areas visited. Any and all visitors not meeting the requirements as stipulated in this plan for site clearance will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause all on-site activities to be terminated until that visitor can be removed. Removal of unauthorized visitors will be accomplished with support from the Base Contact, if necessary. At a minimum, the Base Contact will be notified of any unauthorized visitors.

#### 10.8 SITE SECURITY

As this activity will take place at a Navy facility, the first line of security will be provided by the base gate restricting the general public. The second line of security will take place at the work site referring interested parties to the FOL and Base Contact.

Security at the work areas will be accomplished using field personnel. This is a multiple person operation, involving multiple operational zones. Tetra Tech NUS personnel will retain complete control over active operational zones.

The Base Contact will serve as the focal point for base personnel and interested parties and will serve as the primary enforcement contact.

## 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 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, and the HSM will have to be notified.

## 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 decontamination solutions, fuels, 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.

**MSDSs (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 Department of Transportation (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 GLOSSARY

ACGIH	American Conference of Governmental Industrial Hygienists
APR	Air Purifying Respirators
AOC	Area of Concern
CERCLA	Comprehensive Environmental Response Compensation, and Liability Act
CFR	Code of Federal Regulations
CNS	Central Nervous System
CRZ	Contamination Reduction Zone
CTO	Contract Task Order
DOD	Department of Defense
DOT	Department of Transportation
DPT	Direct-Push Technology
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FFA	Federal Facilities Agreement
eV	Electron Volts
FID	Flame Ionization Detector
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
HSM	Health and Safety Manager
IDW	Investigation-derived Waste
LEL/O <sub>2</sub>	Lower Explosive Limit/Oxygen
MSDS	Material Safety Data Sheet
N/A	Not Available
NAS	Naval Air Station
NIOSH	National Institute Occupational Safety and Health
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PEL	Permissible Exposure Limit
PHSO	Project Health and Safety Officer
PID	Photo Ionization Detector
PM	Project Manager
PPE	Personal Protective Equipment
RIFS	Remedial Investigation and Feasibility Study

SAP	Sampling and Analysis Plan
SCBA	Self Contained Breathing Apparatus
SOPs	Standard Operating Procedures
SSO	Site Safety Officer
STEL	Short Term Exposure Limit
SVOC	Semi-volatile Organic Compounds
TOM	Task Order Manager
TPH	Total Petroleum Hydrocarbons
TiNUS	Tetra Tech NUS, Inc.
TWA	Time Weighted Average
USTs	Underground Storage Tanks
UV	Ultra Violet
VOCs	Volatile Organic Compounds



**ATTACHMENT I**  
**INJURY/ILLNESS PROCEDURE**  
**AND REPORT FORM**

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

---

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

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

**ADDITIONAL QUESTIONS REGARDING WORKER'S COMPENSATION:**

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

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

**WHO IS COVERED:**

All employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits. All employees must follow the above injury/illness reporting procedures. Consultants, independent contractors, and employees of subcontractors are not covered by Tetra Tech's Worker's Compensation plan.



case no. \_\_\_\_\_

**WHAT IS COVERED:**

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



case no. \_\_\_\_\_

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

To: Corporate Health and Safety Manager  
Human Resource Administrator

Prepared by: \_\_\_\_\_

Position: \_\_\_\_\_

Project Name: \_\_\_\_\_

Office: \_\_\_\_\_

Project No. \_\_\_\_\_

Telephone: \_\_\_\_\_

**Information Regarding Injured or Ill Employee:**

Name: \_\_\_\_\_ Office: \_\_\_\_\_

Home address: \_\_\_\_\_ Gender: M  F  No. of dependents: \_\_\_\_\_

Marital status: \_\_\_\_\_

Home telephone: \_\_\_\_\_ Date of birth: \_\_\_\_\_

Occupation (regular job title): \_\_\_\_\_ Social Security No.: \_\_\_\_\_

Department: \_\_\_\_\_

Date of Accident: \_\_\_\_\_ Time of Accident: \_\_\_\_\_

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

Street address: \_\_\_\_\_

City, state, and zip code: \_\_\_\_\_

County: \_\_\_\_\_

**Narrative Description of How Accident Occurred:** (Be specific. Explain what the employee was doing and how the accident occurred.)



**TETRA TECH, INC.  
INJURY/ILLNESS REPORT**

Did employee die? Yes  No   
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 accident report.

**Witness(es):**

Name:

Address:

Telephone:

**Describe the Illness or Injury and Part of Body Affected:**

**Name the Object or Substance which Directly Injured the Employee:**

**Medical Treatment Required:**

No  Yes  First Aid Only

Physician's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Hospital or Office Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone No.: \_\_\_\_\_

**Lost Work Days:**

No. of Lost Work Days \_\_\_\_\_

Last Date Worked \_\_\_\_\_

Time Employee Left Work \_\_\_\_\_

Date Employee Returned to Work \_\_\_\_\_

No. of Restricted Work Days \_\_\_\_\_

None

**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:** \_\_\_\_\_

	Printed Name	Signature	Telephone No.	Date
Project or Office Manager				
Site Safety Coordinator				
Injured Employee				

**To be completed by Human Resources:**

**Date of hire:** \_\_\_\_\_ **Hire date in current job:** \_\_\_\_\_

**Wage information:** \$ \_\_\_\_\_ per \_\_\_\_\_ (hour, day, week, or month)

**Position at time of hire:** \_\_\_\_\_

**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 insurance carrier:**

**Date reported:** \_\_\_\_\_ **Reported by:** \_\_\_\_\_

**TeleClaim phone number:** \_\_\_\_\_

**TeleClaim account number:** \_\_\_\_\_

**Location code:** \_\_\_\_\_

**Confirmation number:** \_\_\_\_\_

**Name of contact:** \_\_\_\_\_

**Field office of claims adjuster:** \_\_\_\_\_

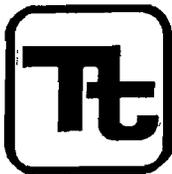


**ATTACHMENT II**

**STANDARD OPERATING PROCEDURE**

**FOR**

**UTILITY LOCATING AND EXCAVATION CLEARANCE**



TETRA TECH NUS, INC.

# STANDARD OPERATING PROCEDURES

Number	HS-1.0	Page	1 of 11
Effective	03/00	Date	Revision
			1
Applicability	Tetra Tech NUS, Inc.		
Prepared	Health & Safety		
Approved	D. Senovich <i>DS</i>		

Subject  
UTILITY LOCATING AND EXCAVATION CLEARANCE

## TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 PURPOSE .....	2
2.0 SCOPE .....	2
3.0 GLOSSARY .....	2
4.0 RESPONSIBILITIES.....	2
5.0 PROCEDURES.....	3
5.1 BURIED UTILITIES .....	3
5.2 OVERHEAD POWER LINES .....	4
6.0 UNDERGROUND LOCATING TECHNIQUES.....	5
6.1 GEOPHYSICAL METHODS .....	5
6.2 PASSIVE DETECTION SURVEYS .....	6
6.3 INTRUSIVE DETECTION SURVEYS.....	6
7.0 INTRUSIVE ACTIVITIES SUMMARY .....	7
8.0 REFERENCES .....	7

### ATTACHMENTS

1	Listing of Underground Utility Clearance Resources .....	8
2	Frost Line Penetration Depths by Geographic Location .....	10
3	Utility Clearance Form .....	11

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 2 of 11
	Revision 1	Effective Date 03/00

**1.0 PURPOSE**

Utilities such as electric service lines, natural or propane gas lines, water and sewage lines, telecommunications, and steam lines are very often in the immediate vicinity of work locations. Contact with underground or overhead utilities can have serious consequences including employee injury/fatality, property and equipment damage, substantial financial impacts, and loss of utility service to users.

The purpose of this procedure is to provide minimum requirements and technical guidelines regarding the appropriate procedures to be followed when performing subsurface and overhead utility locating services. It is the policy of Tetra Tech NUS, Inc. (TtNUS) to provide a safe and healthful work environment for the protection of our employees. The purpose of this Standard Operating Procedure (SOP) is to aid in achieving the objectives of the TtNUS Utility Locating and Clearance Policy. The TtNUS Utility Locating and Clearance Policy must be reviewed by anyone potentially involved with underground or overhead utility services.

**2.0 SCOPE**

This procedure applies to all TtNUS field activities where there may be potential contact with underground or overhead utilities. This procedure provides a description of the principles of operation, instrumentation, applicability, and implementability of typical methods used to determine the presence or absence of utility services. This procedure is intended to assist with work planning and scheduling, resource planning, field implementation, and subcontractor procurement. Utility locating and excavation clearance requires site-specific information prior to the development of detailed operating procedures. This guidance is not intended to provide a detailed description of methodology and instrument operation. Specialized expertise during both planning and execution of several of the geophysical methods may also be required.

**3.0 GLOSSARY**

Electromagnetic Induction (EMI) Survey - A geophysical exploration method whereby electromagnetic fields are induced in the ground and the resultant secondary electromagnetic fields are detected as a measure of ground conductivity.

Magnetometer – A device used for precise and sensitive measurements of magnetic fields.

Magnetic Survey – A geophysical survey method that depends on detection of magnetic anomalies caused by the presence of buried ferromagnetic objects.

Metal Detection – A geophysical survey method that is based on electromagnetic coupling caused by underground conductive objects.

Vertical Gradiometer – A magnetometer equipped with two sensors that are vertically separated by a fixed distance. It is best suited to map near surface features and is less susceptible to deep geologic features.

Ground Penetrating Radar – Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture.

**4.0 RESPONSIBILITIES**

Project Manager (PM)/Task Order Manager (TOM) - Responsible for ensuring that all field activities are conducted in accordance with this procedure and the TtNUS Utility Locating and Clearance Policy.

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 3 of 11
	Revision 1	Effective Date 03/00

Site Manager (SM)/Field Operations Leader (FOL) - Responsible for the onsite verification that all field activities are performed in compliance with approved SOPs or as otherwise directed by the approved project plan(s).

Site Health & Safety Officer (SHSO) – Responsible to provide technical assistance and verify full compliance with this SOP and the TtNUS Utility Locating and Clearance Policy. The SHSO is also responsible for reporting any deficiencies to the Corporate Health and Safety Manager (HSM) and to the PM/TOM.

Health & Safety Manager (HSM) – Responsible for preparing, implementing, and modifying corporate health and safety policy.

Site Personnel – Responsible for understanding and implementing this SOP and the TtNUS Utility Locating and Clearance Policy.

## 5.0 PROCEDURES

This procedure addresses the requirements and technical procedures that must be performed to minimize the potential for contact with underground and overhead utility services. These procedures are addressed individually from a buried and overhead standpoint.

### 5.1 Buried Utilities

Buried utilities present a heightened concern because their location is not typically obvious by visual observation, and it is common that their presence and/or location is unknown or incorrectly known on client properties. The following procedure must be followed prior to beginning any excavation that might potentially be in the vicinity of underground utility services. In addition, the Utility Clearance Form (Attachment 3) must be completed for every location or cluster of locations where intrusive activities will occur.

Where the positive identification and de-energizing of underground utilities cannot be obtained and confirmed using the following steps, the PM/TOM is responsible for arranging for the procurement of a qualified, experienced, utility locating subcontractor who will accomplish the utility location and demarcation duties specified herein.

1. A comprehensive review must be made of any available property maps, blue lines, or as-builts prior to site activities. Interviews with local personnel familiar with the area should be performed to provide additional information concerning the location of potential underground utilities. Information regarding utility locations shall be added to project maps upon completion of this exercise.
- 2., A visual site inspection must be performed to compare the site plan information to actual field conditions. Any findings must be documented and the site plan/maps revised. The area(s) of proposed excavation or other subsurface activities must be marked at the site in white paint or pin flags to identify those locations of the proposed intrusive activities. The site inspection should focus on locating surface indications of potential underground utilities. Items of interest include the presence of nearby area lights, telephone service, drainage grates, fire hydrants, electrical service vaults/panels, asphalt/concrete scars and patches, and topographical depressions. Note the location of any emergency shut off switches. Any additional information regarding utility locations shall be added to project maps upon completion of this exercise and returned to the PM/TOM.

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 4 of 11
	Revision 1	Effective Date 03/00

3. If the planned work is to be conducted on private property (e.g., military installations, manufacturing facilities, etc.) the FOL must identify and contact appropriate facility personnel (e.g., public works or facility engineering) before any intrusive work begins to inquire about (and comply with) property owner requirements. It is important to note that private property owners may require several days to several weeks advance notice prior to locating utilities.
4. If the work location is on public property, the state agency that performs utility clearances must be notified (see Attachment 1). State "one-call" services must be notified prior to commencing fieldwork per their requirements. Most one-call services require, by law, 48- to 72-hour advance notice prior to beginning any excavation. Such services typically assign a "ticket" number to the particular site. This ticket number must be recorded for future reference and is valid for a specific period of time, but may be extended by contacting the service again. The utility service will notify utility representatives who then mark their respective lines within the specified time frame. It should be noted that most military installations own their own utilities but may lease service and maintenance from area providers. Given this situation, "one call" systems may still be required to provide location services on military installations.
5. Utilities must be identified and their locations plainly marked using pin flags, spray paint, or other accepted means. The location of all utilities must be noted on a field sketch for future inclusion on project maps. Utility locations are to be identified using the following industry-standard color code scheme, unless the property owner or utility locator service uses a different color code:

white	excavation/subsurface investigation location
red	electrical
yellow	gas, oil, steam
orange	telephone, communications
blue	water, irrigation, slurry
green	sewer, drain

6. Where utility locations are not confirmed with a high degree of confidence through drawings, schematics, location services, etc., the work area must be thoroughly investigated prior to beginning the excavation. In these situations, utilities must be identified using such methods as passive and intrusive surveys, physical probing, or hand augering. Each method has advantages and disadvantages including complexity, applicability, and price. It also should be noted that in many states, initial excavation is required by hand to a specified depth.
7. At each location where trenching or excavating will occur using a backhoe or other heavy equipment, and where utility identifications and locations cannot be confirmed prior to groundbreaking, the soil must be probed with a hand auger or pole (tile probe) made of non-conductive material. If these efforts are not successful in clearing the excavation area of suspect utilities, hand shoveling must be performed for the perimeter of the intended excavation.
8. All utilities uncovered or undermined during excavation must be structurally supported to prevent potential damage. Unless necessary as an emergency corrective measure, TtNUS shall not make any repairs or modifications to existing utility lines without prior permission of the utility owner, property owner, and Corporate HSM. All repairs require that the line be locked-out/tagged-out prior to work.

#### 5.2 Overhead Power Lines

If it is necessary to work within the minimum clearance distance of an overhead power line, the overhead line must be de-energized and grounded, or re-routed by the utility company or a registered electrician. If protective measures such as guarding, isolating, or insulating are provided, these precautions must be

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 5 of 11
	Revision 1	Effective Date 03/00

adequate to prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

The following table provides the required minimum clearances for working in proximity to overhead power lines.

<u>Nominal Voltage</u>	<u>Minimum Clearance</u>
0 -50 kV	10 feet, or one mast length; whichever is greater
50+ kV	10 feet plus 4 inches for every 10 kV over 50 kV or 1.5 mast lengths; whichever is greater

**6.0 UNDERGROUND LOCATING TECHNIQUES**

**6.1 Geophysical Methods**

Geophysical methods include electromagnetic induction, magnetics, and ground penetrating radar. Additional details concerning the design and implementation of electromagnetic induction, magnetics, and ground penetrating radar surveys can be found in one or more of the TtNUS SOPs included in the References (Section 8.0).

**Electromagnetic Induction**

Electromagnetic Induction (EMI) line locators operate either by locating a background signal or by locating a signal introduced into the utility line using a transmitter. A utility line acts like a radio antenna, producing electrons, which can be picked up with a radiofrequency receiver. Electrical current carrying conductors have a 60HZ signal associated with them. This signal occurs in all power lines regardless of voltage. Utilities in close proximity to power lines or used as grounds may also have a 60HZ signal, which can be picked up with an EM receiver. A typical example of this type of geophysical equipment is an EM-61.

EMI locators specifically designed for utility locating use a special signal that is either indirectly induced onto a utility line by placing the transmitter above the line or directly induced using an induction clamp. The clamp induces a signal on the specific utility and is the preferred method of tracing since there is little chance of the resulting signals being interfered with. A good example of this type of equipment is the Schonstedt® MAC-51B locator. The MAC-51B performs inductively traced surveys, simple magnetic locating, and traced nonmetallic surveys.

When access can be gained inside a conduit to be traced, a flexible insulated trace wire can be used. This is very useful for non-metallic conduits but is limited by the availability of gaining access inside the pipe.

**Magnetics**

Magnetic locators operate by detecting the relative amounts of buried ferrous metal. They are incapable of locating or identifying nonferrous utility lines but can be very useful for locating underground storage tanks (UST's), steel utility lines, and buried electrical lines. A typical example of this type of equipment is the Schonstedt® GA-52Cx locator. The GA-52Cx is capable of locating 4-inch steel pipe up to 8 feet deep.

Non-ferrous lines are often located by using a typical plumbing tool (snake) fed through the line. A signal is then introduced to the snake that is then traced.

Subject <b>UTILITY LOCATING AND EXCAVATION CLEARANCE</b>	Number HS-1.0	Page 6 of 11
	Revision 1	Effective Date 03/00

## **Ground Penetrating Radar**

Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture. In general, an object which is harder than the surrounding soil will reflect a stronger signal. Utilities, tunnels, UST's, and footings will reflect a stronger signal than the surrounding soil. Although this surface detection method may determine the location of a utility, this method does not specifically identify utilities (i.e., water vs. gas, electrical vs. telephone); hence, verification may be necessary using other methods. This method is somewhat limited when used in areas with clay soil types or with a high water table.

### **6.2 Passive Detection Surveys**

#### **Acoustic Surveys**

Acoustic location methods are generally most applicable to waterlines or gas lines. A highly sensitive Acoustic Receiver listens for background sounds of water flowing (at joints, leaks, etc.) or to sounds introduced into the water main using a transducer. Acoustics may also be applicable to determine the location of plastic gas lines.

#### **Thermal Imaging**

Thermal (i.e., infrared) imaging is a passive method for detecting the heat emitted by an object. Electronics in the infrared camera convert subtle heat differentials into a visual image on the viewfinder or a monitor. The operator does not look for an exact temperature; rather they look for heat anomalies (either elevated or suppressed temperatures) characteristic of a potential utility line.

The thermal fingerprint of underground utilities results from differences in temperature between the atmosphere and the fluid present in a pipe or the heat generated by electrical resistance. In addition, infrared scanners may be capable of detecting differences in the compaction, temperature and moisture content of underground utility trenches. High-performance thermal imagery can detect temperature differences to hundredths of a degree.

### **6.3 Intrusive Detection Surveys**

#### **Vacuum Excavation**

Vacuum excavation is used to physically expose utility services. The process involves removing the surface material over approximately a 1' x 1' area at the site location. The air-vacuum process proceeds with the simultaneous action of compressed air-jets to loosen soil and vacuum extraction of the resulting debris. This process ensures the integrity of the utility line during the excavation process, as no hammers, blades, or heavy mechanical equipment comes into contact with the utility line, eliminating the risk of damage to utilities. The process continues until the utility is uncovered. Vacuum excavation can be used at the proposed site location to excavate below the "utility window" which is usually 8 feet.

#### **Hand-auger Surveys**

When the identification and location of underground utilities cannot be positively confirmed through document reviews and/or other methods, borings must be hand-augered for all locations where there is a potential to impact buried utilities. The minimum hand-auger depth that must be reached is to be determined considering the geographical location of the work site. This approach recognizes that the

Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 7 of 11
	Revision 1	Effective Date 03/00

placement of buried utilities is influenced by frost line depths that vary by geographical region. Attachment 2 presents frost line depths for the regions of the contiguous United States. At a minimum, hand-auger depths must be at least to the frost line depth plus two (2) feet, but never less than 4 feet below ground surface (bgs). For augering, the hole must be reamed by hand to at least the diameter of the drill rig auger or bit prior to drilling. For soil gas surveys, the survey probe shall be placed as close as possible to the cleared hand-auger. It is important to note that a post-hole digger must not be used in place of a hand-auger.

#### **Title Probe Surveys**

For some soil types, site conditions, and excavation requirements, tile probes may be used instead of or in addition to hand-augers. Tile probes must be performed to the same depth requirements as hand-augers. Depending upon the site conditions and intended probe usage, tile probes should be made of non-conductive material such as fiberglass.

### **7.0 INTRUSIVE ACTIVITIES SUMMARY**

The following list summarizes the activities that must be performed prior to beginning subsurface activities:

1. Map and mark all subsurface locations and excavation boundaries using white paint or markers specified by the client or property owner.
2. Notify the property owner and/or client that the locations are marked. At this point, drawings of locations or excavation boundaries shall be provided to the property owner and/or client so they may initiate (if applicable) utility clearance.

Note: Drawings with confirmed locations should be provided to the property owner and/or client as soon as possible to reduce potential time delays.

3. Notify "One Call" service. If possible, arrange for an appointment to show the One Call representative the subsurface locations or excavation boundaries in person. This will provide a better location designation to the utilities they represent. You should have additional drawings should you need to provide plot plans to the One Call service.
4. Complete Attachment 3, Utility Clearance Form. This form should be completed for each excavation location. In situations where multiple subsurface locations exist within the close proximity of one another, one form may be used for multiple locations provided those locations are noted on the Utility Clearance Form. Upon completion, the Utility Clearance Form and revised/annotated utility location map becomes part of the project file.

### **8.0 REFERENCES**

TtNUS Utility Locating and Clearance Policy  
TtNUS SOP GH-3.1; Resistivity and Electromagnetic Induction  
TtNUS SOP GH-3.2; Magnetic and Metal Detection Surveys  
TtNUS SOP GH-3.4; Ground-penetrating Radar Surveys

Subject

UTILITY LOCATING AND  
EXCAVATION CLEARANCE

Number

HS-1.0

Page

8 of 11

Revision

1

Effective Date

03/00

**ATTACHMENT 1  
LISTING OF UNDERGROUND UTILITY CLEARANCE RESOURCES**

<b>ALABAMA</b> Alabama Line Location (800) 292-8525 Tucson Blue Stake Center (800) 782-5348	<b>Maine</b> Dig Safe – Maine (800) 225-4977
<b>Alaska</b> Locate Call Center of Alaska Inc. (800) 478-3121	<b>Maryland</b> Miss Utility (800) 257-777 Miss Utility of Delmarva (800) 282-8555
<b>Arizona</b> Arizona Blue Stake Inc. (800) 782-5348	<b>Massachusetts</b> Dig Safe – Massachusetts (800) 322-4844
<b>Arkansas</b> Arkansas One Call System Inc. (800) 482-8998	<b>Michigan</b> Miss Dig System (800) 482-7171
<b>California</b> Underground Service Alert North (800) 227-2600 Underground Service Alert South (800) 227-2600	<b>Minnesota</b> Gopher State One Call (800) 252-1166
<b>Colorado</b> Utility Notification Center of Colorado (800) 922-1987	<b>Mississippi</b> Mississippi One-Call System Inc. (800) 227-6477
<b>Connecticut</b> Call Before You Dig (800) 922-4455	<b>Missouri</b> Missouri One Call System Inc. (800) 344-7483
<b>Delaware</b> Miss Utility of Delmarva (800) 282-8555	<b>Montana</b> Utilities Underground Location Center (800) 424-5555 Montana One Call Center (800) 551-8344
<b>District of Columbia</b> Miss Utility (800) 257-7777	<b>Nebraska</b> Diggers Hotline of Nebraska (800) 331-5666
<b>Florida</b> Call Sunshine (800) 432-4770	<b>Nevada</b> Underground Service Alert North (800) 227-2600
<b>Georgia</b> Utilities Protection Center Inc. (800) 282-7411	<b>New Hampshire</b> Dig Safe – New Hampshire (800) 225-4977
<b>Idaho</b> Palouse Empire Underground Coordinating Council (800) 882-1974 Utilities Underground Location Center (800) 424-5555 Kootenai Country Utility Coordinating Council (800) 428-4950 Shoshone County One Call (800) 398-3285 Dig Line (800) 342-1585 One Call Concepts (800) 626-4950	<b>New Jersey</b> New Jersey One Call (800) 272-1000
<b>Illinois</b> Julie Inc. (800) 892-0123 Digger (Chicago Utility Alert Network) (312) 744-7000	<b>New Mexico</b> New Mexico One Call System Inc. (800) 321-ALERT Las Cruces-Dona Utility Council (505) 526-0400
<b>Indiana</b> Indiana Underground Plant Protection Services (800) 382-5544	<b>New York</b> Underground Facilities Protection Organization (800) 962-7962 New York City: Long Island One Call Center (800) 272-4480
<b>Iowa</b> Underground Plant Location Service Inc. (800) 292-8989	<b>North Carolina</b> The North Carolina One-Call Center Inc. (800) 632-4949
<b>Kansas</b> Kansas One-Call Center (800) 344-7233	<b>North Dakota</b> Utilities Underground Location Center (800) 795-0555
<b>Kentucky</b> Kentucky Underground Protection Inc. (800) 752-6007	<b>Ohio</b> Ohio Utilities Protection Service (800) 362-2764 Oil & Gas Producers Underground Protection Service (800) 925-0988
<b>Louisiana</b> Louisiana One Call (800) 272-3020	<b>Oklahoma</b> Call Okie (800) 522-6543

Subject  <b>UTILITY LOCATING AND EXCAVATION CLEARANCE</b>	Number <b>HS-1.0</b>	Page <b>9 of 11</b>
	Revision <b>1</b>	Effective Date <b>03/00</b>

**Oregon**  
 Utilities Underground Location Center  
 (800) 424-5555  
 Douglas Utilities Coordinating Council  
 (503) 673-6676  
 Josephine Utilities Coordinating Council  
 (503) 476-6676  
 Rogue Basin Utility Coordinating Council  
 (503) 779-6676  
 Utilities Notification Center  
 (800) 332-2344

**Pennsylvania**  
 Pennsylvania One Call System Inc.  
 (800) 242-1776

**Rhode Island**  
 Dig Safe – Rhode Island (800) 225-4977

**South Carolina**  
 Palmetto Utility Protection Service Inc.  
 (800) 922-0983

**South Dakota**  
 South Dakota One Call (800) 781-7474

**Tennessee**  
 Tennessee One-Call System (800) 351-1111

**Texas**  
 Texas One Call System (800) 245-4545  
 Texas Excavation Safety System (800) 344-8377  
 Lone Star Notification Center (800) 669-8344

**Utah**  
 Blue Stakes Location Center (800) 662-4111

**Vermont**  
 Dig Safe – Vermont (800) 225-4977

**Virginia**  
 Miss Utility of Virginia (800) 552-7001  
 Miss Utility (800) 257-7777  
 Miss Utility of Delmarva (800) 441-8355

**Washington**  
 Utilities Underground Location Center  
 (800) 424-5555  
 Grays Harbor & Pacific County  
 Utility Coordinating Council  
 (206) 535-3550  
 Utilities County of Cowlitz County  
 (360) 425-2506  
 Chelan-Douglas Utilities Coordinating Council  
 (509) 663-6111  
 Upper Yakima County  
 Underground Utilities Council  
 (800) 553-4344  
 Inland Empire Utility Coordinating Council  
 (509) 456-8000  
 Palouse Empire Utilities Coordinating Council  
 (800) 822-1974  
 Utilities Notification Center (800) 332-2344

**West Virginia**  
 Miss Utility of West Virginia Inc. (800) 245-4848

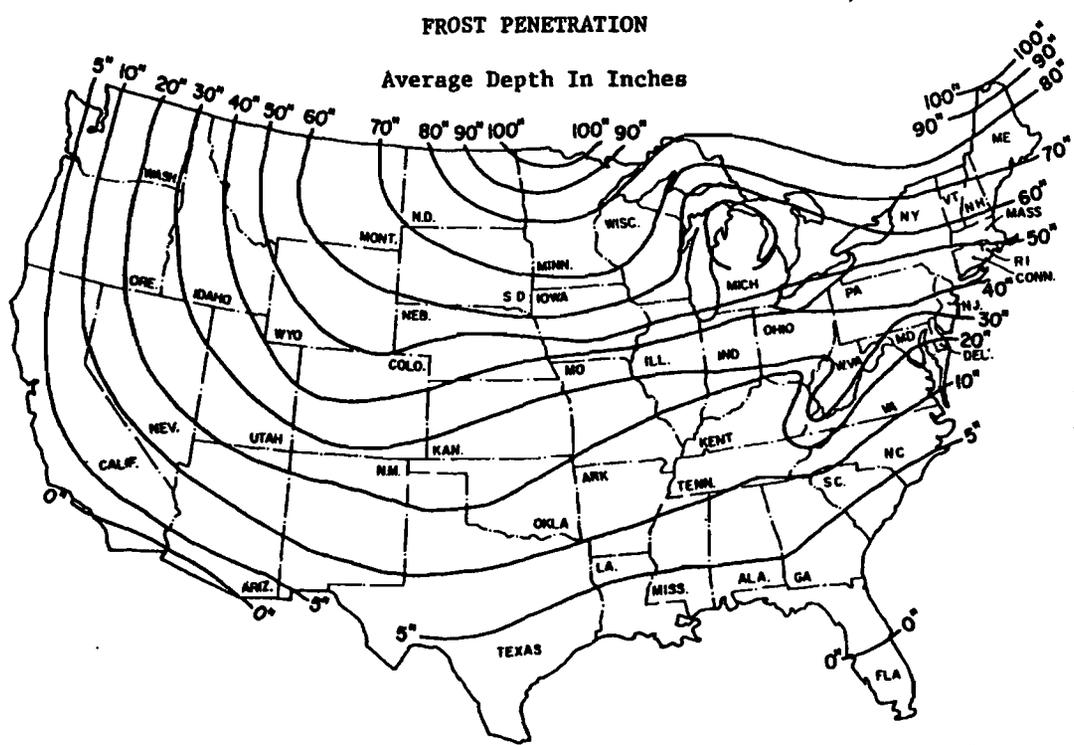
**Wisconsin**  
 Diggers Hotline Inc. (800) 242-8511

**Wyoming**  
 West Park Utility Coordinating Council  
 (307) 587-4800  
 Call-In Dig-In Safety Council (800) 300-9811  
 Fremont County Utility Coordinating Council  
 (800) 489-8023  
 Central Wyoming Utilities Coordinating Council  
 (800) 759-8035  
 Southwest Wyoming One Call (307) 362-8888  
 Carbon County Utility  
 Utility Coordinating Council (307) 324-6666  
 Albany County Utility Coordinating Council  
 (307) 742-3615  
 Southeast Wyoming Utilities Coordinating Council  
 (307) 638-6666  
 Wyoming One-Call  
 (800) 348-1030  
 Utilities Underground Location Center  
 (800) 454-5555  
 Converse County Utility Coordination Council  
 (800) 562-5561

Subject UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 10 of 11
	Revision 1	Effective Date 03/00

**ATTACHMENT 2**

**FROST LINE PENETRATION DEPTHS BY GEOGRAPHIC LOCATION**



Courtesy U.S. Department Of Commerce

Subject <b>UTILITY LOCATING AND EXCAVATION CLEARANCE</b>	Number HS-1.0	Page 11 of 11
	Revision 1	Effective Date 03/00

**ATTACHMENT 3  
UTILITY CLEARANCE FORM**

Client: \_\_\_\_\_ Project Name: \_\_\_\_\_  
 Project No.: \_\_\_\_\_ Completed By: \_\_\_\_\_  
 Location Name: \_\_\_\_\_ Work Date: \_\_\_\_\_  
 Excavation Method/Overhead Equipment: \_\_\_\_\_

1. **Underground Utilities** Circle One
- a) Review of existing maps? yes no N/A
  - b) Interview local personnel? yes no N/A
  - c) Site visit and inspection? yes no N/A
  - d) Excavation areas marked in the field? yes no N/A
  - e) Utilities located in the field? yes no N/A
  - f) Located utilities marked/added to site maps? yes no N/A
  - g) Client contact notified yes no N/A  
 Name \_\_\_\_\_ Telephone: \_\_\_\_\_ Date: \_\_\_\_\_
  - g) State One-Call agency called? yes no N/A  
 Caller: \_\_\_\_\_  
 Ticket Number: \_\_\_\_\_ Date: \_\_\_\_\_
  - h) Geophysical survey performed? yes no N/A  
 Survey performed by: \_\_\_\_\_  
 Method: \_\_\_\_\_ Date: \_\_\_\_\_
  - i) Hand augering performed? yes no N/A  
 Augering completed by: \_\_\_\_\_  
 Total depth: \_\_\_\_\_ feet Date: \_\_\_\_\_
  - j) Trench/excavation probed? yes no N/A  
 Probing completed by: \_\_\_\_\_  
 Depth/frequency: \_\_\_\_\_ Date: \_\_\_\_\_

2. **Overhead Utilities** Present Absent
- a) Determination of nominal voltage yes no N/A
  - b) Marked on site maps yes no N/A
  - c) Necessary to lockout/insulate/re-route yes no N/A
  - d) Document procedures used to lockout/insulate/re-route yes no N/A
  - e) Minimum acceptable clearance (SOP Section 5.2): \_\_\_\_\_

3. **Notes:**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Approval: \_\_\_\_\_  
 Site Manager/Field Operations Leader Date  
c: PM/Project File  
Program File

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

**Safety Guards:**

**Yes    No**

- Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? \_\_\_\_\_
- Hot pipes and surfaces exposed to accidental contact? \_\_\_\_\_
- All emergency shut offs have been identified and communicated to the field crew? \_\_\_\_\_
- Have emergency shutoffs been field tested? \_\_\_\_\_
- Results? \_\_\_\_\_
- Are any structural members bent, rusted, or otherwise show signs of damage? \_\_\_\_\_
- Are fueling cans used with this equipment approved type safety cans? \_\_\_\_\_

- Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? \_\_\_\_\_

**Portable Power Tools:**

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

**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 all 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?                      | <input type="checkbox"/> | <input type="checkbox"/> |
| - If so, has an 8-hour noise dosimetry test been performed?                | <input type="checkbox"/> | <input type="checkbox"/> |
| - Results of noise dosimetry: _____  |                          |                          |
| - Defects and repairs needed: _____  |                          |                          |
| - General Safety Condition: _____  |                          |                          |
| - Operator or mechanic signature: _____                                    |                          |                          |
| Approved for Use: <input type="checkbox"/> Yes <input type="checkbox"/> No |                          |                          |

\_\_\_\_\_  
Site Safety Officer Signature

**ATTACHMENT IV**  
**SAFE WORK PERMITS**

**SAFE WORK PERMIT  
GEOGRAPHICAL SURVEYING  
NCBC GULFPORT, GULFPORT, MISSISSIPPI**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Geographical Surveying
- II. Required Monitoring Instruments: None
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted  Yes  No Initials of Inspector TiNUS

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

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

Modifications/Exceptions: Minimum requirements include sleeved shirt and long pants and safety footwear.(except for magnetometer, geophysical surveys) Safety glasses, hard hats, and hearing protection will be worn when working near operating equipment.

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>None anticipated given the nature of surveying activities and limited contact w/ media.</u>	<u>None</u>	

- VII. Additional Safety Equipment/Procedures
- |                                     |   |  |   |
|-------------------------------------|---|--|---|
| Hard-hat.....                       | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |   |
| Safety Glasses .....                | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Safety belt/harness .....  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles.....        | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio .....  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash Shield.....                  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades.....  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash suits/coveralls .....        | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Gloves (Type - <u>Work</u> ).....  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots ..... | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Work/rest regimen .....  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

Modifications/Exceptions: Pant legs are to taped to work boots to prevent entry under the clothing by ticks and other insects. Use repellants applied directly to the clothing at all entry points(pants to boots, shirt to pants, etc.) Tyvek coveralls may be used in heavy brush to protect against natural hazards (e.g., ticks) and also to make identification easier. If working in areas where snakes are a threat, wear snake chaps to protect against bites.

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

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

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

- XI. Special instructions, precautions: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Avoid potential nesting areas. Wear light colored clothing so that ticks and other biting insects can be easily visible and can be removed. Decontamination is not required for this operation, it is however, required that persons perform a close body inspection upon exiting wooded or brush areas for ticks prior to entering vehicles and work trailers, etc.. Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather. Inspect all hand tools to insure in good condition prior to use (i.e., cutting tools are sharp, handles are free from defects, etc.) Maintain a ten foot radius around anyone clearing brush using a brush hook or machete

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
DECONTAMINATION ACTIVITIES  
NCBC GULFPORT, GULFPORT, MISSISSIPPI**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Decontamination of sampling equipment and machinery (i.e., DPT rigs, augers). Brushes and spray bottles will be used to decon small sampling equipment. Pressure washers or steam cleaning units will be used to decon the augers and DPT rig.
- II. Required Monitoring Instrument(s): None
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted  Yes  No Initials of Inspector TtNUS

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

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

Modifications/Exceptions: When using pressure washers, steam cleaners field crews will wear hearing protection, and face shields.

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>Chlorobenzene</u>	<u>VOCs any sustained</u>	<u>Dust Suppression/Area Wetting.</u>
<u>PCBs</u>	<u>readings &gt; 1 minute</u>	<u>Evacuate area only investigate</u>
<u>Decontamination Solvent</u>	<u>above background</u>	<u>when safe levels return.</u>
		<u>Per MSDS.</u>

- VII. Additional Safety Equipment/Procedures
- |                                      |   |                                       |   |
|--------------------------------------|---|---------------------------------------|---|
| Hard-hat.....                        | <input checked="" 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 .....                           | <input type="checkbox"/> Yes <input checked="" 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 |
| Steel toe Work shoes or boots .....  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen .....               | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical Resistant Boot Covers ..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Impermeable apron.....                | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |

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

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

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

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

XI. Special instructions, precautions: Chemical hazards with decontamination due to fluids such as isopropyl alcohol, etc. Site personnel will use PPE and prevent contact equipment. Refer to the manufacturer's MSDS regarding PPE, handling, storage, and first-aid measures related to decontamination fluids. For pressure washers or steam cleaners in excess of 3,000 psi use a fan tip of 25° or greater to control potential for water cuts. Inspect all hoses and fittings for structural integrity prior to use. Decontamination Pad construction – sloped a sufficient degree to allow collection at a sump away from the work area; constructed of 10-30 mil polyethylene sheeting should be covered in a light coating of sand if the surface becomes to slippery.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
MOBILIZATION AND DEMOBILIZATION ACTIVITIES  
NCBC GULFPORT, GULFPORT, MISSISSIPPI**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Mobilization and demobilization activities.
- II. Required Monitoring Instruments: None
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted  Yes  No Initials of Inspector TINUS

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

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

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, or coveralls, safety glasses and safety footwear. Hard hats and hearing protection will be worn when working near operating equipment

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>None anticipated</u>	_____	_____
_____	_____	_____
_____	_____	_____

- |  |  |
|--|--|
| VII. Additional Safety Equipment/Procedures  |  |
| Hard-hat..... <input type="checkbox"/> Yes <input type="checkbox"/> No                                 | Hearing Protection (Plugs/Muffs) .. <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                | Safety belt/harness..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No       | Radio..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No               |
| Splash Shield..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                 | Barricades..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No          |
| Splash suits/coveralls..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No        | Gloves (Type - )..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No    |
| Steel toe Work shoes or boots .... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   |

Modifications/Exceptions: Pant legs taped to work boots if in an area of heavy vegetation. Tyvek coverall may also be used to protect against natural hazards (e.g., ticks). If working in areas where snakes are a threat, wear snake chaps to protect against bites. Area which are frequented by alligators should also take the necessary precautions listed in Section 6.3 of this HASP

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

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

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

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

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
MULTI-MEDIA SAMPLING  
NCBC GULFPORT, GULFPORT, MISSISSIPPI**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Multi media sampling including groundwater, surface water, sediment, and IDW.
- II. Required Monitoring Instrument(s): PID with 10.6 eV lamp or FID
- III. Field Crew: \_\_\_\_\_
- IV. On-site inspection conducted  Yes  No Initials of Inspector TtNUS

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

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

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

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>Chlorobenzene</u>	<u>VOCs any sustained</u>	<u>Dust Suppression/Area Wetting.</u>
<u>PCBs</u>	<u>readings &gt; 1 minute</u>	<u>Evacuate area only investigate</u>
	<u>above background</u>	<u>when safe levels return.</u>

- VII. Additional Safety Equipment/Procedures
- |  |  |
|--|--|
| <p>Hard-hat ..... <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Safety Glasses ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Chemical/splash goggles ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Splash Shield ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Splash suits/coveralls ..... <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Steel toe Work shoes or boots ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Chemical Resistant Boot Covers ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> | <p>Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Safety belt/harness ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Radio ..... <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Barricades ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Gloves (Type - Nitrile) ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Work/rest regimen ..... <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Impermeable apron ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> |
|--|--|

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

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

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

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

XI. Special instructions, precautions: Avoid potential nesting areas. Snake chaps or leggings should be worn in areas prone to snakes. Remote sampling devices should be used for sample acquisition of surface waters and obstructed view areas due to potential for alligators and snakes. The SSO shall preview work areas for signs of habitation, nesting, or foraging in remote areas where sampling is to be conducted. Wear light colored clothing so that ticks and other biting insects can be easily visible and can be removed. Inspect clothing and body for ticks upon exiting wooded areas and high brush. Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather. Use proper lifting techniques as described on Table 5-1 for mobilization/demobilization.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
SOIL BORING AND SUBSURFACE SOIL SAMPLING OPERATIONS  
NCBC GULFPORT, GULFPORT, MISSISSIPPI**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Soil boring and subsurface soil sample collected via direct push technology.
- II. Required Monitoring Instruments: PID with 10.6 eV lamp or FID
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted  Yes  No Initials of Inspector TtNUS

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

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

Modifications/Exceptions \_\_\_\_\_

VI. Chemicals of Concern	Action Level(s)	Response Measures
<u>Chlorobenzene</u>	<u>VOCs any sustained</u>	<u>Dust Suppression/Area Wetting.</u>
<u>PCBs</u>	<u>readings &gt; 1 minute</u>	<u>Evacuate area only investigate</u>
	<u>above background</u>	<u>when safe levels return.</u>

- VII. Additional Safety Equipment/Procedures
- |                                      |   |                                  |   |
|--------------------------------------|---|----------------------------------|---|
| Hard-hat.....                        | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses .....                 | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness .....        | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles.....         | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio .....                      | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| Splash Shield.....                   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades.....                  | <input type="checkbox"/> Yes <input type="checkbox"/> No            |
| Splash suits/coveralls .....         | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Gloves (Type - Nitrile).....     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots .....  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen .....          | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical Resistant Boot Covers ..... | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Impermeable apron.....           | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |

Modifications/Exceptions: Reflective vests for high traffic areas. Tyvek coverall if there is a potential for soiling work clothes. PVC or PE coated Tyvek, if saturation or work clothes may occur.

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

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

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

XI. Special instructions, precautions: Follow safe work practices specified in Section 5.0 of this HASP. Complete an Equipment Inspection Checklist for the DPT Rig upon arrival to the site, and then every 10 day shift thereafter or after major repairs. Test all emergency stop devices initially then periodically to insure operational status. Decontamination of equipment will consist of soap and water wash and rinse with the use of a pressure washer until visibly clean. Personnel decontamination will consist of vacuuming outer garments and soap and water wash and rinse of outer PPE and hands and face prior to breaks or meals.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**ATTACHMENT V**  
**MEDICAL DATA SHEET**

**MEDICAL DATA SHEET**

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

Project \_\_\_\_\_

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