

FINAL

ACCIDENT PREVENTION PLAN

REMEDIAL INVESTIGATION /
FEASIBILITY STUDY / DECISION DOCUMENTS

**FORT MONMOUTH, OCEANPORT,
MONMOUTH COUNTY, NEW JERSEY**

BRAC 05 Facility
Contract W912DY-09-D-0062
Task Order 0012, Project No. 369857

Submitted To:

U.S. Army Engineering and Support Center
Huntsville, Alabama
and
U.S. Army Corps of Engineers, New York District



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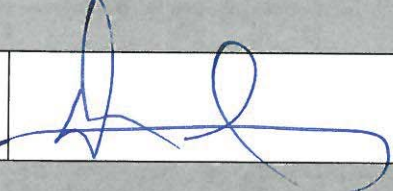
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ACCIDENT PREVENTION PLAN**

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The views, opinions, and/or findings contained in this document are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentations.

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LIST OF ACRONYMS

ACRONYM	DEFINITION
ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Activity Hazard Analysis
AED	Automatic Electric Defibrillator
APP	Accident Prevention Plan
BRAC	Base Realignment and Closure
CENAE	Corps of Engineers, New England District
CENAN	Corps of Engineers, New York District
CEO	Corporate Executive Officer
CHSM	Corporate Health and Safety Manual
CIH	Certified Industrial Hygienist
CFR	Code of Federal Regulations
COR	Contracting Officer Representative
CPR	Cardiopulmonary Resuscitation
DD	Decision Document
ERCP	Emergency Response and Contingency Plan
EM	Engineering Manual
EMAs	Emergency Management Agency
EMS	Emergency Medical Services
EPA	Environmental Protection Agency
ESHARP	Environmental, Safety, Health, and Risk Program
EZ	Exclusion Zone
F	Fahrenheit
FAR	Federal Acquisition Regulation
FTE	Full-Time Equivalent
FTL	Field Team Leader
FTMM	Fort Monmouth
HAZCOM	Hazard Communication
HAZWOPER	Hazardous Waste Operations and Emergency Response
H&S	Health and Safety
HSP	Health and Safety Plan
HTRW	Hazardous, toxic, and radiological wastes
IAW	In Accordance With
IDW	Investigation Derived Waste
KO	Contracting Officer
LTM	Long Term Monitoring
MSDS	Material Safety Data Sheets
NIOSH	National Institute for Occupational Safety and Health
OE	Ordnance and Explosives
OSHA	Occupational Safety and Health Administration
OSIC	On-Scene Incident Commander
OTJ	On-The-Job
PE	Professional Engineer

ACRONYM	DEFINITION
PELs	Permissible Exposure Limits
PGS	Parsons Government Services
PHSO	Project Health and Safety Officer
PI&T	Parsons Infrastructure and Technology
PM	Project Manager
PO	Purchase Order
PPE	Personnel Protection Equipment
PWeb	Parsons Intranet Website
PWS	Performance Work Statement
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI/FS	Remedial Investigation/Feasibility Study
SC	Subcontract
SC/NFA	Site Closure / No Further Action
ESHARP	Environmental, Safety, Health, and Risk Program
SHSP	Site Wide Safety and Health Plan
SSHO	Site Safety and Health Officer
SOP	Standard Operating Procedures
SOW	Scope of Work
STELs	Short-Term Exposure Limits
SSP	Subcontractor Safety Plan
START	Supervisory Training in Accident Reduction Techniques
TBD	To Be Determined
TLV	Threshold Limit Values
TO	Task Order
USACE	U.S. Army Corps of Engineers
USAESCH	U.S. Army Engineering and Support Center, Huntsville
UST	Underground Storage Tank
UXO	Unexploded Ordnance
WERS	Worldwide Environmental Remediation Services
WP	Work Plan

CHAPTER 1 BACKGROUND INFORMATION

1.1 INTRODUCTION

1.1.1 Accident prevention is a key program element to achieve compliance and strive towards our ultimate goal of zero safety incidents. Personnel active in site operations will be thoroughly familiar with the programs and procedures outlined in this Accident Prevention Plan (APP) prior to conducting work at the site.

1.1.2 This APP and the attached Site-Wide Health and Safety Plan (SHSP) include discussions of procedures and methods that are applicable to areas of work associated to the scope of work (SOW) and/or Performance Work Statement (PWS). Site-specific Work Plans (WPs) will reference the applicable components of the APP/HSP during discussions of work elements relating to the APP. The APP is a dynamic and living document that will be updated throughout the duration of the project.

1.2 PROJECT AUTHORIZATION AND DESCRIPTION

1.2.1 Parsons Government Services, Inc. (Parsons) is serving as the prime contractor to the U.S. Army Engineering and Support Center, Huntsville (USAESCH) for the performance of a Remedial Investigation/Feasibility Study (RI/FS) to achieve acceptance of Decision Documents (DD) at the Fort Monmouth (FTMM) site in Oceanport, Monmouth County, New Jersey. This project is being performed under task order (TO) 0012 issued under the Worldwide Environmental Restoration Services (WERS) contract number W912DY-09-D-0062.

1.2.2 This APP addresses RI field activities as well as long-term monitoring (LTM) of groundwater. Primary project activities will include mobilization/demobilization, soil sampling, groundwater well installation, groundwater sampling and analysis, and investigation derived waste (IDW) management. The location of Fort Monmouth is presented in **Figure 1.1**. This APP has been prepared in accordance with requirements identified within the U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual EM 385-1-1, Appendix A “Minimum Basic Outline for Accident Prevention Plan”. This APP has also been prepared in accordance with the requirements identified in the Parsons Environmental, Safety, Health, and Risk Program (ESHARP) Manual, Version 5.0 dated November 2015. It is supplemented by the SHSP for FTMM, which is included as **Appendix A** of this document. (Please refer to the SHSP for additional site information.)

1.3 PARSONS ACCIDENT EXPERIENCE

Parsons has a policy of compliance with governing safety standards and regulations, and a safety performance goal of zero accidents, operational mishaps, and injuries/illnesses. Parsons’ current Experience Modification Rate in 2016 is 0.52.

1.4 PHASES OF WORK AND HAZARDOUS ACTIVITIES REQUIRING ACTIVITY HAZARD ANALYSES (AHAS)

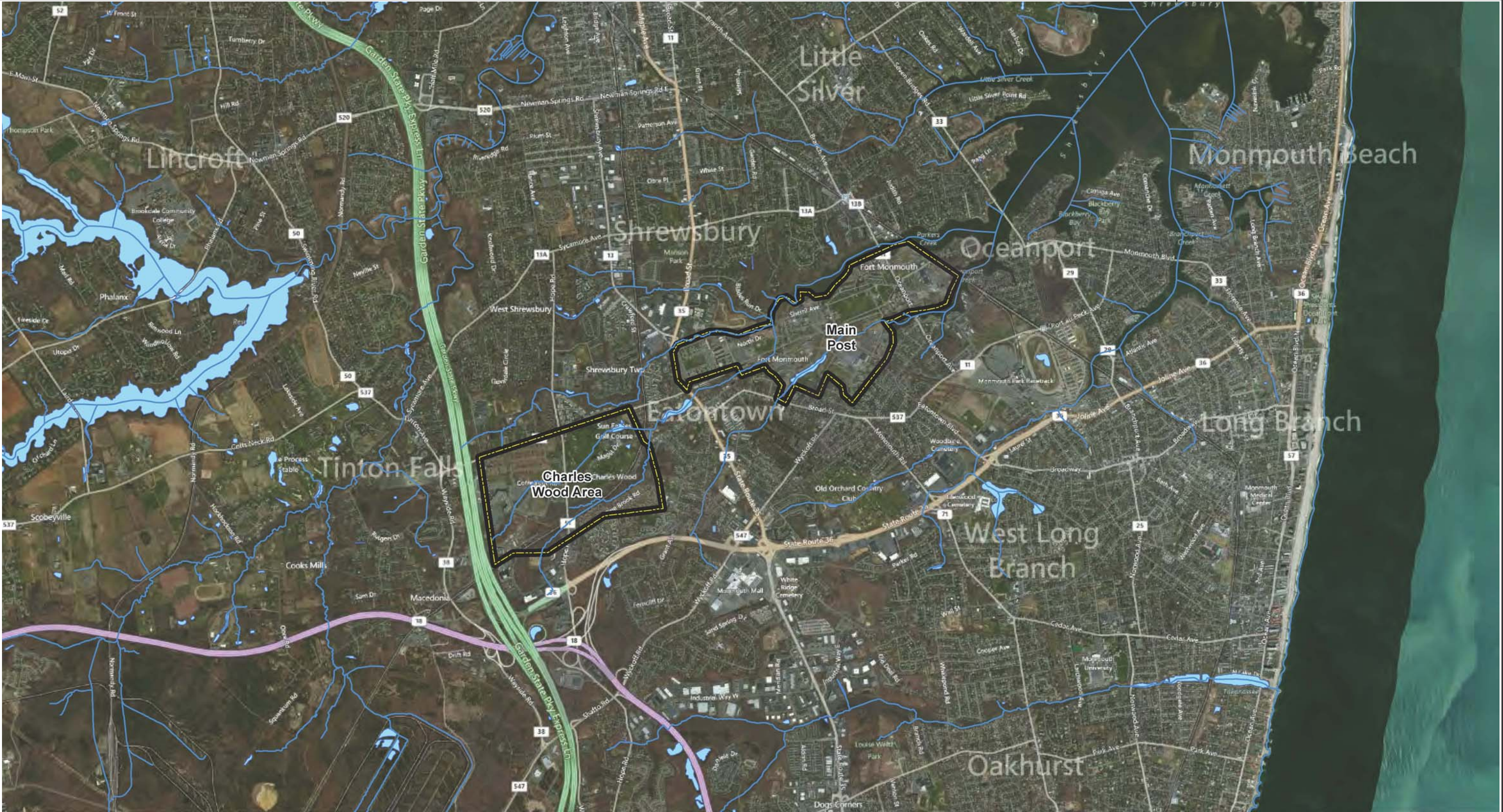
1.4.1 The project at FTMM addresses various sites that are currently in different stages of Hazardous, Toxic, and Radioactive Waste (HTRW) investigation and remediation. Primary project activities will include:

- Mobilization/demobilization;
- Soil sampling and analysis;
- Groundwater well installation;
- Groundwater sampling and analysis; and
- IDW management.

1.4.2 Project-specific Activity Hazard Analyses (AHAs) for each major phase/activity of work for the Fort Monmouth project are provided in **Appendix B** to this APP.

1
2
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Figure 1.1
Location of Fort Monmouth, New Jersey



Map Location



Site Description:
Fort Monmouth
Main Post & Charles Wood Area
Monmouth County, NJ
Longitude – 74° 2' 33.39" W
Latitude – 40° 18' 49.33" N
Latitude and Longitude
represents center point of Main Post

Legend

- Base Boundary
- Stream (USGS)
- Lake (USGS)

Image Source: Bing Aerial Imagery



PARSONS 401 Diamond NW Huntsville AL, 35806	Fort Monmouth New Jersey
Fort Monmouth Location	
DATE: November 7, 2012	FIGURE NUMBER: Figure 1.1
PROJECT NUMBER: 748810.01000	Created by: MA

CHAPTER 2 STATEMENT OF SAFETY AND HEALTH POLICY

2.1 PARSONS CORPORATE SAFETY AND HEALTH POLICY STATEMENT

2.1.1 As an industry-leading engineering, construction and technical services firm, Parsons is firmly committed to maintaining a safe and healthy working environment at its offices and project facilities. We share the National Safety Council Safety and Health Code of Ethics as principles guiding our commitment to safety.

1. We will hold safety and health as our highest core value;
2. Executive management will lead the safety improvement process;
3. Safety will be a responsibility shared by everyone in our organization;
4. Safety performance will be a key indicator of our organizational excellence and will be incorporated into our business processes;
5. We will communicate safety performance openly with employees;
6. Employees will be given the knowledge and skills necessary to safely perform their jobs;
7. We will extend our safety efforts beyond the workplace to include transportation, homes, and communities; and
8. We will continually strive to improve our safety and health processes.

2.1.2 To meet its health and safety objectives, Parsons employees are expected to act proactively with regard to health and safety issues. This requires the combined efforts of a concerned management, responsible and knowledgeable supervision, and conscientious, well-trained employees.

2.1.3 Parsons will take reasonable action to meet or exceed the applicable occupational health and safety requirements, domestically and internationally, and will continuously monitor and improve operations, procedures, technologies, and programs that are conducive to maintaining a safe and healthy working environment.

2.2 PARSONS SAFETY, HEALTH, AND RISK PROGRAM

Parsons has developed the ESHARP Management Program for the implementation of key environmental, health, and safety initiatives on Parsons' projects. Parsons Project Managers (PMs) maintain a copy of this document in their office to ensure application and conformance on projects.

CHAPTER 3 RESPONSIBILITIES AND LINES OF AUTHORITY

Parsons personnel and subcontractors are responsible for continuous adherence to this APP and safety and health procedures during the performance of their work. The section below presents personnel responsible for safety. An OSHA Competent Person shall be on site at all times and designated on a task by task basis. (Additional information on “Competent Person” is provided in Chapter 6, Section 6.2.1). If changes are made the document will be updated accordingly.

3.1 IDENTIFICATION AND ACCOUNTABILITY OF PERSONNEL RESPONSIBLE FOR SAFETY

3.1.1 Parsons Program Manager

Responsibilities include:

- Ensuring conformance with Parsons corporate, and other regulatory policies and procedures;
- Ensuring the project has the necessary resources to operate safely;
- Ensuring that the project personnel satisfy corporate and regulatory safety and health requirements; and
- Resume and certifications will be provided upon request.

3.1.2 Parsons Project Manager

Responsibilities include:

- Coordinating with Program Manager and client Project Manager;
- Providing management of project work;
- Setting the tone for safety on the job site;
- Ensuring personnel have the equipment, training, and resources to perform the job safely;
- Ensuring that the project personnel implement the project APP/SHSP;
- Ensuring that the project personnel have the appropriate regard for safe job performance; and
- Resume and certifications will be provided upon request.

3.1.3 Parsons Project Health and Safety Officer

Responsibilities of the Project Health and Safety Officer (PHSO) include:

- Overseeing the development, maintenance, and implementation of the APP/SHSP;
- Performing Safety Program audits;
- Providing consultation to Project Managers and Project Engineers;
- Making changes to the APP/SHSP if warranted by changed conditions;

- Evaluating occupational exposure monitoring/air sampling data and adjusting APP/SHSP requirements, as necessary;
- Administering and enforcing the general Safety and Health Program;
- Authorizing the level of personnel protection required;
- Investigating significant accidents and illnesses and implementing corrective action plans;
- Reviewing air-monitoring parameters based on expected contaminants;
- Establishing employee exposure monitoring notification programs;
- Developing site specific employee/community emergency response plans based on expected hazards;
- Providing technical, analytical, and report writing support to ensure the technical quality of deliverables to the customer;
- Reviewing and approval of the APP/SHSP, as required;
- Conducting field safety and health audits to ensure Safety and Health Plan conformance and policy compliance;
- Certifying that workers have proper training per OSHA 29 Code of Federal Regulation (CFR) 1910.120(e) and in accordance with EM 385-1-1;
- Updating equipment or procedures based on information obtained during site operations; and
- Resume and certifications will be provided upon request.

3.1.4 Field Team Leader

Site activities will be conducted under the management of the Field Team Leader (FTL). The FTL will oversee normal and emergency work and will perform any emergency notification. The FTL is also responsible for:

- Supervising site activities;
- Ensuring the project APP/SHSP is properly implemented;
- Coordinating with the Site Safety and Health Officer (SSHO) on safety-related matters;
- Presenting daily operational briefings;
- Maintaining logs and records in the field;
- Implementing changes to the APP/SHSP, as directed by the PHSO or SSHO;
- Performing periodic safety inspections of field operations to verify that the requirements of the APP/SHSP are being met; and
- Resume and certifications will be provided upon request.

3.1.5 Site Safety and Health Officer

Site activities will be conducted under the supervision of the SSHO. The SSHO will act as safety oversight for normal and emergency work and will perform any emergency notification as the On-Scene Incident Commander (OSIC). The SSHO is also responsible for:

- Implementing and enforcing provisions of the APP/SHSP;
- Providing daily inspections of site activities to identify safety and occupational health deficiencies and assure corrective action;
- Coordinating and implementing changes to the APP/SHSP, as directed by the PHSO;
- Conducting project-specific training for site personnel and visitors;
- Stopping any operation that threatens the health or safety of the team or surrounding population;
- Determining evacuation routes;
- Confirming each team member's suitability for work based on physician's recommendation;
- Presenting daily safety meetings;
- Maintaining safety logs and records in the field;
- Enforcing the level of personnel protection equipment required;
- Upgrading or downgrading levels of protection based on site observations or monitoring results;
- Investigating work-related accidents and illnesses and implementing corrective action plans;
- Ensuring air-monitoring is properly conducted based on expected contaminants;
- Implementing employee exposure monitoring notification programs;
- Stopping any operation that threatens the health or safety of the team or surrounding population;
- Upgrading levels of protection based on site observations or monitoring results; and
- Resume and certifications will be provided upon request.

3.1.6 U.S. Army Corps of Engineers

USAESCH has the primary responsibility for the administration of this TO. The U.S. Army Corps of Engineers, New York District (CENAN) has the role of Project Manager for the FTMM project. The U.S. Army Corps of Engineers, New England District (CENAE) has the role of Technical Lead for the FTMM project.

Parsons will notify CENAN and USAESCH within 24 hours of accidents that occur during the performance of work activities under this TO. Additional notification will be made to FTMM in accordance with the site emergency notification procedures.

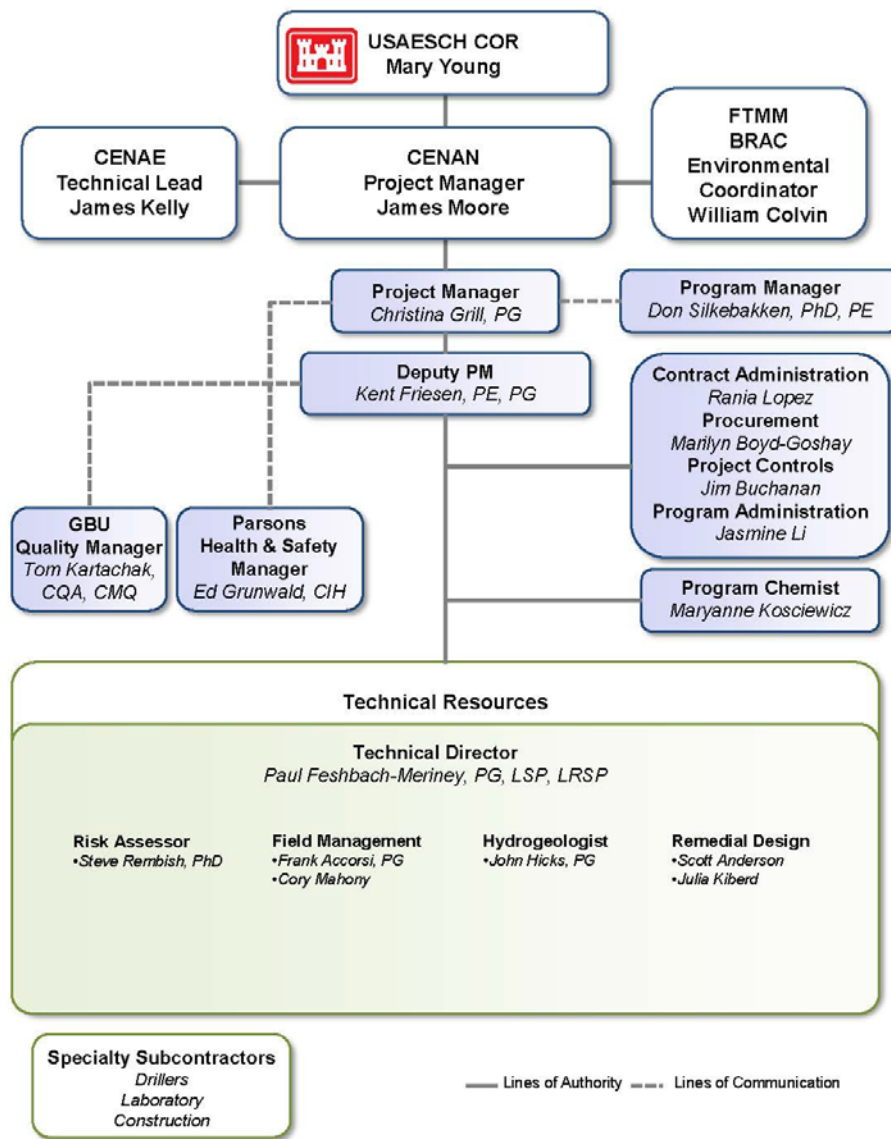
Parsons will not contact any stakeholder or customer without the concurrence of the CENAN Project Manager.

3.1.7 Fort Monmouth

FTMM is the customer for whom services will be provided.

3.2 LINES OF AUTHORITY REGARDING SAFETY

It is important for each employee involved with the project to know and understand the lines of authority. The organizational structure for this project is provided below. Personnel will be informed of this organizational structure during the training phase of the project. A copy of the project organization chart will also be posted on the jobsite in order to provide quick references to anyone needing to report or make suggestions regarding safety issues.



CHAPTER 4 SUBCONTRACTORS AND SUPPLIERS

4.1 IDENTIFICATION OF SUBCONTRACTORS AND SUPPLIERS

Table 4.1 details the current suppliers and subcontractors anticipated to supply equipment or render services to the personnel working at the FTMM site. The actual subcontractors and suppliers used may vary from the list in **Table 4.1**. Services and vendors will be selected based on government-approved procurement procedures.

Table 4.1
Subcontractors and Suppliers

Subcontractor or Supplier	Service Provided
ALS Environmental	Laboratory Analytical – Primary
SGS Accutest	Laboratory Analytical – Quality Assurance
SiREM	Specialty Laboratory
Microbial Insights	Specialty Laboratory
East Coast Drilling, Inc	Drilling and Direct Push
Cascade/Zebra	Drilling and Direct Push
AWT	IDW Disposal
Underground Services (SoftDig)	Utility Locating
Kennon Surveying	Surveying
Ditto	Printer Repair

4.2 SUBCONTRACTOR CONTROL AND SAFETY RESPONSIBILITIES

Each subcontractor is required to abide by site safety and health regulations. Parsons will work closely with each subcontractor to ensure they are aware of the health and safety regulations that apply to the work site. Personnel arriving onsite to conduct business or provide a service will first attend an initial site-specific safety briefing. If returning to the site, the individual will be required to register and sign-in before beginning work. The site-specific safety briefing will inform the individual of the policies and regulations that apply to the subcontractor while onsite. The briefing will also include hazards associated with the individual's area of work, as well as hazards specific to the site. Documentation of the subcontractor's attendance will be generated and the personnel involved will agree to abide by site regulations.

CHAPTER 5 TRAINING

5.1 SAFETY INDOCTRINATION

5.1.1 Safety indoctrination will be conducted for any site workers who are expected to work onsite. Training will be conducted prior to the job start-up and as needed thereafter. The PM, PHSO, FTL, or SSHO will conduct initial site-specific training prior to job start-up to ensure that employees have a thorough understanding of the APP, standard operating procedures (SOPs), and physical, safety, biological, and chemical hazards of the site.

5.1.2 This training will be conducted as necessary prior to new employees working on site. Site-specific health and safety training includes the following topics:

- Site Personnel and Duties;
- Site Description;
- Site Characterization;
- FTMM specific training requirements;
- Hazard Communication, Chemical and Physical Hazards (site-specific);
- Heat Stress and Cold Stress;
- Biological Hazards, including poison ivy, snakes, spiders, and bloodborne pathogens;
- Site Layout, Site Control Measures, and Work Zones;
- Personal Protective Equipment (PPE);
- Air and personnel monitoring
- Safe Work Practices and Engineering Controls;
- Emergency Response Plan;
- Evacuation Procedures;
- Emergency and PPE;
- Emergency Telephone Numbers;
- Directions to Hospital;
- Medical Surveillance Requirements;
- Health and Safety Training;
- Workers Compensation; and
- Accident Investigation and Reporting.

5.1.3 Employees will also be instructed in the use of the buddy system, which is a method of organizing work groups so that there is someone that is always available to:

- Provide his or her partner with assistance in an emergency;
- Observe his or her partner for signs of chemical or physical exposure;

- Periodically check the integrity of his or her partner's PPE; and
- Notify the emergency response personnel when an emergency occurs.

5.1.4 Employees will be made aware of the project emergency assistance network, the most probable route of evacuation from the site in the event of an emergency, and other emergency procedures included in the Project Plans. Employees will be briefed on the procedures and hazards specific to the site.

5.2 MANDATORY TRAINING AND CERTIFICATIONS

5.2.1 **Table 5.1** lists the training requirements for various project personnel. Site personnel are grouped into categories of supervisors, field teams, visitors, and casual subcontractors. With respect to training requirements, the supervisors are the FTL and the SSHO. The field teams include the RI team and long-term groundwater monitoring team. Visitors are those workers, such as deliverymen, repairmen, or subcontractors, will receive visitor training and will be escorted during their time onsite. Casual subcontractors include those who may operate at the site briefly and require an escort, such as drillers and surveyors, and waste disposers. The required training is shown in **Table 5.1**; however, additional training may be required at the discretion of the SSHO.

5.2.2 Any emergency response training during a project will be conducted by qualified instructors. The qualifications are relative to the specific emergency response operation being conducted and are outlined in EM-385-1-1. The emergency response training will include, at a minimum, the plans outlined in Subchapter 11.2 of this APP.

Table 5.1
Training Requirements

Training Content	Duration (If specified)	Frequency (If specified)	Personnel Categories (see Subchapter 3.1)			
			Supervisors	Field Teams	Visitors	Casual Subcontractors
Health and Safety for Hazardous Waste Operations and Emergency Response – 29 CFR 1910.120	40-Hours	Once	☒	☒		
Health and Safety for Hazardous Waste Operations and Emergency Response (Refresher) - 29 CFR 1910.120	8-Hours	Annually	☒	☒		
Supervised Field Experience– 29 CFR 1910.120	3-Days	Once	☒	☒		
Supervisor’s Health and Safety for Hazardous Waste Operations and Emergency Response – 29 CFR 1910.120	8-Hours	Once	☒	☒		
Construction Safety Training (to comply with EM 385-1-1, , paragraph 01.A.17 and 28.D.01)	30-Hours	30-hour (once)	☒ *			
Site-Specific Training (see Subchapter 5.1 for training contents)	--	Once	☒	☒		☒
Hazard Communication, Hazards of Materials Used/Encountered	--	Once	☒	☒		☒
First Aid and CPR (Minimum of 2 Trained Personnel Onsite) – Equivalent to American Red Cross Training	--	Every 3 years for First Aid; every 2 years for CPR	☒	☒		☒
Bloodborne Pathogen – 29 CFR 1910.1030 Protective Equipment, Containment and Disposal of Wastes	--	Annually				☒
Visitor Training – Operational Activities & Hazards, Boundaries of Work Area and Entry/Exit, Emergency Evacuation& Assembly Points, PPE	--	Per visit			☒	
Tailgate Safety Meetings – Potential Hazards & Risks, Encounters with Hazardous Materials to Date, Daily Activities	--	Daily, prior to operations	☒	☒	☒	☒
PPE – Proper wear, donning, and doffing	--	Prior to operations	☒	☒	☒	☒

* SSHO will be certified in a 30-hour OSHA Construction Safety Course.

5.2.1 Initial Training

Field personnel must have received training from their employer complying with those requirements specified by the USACE in EM 385-1-1 and 29 CFR 1910.120. Site personnel performing working onsite shall have completed this training. These personnel must also complete three days of supervised field experience. Copies of certificates of completion, as required, for Hazardous Waste Operations and Emergency Response (HAZWOPER) initial 40-hour or refresher course, medical status, first aid, and cardiopulmonary resuscitation (CPR) training, as applicable, will be maintained onsite for review.

5.2.2 Supervisory Training

5.2.2.1 The SSHO and FTL, as individuals responsible for supervising personnel engaged in site work, will have at least eight additional hours of supervisory training compliant with OSHA 29 CFR 1910.120 and 29 CFR 1926.65. This specialized training includes the employer's safety and health program and the associated employee training program, PPE program, and health hazard monitoring procedures and techniques.

5.2.2.2 In addition, the SSHO will have completed the 30-hour OSHA construction safety class or meet equivalent training requirements specified in EM 385-1-1 Paragraph 01.A.17.

5.3 HAZARD COMMUNICATION

In accordance with the OSHA Hazard Communication Standard (29 CFR 1920.1200 and 29 CFR 1926.59), copies of safety data sheets (SDS) for hazardous chemical materials that are used during site operations or that are present onsite will be available onsite from the SSHO. Hazard communication training in accordance with 29 CFR 1920.1200 and 29 CFR 1926.59, and EM 385-1-1 will be presented during the initial training. Training will include, but not be limited to, hazards or potential hazards associated with site activities, and any hazardous chemical materials brought to or found onsite. The SDSs for chemicals potentially present are maintained onsite by the SSHO.

5.4 FIRST AID, CPR, AND BLOODBORNE PATHOGENS

Personnel assigned to conduct fieldwork for this project do not conduct first aid or CPR as a primary job function. Rather, selected employees have been trained in CPR and first aid for emergency use only. Indoctrination to the bloodborne pathogens standard (29 CFR 1910.1030) will be provided to employees either during their first aid training or during the initial site health and safety meeting. Acting in the capacity of a designated emergency first aid provider is not mandatory, and anyone who is uncomfortable with the possibility of being so designated should notify the SSHO. In accordance with EM-385-1-1, at least two persons currently certified in CPR and first aid shall be present onsite during site operations.

5.5 VISITOR TRAINING

5.5.1 When a visitor arrives onsite, a site-specific visitor safety briefing shall be given by the SSHO. The visitor training will include:

- Emergency signals and procedures;
- Work areas and locations;
- FTMM specific training requirements;
- Names of field team leader and SSHO;
- Location and description of potential hazards and risks;
- A short briefing about chemical and physical hazards found onsite;
- Areas of the site that are closed to visitors; and
- Other topics as deemed appropriate.

5.5.2 Site visitors will be required to wear appropriate PPE, as dictated by Parsons and the SSHO during the visit. In addition, it is Parsons general policy to suspend active site operations during site visitations by outside observers. If visits to view active operations are required and necessary, Parsons will expect advance notice of the planned site visit so necessary arrangements and coordination can be discussed and reviewed.

5.5.3 Once visitors have provided Parsons with sufficient information and documentation to document their acceptability to visit a site, a qualified person will brief them on the hazards expected to be site and the health controls required. They will be escorted by the FTL or their designee, and will sign the visitor sign-in/out log (**Appendix D** of this APP). Visitors will be required to follow advice and instructions provided by the Parsons' FTL and SSHO. Failure to follow instructions or guidance may endanger the health and safety of the site visitor and other site personnel. Visitors not complying with provided site guidance and instructions will be escorted off the site.

5.5.4 Visitors to the site not satisfying the above conditions will be denied access to active sites under Parsons' control.

5.6 SAFETY MEETINGS

5.6.1 Daily Tailgate Meetings

Personnel who plan to enter the site during investigation activities will attend the daily tailgate safety meeting. The FTL or the SSHO is responsible for the daily tailgate safety meeting at the beginning of each day. This meeting will cover specific health and safety issues, site activities for that day, changes in site conditions, topics covered in the initial health and safety meeting as they apply to daily activities, PPE, personnel and equipment, potential physical hazards, emergency warning signal, rally point, etc. Issues discussed in the daily tailgate meeting will be documented on a form, which will be signed by the attendees and retained by the SSHO. A sample Daily Safety Briefing Form is provided in **Appendix D** of this APP.

5.6.2 Site Safety Committee Meetings

During weekly progress meetings, the FTL, SSHO, and subcontractor onsite managers (Site Safety Committee) will review and summarize upcoming work tasks, audits and inspections, competent person changes, and training. The Site Safety Committee will discuss and evaluate the risks of the upcoming work tasks and the planned mitigation measures for follow-on discussion during the daily tailgate safety meetings. Activities will be added to the summary at least two weeks in advance of the work. The Risk Mitigation Two-Week Look-Ahead Form, provided in **Appendix D** of this APP, can be used to plan risk mitigation strategies at the weekly progress meetings.

5.6.3 Take 5 Program

One tool Parsons employs to ensure that employees understand the hazards and control measures associated with their assigned task is through the use of a Take 5 card (see example in **Appendix D**). The Take 5 card is employed by the FTL as means to review safety concerns with team members prior to the start of an activity. The card is to be used by the FTL as a guide highlighting the topics that should be discussed during the meeting. The card provides a list of questions that the FTL or SSHO can use to prompt employee involvement. Input by team

members can provide the FTL or SSHO with insight into potential hazards or areas where safety and health protections systems can be improved. At the conclusion of the meeting the card is completed by the FTL, signed by team members, and forwarded to the SSHO. A Take 5 meeting must be conducted whenever a new activity is started during the day (i.e. a team taken from one activity to assist on another activity must conduct a 2nd meeting prior to the start of the new operation). The Take 5 card can be incorporated into the morning safety brief that is performed by the SSHO. In this instance the card is completed by the SSHO which is then signed by team members.

5.7 TRAINING DOCUMENTATION

5.7.1 Documentation of training requirements is the responsibility of each employer. Written documentation verifying compliance with 29 CFR 1910.120 (e)(3), (e)(4) (as applicable) and (e)(8) must be submitted to the SSHO prior to entering the site. Types of training documentation include 40-hour HAZWOPER, eight-hour refresher, supervisor training, 30-hour OSHA construction safety, bloodborne pathogens, hazard communication (HAZCOM), first aid, CPR, current physician's certificate, and hearing conservation training. Documentation of workers' current training credentials will be kept on site. Daily tailgate meetings will be documented using a form similar to the sample form presented in **Appendix D** of this APP.

5.7.2 If training deficiencies are identified, the SSHO will document the lack of training and request that the person or persons leave the site until the documentation of the training is presented. If the training can be conducted onsite, the SSHO will coordinate that training and allow the involved persons to remain onsite and under escort until that training deficiency is corrected.

CHAPTER 6 SAFETY AND HEALTH INSPECTIONS

6.1 RESPONSIBILITY

6.1.1 As part of the Parsons ESHARP Management, roles and responsibilities for safety audits, inspections and recordkeeping have been established. For each project, the Parsons PM is responsible for ensuring that routine internal safety inspections are performed, for tracking corrective actions to completion, and performing inspections. The Parsons PHSO is responsible for developing and implementing the project safety and health inspection program contained in this plan as well as conducting inspections.

6.1.2 The SSHO is responsible for conducting safety and health inspections or 'walkarounds', identifying and reporting deficiencies, and working with the project team to develop corrections. The SSHO will follow-up on any deficiency in a timely manner and halt operations if necessary in order to ensure that individuals are not exposed to an unsafe environment.

6.2 INSPECTIONS

6.2.1 Safety and health inspections will be conducted either by the SSHO, the PHSO, or other qualified appointee. Personnel responsible for safety and health inspections will meet the criteria of an OSHA competent person. An OSHA competent person is defined as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them." No work shall be performed unless a competent person is present on the job-site. Safety and health inspections will be conducted daily during field operations and when any of the following events occur:

- The introduction of new substances, procedures, or equipment that presents potential new hazards into the workplace;
- New, previously unidentified hazards are recognized;
- Receipt of complaints of unsafe conditions; or
- In the event of an occupational injury or illness.

6.2.2 Safety inspections are conducted by physically walking around the work area(s) and observing conditions for routine and emergency access, evacuation technique, PPE, work practices, site access control, Safety Data Sheets (MSDS) availability, first aid equipment, firefighting equipment, and sanitation. The inspections may include conversations with workers and supervisors and review of certifications and training documentation.

6.2.3 Inspection results, including deficiencies or nonconformances, will be documented. If safety hazards exist, it may be necessary to stop work until corrections are in place. Many deficiencies can be corrected immediately by placing barriers, installing signs, changing procedures, etc. The status of each deficiency will be tracked by the SSHO to ensure that a correction is made. If necessary, the SSHO will stop work until the deficiency is corrected. Follow-up reporting on deficiencies will be included on succeeding safety and health inspection documentation until the deficiency is resolved.

6.3 RECORDKEEPING

6.3.1 Safety inspections begin during the project mobilization phase, and continue through the life of the project, with the content and protocol changing based on the phase of work. Findings from the inspection are documented, and correction actions will be tracked to completion by the PM or the PHSO. The goal of the safety inspection process is to identify potential process failures and improvement opportunities.

6.3.2 A record of each inspection will be maintained in the project files. The record must include the name of the inspector, unsafe conditions and work practices identified, and actions taken to correct unsafe conditions and work practices. A standard safety inspection form has been developed to assist the inspections and provide documentation of safety and health non-conformances. The Safety Inspection form is located in **Appendix D** of this APP.

CHAPTER 7 SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE

7.1 SAFETY GOALS AND OBJECTIVES

As stated in our Corporate Safety and Health Policy Statement (Chapter 2 of this APP), Parsons holds safety and health as our highest core value. It is Parsons' objective to maintain a safe working environment and complete every job with zero accidents.

7.2 PARSONS SAFETY AWARD PROGRAM

The Program/Project Manager is responsible for developing and implementing a safety program that ensures the safety of project employees, subcontractors, visitors, and others involved in a program/project. One potential aspect of the safety program is development of an incentive/rewards program to recognize safety achievements. Parsons has recognized that a necessary tie-in to a meaningful safety program is a program that rewards exemplary conduct. Such rewards include, but are not limited to, the presentation of certificates or other tokens of appreciation to employees who demonstrate dedication to creating a safe and healthy environment. Bagels in the morning or pizza at lunch are examples of incentive rewards that may be used to let the project team members know they have taken extra steps where safety is involved, worked a designated number of man hours without incident or injury, or have made a conscious effort to make safety personal.

7.3 SAFETY VIOLATIONS

7.3.1 In the event of a safety violation, the individual (supervisor, manager, or employee) or company will be notified of the issue and the situation will be documented. After documentation is completed, the safety violator will be required to submit a written plan of action to correct the problem within two days of notification. Failure to comply will result in disciplinary action against the individual or the individual's company. If the violation is such that work on the site is deemed unsafe, work will be stopped until the problem is corrected and the SSHO inspects the site for safety. Once the corrections are in place and the site has been inspected for compliance, the SSHO will notify the FTL when work may resume. Subcontractor Safety Violation and Noncompliance forms are provided in **Appendix D** of this APP.

7.3.2 Each member of the project team will play a part in keeping operations safe. A brief description of each employee's safety responsibility is listed below:

- Senior management is responsible for leadership and support of the safety program, for its effectiveness and improvement, and for providing the safe guards necessary to assure a safe working environment;
- Supervisors are responsible for developing proper attitudes towards safety in themselves, and in those they supervise. Supervisors must ensure that operations are performed with the highest regard for the safety of personnel involved; and
- Employees are responsible for genuine cooperation with the safety program, including compliance with policies and procedures. Employees need to continually practice safety while performing their work duties.

- 1 7.3.3 Parsons holds the FTL, SSHO, and PM accountable for maintaining project safety
- 2 and health. These persons may be subject to safety inspections by Parsons senior management.
- 3 These inspections are used to measure safety and health performance and to provide feedback.

CHAPTER 8 MISHAP REPORTING

8.1 EXPOSURE DATA

8.1.1 Parsons labor hours expended on programs and projects within Parsons are reported weekly within Parsons Webtime Management System. When needed, features within the Parsons Webtime application allow field labor hours expended on projects to be reported and tallied separate from non-field time labor hours within Parsons' Financial Reporting System. Parsons Managers, Program Managers, PMs and other employees can specify and access ad hoc labor hour reports directly from their computers. Such reports can be tailored to individual employee reports or Program/Project/Work Breakdown Structure reports on a weekly or multi-weekly basis. As part of our Monthly Progress Reports and billing process, Parsons provides the USACE with information pertinent to total project hours and on-site labor hours expended on the projects performed. Subcontractor hours will be tracked and entered into Industry-safe system each month.

8.1.2 In addition, Parsons requires programs/projects that meet or exceed one or more of the following criteria to submit internal Parsons monthly man hour reports to the Parson Government Services (PGS) Safety Director:

- Parsons has five or more full-time equivalent (FTE) employees working in the field;
- Subcontractors (all tiers) have 25 or more FTE employees working in the field;
- Parsons is contractually responsible for construction on the project; and
- Parsons is contractually responsible for safety on the project.

8.1.3 Projects not surpassing these baseline levels do not need to provide internal reports to PGS management.

8.2 MISHAP REPORTS, INVESTIGATIONS, AND DOCUMENTATION

8.2.1 Mishap investigations are an important element of Parsons Safety Program because they provide useful information to prevent similar incidents. Mishaps include any unplanned, undesired event that occurs during the work being performed, and includes accidents, incidents, and near misses. All mishaps must be reported to an individual's supervisor immediately. No supervisor may decline to accept a report of a mishap from a subordinate.

8.2.2 Mishap investigations identify root causes, system failures, unsafe acts and conditions, and noncompliance with or inadequacy of the APP. All significant near miss, injury, illness, or major equipment or property damage incidents (including work interruptions) require an investigation.

8.2.3 The SSHO must conduct the on-site investigation immediately and prepare an incident investigation report in the event that one is required. The PM is responsible for ensuring that all incidents are reported and investigated in a timely manner and that appropriate corrective actions are identified and implemented. The SSHO usually leads investigations with the assistance of the SM.

8.2.4 The general information collected by the mishap investigation includes:

- Location, time, and date;
- Description of the operation being performed at the time of the mishap;
- Outline of the sequence of events that led up to the mishap;
- All personnel associated with the work task and incident; and
- All eyewitnesses.

8.2.5 The investigation team will proceed in the following manner:

- Identify, secure, and document any evidence, tools, or other materials pertinent to the investigation;
- Identify and interview involved employees and eyewitnesses;
- Provide a private place and time for each individual to prepare a written statement; and
- Prepare and issue a written report.

8.3 MISHAP REPORTING

8.3.1 In the event a mishap occurs at the site, the SSHO will investigate the mishap after all emergency actions have been taken. Engineering Form 3394 (**Appendix D**) will be filled out by the SSHO and submitted to the Parsons PSHM. A verbal notification should be given to the PSHM that the form is being filled out. Subcontractors must investigate incidents involving their employees or activities and submit an investigation report to the Parsons PM within 48 hours of an incident. The PHSO or SSHO shall finalize and sign the Accident Reports sent to USACE.

8.3.2 In accordance with EM 385-1-1, Section 01, Accident Reporting, paragraph D, all mishaps (property damage greater than \$5,000, days away injuries, days away illness, and restricted/transfer injuries) will be reported as soon as possible but not more than 24 hours afterwards to the contracting officer. Parsons will thoroughly investigate the mishap and submit the findings of the mishap along with the appropriate corrective actions to the contracting officer as soon as possible but no later than five working days following the mishap. Mishaps will be reported immediately if there is:

- a) a fatal injury/illness;
- b) a permanent totally disabling injury/illness;
- c) a permanent partial disabling injury/illness;
- d) the hospitalization (as inpatients) of one or more people resulting from a single occurrence;
- e) property damage of \$500,000 or more;
- f) the occurrence of three or more individuals becoming ill or having a medical condition which is suspected to be related to a site condition or a hazardous or toxic agent on site; or
- g) Unfavorable criticism from USACE.

1 8.3.3 Parsons will notify OSHA within 8 hours when there is the occurrence of a
2 fatality. Parsons will report all work-related in-patient hospitalizations, as well as amputations and
3 losses of an eye, to OSHA within 24 hours of the event.

4 8.3.4 In accordance with Data Item Description (DID) Worldwide Environmental
5 Services (WERS)-011.01, Parsons will immediately report to the contracting officer or
6 government designated authority any accident that could bring adverse attention or publicity to
7 the USACE.

8 8.3.5 Parsons has an online incident reporting tool for internal reporting. This system
9 can be used to file the initial report and the incident detail report; however, it is necessary to have
10 access to the Parsons PWeb in order to use this tool. The incident reporting tool can be accessed
11 at the following link:

12 <https://project1.parsons.com/Safety/login.htm>

13 8.3.6 Other lost-time or OSHA-recordable accidents/incidents will be formally reported
14 (i.e., using a written report) to USAESCH within five working days. The onsite USAESCH
15 representative will be notified within one day of any accident or injury that may require
16 reporting. An OSHA 300 log of work-related injuries and illnesses will be maintained at the site.
17 A copy of the OSHA 300 log is provided in **Appendix D**.

CHAPTER 9 MEDICAL SUPPORT

9.1 The medical support requirements necessary during activities at FTMM are described in the following sections.

9.2 During field activities, the SSHO is designated as the first responder for medical emergencies or minor injuries. At least two personnel trained in First Aid and CPR will be onsite. The names and qualifications of the designated individuals will be provided to FTMM and CENAE prior to the beginning of field activities.

9.3 In the event of a medical emergency, team members will render first aid; while additional medical assistance will be requested by calling 911. See **Table 9.1** for a list of Emergency Contacts. Additional information regarding Emergency Response can be found in Section 16 of the SHSP, included as **Appendix A** of this APP.

9.4 Parsons has implemented a system of incident intervention through a partnership with WorkCare in the event of a non-life threatening, non-medical emergency work-related injury or illness. Through this process, Parsons can leverage clinical expert resources to coordinate appropriate treatment care. WorkCare serves as a “medical advocate” for the employee, the WorkCare clinician provides responsive evaluation of the incident, assists the employee/employer in determining the most appropriate course of action, and consults with the treating physician. To initiate this process, the following guidelines will be followed:

- If an emergency, call # 911. If the injury or sickness is serious or life-threatening, summon medical response prior to contacting the PHSO, filing the incident report, or involving WorkCare;
- Workers will report work-related injuries immediately to their supervisor or to the SSHO. Work related injuries or illnesses which may require physician direction on appropriate attention should be reported to WorkCare # (888-449-7787) before seeking medical care; and
- If the injured employee requires medical care, an Order for Treatment of Work-Related Injury or Illness form (**Appendix D** of this APP) must be filled out and sent with the injured employee (or faxed to the clinic) at the time of initial evaluation.

9.5 The primary hospital for medical emergencies at Fort Monmouth is the Monmouth Medical Center, 300 2nd Ave, #21, Long Branch, NJ, Main # (732) 222-5200. A map showing the transportation route to the hospital is shown in **Figure 9.1**. Driving directions are provided in **Figure 9.2**. A map with driving directions will be placed in each field vehicle.

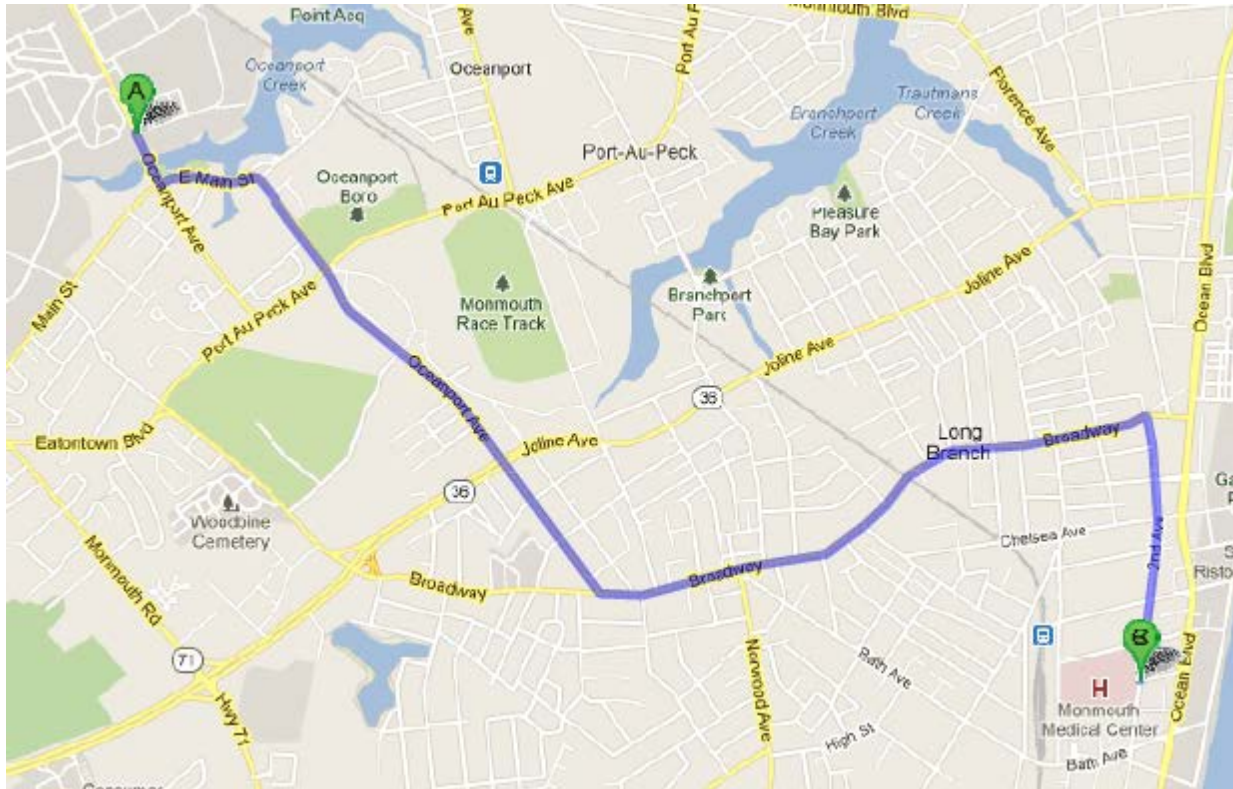
9.6 The nearest Worker’s Compensation Clinic is Meridian Occupational Health, 241 Monmouth Road, Suite 201, West Long Branch, NJ, Main # (732) 263-7650. A map showing the transportation route to the hospital is shown in **Figure 9.3**. Driving directions are provided in **Figure 9.4**. A map with driving directions will be placed in each field vehicle.

Table 9.1
Emergency Contacts

These contacts and maps should be available to personnel at the site. Should any situation or unplanned occurrence require outside assistance or support services, the appropriate contact from the following list should be made:

Agency/Contact	Activity	Telephone Number
Monmouth County Sheriff's Office	732-431-7139 (non emergency)	911
Oceanport Police Department	732-222-6301 (non emergency)	911
Fort Monmouth Fire and Emergency Services	732-532-1365 (non emergency)	911
Ambulance		911
WorkCare Incident Intervention		888-449-7787
Hospital	Monmouth Medical Center	732-222-5200
Worker's Compensation Clinic	Meridian Occupational Health	732-263-7650
National Response Center		800-424-8802
Poison Control Center		800-288-9999
Responsible Person	Telephone Numbers	
	Work	Other
SSHO – TBD		
Parsons PSHO – Ed Grunwald, C.I.H.	678-969-2394	Redacted - Privacy Act (cell)
USAESCH – COR Mary Young	256-895-1859	
CENAN PM – Jim Moore	917-790-8230	Redacted - Privacy Act (cell)
CENAE Technical Manager – Jim Kelly	978-318-8227	
FTMM BRAC Environmental Coordinator William Colvin	732-380-7064	
Parsons PM – Cris Grill	617-449-1583	Redacted - Privacy Act (cell)
Parsons Deputy PM – Kent Friesen	732-383-7201	Redacted - Privacy Act (cell)
Parsons FTL – TBD		
Parsons Worker's Compensation – Donna Miller		661-904-0978

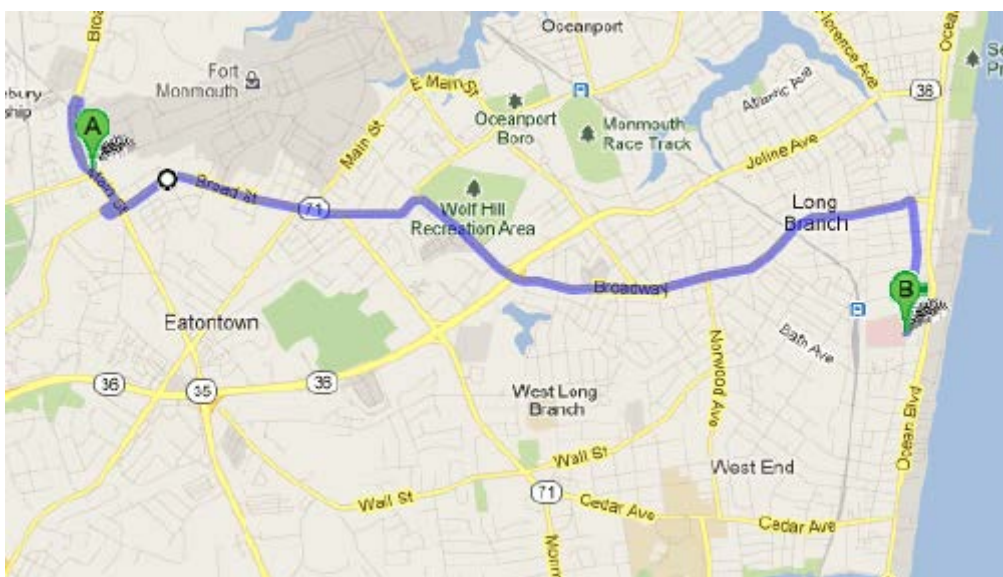
Figure 9.1
Route from Main Post, Fort Monmouth to
Monmouth Medical Center, 300 2nd Avenue #21, Long Branch, NJ



Driving Directions from Main Post, Fort Monmouth to the Monmouth Medical Center

1	Head southeast on Oceanport Ave	go 0.1 mi
2	Take the 1 st left onto E Main St	go 0.6 mi
3	Continue onto Oceanport Ave	go 1.1 mi
4	Turn left onto Broadway/County Rd 537 E	go 1.5 mi
5	Turn right onto 2 nd Ave	go 0.7 mi
6	Destination will be on the right.	

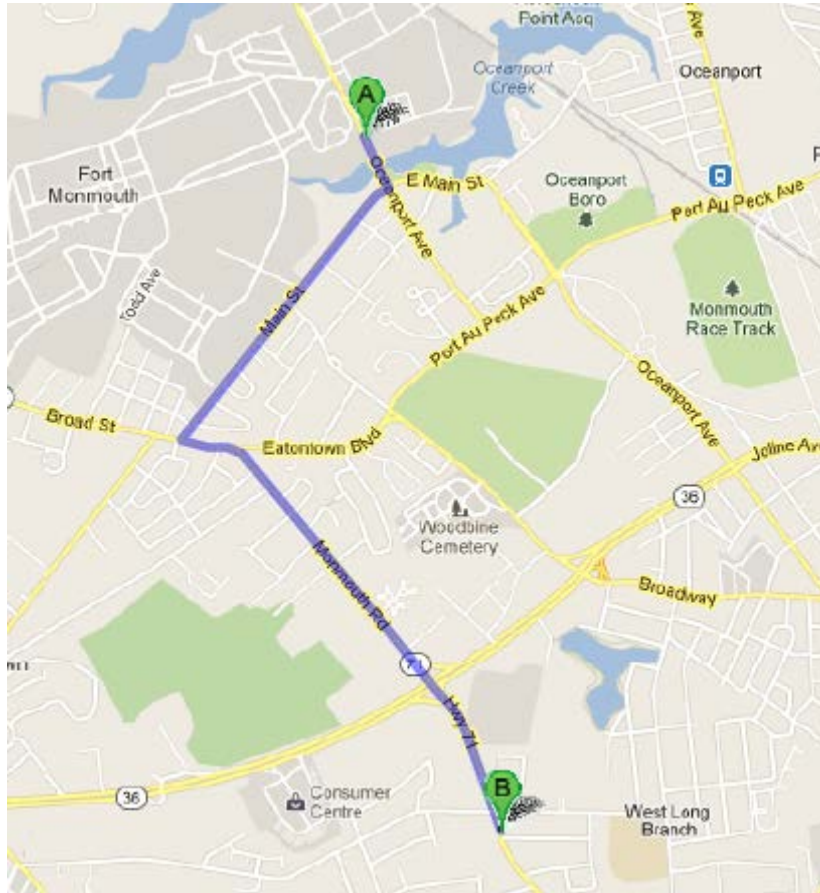
Figure 9.2
Route from Charles Wood Area, Fort Monmouth to
Monmouth Medical Center, 300 2nd Avenue #21, Long Branch, NJ



Driving Directions from Charles Wood Area, Fort Monmouth to
Monmouth Medical Center

1	Head northwest on Broad St/Main St toward Abbey Ave	go 0.3 mi
2	Slight right onto Shrewsbury Ave	go 433 ft
3	Take the 1 st left onto Broad St	go 0.6 mi
4	Turn right onto Lewis St	go 397 ft
5	Take the 1 st left onto State Route 71	go 1.3 mi
6	Continue onto County Rd 537 E/Eatontown Blvd	go 0.4 mi
7	Turn right to stay on County Rd 537 E/Eatontown Blvd	go 2.8 mi
8	Turn right onto 2 nd Ave	go 0.7 mi
9	Destination will be on the right.	

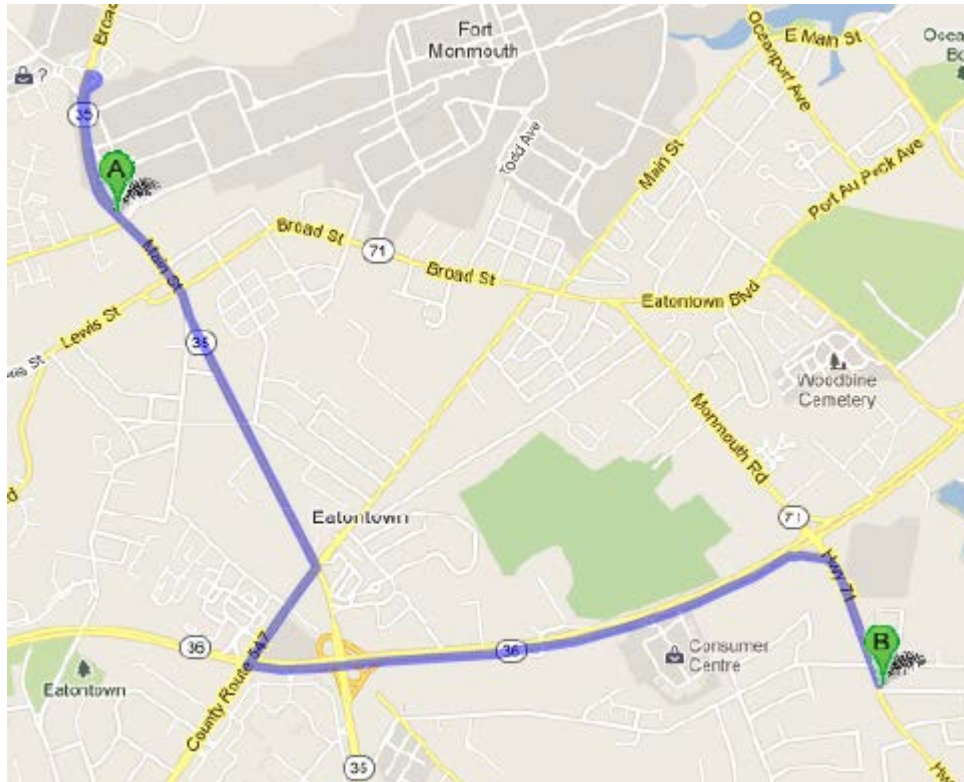
Figure 9.3
Route from Main Post, Fort Monmouth to
Meridian Occupational Health, 241 Monmouth Road, Suite 201,
West Long Branch, NJ



Driving Directions from Main Post, Fort Monmouth to
Meridian Occupational Health

1	Head southeast on Oceanport Ave	go 0.1 mi
2	Take the 1 st right onto Main St	go 0.8 mi
3	Turn left onto Broad St/County Rd 537 E	go 0.1 mi
4	Slight right onto NJ-71 S/Monmouth Rd	go 1.2 mi
5	Destination will be on the right.	

Figure 9.4
Route from Charles Wood Area, Fort Monmouth to
Meridian Occupational Health, 241 Monmouth Road, Suite 201,
West Long Branch, NJ



Driving Directions from Charles Wood Area, Fort Monmouth to
Meridian Occupational Health

1	Head northwest on Broad St/Main St toward Abbey Ave	go 0.3 mi
2	Slight right onto Shrewsbury Ave	go 433 ft
3	Take the 1 st left onto NJ-35 S/Broad St	go 1.4 mi
4	Turn right onto County Route 547 S/Wyckoff Rd	go 0.3 mi
5	Turn left onto NJ-36 E	go 1.4 mi
6	Turn right onto Monmouth Rd (signs for State Route 71 S)	go 0.4 mi
7	Destination will be on the right.	

CHAPTER 10

PERSONAL PROTECTIVE EQUIPMENT

10.1 GENERAL REQUIREMENTS

Personnel performing site tasks will wear and use the appropriate level and type of PPE for each individual task and as otherwise specified in this plan. This APP makes provisions for use of Level D PPE in accordance with the hazards and contamination level anticipated for each task or operation. The following sections describe the PPE requirements for activities at the FTMM site.

10.1.1 Responsibilities

10.1.1.1 SSHO

The SSHO must ensure that:

- Personnel are trained in the proper wearing, donning, and doffing procedures for the PPE used at the site;
- PPE used is properly fitted;
- PPE is in good serviceable condition;
- Replacement PPE is on hand and serviceable; and
- PPE use complies with applicable OSHA, USACE, and Parsons' regulations.

10.1.1.2 Site Personnel

Site personnel using PPE must ensure that:

- PPE is serviceable;
- PPE is clean; and
- Defective PPE will be turned in to the SSHO.

10.1.2 Hazard and Risk Assessment

Hazard and risk assessment is a continuing process and will be conducted throughout the duration of the project. As a general rule, levels of PPE will need to be reassessed if any of the following occur:

- Previously unidentified or unanticipated chemicals, conditions, or hazards are encountered;
- Ambient weather conditions affect the use of assigned PPE; or
- A new task is introduced or a previously assigned and evaluated task is expanded in scope.

10.1.3 PPE Changes

If work tasks are added to the project after approval of this APP that change the type or level of PPE, the SSHO will identify and assess the task hazards and relay that information to the PHSO and USACE Safety Specialist. The PHSO will prepare an amendment to the APP/SHSP

and submit the amendment for approval from USACE, as appropriate. The amendment will be added to the APP/SHSP upon approval.

10.2 TASK-SPECIFIC LEVELS OF PPE

10.2.1 Special PPE Considerations

The following special considerations will be observed in the selection of PPE:

- Hard hats will be required when working around heavy equipment or when an overhead hazard exists;
- Steel toe/shank boots are required when working around heavy equipment;
- Safety glasses will be selected that provide site personnel with the best protection from not only physical hazards, such as flying objects, but that also provide adequate splash protection. Safety glasses will be worn when an eye hazard exists (i.e., in wooded areas when using a chain saw or weed eater); and
- The SSHO will continually evaluate site tasks to identify hazards and will provide necessary and appropriate PPE to ensure the safety and health of site personnel, regardless of the activity they perform.

10.2.2 Level D PPE

Level D PPE will be worn during site activities and includes the following:

- Work clothes (i.e., long pants and shirt) or cotton coveralls. Tyvek coveralls may also be worn if handling heavy metal-contaminated soil;
- Leather work boots (disposable over boots may also be worn if deemed necessary). Safety toe may be required when working in conjunction with heavy equipment;
- Safety glasses with side shields or goggles when eye hazards exist;
- Hard hat when working around heavy equipment or when an overhead hazard exists;
- Hearing protection when high noise levels reach 85dB or greater;
- Leather or canvas work gloves when a scrape or cut hazard exists;
- High visibility vest when working on or adjacent to public roads or near heavy equipment; and
- Unless otherwise specified in the APP/SHSP, Level D PPE is sufficient for mobilization, sampling, site preparation, and demobilization activities at the FTMM site.

10.2.3 Respiratory Protection

10.2.3.1 Although Level C PPE is not anticipated during this project, respiratory protection is required whenever if it is determined necessary by the SSHO. The selection and use of respiratory protection must comply with the OSHA respirator standards and U.S. Army EM 385-1-1. Respirators must be NIOSH approved and properly fit tested. Fit test forms are located in **Appendix D**. Respirator use and maintenance must be documented.

10.2.3.2 When usage of a respirator is deemed necessary, the following will be completed:

- Project personnel that will be required to wear a respirator will be fit tested;
- Used cartridges for Level C operation will be disposed at the end of the day and new cartridges will be used for the next working day; and
- Respirators will be cleaned daily by project personnel.

10.3 PPE INSPECTION, MAINTENANCE, CLEANING, AND STORAGE

10.3.1 PPE will be inspected initially by the SSHO and prior to use to ensure that it is functional and that its structural integrity has not been compromised. Re-usable PPE (such as safety glasses and hard hats) will also be inspected by the wearer after each use, prior to storage, and prior to maintenance. If site personnel find that a piece of PPE is defective, it will be reported to the SSHO and the defective article will be repaired or replaced.

10.3.2 Any PPE stored and designated as emergency rescue equipment will be inspected at least monthly to ensure that it has not been adversely affected by prolonged storage. Any equipment found to be defective will be replaced immediately. This inspection will be recorded in the appropriate log. PPE will be used in compliance with the standard operating procedure for PPE included in **Appendix C** to this APP.

CHAPTER 11 SITE PLANS

11.1 LAYOUT PLAN

It is anticipated that field personnel will be using field vehicles during the daily site operations. However, if an office trailer is provided to Parsons by FTMM it will be used in coordinating field activities, support for the field crew/personnel, and temporary storage of field equipment.

11.2 FATIGUE MANAGEMENT PLAN

Not Applicable.

11.3 EMERGENCY RESPONSE PLAN

11.3.1 Procedures and Tests

11.3.1.1 The purpose of the Emergency Response and Contingency Plan (ERCP) is to define the general procedures to protect human health and the environment both in the event of an accident or emergency during the course of project activities at FTMM. The emergency response procedures developed for this investigation comply with 29 CFR 1910.120(1) and the guidelines given in *Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, Appendix B, Contingency Plan* (EPA, 1990). In addition, the ERCP meets the USACE requirements for the emergency response plan as presented in the Health and Safety Requirements Manual, EM-385-1-1 (USACE, 2014) paragraph 28.B.02, and the Safety and Occupational Health Requirements for HTRW Activities, ER-385-1-92 (USACE, 2003). The following elements are presented in this section:

- Pre-emergency planning;
- Personnel roles, lines of authority, training, and communications;
- Posted instructions and emergency contacts;
- Emergency recognition and prevention;
- Criteria and procedures for site evacuation;
- Procedures for decontamination and medical treatment;
- Evacuation routes and procedures;
- Emergency alerting and response procedure; and
- Critique of emergency responses and follow-up.

11.3.1.2 Emergency telephone numbers for the closest hospitals capable of providing emergency service, Poison Control Center, local Law Enforcement and Fire Department, and key safety and management personnel from USACE, FTMM and Parsons will be available to the SSHO and will be kept immediately available in the field vehicles and with the SSHO. The SSHO will be responsible for keeping the list current and for taking necessary action and contacting the appropriate emergency resources in the event of an emergency. Emergency contact numbers are provided in **Table 9.1**, Chapter 9 – Medical Support, of this APP.

11.3.1.3 If an emergency occurs while personnel are in site work zones, voice alarms or three blasts on an air horn (or vehicle horn) will be used to alert other site personnel that an emergency exists. On hearing the alarm, site personnel will cease work activities, secure the site, and proceed back through the marked ingress/egress corridor (if they are in the EZ) to assemble at the field vehicle or the designated rally point (designated at morning safety meeting).

11.3.1.4 The overall responsibility during emergencies rests with the SSHO. In case of emergency, the SSHO will implement the site emergency procedures. The SSHO is specifically responsible for the following:

- Assessing the situation and determine the existing hazards, potential for additional hazards, and need for additional response. Ensure the hazardous condition is stabilized, eliminated, or permanently fixed. If personnel or properties are jeopardized, a determination must be made to alert the local community;
- Locating victims, assessing their conditions, and making an on-scene determination of the resources needed to stabilize and transport;
- Implementing the site ERCP, including ordering site evacuations, coordinating firefighting efforts, and directing spill control and cleanup;
- Supervising site evacuation and decontamination procedures;
- Contacting emergency services such as the fire department, ambulance, and security services, as may be required or requested by the emergency rescue team;
- Assisting in providing first aid services and medical support or evacuation for injured or exposed personnel;
- Determining the cause of the incident and ways to prevent future occurrences; and
- Preparing a Form 3394 Accident Report (**Appendix D**) for submission to the USACE.

11.3.1.5 Onsite personnel are responsible for reporting emergencies immediately to their supervisors, alerting other employees, helping injured personnel, and assisting as directed to mitigate the incident.

11.3.1.6 Prior to initiating field activities, the following training will occur under the direction of the SSHO:

- Hazard communication;
- Emergency numbers; and
- Emergency procedures.

The training conducted will be part of the initial training conducted as discussed in Chapter 5 of this APP and may include a mock execution of the emergency plan.

11.3.2 Spill Plan

The occurrence of chemical leaks or spills is anticipated to be remote due to the preventative measures implemented on the site and the nature of the contaminated materials present. Procedures for responding to spills are outlined in Subchapter 14.13 of the SHSP (**Appendix A** of this APP).

11.3.3 Firefighting Plan

Fire prevention and protection is covered in Subchapter 14.12 of the SHSP, which is provided in **Appendix A** of this APP.

11.3.4 Posting of Emergency Telephone Numbers

Emergency telephone numbers for the closest hospitals capable of providing emergency service, Poison Control Center, local Law Enforcement and Fire Department, and key safety and management personnel from USACE and Parsons will be available to the SSHO and will be kept immediately available in each field vehicle. The SSHO will be responsible for keeping the list current and for taking necessary action and contacting the appropriate emergency contacts in the event of an emergency. Emergency contact numbers are provided in **Table 9.1**, Chapter 9 – Medical Support, of this APP.

11.3.5 Wild Land Fire Prevention Plan

Depending on the time of year, it may be necessary to take extra precautions in preventing wild fires. This can be accomplished by keeping vehicles on roadways and off the grassy areas, restricting smoking to one small area, and ensuring that any power equipment is not placed down in the grass.

11.3.6 Man Overboard/Abandon Ship

Not Applicable.

11.4 HAZARD COMMUNICATION PROGRAM

Details on hazard communication training are presented in Subchapter 5.3 of this APP.

11.5 RESPIRATORY PROTECTION PLAN

11.5.1 The primary objective of respiratory protection is to prevent employee exposure to atmospheric contamination. When engineering measures to control contamination and respiration hazards are not feasible, or while they are being implemented, personal respiratory protective devices will be used.

11.5.2 Use of respiratory protection is not anticipated for this work. Air monitoring will be conducted in accordance with **Table 7.1** of the SHSP provided in **Appendix A** of this APP. If action levels are exceeded, the team will stop work, evacuate the work area, and allow the area to ventilate. If the SSHO determines that respiratory protection is necessary, Parsons will institute a respiratory protection plan in accordance with the process described in Subchapter 10.2.3 of this APP.

11.5.3 In the event that respirators are determined to be required, respirator users will be OSHA-trained in proper respirator use and maintenance. The SSHO will observe workers during respirator use for signs of stress. The SSHO will periodically evaluate the implementation of the APP/SHSP to determine its continued effectiveness with regard to respiratory protection. Persons assigned to use respirators will have medical clearance to do so and receive fit-testing prior to respirator use.

11.6 HEALTH HAZARD CONTROL PLAN

The health hazard controls for the project are covered in detail in Chapter 2 of the SSHP (Appendix A to this APP).

11.7 PROCESS SAFETY MANAGEMENT PLAN

Not Applicable.

11.8 LEAD ABATEMENT PLAN

Contact with lead is not anticipated as part of the operations to be conducted at FTMM. In the unlikely event that lead is encountered during operations, workers will be required to avoid the area of contamination and consult with the SSHO and FTL for further instruction.

11.9 ASBESTOS ABATEMENT PLAN

Contact with asbestos is not anticipated as part of the operations to be conducted at FTMM. In the unlikely event that asbestos is encountered during operations, workers will be required to avoid the area of contamination and consult with the SSHO and FTL for further instruction.

11.10 RADIATION SAFETY PROGRAM

Not applicable.

11.11 ABRASIVE BLASTING

Abrasive blasting will not be performed during the operations to be conducted at FTMM.

11.12 HEAT/COLD STRESS MONITORING PLAN

Refer to Section 8 “Heat and Cold Stress” of the SSHP (Appendix A of this APP).

11.13 INDOOR AIR QUALITY MANAGEMENT

Not Applicable.

11.14 MOLD REMEDIATION PLAN

Not Applicable.

11.15 CHROMIUM (VI) EXPOSURE EVALUATION

Not Applicable.

11.16 CRYSTALLINE SILICA ASSESSMENT

Silica will not be produced, reacted, released, transported, stored, handled, or used during this project.

11.17 LIGHTING EVALUATION

Not Applicable.

11.18 LIGHTING PLAN FOR NIGHT OPERATIONS

Not Applicable.

11.19 TRAFFIC CONTROL PLAN

If road closures are needed during investigation or demolition operations they will be done in accordance with EM 385-1-1 Section 0.8C.

11.20 ARC FLASH HAZARD ANALYSIS

Not Applicable.

11.21 ASSURED EQUIPMENT GROUNDING PROGRAM

Not Applicable.

11.22 CONFINED SPACE ENTRY

Confined space entry is not anticipated as part of normal operations at FTMM. In the unlikely event that a confined space is required during field operations, personnel will stop work and will consult with the SSHO and PHSO for further instruction before continuing.

11.23 HAZARDOUS ENERGY CONTROL PLAN

Should it be necessary to use main power or a generator, a lockout/tag-out procedure will be used by site personnel if the associated equipment is being worked on or maintained. The lockout/tag-out procedure will ensure that any machine or equipment being worked on is isolated from potential hazardous energy sources, and locked out or tagged out before any servicing or maintenance activity where the unexpected energization, start-up, or release of energy might result in an injury.

11.24 STANDARD PRE-LIFT PLAN

Not Applicable.

11.25 CRITICAL LIFT PROCEDURES

Crane lift operations are not expected to be necessary for operations at FTMM. If required, development of lift plans will be in accordance with EM 385-1-1. Hoisting operations will be preplanned and the exact size and weights of loads to be lifted will be evaluated based on the manufacturing maximum load limits for the entire range of the lift. Lift geometry, including crane position, height of lift, load radius, and boom length and angle, for the entire range of lift will be documented. Crane operators will be checked for qualification with proper certification.

11.26 NAVAL ARCHITECTURAL ANALYSIS

Not Applicable.

11.27 FLOATING EQUIPMENT EVALUATION

Not Applicable.

11.28 FLOAT PLAN

Not Applicable.

11.29 CONTINGENCY PLAN FOR SEVERE WEATHER

Severe weather is defined as high winds, electrical storms, tornadoes, extremely hot weather (> 100°F), or extremely cold weather (< 0°F). In the event that such conditions arise, it may be necessary to cease operations and evacuate the site. The SSHO will be responsible for monitoring the weather. Should severe weather conditions threaten, the SSHO is responsible for deciding if site operations should be halted. Procedures for action during severe weather are detailed in Subchapter 2.5.2 of the SHSP (**Appendix A** of this APP) and in SOP 4, Severe Weather Operations, provided in **Appendix C** of this APP.

11.30 ACCESS AND HAUL ROAD PLAN

Roads used during field activities at FTMM will be used in a safe manner to reduce any potential hazards involving vehicles. No construction of new roadways is planned during any of the fieldwork. Field vehicles will be driven in a safe manner by a licensed driver. Speed limits on public roads will be observed, and speed on the site will be adjusted as appropriate for existing road conditions.

11.31 DEMOLITION PLAN

Project activities will not involve any structures or improvements; thus, no structural demolition will be required.

11.32 ROPE ACCESS PROGRAM

Not Applicable.

11.33 EXCAVATION/TRENCHING PLAN

Not Applicable.

11.34 EMERGENCY RESCUE (TUNNELING)

Tunneling will not be required as part of the operations at FTMM and, therefore, emergency rescue procedures for tunneling are not necessary.

11.35 UNDERGROUND CONSTRUCTION FIRE PREVENTION AND PROTECTION PLAN

Underground construction will not be required as part of the operations at FTMM and, therefore, an Underground Construction Fire Prevention and Protection Plan is not necessary.

11.36 COMPRESSED AIR PLAN

Compressed air will not be used during the operations at FTMM and, therefore, a Compressed Air Plan is not necessary.

11.37 FORMWORK AND SHORING ERECTION AND REMOVAL PLANS

Formwork and shoring erection operations is not anticipated as part of site operations. In the event that shoring is required, it will be erected and handled in accordance with manufactures instructions.

11.38 MASONRY BRACING PLAN

Not Applicable.

11.39 PRECAST CONCRETE PLAN

Not Applicable.

11.40 LIFT SLAB PLAN

Not Applicable.

11.41 EXPLOSIVES SAFETY SITE PLAN

Not Applicable.

11.42 BLASTING PLAN

Not Applicable.

11.43 TREE FELLING/MAINTENANCE PROGRAM

Not Applicable.

11.44 UNDERWATER DIVE OPERATIONS PLAN

. Not Applicable

11.45 AIRCRAFT/AIRFIELD CONSTRUCTION SAFETY & PHASING PLAN

Not Applicable.

11.46 AIRCRAFT/AIRFIELD SAFETY PLAN COMPLIANCE DOCUMENT

Not Applicable.

11.47 PREVENTION OF ALCOHOL AND DRUG ABUSE

Parsons will institute and maintain a program for achieving the objective of drug free workspace. Parsons ensures consistent and uniform application of this policy and, when required, interfaces with supervisor and employee to evaluate performance and behavior.

11.47.1 Parsons Corporate Statement of Policy

11.47.1.1 Parsons expects employees to report to work in a fit condition in order to perform their duties at the utmost levels of safety and efficiency. To that end, Parsons expressly prohibits the unlawful manufacture, distribution, dispensing, possession, use, or sale of a controlled substance or alcohol on its premises at any time. Employees are prohibited from being at work under the influence of these substances. Parsons will reasonably accommodate the efforts of an

employee to obtain medical treatment for substance abuse and to return to employment thereafter. However, no provisions of this policy will contravene the provision of the Employee Personal Conduct Policy or preclude the corporation from terminating an employee in accordance with this policy.

11.47.1.2 Parsons has an obligation to safeguard the privacy rights of employees; however, it is also committed to provide a healthy and safe work environment for employees and to take reasonable steps to safeguard the health and safety of others and protect the environment in conducting its business.

11.47.2 Safety and Environmental Provisions

11.47.2.1 In some instances employees may be required to undergo random toxicological tests to ensure their continuing fitness for duty to comply with contract mandated requirements or government regulations, or if performing work at locations where the nature of their duties is such that there is the potential for serious physical injury to themselves, to others, or the general public, or potential for significant damage to property or the environment.

11.47.2.2 Assignment of employees to such job sites will be done on a voluntary basis. Employees who refuse to participate in the random testing program and whose job duties would normally expose them to random testing will be considered for placement in other positions not requiring random testing. Every reasonable effort will be made to accommodate such transfers; however if suitable work for which the employee is qualified is not available, the employee will be subject to termination. A positive test result will lead to immediate removal from the site, in addition to either corrective action in accordance with this policy or the employee's termination in accordance with the Employee Personal Conduct Policy.

11.47.2.3 Searches are another means of protecting the safety of individuals and property at those locations where the nature of the work has the potential for serious injury or damage. Reasonable searches may be conducted of individuals, their personal vehicles, effects, and other areas under the individual's control while at such work sites, or engaged in Parsons business at such sites.

11.47.2.4 Employees will not be detained or searched without their consent. An employee's cooperation in a search at such work sites is a condition of employment. The employee will be required to sign an Acknowledgment and Consent for Random Toxicological Tests and Searches form. Such testing will be performed by the company using qualified contracted agents, or trained employees.

11.47.3 Substance Abuse Testing – Employment Offer

Candidates for employment will be subjected to substance abuse testing prior to the receipt of an offer of employment. Offers of employment, regardless of employment category, must contain a contingency regarding satisfactory completion of substance abuse testing. Failure to submit to or pass an examination will result in immediate disqualification from consideration for placement.

11.47.4 Employee Personal Conduct

11.47.4.1 Parsons provides exceptional service to its customers and the community by maintaining an orderly, safe, collaborative, cooperative and productive work environment for its employees and visitors to our offices. Parsons employees and managers represent the company

inside our offices and in meetings and at project and customer facilities outside the office. Employees are expected to conduct themselves in a manner that projects and maintains a positive, safe, efficient and professional image of the company at times and in situations related to company business. Improper conduct, as further defined in company operating policies and procedures, will result in commensurate disciplinary action, up to and including immediate termination of employment.

11.47.4.2 Employees bear the primary responsibility for their own job performance and for taking any action or undergoing treatment necessary to maintain performance at a satisfactory level.

11.47.4.3 In addition, the Corporation may require an employee to submit to a test for alcohol or illegal drugs, based upon reasonable suspicion that the employee's performance or behavior is being adversely affected by use of such substance(s). Reasonable suspicion will be based upon physical manifestations of impairment, or unsatisfactory behavior or job performance (including on-the-job accident or injury) which causes the supervisor and Human Resources Representative to reasonably believe that alcohol or drug abuse may be a contributing factor. Refusal by an employee to take such a test will be viewed as an admission of such use by the employee.

11.47.5 Confidentiality of Records

Information concerning an applicant's or employee's medical condition or test results will be kept strictly confidential, with information released only upon a legitimate need-to-know basis.

11.48 FALL PREVENTION PLAN

If workers have the potential to become exposed to fall hazards, proper precautions will be implemented to ensure safety. Standard guardrail, catch platforms, temporary floors, and safety nets will be used based on evaluations by the SSHO. In addition, full-body harnesses with a shock absorbing lanyard will be worn by any personnel working at risk of falling more than 6 feet. The lanyard will be adjusted to limit free-fall to no more than 6 feet. Lanyards must be secured to strong structural components (breaking strength of 5,000 pounds per attached employee) or lifelines.

11.49 STEEL ERECTION PLAN

There will be no requirement for erection of steel structures during operations at FTMM and, therefore, a Steel Erection Plan is not necessary.

11.50 SITE SANITATION PLAN

The sanitation provisions specified in Section 2 of EM 385-1-1 will be established and maintained onsite as outlined in the following paragraphs.

11.50.1 Drinking Water

11.50.1.1 Only approved potable water systems shall be used for the distribution of drinking water. Drinking water supplied from other sources approved by Federal, State, or local health

authorities can also be used. It is anticipated that single serve water bottles will be used during this program by field personnel.

11.50.1.2 Parsons shall supply drinking water for field teams. Drinking water coolers may be provided for the field teams. The portable coolers used to dispense drinking water shall be tightly closed, and equipped with a tap. Containers will be clearly marked as their contents and shall not be used for other purposes. Water shall not be dipped from containers. Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

11.50.1.3 Outlets dispensing nonpotable water will be conspicuously posted “**CAUTION – WATER UNFIT FOR DRINKING, WASHING, OR COOKING.**”

11.50.2 Toilets

Waste disposal procedures are detailed in Subchapter 11.4 of the SHSP (**Appendix A** of this APP). Other sanitation issues will be in accordance with Section 2 of EM 385-1-1.

11.50.3 Hand-Washing Facilities

Hand-washing facilities will be provided with potable water, soap, and single use towels. At a minimum, a water jug, liquid soap, and paper towels will be provided and field team personnel will wash their hands prior to eating or drinking, and prior to leaving the site.

11.51 FIRE PREVENTION PLAN

To ensure adequate fire prevention, the SSHO will inspect the site to ensure that flammable and combustible materials are being safely stored in appropriately configured storage areas and containers. The SSHO will also ensure that no flammable/combustible materials are stored near any sources of ignition, and that sources of ignition are removed a safe distance from storage areas. If needed, storage areas will be segregated from the remainder of the site using flagging. Portable fire extinguishers will be located onsite. In the event of fire, the firefighting procedures outlined in the ERCP in Subchapter 11.2.3 of this APP and in SOP 2, Emergency Response and Fire Prevention Plan.

CHAPTER 12 STANDARD OPERATING PROCEDURES

12.1 GENERAL

Parsons and its subcontractors will meet the requirements of the applicable sections of this APP by following the SHSP provided in **Appendix A** and the SOPs provided in **Appendix C**.

12.2 STANDARD OPERATING PROCEDURES

The following Parsons SOPs are provided in **Appendix C** of this APP.

- Parsons SOP Number 1, Medical Surveillance, Control/Access to Employee Medical Records, and Emergency Care;
- Parsons SOP Number 2, Emergency Response and Fire Prevention Plan;
- Parsons SOP Number 3, Heavy Equipment and Vehicle Safety;
- Parsons SOP Number 4, Severe Weather Operations;
- Parsons SOP Number 5, Heat Stress;
- Parsons SOP Number 6, Lockout/Tagout Program;
- Parsons SOP Number 7, Hearing Conservation Program;
- Parsons SOP Number 8, Handling of Drum, Roll-off And Other Containers; and
- Parsons SOP Number 9, Fire Fighting Plan.

CHAPTER 13 RISK MANAGEMENT PROCESS

13.1 Risk Management Process is the means by which project team members, both in the field and in the office, identify hazards and describe the appropriate steps to avoid mishaps. The PM will ensure that the SSHO and project field team reviews each field task, identifies the associated hazards, and formulates an AHA that documents the hazards and provides steps used to avoid each hazard.

13.2 The Risk Management Process starts with the development of the Work Plan and evolves throughout mobilization of the field crew and enactment of the work being conducted. The Work Plan will establish the work that needs to be accomplished to fulfill the contract, as well as the steps required to conduct the work. The field team will mobilize and subsequently establish a Safety Committee per subsection 5.6.2. The Safety Committee will discuss and define the steps being performed within each task or Defined Feature of Work (DFOW), identifying work sequences, specific anticipated hazards, site conditions, equipment and materials needed, personnel involved (including Competent or Qualified persons), and the control methods to be implemented. These elements will be incorporated into an AHA which will be sent first to the Project Health and Safety Office (PHSO) for approval. Work involving new tasks will not be conducted prior to approval of the AHAs. Once the AHAs have been approved, Team Leaders will use them during their “Take 5” meeting (subsection 5.6.3).

13.3 It is important to note that AHAs are treated as “living documents” and can be changed throughout the project in order to address changing site conditions or operations. If the AHA has been changed in a manner which increases the Risk Assessment Code (RAC), it must be reviewed by the PHSM prior to conducting the activity. The change of a Competent Person (CP) or Qualified Person (QP) can be conducted as an administrative change which does not require review, provided that the new CP/QP acknowledges in writing that they have reviewed the AHA and are familiar with current site safety issues.

13.4 Workers should have the accepted AHAs in their possession while conducting work. The AHAs present will represent current site conditions and work must be conducted in accordance with the AHA. In the event that work is not being conducted in a safe manner, all work will stop until it is in compliance with the APP.

13.5 Section 2 of the SSHP (Appendix A) provides an outline of the identified major project steps and activities for which AHAs will be required (Appendix BB) and reviewed by the team. It is important to understand that the initial AHAs provided in Appendix B serve as a framework to be completed by the Field Team.

CHAPTER 14 SITE SPECIFIC HAZARDS AND CONTROLS

Detailed site specific hazards and controls are provided in the AHAs for each activity conducted during the remedial investigation. The AHAs for the following activities are provided in **Appendix B** of this APP.

- Site Visit and Site Walks;
- Operation of Motor Vehicles;
- Use of Heavy or Motorized Equipment;
- Fueling of a Motor Vehicle;
- Fueling of Heavy Equipment;
- Personnel Decontamination;
- Heavy Equipment Decontamination;
- Portable Tools Decontamination;
- Sample Collection;
- Sample Processing;
- Power and Hand Tool Operation;
- Drilling, Well Installation, Well Abandonment;
- Drum/Container Handling;
- High Pressure Washing;
- Trailer Towing;
- Forklift;
- Step Ladder Use; and
- Mobilization/Demobilization.

1 **APPENDICES**

2 Appendix A Site-Wide Health and Safety Plan

3 Appendix B Accident Hazard Analysis

4 Appendix C Standard Operating Procedures

5 Appendix D Forms

1
2

APPENDIX A SITE-WIDE HEALTH AND SAFETY PLAN

FINAL

APPENDIX A

SITE HEALTH AND SAFETY PLAN

REMEDIAL INVESTIGATION /

FEASIBILITY STUDY / DECISION DOCUMENTS

FORT MONMOUTH, OCEANPORT,

MONMOUTH COUNTY, NEW JERSEY

BRAC 05 Facility
Contract W912DY-09-D-0062
Task Order 0012, Project No. 369857

Submitted To:

U.S. Army Engineering and Support Center
Huntsville, Alabama

and

U.S. Army Corps of Engineers, New York District



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The views, opinions, and/or findings contained in this document are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentations.

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LIST OF ACRONYMS

ACRONYM	DEFINITION
ACGIH	American Conference of Industrial Hygienists
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
APR	Air Purifying Respirator
C	Celsius
CDC	Center for Disease Control and Prevention
CECOM	Communications and Electronic Command
CENAE	Corps of Engineers, New England District
CENAN	Corps of Engineers, New York District
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CHP	Certified Health Physicist
CIH	Certified Industrial Hygienist
COR	Contracting Officer Representative
CPR	Cardiopulmonary Resuscitation
CRZ	Contamination Reduction Zone
CSP	Certified Safety Professional
CWA	Charles Wood Area
DPR	Daily Progress Reports
EA	Evans Area
EPP	Environment Protection Plan
ERCP	Emergency Response and Contingency Plan
EZ	Exclusion Zone
F	Fahrenheit
F-B	Flash to Bang
FS	Feasibility Study
FTL	Field Team Leader
FTMM	Fort Monmouth
GW	Groundwater
HTRW	Hazardous, toxic and radiological waste
KO	Contracting Officer
MP	Main Post
OE	Ordnance and explosive contamination
OSHA	Occupational Safety and Health Administration
PID	Photo Ionization Detector
PM	Project Manager

ACRONYM	DEFINITION
PPE	Personal Protective Equipment
PHSO	Project Health and Safety Officer
PWS	Performance Work Statement
QC	Quality Control
RI	Remedial Investigation
RMSF	Rocky Mountain Spotted fever
SOP	Standard Operating Procedure
SHSP	Site Health and Safety Plan
SSHO	Site Safety and Health Officer
SZ	Support Zone
TAL	Target Analyte List
TBD	To Be Determined
TPHC	Total Petroleum Hydrocarbons
TO	Task Order
USACE	U.S. Army Corps of Engineers
USAESCH	U.S. Army Engineering and Support Center, Huntsville
UXO	Unexploded ordnance
VOCs	Volatile Organic Compounds
WBGT	Wet Bulb Globe Temperature

SECTION 1 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

1.1 SITE DESCRIPTION

1.1.1 Fort Monmouth (FTMM) site is located in the central-eastern portion of New Jersey in Monmouth County, approximately 45 miles south of New York City, 70 miles northeast of Philadelphia, and 40 miles east of Trenton. The Atlantic Ocean is approximately 3 miles to the east. FTMM is comprised of three areas; Main Post (MP), the Charles Wood Area (CWA) and the Evans Area (EA). FTMM falls within the Boroughs of Eatontown, Oceanport, and Tinton Falls. The MP is in the Eatontown and Oceanport Boroughs. The CWA is in the Eatontown and Tinton Falls Boroughs.

1.1.2 The EA is located approximately 8 miles to the south of the MP and CWA and was formerly used for administrative, research and development and some training. EA was closed under the BRAC process in 1998 and all but 2 acres have been transferred from the FTMM.

1.1.3 On September 15, 2011, FTMM was closed under the 2005 BRAC process. This TO addresses certain areas of environmental concern located on the former MP and the CWA. MP includes 637 acres and the CWA covers 489 acres. The primary mission of FTMM was to provide command, administrative, and logistical support for Headquarters, and U.S. Fort Monmouth Communications and Electronics Command (CECOM). CECOM is a major subordinate command of the U.S. Fort Monmouth Material Command and was the host activity. FTMM was the center for the development of the Fort Monmouth's Command and Control Communications, Computers, Intelligence, Sensors and Reconnaissance systems, formerly the primary tenants of FTMM. Much of FTMM research and development of high-tech systems was done at FTMM.

1.1.4 The MP provided supporting administrative, training, and housing functions, as well as many of the community and industrial facilities for FTMM. These facilities were distributed across the property, with no distinct clustering of functions. The CWA was used primarily for research and development, testing, housing, and recreation. The CWA research, development and testing facilities occupied the southwest corner of the sub-post. The northwest corner formerly held residential units but is currently undeveloped. Residential units currently occupy the southeastern boundary and the golf course occupies the northeast corner.

1.2 CONTAMINATION CHARACTERIZATION

The project at FTMM addresses various environmental sites that are currently in different stages of hazardous, toxic, and radioactive waste (HTRW) investigation and remediation. The sites, which consist of closed solid waste landfills, former aboveground and underground storage tanks, a former training area, and a wastewater treatment lime pit, are located in the MP and CWA areas of FTMM. The sites to be investigated and the associated contaminants of concern are shown on **Table 1.1**.

Table 1.1
Contaminants of Concern

Site Name	Type	Area	Description	Contaminants of Concern
FTMM-02	Landfill	MP	Closed Solid Waste Landfill	VOCs
FTMM-03	Landfill	MP	Closed Solid Waste Landfill	VOCs, TAL Metals
FTMM-04	Landfill	MP	Closed Solid Waste Landfill	VOCs TAL Metals
FTMM-05	Landfill	MP	Closed Solid Waste Landfill	VOCs
FTMM-08	Landfill	MP	Closed Solid Waste Landfill	VOCs
FTMM-12	Landfill	MP	Closed Solid Waste Landfill	VOCs, TAL Metals
FTMM-14	Landfill	MP	Closed Solid Waste Landfill	VOCs
FTMM-18	Landfill	MP	Former Training Area	VOCs
FTMM-22	RI Site	CW	(CW-1) Waste Water Treatment Lime Pit	VOCs
FTMM-25	Landfill	CW	(CW-3A) Landfill	VOCs, TAL Metals
FTMM-53	Remedial Investigation (RI) Site	MP	M53-Bldg 699 Gasoline Storage	VOCs
FTMM-54	Reporting Site	MP	M54-Bldg 296 Gasoline Storage	VOCs
FTMM-55	Reporting Site	MP	M55-Bldg 290 UST Gasoline	VOCs, Lead
FTMM-56	Reporting Site	MP	M56-Bldg 80 Petroleum Release	Pesticides, TAL Metals
FTMM-57	Groundwater (GW) Sampling	MP	M57-Bldg 108 UST Gasoline Release	VOCs, TAL Metals
FTMM-58	GW Sampling	CW	M58-Bldg 2567 UST Gasoline	VOCs
FTMM-59	RI Site	MP	M59-Bldg 1122 Unknown Discharge	VOCs
FTMM-61	Reporting Site	MP	M61-B37 Bldg 283 Gasoline Storage	VOCs
FTMM-64	GW Sampling	MP	M64-Bldg 812 UST Gasoline	VOCs
FTMM-66	Reporting Site	MP	M66-Bldg 886 Former AST	VOCs, TPHC
FTMM-68	RI Site	MP	M68-Bldg 700 Former UST	VOCs
Various Parcel	SI Site	MP/CW	Miscellaneous Sites	VOCs, PAHs, TAL Metals, EPH, PCBs

SECTION 2 HAZARD AND RISK ANALYSIS

2.1 INTRODUCTION

Work activities, natural phenomena, as well as biological hazards may present a risk to workers on this project. The level of risk is dependent upon the type of work being conducted. This chapter identifies the hazards associated with tasks being performed on this project and the procedures that are to be employed to prevent accidents, injuries, and illness. The Site-Wide Health and Safety Plan (SHSP) is designed to protect the site personnel, the public, and the environment.

2.2 ACTIVITY HAZARD ANALYSES

2.2.1 Individual hazard analyses have been performed for the tasks associated with the FTMM. The potential hazards have been identified; control measures have been outlined; training requirements and Personal Protective Equipment (PPE) requirements and equipment inspection procedures have been established. The following activities are considered in the Activity Hazard Analyses (AHAs):

- | | |
|-----------------------------------|-------------------------------------|
| • Site Visit and Site Walks; | • Drilling, Well Installation, Well |
| • Operation of Motor Vehicles; | Abandonment; |
| • Use of Heavy or Motorized | • Drum/Container Handling; |
| Equipment; | • High Pressure Washing; |
| • Fueling of a Motor Vehicle; | • Mobilization/Demobilization; |
| • Fueling of Heavy Equipment; | • Trailer Towing; |
| • Personnel Decontamination; | • Forklift; and |
| • Heavy Equipment | • Step Ladder Use. |
| Decontamination; | |
| • Portable Tools Decontamination; | |
| • Sample Collection; | |
| • Sample Processing; | |
| • Power and Hand Tool Operation; | |

2.2.2 **Appendix B to the Accident Prevention Plan (APP)** contains AHAs for each of the major tasks identified for the activities at the FTMM, including potential hazards, control measures, training and PPE requirements.

2.2.3 If new operations/tasks are introduced, an AHA will be performed by the Project Health and Safety Officer (PHSO). If operations change significantly during the course of this project, the related AHA will be updated to accommodate these changes. Changes in PPE or operating procedures will be approved by the PHSO before they are implemented, and will be communicated to the field team during daily tailgate safety meetings. It will be the responsibility

of the Site Safety and Health Officer (SSHO) to ensure that the required controls are being properly implemented.

2.3 CLASSIC SAFETY HAZARDS

2.3.1 Slip, Trip, and Fall Hazards

2.3.1.1 Hazard Identification

Work areas may contain slip, trip, and fall hazards for workers, such as:

- Holes, pits, or ditches;
- Slippery surfaces;
- Steep and uneven grades;
- Guy wires and ropes;
- Objects such as nails, metal shards, and broken glass or remnant branches and vegetative debris; or
- Weather conditions such as snow and rain will make surfaces slippery and obscure visibility.

2.3.1.2 Hazard Mitigation and Prevention

Site personnel will be instructed to look for these potential safety hazards and immediately inform the SSHO or the Field Team Leader (FTL) about any new hazards. If the hazard cannot be immediately removed, action must be taken to warn site workers about the hazard. Proper housekeeping must be maintained on site, particularly adjacent to office trailers. Small holes and pits along high foot traffic areas should be covered or barricaded to prevent injury.

2.3.2 Motor Vehicles and Heavy Equipment

2.3.2.1 Hazard Identification

Working with large motor vehicles and heavy equipment can be a major hazard. Injuries can result from equipment hitting or running over personnel or vehicles overturning. Vehicles and heavy equipment design and operation will be according to 29 CFR Subpart O, 1926.600 through 1926.602. The types of heavy equipment which may be used on-site include drill rig, direct push rig, forklift, flatbed truck, pick-up trucks, and trailers.

2.3.2.2 Hazard Mitigation/Prevention

Procedures for mitigation and prevention of hazards associated with motor vehicles and heavy equipment is contained in Standard Operating Procedure (SOP) #3, Heavy Equipment and Vehicle Safety, which is located in **Appendix C of the APP**.

2.3.3 Hazardous Energy Control

2.3.3.1 Hazard Identification

It is important to be aware of hazardous energy to prevent accidents. At the site, electricity is the primary hazardous energy of concern. Accidents occur when electrical equipment is not properly used and/or installed. Accidents also occur when equipment is not properly isolated, shut down, and/or de-energized.

2.3.3.2 Hazard Mitigation and Prevention

2.2.3.2.1 The Lockout/Tagout SOP #6 contains procedures for mitigating and preventing electrical hazards and is located in **Appendix C of the APP**.

2.2.3.2.2 Lockout/Tagout procedures will be used for all maintenance procedures to ensure the equipment is isolated from all potential hazardous energy sources (electrical and mechanical).

2.3.4 Underground Utilities Hazards

2.3.4.1 Hazard Identification

Underground utility hazards may exist in the intrusive operations area. These hazards include, but are not limited to, utilities such as sewer, telephone, cable, fiber optic, water, fuel, gas, and electrical.

2.3.4.2 Hazard Mitigation and Prevention

The local utility locating hotline (i.e., New Jersey One Call – 800-272-1000, www.nj1-call.org) will be contacted to identify the locations of buried utilities before subsurface activities are allowed to commence. Prior to commencing intrusive activities, the FTL will obtain a digging clearance if appropriate, and document phone calls, correspondence, and confirmation numbers. Site personnel will not enter underground utilities. In the event the local utility service cannot access all areas of the site where utilities may be located, geophysical instruments and utility locators will be used to scan for buried utilities.

2.4 EXPLOSIVE ORDNANCE

2.4.1 Hazard Identification

Unexploded ordnance (UXO) and ordnance-related items are not expected to be encountered at any of the FTMM sites. However, site personnel should be alert for UXO and ordnance and explosives contamination (OE) and OE-related scrap. It is possible that personnel involved in field activities may encounter UXO that has been fired, disposed, or abandoned and is still intact and live.

2.4.2 Hazard Mitigation/Prevention

2.4.2.1 All site personnel will be given ordnance familiarity training prior to working on the site. The following general precautions concerning ordnance will be observed at all times:

- DO NOT touch or move any ordnance items regardless of the markings or apparent condition.
- DO NOT use radios or cellular phones near suspect ordnance items.
- DO NOT walk across an area where the ground cannot be seen. If dead vegetation or animals are observed, leave the area immediately due to potential contamination by chemical agent.
- DO NOT drive vehicles into a suspected UXO area; use clearly marked lanes.
- DO NOT carry matches, cigarettes, lighters, or other flame-producing devices into the primary work area.
- DO NOT rely on color code for positive identification of ordnance items or their contents.
- Approach ordnance items from the side; avoid approaching the front or rear areas.
- Always assume ordnance items contain a live charge until it can be ascertained otherwise.

2.4.2.2 The following actions will be taken if ordnance is found:

- Personnel who are not UXO-qualified should leave the immediate vicinity and clearly mark the location from a safe distance. DO NOT touch, move, or otherwise disturb the item;
- Do not be misled by markings on the ordnance item stating practice bomb or inert. Even practice bombs have explosive charges that are used to mark/spot the point of impact; or the item could be mismarked; and
- Notify the SSHO when UXO is encountered.

2.5 CHEMICAL HAZARDS

The primary sources of chemical exposure at the FTMM will be groundwater and subsurface and surface soil. Contaminants of potential concern at each site are presented in **Table 1.1**.

2.6 PHYSICAL HAZARDS

2.6.1 Primary Physical Hazards

The primary physical hazards potentially associated with this project are expected to include:

- Severe weather;
- Lightning;

- Hazardous noise;
- Heat stress; and
- Cold stress.

These hazards and mitigation actions are discussed in the following subsections.

2.6.2 Severe Weather

2.6.2.1 Hazard Identification

During the course of field operations, severe weather (refer to SOP #4 in **Appendix C of the APP**) may be encountered, including thunderstorms, rainstorms, and other unsafe weather conditions (i.e., high winds and tornadoes). Criteria indicating that severe weather conditions may exist include:

- High winds (greater than 40 miles per hour – depending on the tree cover and other site specific conditions);
- Tornado watch or warning in place for an area including the site;
- Visible lightning;
- Extreme temperatures (e.g., greater than 100 degrees or less than 0 degrees F);
- Hurricane, tropical storms, or winter storm watches and warnings;
- Heavy rainfall or ice storms that makes footing treacherous and visibility difficult; or
- Muddy or soft ground restricts the movement of rescue teams and emergency vehicles.

2.6.2.2 Hazard Mitigation and Prevention

2.6.2.2.1 The SSHO will decide if field activities should cease due to severe weather. Weather reports will be monitored by listening to local weather forecasts on vehicle radios or by use of a National Oceanic and Atmospheric Administration weather radio.

2.6.2.2.2 In the event that work is suspended, the SSHO will notify personnel who have radios or cellular telephones. These individuals will be responsible for relaying the work suspension to other personnel in their areas. All personnel will render the work place temporarily closed and move to designated assembly areas for further instruction.

2.6.2.2.3 Once the severe weather hazard has passed, the SSHO will notify personnel that work may resume. The SSHO will monitor weather forecasts and reports of current weather conditions both before and during field activities to determine if severe weather is forecast or is imminent.

2.6.3 Lightning

2.6.3.1 Hazard Identification

Lightning's distance from a given person's position can be estimated by noting the time from its flash to the bang of the associated thunder. For each 5-second count from flash to bang (F-B), lightning is 1 mile away. Thus, an F-B of 10 means that lightning is 2 miles away and an F-B of 15 means that lightning is 3 miles away, and so on. A more effective means of monitoring for lightning strikes is to use a smart phone App designed for this purpose. An App will not only detect lightning strikes but it provides information on the distance and allows the field team to monitor the motion of the storm. The lightning safety evacuation plan will be implemented when lightning is 10 miles away or less; work will stop and personnel will seek shelter until 30 minutes after the last audible thunder or visible flash of lightning.

2.6.3.2 Hazard Mitigation and Prevention

2.6.3.2.1 If a lightning storm is expected or observed, all outdoor site activities must cease. Personnel should seek shelter indoors. A safe shelter may consist of:

- Fully enclosed metal vehicles with windows up;
- Enclosed buildings; or
- Low ground.

2.6.3.2.2 Unsafe shelter areas include all nearby outdoor metallic objects such as flag poles, fences, high mast light poles, gates, etc. Avoid trees, water, open fields, and avoid using the telephone.

2.6.3.2.3 People who have been struck by lightning do not carry an electrical charge and are safe to handle. Apply cardiopulmonary resuscitation (CPR) immediately if you are qualified to do so. Get emergency help promptly.

2.6.4 Hazardous Noise

2.6.4.1 Hazard Identification

Operating heavy equipment can be a potential noise source. The unprotected exposure of site workers to this noise during activities can result in noise-induced hearing loss.

2.6.4.2 Hazard Mitigation and Prevention

2.6.4.2.1 Hearing protection is designed to lower noise levels by 20 to 35 dBA, however depending on the actual fit of the protector device the reduction in noise levels is likely closer to 10 to 20 dBA. Personnel shall wear earmuffs during coring operations since levels are anticipated to approach 85dBA, based on noise surveys involving concrete coring drills. A smart phone App can be used to monitor noise levels.

2.5.4.2.2 Personnel working on this project will participate in a Hearing Conservation Program. Appendix J contains information on the Hearing Conservation Program. The SSHO will verify these requirements have been met for each site worker. The SSHO will ensure that ear protection are made available to, and used by, all personnel near the coring operations.

2.6.5 Heat Stress

A discussion of heat stress symptoms and heat stress mitigation and prevention are provided in Chapter 8 of this SHSP.

2.6.6 Cold Stress

A discussion of cold stress symptoms and cold stress mitigation and prevention are provided in Chapter 8 of this SHSP.

2.7 IONIZING RADIATION

Instruments which emit ionizing radiation are not planned to be used at the FTMM. Handling of radioactive wastes is also not anticipated. Should this status change (such as the determination to use x-raying equipment), an SOP will be created and included in the APP.

2.8 BIOLOGICAL HAZARDS

2.8.1 Snakes

2.8.1.1 Hazard Identification

New Jersey is within the range of two venomous snakes, the Timber Rattlesnake and the Northern Copperhead. Illustrations of these snakes are shown in on **Figure 2.1** and descriptions provided below. These species are not generally found in Oceanport/Monmouth County, New Jersey (<http://monmouthcountyparks.com/documents/127/snakes.pdf>).

1. Timber Rattlesnake (**Figure 2.1a**): This is a large, stout-bodied snake that can obtain lengths of five feet or more. Along with its sheer size and characteristic rattle, this snake can be readily identified by the presence of dark bands, or chevrons, running across its back. Timber rattlesnakes are generally found in deciduous forests in rugged terrain.
2. Northern Copperhead (**Figure 2.1b**): This is a medium-sized venomous snake identified by its strong, hourglass-shaped dark cross-bands. It has a distinctive copper coloring and lives in rocky wetlands, typically in old abandoned barns (and other similar structures) and rock piles.

Figure 2.1
Snake Illustrations



2.1a – Timber Rattlesnake



2.1b – Northern Copperhead

2.8.1.2 Hazard Mitigation and Prevention

2.8.1.2.1 The best snakebite treatment is to avoid being bitten. The following suggestions will help in this process:

- Learn to identify poisonous snakes – this will be reviewed during site-specific safety training. Regardless of type, all snakes should be avoided;
- Wear long pants and work boots as protection;
- Watch where you sit and where you place your hands and feet;
- Avoid rock piles, stacks of old boards, and brush in wooded areas. If movement is necessary, use a remote means to initially relocate the material. Prior to entering a heavily wooded or brush area, look and listen carefully;
- Never handle any snake, whether dead or alive. According to the Centers for Disease Control and Prevention (CDC), most snakebites are the direct result of handling or harassing snakes, which bite as a defensive measure; and
- Do not attempt to capture or kill ANY snakes.

2.8.1.2.2 A snake bite is usually characterized by extreme pain and swelling at the site of the bite; the presence of one or more puncture wounds created by the fangs; and a general skin discoloration. The manifestations of the bite include general weakness, rapid pulse, nausea and vomiting, shortness of breath, dimness of vision, tingling or numbness of the tongue, mouth or scalp, and shock.

2.8.1.2.3 Physical reactions are aggravated by acute fear, anxiety, and the amount of venom injected and the speed of absorption of venom into the victim's circulation, the size of the victim, protection provided by clothing (including shoes and gloves), quick anti-venom therapy, and location of the bite.

2.8.1.2.4 First Aid – The rules to follow if someone is bitten by a snake are:

1. Allow bite to bleed freely for 15-30 secs;

2. Cleanse and rapidly disinfect area with Betadine, assuming the victim is not allergic to iodine, fish or shellfish. Remove clothing (pant legs, shirt sleeves, rings and jewelry on bitten side);
3. If bite is on the hand, finger, foot or toe, wrap the leg/arm rapidly with 3" to 6" ACE (elastic) or crepe bandage past the knee or elbow joint immobilizing it. Overwrap bite marks. But first, if possible, apply hard direct pressure over bite using a 4 x 4 gauze pad folded in half twice to 1 x 1. Tape in place with adhesive tape. Soak gauze pad in Betadine solution if available and victim is not allergic to iodine, fish or shellfish;
4. Strap gauze pad tightly in place with adhesive tape;
5. Overwrap dressing above, over and below bite area with ACE or crepe bandage, but not too tight. Wrap ACE bandage as tight as one would for a sprain, but not too tight (you should be able to fit two fingers under the bandage). Check for pulses above and below elastic wrap; if absent it is too tight. Unpin and loosen. If pulses are strong (normal) it may be too loose;
6. Immobilize bitten extremity, use splinting if available;
7. If possible, try to keep the bitten extremity at heart level or in a gravity-neutral position. Raising it above heart level can cause venom to travel into the body. Holding it down, below heart level can increase swelling;
8. Evacuate to nearest hospital or medical facility as soon as possible;
9. If possible, try to get a good look at the snake so it can be identified for proper selection of anti-venom, but do not try to capture or kill it; and
10. Bites to face, torso or buttocks are more of a problem. ACE/crepe bandaging cannot be applied to such bites. A pressure dressing made of a gauze pad may help to contain venom.

2.8.1.2.5 Identification Features - Non-poisonous snakes are often erroneously identified as poisonous. The features identified in **Table 2.2** will assist in properly identifying a snake as poisonous or non-poisonous.

Table 2.1
Snake Identification Features

Feature	Poisonous	Non-Poisonous
Eye Pupils	Elliptical, or cat-like	Round
Sensing Pits	Pit between the eyelids and nostrils	No pit between the eyelids and nostrils
Teeth	Two enlarged teeth (fangs) in front of the upper jaw	All teeth are approximately the same size
Scales	Form a single row on the underside and below the tail	Arranged in a double row on the underside of the tail
Head	Head much wider than the neck	Head slightly wider than the neck
Tail	Single anal plate	Divided anal plate

2.8.2 Insect and Arachnid Bites and Stings

2.8.2.1 Overview

2.8.2.1.1 Poisonous insects and insect-like creatures that may be encountered include the following:

- Spiders;
- Bees (honeybees, bumble bees, wasps, and hornets);
- Fire ants;
- Scorpions;
- Chiggers; and
- Ticks.

2.8.2.1.2 If insect bites become red or inflamed, or if symptoms such as nausea, dizziness, shortness of breath, etc., appear, medical care will be sought. Immediate care is needed if a person is allergic to insect bites/stings. Personnel with insect allergies should inform the PM, FTL, and SSHO. If an allergic person receives a spider bite or insect bite/sting, seek immediate medical attention, keep the victim calm, and check vital signs frequently. Rescue breathing should be given if necessary to supply oxygen to the victim.

2.8.2.2 Spiders

2.8.2.2.1 Hazard Identification

The two poisonous spiders likely to be encountered are the Brown Recluse and the Black Widow, shown on **Figure 2.2**. The Brown Recluse is up to one inch long with a violin or “fiddle” shaped mark on the top of the head. The Black Widow is a smaller, bulbous black spider with a red hourglass-shaped mark on the underside.

Figure 2.2
Arachnid Illustrations



Black Widow



Brown Recluse

2.8.2.2.2 Hazard Mitigation and Prevention

2.8.2.2.2.1 Workers involved in brush clearing, surveying, and other similar activities should avoid spiders and webs.

2.8.2.2.2.2 Persons who are believed to have been bitten by a Brown Recluse or Black Widow spider should be immediately transported to a hospital. The spider should be collected (if possible) for confirmation of the species. Reactions to a Brown Recluse spider bite include mild to severe pain within two to eight hours, and a star shaped area around the bite within three to four days. Significant tissue death and loss accompanies a Brown Recluse spider bite. Reactions to a Black Widow spider include intense pain at the site of the bite after approximately 15 to 60 minutes, followed by profuse sweating, rigid abdominal muscles, muscle spasms, breathing difficulty, slurred speech, poor coordination, dilated pupils, and generalized swelling of face and extremities.

2.8.2.3 Ticks

2.8.2.3.1 Hazard Identification

2.8.2.3.1.1 The CDC has noted the increase of Lyme Disease and Rocky Mountain Spotted Fever (RMSF) which are caused by bites from infected ticks that live in and near wooded areas, tall grass, and brush. Ticks are small, ranging from the size of a comma up to about one quarter inch. They are sometimes difficult to see. When embedded in the skin, they may look like a freckle. The tick season extends from spring through summer.

2.8.2.3.1.2 Lyme Disease has occurred in 43 states, with the heaviest concentrations in the Northeast (Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania), the upper Midwest (Minnesota and Wisconsin), and along the northern California coast. It is caused by deer ticks and the lone star ticks. Female deer ticks are about one quarter inch in size, and are black and brick red in color. Male deer ticks are smaller, and completely black. Lone star ticks are larger and chestnut brown in color.

2.8.2.3.1.3 RMSF has occurred in 36 states, with the heaviest concentrations in Oklahoma, North Carolina, South Carolina, and Virginia. It is caused by Rocky Mountain wood ticks and dog ticks. Both are black in color.

2.8.2.3.1.4 The first symptoms of either disease are flu-like chills, fever, headache, dizziness, fatigue, stiff neck, and bone pain. If immediately treated by a physician, most individuals recover fully in a short period. If not treated, symptoms that are more serious can occur. If you believe a tick has bitten you, or if any of the signs and symptoms noted above appear, contact the SSHO.

2.8.2.3.2 Hazard Mitigation/Prevention

Standard field gear (work boots, socks and light-colored coveralls) provide good protection against tick bites, particularly if the joints are taped. However, even when wearing field gear, the following precautions shall be taken when working in areas that might be infested with ticks:

- When in the field, check yourself often for ticks, particularly on your lower legs and areas covered with hair;
- Apply DEET (vapor-active repellent) or powdered sulfur to any exposed skin surface (except eyes and lips). Carefully read and follow directions on the container and wash treated skin when tick exposure has ended;
- Apply permethrin repellent spray or powdered sulfur to field clothing, particularly pant legs and socks, and avoid direct application to skin if feasible;
- When walking in wooded areas, wear a hat, and avoid contact with bushes, tall grass, or brush as much as possible;
- If you find a tick, remove it by pulling on it gently with tweezers. Do not squeeze the tick's body. Grasp it where the mouthparts enter the skin and tug gently, but firmly, until it releases its hold on the skin;
- DO NOT use matches, a lit cigarette, nail polish or any other type of chemical to "coax" the tick out;
- Be sure to remove all parts of the tick's body, and disinfect the area with alcohol or a similar antiseptic after removal;
- For several days to several weeks after removal of the tick, look for the signs of the onset of Lyme disease, such as a rash that looks like a bulls-eye or an expanding red circle surrounding a light area, frequently seen with a small welt in the center; and
- Also look for the signs of the onset of RMSF, such as an inflammation which is visible in the form of a rash comprising many red spots under the skin, which appears 3 to 10 days after the tick bite.

2.8.2.4 Chiggers

2.8.2.4.1 Hazard Identification

Chiggers, or harvest mites, are red, eight-legged arachnids. They are grouped with spiders, ticks, and scorpions and they measure approximately 1/150 of an inch in diameter. Chiggers do not burrow into the skin. They generally attach to those areas of the body where clothing fits tightly, such as at the sock line and waistline, and they feed at the base of a hair follicle or in a pore. Chiggers usually dislodge within several hours of attachment. The bites commonly cause itching in about 3 to 6 hours and dermatitis develops in about 10 to 16 hours. Some people experience allergic reactions to the bites and develop blister-like lesions. They are commonly encountered at the woodland borders, along the periphery of swamps, and in shrub thickets and un-mowed areas of lawn. Areas that contain thick layers of pine straw, leaf litter, or thatch are suitable habitats for chiggers and their prey. The wooded and brushy areas of FTMM provide a likely habitat for chiggers.

2.8.2.4.2 Hazard Mitigation and Prevention

For personal protection, apply insect repellent or powdered sulfur to clothing and exposed skin.

2.8.2.5 Fire Ants

2.8.2.5.1 Hazard Identification

2.8.2.5.1.1 Fire ants are aggressive, reddish-brown to black ants that are 1/8 inch to 1/4 inch long. They construct nests that are often visible as dome-shaped mounds of soil, sometimes as large as 3 feet across and 1½ feet in height. In sandy soils, mounds are flatter and less visible. Fire ants usually build mounds in sunny, open areas such as lawns, pastures, cultivated fields, and meadows, but they are not restricted to these areas. Mounds or nests may be located in rotting logs, around trees and stumps, under pavement and buildings, and occasionally indoors.

2.8.2.5.1.2 Fire ants use their stingers to immobilize or kill prey and to defend ant mounds from disturbance by larger animals, such as humans. Any disturbance sends hundreds of workers out to attack anything that moves. The ant grabs its victim with its mandibles (mouthparts) and then inserts its stinger. The process of stinging releases a chemical which alerts other ants and induces them to sting. In addition, one ant can sting several times without letting go with its mandibles.

2.8.2.5.1.3 Once stung, humans experience a sharp pain which lasts a couple of minutes. Then the sting starts itching and a welt appears. Fire ant venom contains alkaloids and a relatively small amount of protein. The alkaloids kill skin cells; this attracts white blood cells, which form a pustule within a few hours of being stung. The fluid in the pustule is sterile, but if the pustule is broken, the wound may become infected. The protein in the venom can cause allergic reactions that may require medical attention -- nausea, vomiting, dizziness, perspiration, cyanosis, and asthma.

2.8.2.5.2 Hazard Mitigation/Prevention

Site personnel will comply with the following work practices:

- Personnel with a known hypersensitivity to fire ants will inform the SSHO of this condition prior to performing site activities.
- Personnel with a known hypersensitivity condition will keep emergency medication available.
- All personnel will remain vigilant for the presence of fire ants.
- If stung, immediately inform the SSHO to receive treatment (same as for other biting insects) and observe for allergic reaction.

2.8.2.6 Mosquitoes

2.8.2.6.1 Hazard Identification

2.8.2.6.1.1 West Nile virus is a virus that is spread by infected mosquitoes. The virus usually infects birds, but it can be spread to humans by mosquitoes that feed on infected birds and then bite humans. The virus cannot be spread by person-to-person contact.

2.8.2.6.1.2 Symptoms usually occur 3 to 15 days after the bite of an infected mosquito. Most people who are infected with West Nile virus will have no symptoms or may have a mild flu-like illness with a fever, headache, and body aches before they recover. In some individuals, particularly the elderly, the virus can cause a serious illness called encephalitis, which is an inflammation of the brain. Symptoms of encephalitis may include high fever, severe headache, nausea, stiff neck, confusion, muscle weakness, paralysis, disorientation, convulsions, coma, and rarely, death. Less than 1% of humans infected with West Nile virus will develop serious illness.

2.8.2.6.2 Hazard Mitigation and Prevention

The best way to prevent infections with West Nile virus and other mosquito-borne diseases is to avoid getting mosquito bites. Other viruses that are transmitted by mosquitoes, including those that cause St. Louis Encephalitis and Eastern Equine Encephalitis, already exist in the United States, and the following precautions should be taken to avoid mosquito bites:

- Cover up by wearing shoes, socks, long-sleeved shirts, and long pants.
- Consider using a mosquito repellant that contains DEET on exposed skin. Carefully read and follow directions on the container and wash treated skin when mosquito exposure has ended.
- All mosquitoes need standing water for the first stages of development. Eliminate stagnant water around the work areas, where mosquitoes can lay eggs, by disposing of old tin cans, jars, tires, and any other container that can hold water. Stack tubs, buckets, barrels, etc. upside down so that water cannot accumulate in them.

2.8.2.7 Bees, Wasps, Hornets, and Other Insects

2.8.2.7.1 Hazard Identification

Symptoms of an insect bite are normally a sharp, immediate pain in the body part bitten followed by redness and swelling around the bite area.

2.8.2.7.2 Hazard Mitigation and Prevention

Site personnel will comply with the following work practices:

- Personnel with a known hypersensitivity to bee, wasp, or hornet stings will inform the SSHO of this condition prior to performing site activities.
- Personnel with a known hypersensitivity condition will keep emergency medication available.
- All personnel will remain vigilant for the presence of these stinging insects. Discovered nests will be flagged and their location reported to other site personnel.
- If stung, immediately inform the SSHO to receive treatment.

2.8.3 Poisonous Plants

2.8.3.1 Hazard Identification

2.8.3.1.1 The poisonous plants of greatest concern are poison ivy, poison oak, and poison sumac. Contact with the poisonous sap of these plants produces a severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim also may develop a high fever and may be very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

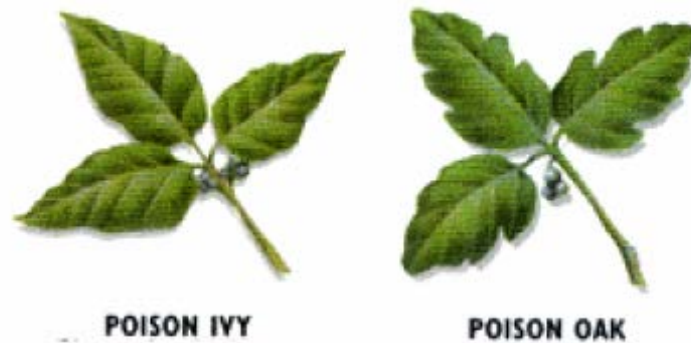
2.8.3.1.2 The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each (**Figure 2.3**). In certain seasons, both plants also have greenish-white flowers and berries that grow in clusters. Poison sumac is a tall shrub or small tree with 6-12 leaflets arranged in pairs with a single leaflet at the end. This plant grows in wooded, swampy areas. The reaction associated with exposure to these plants will generally cause the following signs and symptoms:

- Blistering at the site of contact, usually occurring within 12 to 48 hours after contact;
- Reddening, swelling, itching and burning at the site of contact;
- Pain, if the reaction is severe;
- Conjunctivitis, asthma, and other allergic reactions if the person is extremely sensitive to the poisonous plant toxin. If the rash is scratched, secondary infections can occur. Preventive measures that are effective for most site personnel include;
- Avoid contact with any poisonous plants on site, and keep a steady watch to identify, report and mark poisonous plants found on site;
- Wash hands, face or other exposed areas at the beginning of each break period and at the end of each workday;

- Avoid contact with, and wash on a daily basis, contaminated tools, equipment and clothing; and
- Barrier creams, detoxification/wash solutions and orally administered desensitization may prove effective and should be tried to find the best preventive solution.

2.8.3.1.3 Keeping the skin covered as much as possible (i.e., long pants and long sleeved shirts) in areas where these plants are known to exist will limit much of the potential exposure.

Figure 2.3
Poison Ivy and Poison Oak



2.8.3.2 Hazard Mitigation and Prevention

Avoidance of plant/sap contact is the most effective means of preventing exposure. Barrier creams are also available. A person experiencing symptoms of exposure should remove contaminated clothing; wash all exposed areas thoroughly with soap and water. Apply calamine or other poison ivy/oak lotion if the rash is mild. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity. Thorough washing of skin and clothing after site work or after potential exposure can reduce the severity of irritation.

2.8.4 Bloodborne Pathogens

2.8.4.1 Hazard Identification

Bloodborne pathogens enter the human body and blood circulation system through punctures, cuts, or abrasions of the skin or mucous membranes. They are not usually transmitted through ingestion (swallowing), through the lungs (breathing), or by contact with whole, healthy skin. However, under the principle of universal precautions (see below), all blood should be considered infectious, and all skin and mucous membranes should be considered to have possible points of entry for pathogens.

2.8.4.2 Hazard Mitigation and Prevention

Potential bloodborne pathogen exposures include those instances listed below and personnel should where the proper PPE (including gloves and masks when appropriate) to prevent exposure to bloodborne pathogens. Potential exposures include:

- Contact with contaminated medical equipment or medical waste or sharps,
- Medical emergency response operations such as administering first aid or CPR, and
- Contact with human wastes such as domestic sewage.

2.8.5 Rats, Mice, and Bats

2.8.5.1 Hazard Identification

Rats, mice, and bats may be found at this site. These animals may carry rabies and they should be avoided. In addition, Hanta Virus is also a concern when encountering these animals. Hanta Virus is a disease spread primarily from infected rodent droppings. Hanta Virus results from intimate contact with rodents, such as may occur in agricultural areas with dense human and rodent populations or during soil excavation. Hanta virus is not transferred from person to person. The overwhelming evidence is that spread is from rodent to humans through contact with infected rodent secretions or airborne transmission by infected dust particles.

2.8.5.2 Hazard Mitigation and Prevention

2.8.5.2.1 If rodent nests are discovered, field team members should be apprised of their locations and should avoid working adjacent to the nests. If work must be performed at that location, a 5% bleach solution should be sprayed on the nest and adjacent areas to kill the virus. If work must be performed at a location where rodent infestation is evident, personal protective equipment should be worn. The PPE ensemble will include:

- Full face Air Purifying Respirator (APR) with N-100 cartridges;
- Coveralls;
- Boot covers; and
- PVC or latex gloves.

2.8.5.2.2 Preventative measures should focus on cleaning all cuts and scratches with soap and water, followed by rinsing with hydrogen peroxide. Put liquid skin on the affected areas. The best preventative measure is to avoid all rodent nests during field work.

2.9 ACTION LEVELS AND MITIGATION METHODS

2.9.1 Implementation of Engineering Controls and Work Practices

Engineering controls and work practices will be implemented as necessary based on the criteria discussed in the hazard mitigation and prevention sections above.

2.9.2 Upgrades/downgrades in levels of PPE

The level of PPE needed to protect employees from site hazards and the situations that would dictate an upgrade or downgrade in PPE is discussed in Chapter 10, Personal Protective Equipment of the APP.

1 **2.9.3 Work Stoppage and/or Emergency Evacuation of On-Site Personnel**

2 All employees have the right and obligation to request a work stoppage if they observe an
3 unsafe condition or behavior. The SSHO will determine if an emergency evacuation is necessary
4 in addition to a work stoppage.

SECTION 3

STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

Chapter 2, Technical Management Plan of the project Work Plans and the Project Management Plan provides detail on the project team, qualifications, and roles and responsibilities of the different organizations and staff involved in this project. Additional requirements are provided below for the PHSO and SSHO.

3.1 PROJECT HEALTH AND SAFETY OFFICER

The PHSO (or Health and Safety Officer) must be a Certified Industrial Hygienist (CIH), Certified Safety Professional (CSP), or Certified Health Physicist (CHP), dependent upon the contaminant-related hazards on the project. The PHSO shall have 3 years of experience managing safety and occupational health at hazardous waste site cleanup operations. The PHSO shall enlist the support of safety and occupational health professionals with appropriate education and experience when working on sites with multiple hazards. The PHSO responsibilities include the following.

- Develop, maintain, and oversee implementation of the SHSP;
- Visit the project site as needed to audit the effectiveness of the SHSP;
- Remain available for project emergencies;
- Develop modifications to the SHSP as needed;
- Evaluate occupational exposure monitoring data/air-sampling data and adjust the SHSP requirements as necessary;
- Serve as a quality control (QC) staff member; and
- Approve the SHSP by signature.

3.2 SITE SAFETY AND HEALTH OFFICER

At a minimum, the SSHO must have completed the 30-hour Occupational Safety and Health Administration (OSHA) construction safety class. The SSHO shall have five years of experience implementing safety and occupational health procedures at cleanup operations and have the training and experience to conduct exposure monitoring/air sampling, and select and adjust PPE. The training and experience criteria of the SSHO will be certified by in writing and filed on site. The SSHO has the authority and responsibility for the following actions.

- Be present during operations implementing the SSHP;
- Inspect site activities to identify safety and occupational health deficiencies and correct them;

- 1 • Coordinate changes and modifications to the SSHP with the PHSO, FTL, U.S. Army
- 2 Engineering and Support Center, Huntsville (USAESCH), U.S. Army Corps of
- 3 Engineers – New York District (CENAN); and
- 4 • Conduct site-specific training.

3 Training requirements are discussed in Chapter 5, Training of the APP.

SECTION 5
PERSONAL PROTECTIVE EQUIPMENT

PPE requirements are discussed in Chapter 10, Personal Protective Equipment of the APP.

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SECTION 7 EXPOSURE AIR MONITORING AND AIR SAMPLING PROGRAM

An environmental and personal monitoring program will be developed for individual sites. This section will present general information on wind direction monitoring and volatile organic compounds (VOC) monitoring.

7.1 WIND DIRECTION MONITORING

A wind direction indicator (such as survey flagging tied to a stake) will be erected at every active work site. This will enable the SSHO and on-site personnel to determine upwind locations necessary for proper health and safety procedure implementation and, if necessary, evacuation procedures.

7.2 VOLATILE ORGANICS MONITORING

7.2.1 Field work at sites with VOC contamination shall use a photo ionization detector (PID) equipped with a 11.7 eV lamp or other monitoring instrument deemed appropriate by the PHSM to monitor VOC concentrations in the working area. Readings detected by the PID or other instrument will be used to determine the appropriate levels of protection. Action levels for VOCs are presented in Table 7.1, and are based on petroleum fuels. Action levels for individual sites, if different from the levels in **Table 7.1**, will be developed on an as needed basis.

Table 7.1
Action Levels for Changes in Respiratory Protection and Site Evacuation

Contaminant	Monitoring Instrument	Action Level	PPE	Action Taken
VOCs	PID (11.7 eV Lamp)	<1 ppm	Level D	None.
		1-10 ppm	Level D	Implement engineering controls to suppress vapor levels.
		> 10 ppm	Evacuate to an upwind location until vapors have subsided to a lower concentration.	

Note: All readings that will be used to determine the appropriateness of an upgrade in PPE shall be taken in the worker's breathing zone. PID readings shall be sustained readings of 30 seconds or more. Readings will be taken at the beginning of the day, changes in work activities and during all sampling activities. If readings exceed Level D, then stop work, leave the area or allow to ventilate. If actions levels are maintained then consult with the PHSM on upgrading PPE appropriately.

7.2.2 Air monitoring will be used to identify and quantify airborne levels of hazardous substances. Periodic monitoring is required during some on-site activities. Only activities which may encounter airborne contamination (i.e., drilling, excavating, and groundwater sampling) require air monitoring. The primary contaminants expected to be encountered are petroleum fuels (gasoline, heating oil, and diesel).

7.2.3 Initial air monitoring will be provided by Parsons. Personal monitoring during site activities must also be performed using a PID for volatile compounds. The SSHO will periodically confirm air monitoring data and review calibration and recordkeeping procedures.

Table 7.2
Air Monitoring Instruments

Type of Equipment	Minimum Calibration Frequency	Parameter(s) to be Measured	Minimum Sampling Frequency	Sampling Locations
Photoionization Detector (11.7 eV Lamp)	1/day	Organic Vapors	5-ft intervals (while drilling)	Breathing zone (while drilling)
			Upon opening a well cover	Top of casing, breathing zone
			Periodically during excavations	Breathing zone

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SECTION 8 HEAT AND COLD STRESS

8.1 HEAT STRESS

The potential for heat stress (refer to SOP #5 in **Appendix C of the APP**) will be higher if the fieldwork is conducted in the summer months. Therefore, extra care must be taken to observe and respond to symptoms. Sweating does not cool the body unless the sweat is evaporated from the body. The use of some PPE can reduce the body's ability to eliminate large quantities of heat because the evaporation of sweat is decreased. The body's effort to maintain an acceptable temperature may become impaired and this may cause heat stress. Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks. If semi-permeable and impermeable PPE is used at the site, heat stress is a MAJOR HAZARD.

8.1.1 Types of Heat Stress

8.1.1.1 Heat stress related problems include heat rash, fainting, heat cramps, heat exhaustion, and heat stroke. Heat rash occurs because sweat is not evaporating, making the skin wet most of the time. Standing erect and immobile allows blood to pool in the lower extremities. As a result, blood does not return to the heart to be pumped back to the brain and fainting may occur. Heat cramps are painful spasms of the muscles due to excessive salt loss resulting from profuse sweating. Heat exhaustion occurs because of fluid and salt loss from profuse sweating.

8.1.1.2 Heat stroke occurs when the body's temperature regulatory system has failed. Skin is hot, dry, red, and spotted. These skin color changes may not be readily evident in darker skinned individuals and other signs must be relied upon. The affected person may be mentally confused, delirious, and convulsions may occur. A person exhibiting signs of heat stroke should be removed from the work area to a shaded area immediately. The person should be soaked with water and fanned to promote evaporation. Medical attention must be obtained immediately. EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH.

8.1.2 Early Symptoms of Heat Stress Related Problems

Personnel should recognize the early symptoms of heat stress. These symptoms include:

- Reduced performance;
- Lack of coordination;
- Lack of alertness;
- Unsteady walk;
- Excessive fatigue;
- Muscle cramps; or
- Dizziness.

8.1.3 Engineering Controls

A wet bulb globe temperature (WBGT) monitor may be used to monitor for conditions that pose a threat of heat stress. WBGT monitoring should be conducted by the SSHO when temperatures on-site exceed 75°F.

8.1.4 Work/Rest Regimen

8.1.4.1 The management of risk for heat stress exposures centers around the principal of job-specific controls. Controls that will be implemented to reduce the potential for heat stress includes: use of acclimated personnel, providing adequate replacement fluid, educating individuals to recognize the early symptoms of heat stress, use of cooling vest, physiological monitoring, and development of a work/rest schedule that will prevent the onset of heat stress.

8.1.4.2 Because the incidence of heat stress depends on a variety of factors, all workers shall be monitored by the SSHO. For workers wearing permeable clothing such as that of Level D PPE, one should follow recommendations for monitoring requirements and suggested work/rest schedules in the current American Conference of Industrial Hygienists (ACGIH) Threshold Limit Values for Heat Stress. **Table 8.1** presents ACGIH Threshold Limit Values based on WBGT measurements for Level D PPE. Modification to the work/rest schedule can be instituted by the SSHO based on physiological monitoring data.

Table 8.1
Permissible Heat Exposure Threshold Limit Values (°C and [°F] WBGT)
When Level D PPE is Worn

Allocation of Work in a cycle of work and recovery	Workload		
	Light	Moderate	Heavy
75 to 100%	31 (87.8)	28 (82.4)	--
50 to 75%	31 (87.8)	29 (84.2)	27.5 (81.5)
25-50%	32 (89.6)	30 (86)	29 (84.2)
0-25%	32.5 (90.5)	31.5 (88.7)	30.5 (86.9)

NOTE: The workload category may be established by ranking each job into light, medium, or heavy categories on the basis of type of operation:

- Light: (up to 200 kcal/hr or 800 Btu/hr): e.g., sitting or standing to control machines, performing light hand or arm work.
- Moderate: (200-350 kcal/hr or 800-1400 Btu/hr): e.g., walking about with moderate lifting and pushing.
- Heavy: (350-500 kcal/hr or 1400-2000 Btu/hr): e.g., pick and shovel work.

8.1.4.3 If at the end of a work period, the core body temperature for any team member exceeds 38°C (100.4°F), then the next lower work/rest regimen will be instituted.

8.1.4.4 If no team member's core body temperature exceeds 37.5°C (99.5°F), then the next higher work/rest regimen may be instituted.

8.1.4.5 A WBGT monitor may be used to monitor for conditions that pose a threat of heat stress. WBGT monitoring should be conducted by the SSHO when workers are dressed in Level D ensembles and the ambient temperature exceeds 75°F. Once the WBGT has been determined, the SSHO can estimate workers' metabolic heat load using Table D1-8.1 to determine the appropriate work/rest regimen. Modification to the work/rest schedule can be instituted by the SSHO based on physiological monitoring data.

8.1.4.6 Whenever a new team member begins work on-site, that member's entire team will use the appropriate table for establishing the work/rest regimen until the new team member is acclimated.

8.1.4.7 Use of cooling vests by team members may also modify the work/rest regimen or the time of stay for continuous work. In this event, work/rest regimens will be modified as described in Paragraphs 8.1.4.3 through 8.1.4.6 above.

8.1.5 Prevention of Heat Stress

Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illnesses. To avoid heat stress, the following steps should be taken:

- Adjust work schedules;
 - Modify work/rest schedules as described above; and
 - Mandate work slowdowns as needed;
- Perform work during cooler hours of the day, if possible;
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods;
- Ensure workers are acclimated to weather conditions and have extensive experience in the selected level of PPE. Workers can be acclimatized by gradually increasing the workload over a period of days;
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluids intake must approximately equal the amount of water lost in sweat, e.g., 8 fluid ounces (0.23 liters) of water must be ingested for approximately every 8 ounces (0.23 kg) of weight loss. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
 - Maintain water temperature at 50° to 60°F (10° to 16.6°C);
 - Provide small disposable cups that hold about 4 ounces (0.1 liter);
 - Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or diluted drinks) before beginning work; and

- Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight;
- Train workers to recognize the symptoms of heat-related illnesses;
- Provide potassium supplements (banana or potassium chloride tablets); and
- Rotate personnel and alternate job functions.

8.2 COLD-RELATED ILLNESS

8.2.1 General

8.2.1.1 Exposure to low temperatures presents a risk to employee safety and health both through the direct effect of the low temperature on the body and collateral effects such as slipping on ice, decreased dexterity, and reduced dependability of equipment. Work conducted in the winter months can become a hazard for field personnel due to cold exposure. All personnel must exercise increased care when working in cold environments to prevent accidents that may result from the cold. The effects of cold exposure include frostbite and hypothermia. Wind increases the impact of cold on a person's body. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally labeled frostbite. Recognition of the symptoms of cold-related illness will be discussed during the health and safety briefing conducted prior to the onset of site activities.

8.2.1.2 Hypothermia is a life-threatening condition in which the core body temperature falls below 95°F. Hypothermia can occur at temperatures above freezing particularly when the skin or clothing becomes wet. During exposure to cold, maximum shivering occurs when the core temperature falls to 95°F. As hypothermia progresses, depression of the central nervous system becomes increasingly more severe (**Table 8.2**). This accounts for the progressive signs and symptoms ranging from sluggishness and slurred speech to disorientation and eventually unconsciousness.

Table 8.2
Progressive Clinical Symptoms of Hypothermia

Core Temperature (°F)	Clinical Symptoms
95°	Maximum shivering
87° - 89°	Consciousness clouded; blood pressure becomes difficult to obtain; pupils dilated
84° - 86°	Progressive loss of consciousness; muscular rigidity; respiratory rate decreases
79°	Victim rarely conscious
70° - 72°	Maximum risk of ventricular fibrillation

8.2.1.3 Frostbite is both the general and medical term given to areas of cold injury. Unlike hypothermia, frostbite rarely occurs unless environmental temperatures are less than freezing and usually less than 20°F. Frostbite injuries occur most commonly on the distal parts of the body (nose, earlobes, hands, and feet) that are subject to intense vasoconstriction. The three general categories of frostbite are:

- **Frostnip** - A whitened area of the skin that is slightly burning or painful.
- **Superficial** frostbite - Waxy, white skin with a firm sensation but with some resiliency. Symptomatically feels “warm” to the victim with a notable cessation of pain.
- **Deep frostbite** - Tissue damage deeper than the skin, at times, down to the bone. The skin is cold, numb, and hard.

8.2.2 Preventing Cold Exposure

In preventing cold stress, the SSHO must consider factors relating to both the worker and the environment. Training, medical screening, establishment of administrative controls, selecting proper work clothing, and wind-chill monitoring all contribute to the prevention of hypothermia and frostbite.

- **Training** - Recognizing the early signs and symptoms of cold stress can help prevent serious injury. Therefore, workers will be trained to recognize the symptoms of hypothermia and frostbite and have appropriate first-aid instruction. When the air temperature is below 50°F, the SSHO will inform workers of the proper clothing requirements and any work practices that are in effect to reduce cold exposure.
- **Administrative Controls** - The SSHO will establish a work/rest schedule based upon worker monitoring. At the first sign of uncontrollable shivering the worker will be rested in a heated shelter. Work will stop when the air temperature reaches 0°F.
- **Clothing** - Workers will be encouraged to layer clothing when air temperature is below 50°F. Clothing that has a high insulation value will be worn under protective garments. Insulated gloves will be worn when the wind chill index is below 32°F.

SECTION 9 STANDARD OPERATING PROCEDURES

9.1 GENERAL SAFETY

9.1.1 Field personnel must be able to recognize and understand potential hazards associated with the operations they will be performing. Personnel active in site operations must be thoroughly familiar with the programs, practices, and procedures outlined in this SHSP. SOPs for specific activities are provided in **Appendix C of the APP**.

9.1.2 The following are considered standard safe work practices for work on this project.

- Eating, drinking, chewing tobacco, smoking, and carrying matches or lighters are prohibited in a contaminated or potentially contaminated area or where the possibility for contamination transfer exists.
- Avoid contact with potentially contaminated substances or materials. Avoid, whenever possible, kneeling or sitting on the ground. Do not place monitoring equipment on potentially contaminated surfaces.
- All field members should be alert to all potentially dangerous situations e.g., presence of strong, irritating, unusual, or nauseating odors.
- For each site field personnel shall be familiar with:
 - The potential harmful chemicals;
 - Terrain;
 - Location of work zones;
 - Location of emergency equipment; and
 - Designated PPE and clothing for work assignment;
- All workers will use protective equipment as specified in this SSHP;
- Contractor shall supply an eye flush;
- Workers should stay clear of heavy equipment when in operation;
- Wearing personal protective equipment can result in an impairment of the ability to operate site equipment. Field personnel should pay specific attention to decreased performance capabilities resulting from the use of personal protective equipment, such as poor tactile skills when wearing certain types of gloves. Prior knowledge of

limitations imposed by the use of such equipment will allow the worker to assess the decrease in his or her capability to perform field operations in a safe manner;

- Wearing of jewelry, such as rings and loose bracelets and necklaces, is prohibited for personnel operating mechanized or electrical field equipment in order to avoid their entanglement in or interference with such machinery or equipment;
- Overhead power lines or buried cables pose a danger of shock or electrocution if workers contact or sever them during operations. The location of these potential hazards should be ascertained before beginning site activities;
- Buddy system procedures will be enforced during site operations;
- Site personnel will perform only those tasks that they are qualified to perform;
- Site visitors are to be escorted by qualified personnel at all times;
- Running and horseplay are prohibited in all areas of the site; and
- The number of personnel in the Exclusion Zone (EZ) will be the minimum number necessary to perform the task in a safe and efficient manner.

9.1.3 The SSHO will maintain and, when necessary, update the SOP documents.

9.2 MATERIAL HANDLING PROCEDURES

On-site personnel shall avoid contact with potentially-contaminated substances. All wastes generated during activities on-site should be disposed of as specified in the task-specific SOP.

9.3 DRUM/CONTAINER/TANK HANDLING

The handling of HTW drums and containers shall be kept to a minimum. Drum/container handling procedures and precautions presented in Section 28 of the Safety and Health Requirements Manual (USACE, 1996) and Section 6 of the EM 385-1-1 shall be observed. The Drum/Container Handling AHA is included in **Appendix B to the APP**, and the SOP #8 is provided in **Appendix C to the APP**. If a forklift is used for drum/container handling, operators must be certified in accordance with 29 CFR 1910.178.

9.4 COMPREHENSIVE ACTIVITY HAZARD ANALYSIS OF TREATMENT TECHNOLOGIES EMPLOYED AT THE SITE

On-site treatment of contaminated soil or water will not occur during the field activities at FTMM.

SECTION 10 SITE CONTROL MEASURES

10.1 WORK ZONES

10.1.1 The purpose of establishing work zones and maintaining site control is to minimize potential contamination of workers, protect the public, and prevent unauthorized entry to work areas. Site control involves the physical arrangement of, and controlling access into, established work zones. Additionally, PPE requirements are specified for each work zone.

10.1.2 The SSHO must determine whether an EZ, contamination reduction zone (CRZ), and support zone (SZ) is needed around the operation taking place.

10.2 EXCLUSION ZONE

10.2.1 The EZ may consist simply of a 50-foot safety zone when equipment (e.g. Geoprobe®, forklift) is being used. The EZ boundary will be physically marked by tape or temporary barriers, when engineering controls are used, or otherwise well defined by physical and geographic boundaries.

10.2.2 Should an unauthorized person enter the EZ, work will be stopped and the unauthorized person will be escorted out of the EZ. Following any unauthorized entry of the EZ, the event will be recorded in the field logbook and site control measures will be reevaluated immediately with regard to preventing future unauthorized intrusions.

10.3 CONTAMINATION REDUCTION ZONE

10.3.1 The CRZ is the transition area between the EZ and the SZ. Since no contamination is expected at the site, the CRZ is not applicable. This zone typically provides an area to prevent or reduce the transfer of hazardous materials that may have contaminated personnel or equipment leaving the EZ.

10.3.2 The CRZ will be set up as deemed necessary by the SSHO – however contamination reduction operations are anticipated to include only the removal/disposal of outer gloves (and Tyvek if used) into a trash bag upon completion of groundwater and soil sampling activities.

10.4 SUPPORT ZONE

10.4.1 The SZ is considered to be a clean area and will be located at sufficient distance from intrusive activities to ensure the safety of SZ personnel.

10.4.2 The SZ contains the command post (field office trailer) and other support supplies. Level D PPE is the appropriate apparel within this zone. In the event that site activities are being conducted during cold weather, safety equipment susceptible to freezing (such as eye wash and decontamination solutions) will be stored in a heated space. All non-essential activities (e.g. paperwork, lunch) will occur in the SZ.

SECTION 11

PERSONAL HYGIENE AND DECONTAMINATION

11.1 INTRODUCTION

General sanitation requirements are applicable to work at FTMM. The following sections describe the details of these requirements and procedures.

11.2 GENERAL SANITATION

11.2.1 The sanitation provisions specified in Section 2 of EM 385-1-1 will be established and maintained on site as outlined in the following paragraphs.

11.2.2 Eating, drinking, smoking, chewing, and application of cosmetics will be restricted to the SZ.

11.3 DRINKING WATER

Single service water bottles will be used during the program. Cool, potable drinking water may be provided in sanitary, portable containers at all sites. Where necessary, disposable cups will also be provided and used to drink from the drinking water containers.

11.4 TOILETS

11.4.1 When sanitary sewers are not available, one of the following facilities, unless prohibited by local codes, shall be provided: chemical toilets; recirculating toilets; combustion toilets, or other toilet systems as approved by state/local governments.

11.4.2 Unless mobile crews have transportation readily available to nearby toilet facilities, toilets shall be provided for the job sites according to the following:

Table 11.1
Minimum Number of Toilets Required

Number of employees	Minimum number of toilets
1-15	One
16-35	Two
36-55	Three

1 –Where toilets will not be utilized by women, urinals may be provided instead of commodes, except where the number of commodes shall not be reduced to fewer than 2/3 of the minimum number specified above.

11.4.3 Where toilet rooms may be occupied by no more than one person at a time, can be locked from the inside, and contain at least one toilet seat, separate toilet rooms for each sex need not be provided. Under temporary field conditions, provisions shall be made to assure that at least one toilet facility is available.

1 **11.5 HAND-WASHING FACILITIES**

2 Hand-washing facilities or cleaning wipes will be provided in the portable toilet facilities
3 and cleaning wipes will be provided in the crew break area. Field team personnel will wash their
4 hands prior to eating or drinking, and prior to leaving a site.

5 **11.6 DESIGNATED SMOKING AREAS**

6 Smoking will only be permitted in specific areas designated by the SSHO.

SECTION 12 EQUIPMENT DECONTAMINATION

Equipment will be cleaned to remove gross contamination. Soap and water washes will be performed when required for sampling or for heavy contamination. Gross contamination, such as caked mud and dirt on augers and split spoons, will be removed at the work site and placed back in the borehole or drummed with other drilling spoils if contaminant indicators (e.g., PID readings) warrant drumming of the soils. The AHAs that address decontamination of personnel, heavy equipment, and portable tools, are provided in **Appendix B of the APP**.

SECTION 13 EMERGENCY EQUIPMENT AND FIRST AID

13.1 FIRST AID EQUIPMENT

First aid kits for the treatment of minor injuries and burns will be maintained on-site by the SSHO. The first aid kits will meet the requirements for Type III kits contained in EM 385-1-1. First aid kits will be easily accessible to site workers, protected from the weather, and stored in a manner that keeps the contained items sterile. The location(s) of first aid kits will be clearly marked. (The portable kits will present in each field vehicle.)

13.2 FIRE FIGHTING EQUIPMENT

Fire extinguishers will be maintained on-site by the SSHO in accordance with EM 385-1-1. Fire extinguishers will also be placed in each work vehicle.

**Table 13.1
Recommended Fire Extinguisher Size/Type**

Setting	Recommended Extinguisher Size/Type
Office	2-A 20-B:C
Vehicles	2-A 10-B:C

SECTION 14 **EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES**

14.1 INTRODUCTION

The purpose of this Emergency Response and Contingency Plan (ERCP) is to define procedures to protect human health and the environment both on and off site in the event of an accident or emergency during the field activities at FTMM.

14.2 EMERGENCY RESPONSE PROCEDURES

14.2.1 This ERCP complies with 29 CFR 1910.120(1) and includes the following elements:

- Pre-emergency planning;
- Personnel roles, lines of authority, training, and communications;
- Posted instructions and emergency contact list;
- Emergency recognition and prevention;
- Description of the site topography, layout, and prevailing weather conditions;
- Criteria and procedures for site evacuation;
- Procedures for decontamination and medical treatment;
- Evacuation routes and procedures;
- Emergency alerting and response procedure;
- Critique of emergency responses and follow-up;
- PPE and emergency equipment; and
- Material Safety Data Sheets.

14.2.2 This ERCP meets the guidelines given in “Guidance on Environmental Protection Agency (EPA) Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties,” Appendix B, Contingency Plan (EPA, 1990).

14.3 EMERGENCY IDENTIFICATION

It is essential that site personnel be prepared in the event of an emergency. Emergencies can take many forms, such as exposure to chemical agents of various types, illnesses or injuries, chemical exposure, fires, compressed gas leaks, or sudden changes in the weather. The

remaining sections of the ERCP outline general emergency and contingency planning procedures to be followed at FTMM. Emergency information and instructions will be posted as appropriate.

14.4 EMERGENCY INFORMATION DOCUMENTATION

14.4.1.1 The following forms, provided in **Appendix D in the APP**, will be completed by all team members to ensure that they have been instructed in the execution of emergency procedures:

- Plan Acceptance Form (acknowledging receipt and review of the APP and SHSP); and
- Daily Safety Meeting Attendance Log (tailgate meetings are conducted by the SSHO for all site personnel).

14.4.2.1 The SSHO will maintain the completed forms on site.

14.5 PRE-EMERGENCY PLANNING

14.5.1 Situations requiring emergency response can be minimized by planning and approaching the circumstances in a calm, deliberate manner. As conditions dictate, the SSHO will be the on-site emergency coordinator in case of an accident or incident requiring emergency response. All personnel will be briefed at the morning tailgate safety meetings of the location of the cellular telephones and who has on-site radio communications. This information will also be included in all visitor briefings and in briefings to residents, if the work is occurring at a residential property.

14.5.2 Emergency conditions exist if:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure;
- A condition occurs that is more hazardous than anticipated; and/or
- Fires, explosions, structural collapses/failures, and/or unusual weather conditions (thunderstorms, lightning, high winds, etc.) occur.

14.5.3 If an emergency occurs, direct voice communication is used to sound the alarm. If personnel are out of range of direct voice communication, an air horn meeting the requirements of 29 CFR §1910.165 is sounded. General emergency procedures and specific procedures for personal injury are described within this section. A list of emergency contacts is provided in **Table 9.1 of the APP**. A map and driving directions to the nearest medical facilities (Monmouth Medical Center) are included as **Figures 9.1 and 9.2, respectively, of the APP**.

14.5.4 In case of emergency, SSHO will implement the site emergency procedures. The following procedures will be followed:

- Notify the contact listed in **Table 9.1 of the APP** when an emergency occurs;

- Use the "buddy" system (pairs);
- Maintain visual contact between "pairs." Each team member remains close to the other to assist in case of emergencies;
- If any member of the field crew experiences any adverse effects or symptoms of exposure, the entire field crew will immediately halt work and act according to the instructions provided by the Field Team Leader;
- Any condition that suggests a situation more hazardous than anticipated will result in evacuating the field team and re-evaluating the hazard and the level of protection required; and
- If an accident occurs, the FTL or SSHO is to complete an accident investigation and submit the required paperwork. Refer to Chapter 8, Accident Reporting of the APP for additional accident reporting guidelines. Follow-up action will be taken to correct the situation that caused the accident.

14.5.5 The SSHO is specifically responsible for the following:

- Implementing the site ERCP, including ordering site evacuations, coordinating fire-fighting efforts, and directing spill control and cleanup;
- Supervising site evacuation;
- Contacting emergency services such as the fire department, ambulance and security services, as may be required;
- Assisting in providing first aid services and medical support or evacuation for injured or exposed personnel;
- Determining the cause of the incident and ways to prevent future occurrences; and
- Preparing a written incident or near-miss report for submission to Parsons, the COR and CENAN.

14.5.6 On-site personnel are responsible for reporting emergencies or conditions immediately to their supervisors, alerting other employees; helping injured personnel, and assisting as directed to mitigate the incident.

14.6 PERSONNEL ROLES, LINES OF AUTHORITY, AND TRAINING

14.6.1 A clear chain-of-command in emergency situations ensures clear and consistent communication between site personnel and, therefore, results in more effective response to the emergency situation. This section describes the various roles, responsibilities, and communication procedures that will be followed by personnel working on this project in the event of an emergency.

14.6.2 The duties of site personnel in emergency situations are outlined below:

- The **FTL** will direct all emergency response operations, designate duties to other site personnel, and serve as liaison with government officials and emergency response teams; and
- The **SSHO** will make initial contact with off-site emergency response teams (first aid, fire, police, etc.), make recommendations on work stoppage, and provide for on-site first aid and rescue.

14.6.3 Training requirements for site personnel, including site-specific training are discussed in Chapter 4, Training, of this SHSP.

14.7 EMERGENCY CONTACT LIST

Emergency telephone numbers for the closest hospitals capable of providing emergency service, the Poison Control Center, local police and fire departments, and key safety and management personnel from USAESCH, CENAN FTMM and Parsons are included in Chapter 9 **Table 9.1of the APP**, and will also be posted in the field office trailer and other conspicuous locations on site. The SSHO will be responsible for contacting the listed emergency contacts.

14.8 SITE TOPOGRAPHY, LAYOUT, AND PREVAILING WEATHER CONDITIONS

A description of FTMM including topography, geology, and climate is contained in Chapter 1, Introduction, of the project Work Plans.

14.9 EMERGENCY RESPONSE PREPAREDNESS

The following emergency response preparedness steps will be taken prior to any intrusive investigation activities:

- Personnel will have the proper PPE and will be trained in its correct use; and
- The “buddy system” will be enforced. No one will be permitted to enter the EZ alone. Personnel within the EZ will remain in contact with each other at all times.

14.10 MEDICAL EMERGENCIES

14.10.1 Treatment of Minor Injuries

For minor injuries the on-site first aid/CPR trained personnel will provide the initial first aid response. For injuries other than minor injuries refer to Chapter 9, Medical Support of the APP.

14.10.2 Off Site Accidents

14.10.2.1 If an accident occurs off site, the personnel below will be notified in the following order:

1. FTL/SSHO

2. PM/PHSO

14.10.2.2 The phone numbers of these contacts are provided in **Table 9.1 of the APP** and will be kept in all field vehicles.

14.10.3 Accident Reporting Requirements

Accident reporting requirements are described in Chapter 8 of the APP.

14.11 EMERGENCY EVACUATION PLAN

14.11.1 General Evacuation Plan

14.11.1.1 In the case of an operational shutdown as a result of severe weather conditions, or if other hazards exist on-site, the SSHO or FTL will use direct voice communication is used to sound the alarm. If personnel are out of range of direct voice communication, an air horn meeting the requirements of 29 CFR §1910.165 is sounded. All personnel in the work area will secure their equipment and proceed to the assembly point, located a safe distance (designated at morning safety meeting) at an upwind location from the work area. The SSHO or designated alternate will obtain the site entry/exit logs to ensure that all personnel have been safely evacuated. The FTL will coordinate with the SSHO to determine when it is safe to re-enter the work area and resume work.

14.11.1.2 In the general case of a large fire or explosion, a site evacuation will be ordered and the following steps implemented:

- The alarm will be sounded, appropriate emergency response agencies will be notified, and Parsons PM, CENAN, FTMM, and USAESCH will be advised of the situation;
- Personnel will assemble in an upwind area when the situation permits, and a head count will be taken; and
- The extent of the problem will be determined before additional actions are taken.

14.11.2 Evacuation Signals and Routes

14.11.2.1 Two-way radio communication, direct voice communication, or an air-horn (three blasts - each of five seconds duration) will be used to notify employees of the necessity to evacuate an area involved in a release/spill of a hazardous material. Each field team will have a two-way radio or cell phone. A two-way radio or cell phone will be kept in the SSHO's work location to monitor for emergencies. Total site evacuation will be initiated only by the SSHO. However, in their absence, the decision to preserve the health and safety of employees and the public will take precedence.

14.11.2.2 Evacuation routes will be discussed and described during the daily tailgate safety meeting. Periodic drills (before each new phase of work) will be conducted to familiarize each employee with the proper routes and procedures.

14.11.3 Evacuation Procedures

In the event that evacuation is necessary, the following actions will be taken:

- The alarm will be activated;
- No further entry of visitors, contractors, or trucks will be permitted to the site. Vehicle and equipment traffic within the site will cease in order to allow the safe exit of personnel and movement of emergency equipment;
- All machinery and equipment will be shut off as long as it is safe to do so;
- All on-site personnel, visitors, and contractors in the SZ will assemble at designated area, for a head count and wait for further instructions from the SSHO;
- Upon completion of the head count, the senior person will provide the information to the SSHO;
- Visitors will also be accounted for;
- A final tally of persons will be made by the SSHO or his designee. No attempt will be made to find persons not accounted for if the rescue attempt involves endangering the lives of employees;
- Personnel will be assigned by the SSHO to be available at a specific coordination point to direct and brief emergency responders;
- Re-entry into the site will be made only after clearance has been given by the SSHO. At his direction, a signal or other notification will be given for re-entry into the site; and
- Drills will be held at the beginning of intrusive fieldwork and at intervals as deemed necessary during the intrusive work. Drills will be treated with the same seriousness as an actual emergency. However, the drills will be held in a manner that does not disturb or alarm the residents or the public.

14.12 FIRE FIGHTING PLAN

14.12.1 Fire Prevention

Explosions and fires not only pose the obvious hazards of intense heat, open flames, smoke inhalation, and flying objects, but may also cause the release of toxic chemicals into the environment. Such releases can threaten both personnel on-site and members of the general public living or working nearby. Site personnel involved with potentially flammable material or operations will follow the guidelines listed below and EM 385-1-1 to prevent fires and explosions:

- Potentially explosive/flammable atmospheres involving gases or vapors will be monitored using a combustible gas indicator;
- Prior to initiation of site activities involving explosive/flammable materials, all potential ignition sources will be removed or extinguished;
- Non-sparking and explosion-proof equipment will be used whenever the potential for ignition of flammable/explosive gases/vapors/liquids exists;
- Dilution or induced ventilation may be used to decrease the airborne concentration of explosive/flammable atmospheres;
- Smoking is prohibited at work sites, or in the vicinity of, operations which may present a fire hazard;
- Flammable and/or combustible liquids must be handled only in approved, properly labeled metal safety cans equipped with flash arrestors and self-closing lids;
- Transfer of flammable liquids from one metal container to another will be done only when the containers are electrically interconnected (electrically bonded);
- The motors of all equipment being fueled will be shut off during the fueling operations; and
- Metal drums used for storing flammable/combustible liquids will be equipped with self-closing safety faucets, vent bung fittings, grounding cables and drip pans, and will be stored outside buildings in an area approved by the SSHO.

14.12.2 Fire Protection

The following safe work practices will be used to protect against fires:

- At least one portable fire extinguisher having a rating of not less than 20:ABC will be located at each work site; and
- At least one portable fire extinguisher having a rating of not less than 5:ABC will be located in vehicles used for site work.

14.13 SPILL PLAN

The only hazardous materials that would be present at FTMM during the field work that might present a spill threat are fuels and oils. Fuels and oils may be brought on-site occasionally for equipment. These will be brought on-site in small quantity containers in the amounts needed for that day's operations. In the event of a spill, the Field Team Leader and/or the SSHO will be notified immediately. The important factors are that no personnel are overexposed to vapors, gases, or mists and that the liquid does not ignite. Waste spillage must not be allowed to contaminate any local water source. Small dikes will be erected to contain spills, if necessary,

until proper disposal can be completed. Subsequent to cleanup activities, the SSHO will survey the area to ensure that no toxic or explosive vapors remain.

14.14 SAFETY DATA SHEETS

14.14.1 Safety Data Sheets (SDSs) are prepared by manufacturers or producers to provide specific information on the safety precautions and health effects of a particular chemical or mixture. The SDS contains at a minimum the following information:

- Chemical and common names;
- Physical and chemical characteristics;
- Physical hazards;
- Health hazards;
- Primary routes of entry;
- Exposure limits;
- Carcinogenic potential;
- Handling and protective precautions;
- Control measures;
- Emergency and first aid procedures;
- Date of SDS preparation; and
- Name and address of manufacturer.

14.14.2 If chemicals are ordered, the Field Team Leader or his designee will specify on the purchase order that chemicals are not to be shipped without corresponding SDSs. When chemicals and SDS arrive, the SSHO or his designee will review them for completeness. Should any SDS be incomplete, a letter or fax will be sent immediately to the manufacturer requesting the additional information, Parsons or its subcontractors will not accept any shipped chemical materials without an SDS.

14.14.3 A complete file of SDSs for all hazardous chemicals to which an employee of Parsons may be exposed will be kept in labeled files on site. In the event that a SDS is missing the employee should immediately contact the SSHO or PHSO.

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SECTION 16 EMERGENCY RESPONSE TEAM

In the event of an accident, the following parties will have the responsibilities detailed below.

16.1 EMERGENCY RESPONSE TEAM

- Locate all victims, assess their conditions, and make an on-scene determination of the resources needed to stabilize and transport;
- Request emergency response by outside agencies, if required;
- Assess the situation and determine the existing hazards, potential for additional hazards, and need for additional response. Supervisors must ensure the hazardous condition is stabilized, eliminated, or permanently fixed. If personnel or properties are jeopardized, a determination must be made to alert the local community; and
- Remove injured personnel from the area. Decontamination, if required, will be accomplished through the existing personnel decontamination station.

16.2 SSHO

The overall responsibility during emergencies rests with the SSHO. In case of emergency, the SSHO will implement the site emergency procedures. The SSHO is specifically responsible for the following:

- Implementing the site Emergency Response and Contingency Plan (ERCP), including ordering site evacuations, coordinating firefighting efforts, and directing spill control and cleanup;
- Supervising site evacuation and decontamination procedures;
- Contacting emergency services such as the fire department, ambulance and security services, as may be required as requested by the Emergency Response Team;
- Assisting in providing first aid services and medical support or evacuation for injured or exposed personnel;
- Determining the cause of the incident and ways to prevent future occurrences; and
- Preparing a written incident report for submission to the KO or his/her representative and the CENAN.

16.3 ALL ON-SITE PERSONNEL

On-site personnel are responsible for reporting emergencies immediately to their supervisors, alerting other employees, helping injured personnel, and assisting as directed to mitigate the incident.

16.4 EMERGENCY TRAINING

Prior to initiating the field activities at FTMM, the following will occur under the direction of the SSHO and PHSO:

16.4.1 Team Training

This will include the following:

- Hazard communication; and
- Emergency procedures.

SECTION 17
CONFINED SPACE ENTRY

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3 Confined space entry is not anticipated as part of the project.

SECTION 18 **LOGS, REPORTS, AND RECORD KEEPING**

18.1 LOGBOOK

The SSHO will keep a log recording all of the following aspects related to safety at the site. This information will be maintained in a logbook or personal digital assistant. The log will include at a minimum, but not be limited to:

- Date and recorder of log;
- Safety briefings (time conducted, material discussed, etc.);
- Weather conditions;
- Significant site events relating to safety;
- Heat stress monitoring data;
- Accidents and Emergencies;
- Stop work events related to safety;
- Safety audits and inspections;
- Site visitors; and
- Issues or problems encountered.

18.2 TRAINING DOCUMENTATION

The SSHO will maintain training documentation of the following information:

- Date and recorder of log;
- Nature of training (personnel will complete the appropriate documentation of training form);
- Three days of supervised work (for new employees); and
- Visitor training.

18.3 EQUIPMENT MAINTENANCE INFORMATION

The SSHO will document all information related to safety equipment maintenance, calibration, and standardization in the logbook.

18.4 REPORTS

Accident reporting and investigation is covered in Chapter 8 of the APP.

18.5 RECORDKEEPING

18.5.1 The SSHO will establish and maintain a filing system on-site for health and safety records, reports, and other related information such as individual training, medical surveillance, etc. Folders in the health and safety filing system will include:

- Training Records -- Certificates for training required by 29 CFR1910.120 (40-hour initial HAZWOPER, 8-hr refresher, and supervisory training) will be maintained at the site. Additionally, documentation of three days work under supervision, CPR, and First Aid will be available at the site;
- Medical Monitoring -- Documentation of current enrollment (within last 12 months) in a medical monitoring program will be available for each employee working at the site. Documentation will consist of the employee's Health Status Report that is written and signed by the examining physician;
- Accident Reports -- Copies of any accident/incident reports and follow-up reports; and
- Site Health and Safety Plan Acknowledgment Forms -- Copies of the Health and Safety Plan Acceptance Forms documenting that employees have read and understand the APP and SSHP. Forms will be maintained at the site.

18.5.2 Documentation of personnel credentials, site activities, and environmental monitoring will be maintained on-site. The SSHO will maintain and update these records. Documentation, at a minimum, shall include certificates for the following:

- Initial 40-hour Hazardous Waste Operations and Emergency Response Training;
- Applicable annual 8-hour refresher health and safety training;
- Applicable 8-hour supervisory Hazardous Waste Operations and Emergency Response Training;
- On-the-job training, 3-day;
- First Aid and CPR;
- OSHA Job Safety and Health Protection Poster: As there will be no field trailer or office, these materials and information will be made available to employees during site specific safety training and as requested;

- The OSHA 300 log: This log contains the required information for recording on-site injuries and illnesses, and must be generated by each company safety contact. A copy shall be maintained on-site and posted appropriate;
- Site sign-in sheet: This record shall contain the date, name of each individual on-site, the employer, and the time entering and leaving the site. All personnel will sign this form;
- Accident/incident/near miss reports: All accidents, safety/health incidents, and near misses shall be investigated, and investigation reports shall be maintained at the site;
- A Site Health and Safety Plan Acknowledgment form containing the date, names of the individuals, the employer, and the individuals' signature;
- The initial task-specific health and safety training record containing the date, the individuals' names and signatures, and the company they are representing;
- The Safety Meeting Record containing the date, the topics discussed, individuals' names and signatures, and the company they are representing;
- Safety problem/observations: These records: 1) document unsafe behavior and initiate disciplinary action, and 2) document exemplary safety behavior;
- The health and safety inspection log completed daily to verify that site conditions and activities are in compliance with the SHSP. Deficiencies will be noted and changes made immediately; and
- The safety and health program plan required under 29 CFR 1910.120(b).

18.5.3 All records related to the project will be kept in the project files on-site for the duration of field activities. Upon completion of all field tasks, all records will be maintained in the Parsons Boston office.

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APPENDIX B ACCIDENT HAZARD ANALYSIS

Activity/Work Task: ACTIVITIES RELATED TO SITE VISITS AND SITE WALKS	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, gloves, and high visibility vest. Ear plugs/muffs, if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Site visit/walk	Slips, Trips, Falls	- Workers will be aware of potentially slippery surfaces and tripping hazards. - Work slowly during transit. Jumping, running, and horseplay are prohibited. - Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. - Clean up all spills immediately. - Personnel will notify the SSHA of any unsafe conditions	L
	Rain	Have proper PPE and clothing (i.e. rain gear, footwear, etc) available. Be aware of slip hazards, puddles, etc.	L
	Sunshine (UV radiation)	Have sunscreen available for ultraviolet protection. Have water for dehydration.	L
	Lightning	Do not begin or continue work until lightning subsides for 20 minutes.	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
	High winds, dust storm	Wear goggles if dust/debris is visible.	L
	Cold and Heat Stress	- Visitors will dress accordingly to prevent injuries from extreme heat, or cold. - SSHO will monitor for cold/heat stress symptoms.	L
	Biological Hazards (ticks, bees, mosquitoes, snakes, etc.)	- Personnel will be aware of potential exposure to biological hazards. - Wear appropriate clothing (hat, long-sleeve shirt, long pants, gloves, boots etc.) and insect repellent.	L
	Site Hazards Material Exposure	- Training and safety awareness of potential exposure to contaminants at the site. - Training of all personnel decontamination procedures (if appropriate to visit). - Appropriate PPE will be worn dependent on site conditions and actions levels. (if appropriate to visit) - Must sign off on health and safety plan. - Visitor will be escorted around site by a 40 hour trained individual unless cleared with the SSHO.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Appropriate PPE for selection operation, at minimum – a. Long Sleeve Shirt b. Long Legged Pants c. Sturdy Work Boots d. Rain gear, when required e. Safety glasses (use goggles when dusty) f. High visibility vest (when working near vehicles) g. Other PPE as required (hard hat, hearing protection)	<u>Qualified Personnel</u> None required. <u>Training</u> 1) Visitors report to the SSHO who will give a short health and safety orientation and require sign off on the health and safety plan. The SSHO determines if the visitor can access the site based on verification of 40 training or if the visitor(s) will need to be escorted by a 40-hour trained individual onsite. 2) OSHA HAZWOPER and medical monitoring. 3) Additional training (such as first aid/CPR, bloodborne pathogens, etc.) as applicable.	None required.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: OPERATION OF MOTOR VEHICLES	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Steel-toe boots, safety glasses (tinted as necessary), and high visibility vest. Ear plugs/muffs, if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Driving to and from the job site	Vehicle Accident	- All employees shall complete the ParsonsU safety module on Defensive Driving. - Plan your travel route and check maps for directions or discuss with colleagues. - Inspect vehicle before driving and check for proper equipment/supplies. - Clean windows and mirrors as needed throughout the trip. - Have sun glasses available to reduce sun glare and wear as needed. - Follow vehicle maintenance schedule to reduce possibilities of breakdown while driving.	L
	Distraction while driving	- Stop driving a vehicle, regardless of the speed (i.e. even 5 mph) or location (i.e. private road), when the potential of being distracted by conversation exists. - Drivers are prohibited from using communication devices (e.g., cell phones) while operating any motor vehicle.	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
	Fatigue/Falling asleep	▪ Get adequate rest prior to driving. ▪ Pull over and rest if experiencing drowsiness ▪ Change seat position, stretch, open the window, adjust radio if experiencing drowsiness.	L
	Weather /Road conditions	▪ Check road and weather conditions prior to driving. ▪ Be prepared to adjust driving if conditions change. ▪ Travel in daylight hours if possible. ▪ Give yourself plenty of time to allow for slow-downs due to construction, accidents, or other unforeseen circumstances. ▪ Use lights at night and lights/wipers during inclement weather.	L
	Theft/Crime of parked vehicle	▪ Lock the vehicle when leaving the area ▪ Use ant-theft deterrents (e.g., the club, visible alarm indicators, etc.) ▪ Park in well lit areas. ▪ Hide valuables	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
- Appropriate PPE for selection operation, at minimum – - Long sleeve shirt - Long pants - Steel-toe boots - Tinted safety glasses (if needed for glare) - High visibility vest - Designated Site vehicles will be equipped with the minimum - - Map and Directions to site medical facility - Project Emergency Contact Telephone Listing - Serviceable First Aid Kit - Serviceable 2A:10BC rated or larger fire extinguisher - Other vehicles designated as personnel conveyance will be equipped with – - Map and Directions to site medical facility - Project Emergency Contact Telephone Listing - Forms of Communications - Project or personal Cellular Phone	<u>Qualified Personnel</u> - First Aid/CPR – SSHO and one other individual. - Any person operating a motor vehicle shall possess, at all times while operating such vehicle, a license/permit valid for the equipment being operated <u>Training</u> - Site-specific WP, SOP and AHA - Driver’s license. All vehicles must have the required State vehicle registration and/or inspection documentation.	<u>1. Initial (Site Selection)</u> – Before initial use, vehicles not otherwise inspected by State or local authorities, shall be inspected by a qualified mechanic and found in safe operating condition and in compliance with all required published vehicle safety standards. Prior to each use, but not more often than daily, motor vehicles shall be checked by the operator to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use: • Service brakes, including trailer brake connections; • Parking system (hand brake); • Emergency stopping system (brakes); • Tires; • Horns; • Steering mechanism; • Coupling devices (if applicable); • Seat/shoulder belts; • Operating controls • Safety devices • Accessories including lights, reflectors, windshield wipers, and defrosters where such equipment is necessary If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily</u> – Vehicles shall be inspected daily by operator (see above). Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. SSHO will update site’s MSDS files on all items, supplies and material brought onto site. <u>3. Weekly</u> – First Aid/CPR kit(s) and fire extinguisher(s) <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Vehicle Inspection, ON-SITE			
This form must be filled out for any motor vehicle.			
DRIVERS NAME		LICENSE NUMBER	
COMPANY			
TYPE OF VEHICLE		VEHICLE NUMBER	
INSPECTION DATE/TIME		INSPECTOR	
PART INSPECTED	SAT	UNSAT	COMMENT
HORN			
STEERING SYSTEM			
WIPERS			
COUPLING DEVICE (IF APPLICABLE)			
MIRRORS			
FIRE EXTINGUISHERS (10 ABC, 2 EACH)			
FUJLDS (OIL, WIPER, COOLANT)			
REFLECTORS			
EMERGENCY FLASHERS			
LIGHTS			
ELECTRIC WIRING			
FUEL SYSTEM			
EXHAUST SYSTEM			
BRAKE SYSTEM			
SUSPENSION			
CARGO SPACE/ CARGO RESTRAINS			
TIRES, WHEELS, RIMS			
TAILGATE			
SEAT / SHOULDER BELTS			
INSPECTION RESULTS (INSPECTOR INITIALS)			
ACCEPTED:			
REJECTED:			
REMARKS			
INSPECTORS SIGNATURE/DATE			

Activity/Work Task: ACTIVITY INVOLVING USE OF HEAVY OR MOTORIZED EQUIPMENT	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, gloves, high visibility apparel. Ear plugs/muffs, if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards:	Hazard Control Measures:	RAC
Transport to, from, and around the site	Operation of Motor Vehicle	Drivers will have a valid driver's license (CDL as necessary) and will wear a seat belt at all times. Drivers are prohibited from using any communication devices (e.g., cell phones) while operating any motor vehicles. Personnel will practice defensive driving techniques. Personnel will be aware of road conditions, obstacles, and hazards. Obey Base speed limit.	L
	Struck by passing vehicle	Lights or reflectors shall be used on signs for night work. Traffic Control Plans will be implemented as necessary. Barriers, warning signs, designated walkways, or other safeguards will be provided where pedestrians are exposed to the risk of collision. High visibility apparel should be worn when working near roadways. Use ground guides for the backing of all vehicles.	L
	Struck by loose equipment	All equipment and tools will be properly secured during transport. All vehicles and equipment will comply with DOT and OSHA requirements.	L
	Tip Over	Never move the equipment with the bucket upright. Set hydraulic leveling jacks before use (as applicable). Ensure the work area foundation is as stable as possible.	L
	Backing	Use a ground guide along with a functioning back-up alarm (that is audible above the site noise) during equipment backing.	L

Work Activities	Potential Hazards:	Hazard Control Measures:	RAC
Heavy or Motorized Equipment Operation	Equipment Maintenance	The equipment must be maintained in a proper functioning condition. All motors must be shut off and electrical, mechanical, and hydraulic components locked out of service when making repairs. Safety shutoff system must be tested daily and not disabled. Bleed off pressure on hydraulic lines before undoing fittings. Do not leave tools or parts loose on the equipment after maintenance has been performed.	L
	Fire Hazards	All motors must be shut off during refueling. Smoking near the drilling rig is not permitted. A charged fire extinguisher must be maintained on the drilling rig and associated motorized equipment, and must have a tag documenting inspections. Fuel containers will not be stored within 10' of the drilling rig motor. Fuel will be stored in UL approved safety containers with contents clearly labeled.	L
	Operation of Motor Vehicle	Drivers will have a valid driver's license and will wear a seat belt at all times. Drivers are prohibited from using any communication devices (e.g., cell phones) while operating any motor vehicles. Personnel will be aware of road conditions and hazards. Personnel will practice defensive driving techniques. Operators of heavy equipment will be trained in the operation of such, and will provide documentation to the SSHO prior to operation.	L
	Tip Over	Never move the equipment with the bucket upright. Set hydraulic leveling jacks before use (as applicable). Ensure the work area foundation is as stable as possible. Blades and buckets must be lowered to the ground and parking brakes set before shutting off a heavy equipment or vehicle. Load composition, stability, stacking, unstacking, and transport will be conducted in accordance with the site-specific SOP. If a load is in a raised position, an operator will attend to the controls. The maximum rated load for a lift vehicle will not be exceeded.	L
	Struck By	Operation of heavy equipment in accordance with the SSHP. Be alert when working around heavy equipment. No part of any load will pass above a worker. Loads that might tip or fall must be secured. Loads will be transported as low to the ground as feasible. Workers must stay out of the swing radius of backhoes and excavation equipment. Traffic Control Plans will be implemented as necessary. Barriers, warning signs, designated walkways, or other safeguards will be provided where pedestrians are exposed to the risk of collision. High visibility apparel will be worn when working near roadways or heavy equipment. No heavy equipment will be operated without a ground guide. Obtain the attention of the operator before moving into the area of the equipment.	L
Heavy or Motorized Equipment Operation (Cont.)	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the SSHP. Be alert when working around heavy equipment. Ground guide for the backing of all vehicles. No heavy equipment will be operated without a ground guide. Barriers, warning signs, designated walkways, or other safeguards will be provided as necessary according to the traffic control plans. All workers will follow the traffic control plans and review it daily in the tailgate meeting. Obtain the attention of the operator before moving into the area of the equipment. Implement traffic control plan. High visibility apparel will be worn when working near roadways or heavy equipment.	L
	Electrocution	Inspect for buried and overhead utilities near the work area. A clearance permit shall be obtained from Base personnel and a geophysical subcontractor prior to initiating intrusive operations.	L
	Noise	Hearing protection will be worn in hazardous noise areas.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Hand and Power Tools 2. Appropriate PPE for selection operation, at minimum – a. Hard hat b. Long sleeve shirt c. Long pants d. Steel-toe boots e. Safety glasses f. Gloves g. High visibility vest h. Ear plugs/muffs, if necessary 3. Heavy Equipment, as needed or specified by WP or SSHP 4. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2A:10BC or greater extinguisher 5. Other vehicles designated as personnel conveyance will be equipped with – a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing 6. Forms of Communications a. Project or personal Cellular Phone	<u>Qualified Personnel</u> 1. First Aid/CPR – SSHO and one other individual. 2. All personnel operating any mechanized equipment will provide proof of competency (documentation of training or experience) to the SSHO prior to operating the equipment. <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training 9 30-hr OSHA construction Outreach training (SSHO)	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Before any machinery or mechanized equipment is placed in use it shall be inspected and tested in accordance with the manufacturer’s recommendations and shall be certified in writing by a competent person/mechanic to meet the manufacturer’s recommendations Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. SSHO will update site’s MSDS files on all items, supplies and material brought onto site. Prior to each use, but not more often than daily, heavy equipment shall be checked by the operator to assure that the equipment is in safe operating condition and free of apparent damage that could cause failure while in use. Periodic communication checks between Field Office or SSHO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SSHO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SSHO. Competent Person will inspect the excavation daily to ensure engineering controls are adequate and working. <u>3. Weekly</u> – First Aid/CPR kit(s) and fire extinguisher(s), <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: FUELING MOTOR VEHICLES	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, high visibility vest, and gloves (as needed). Ear plugs/muffs, if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Fueling the vehicle	Overflow/Spills of fuel on to pavement.	- Ensure that fuel pumps have a UL listed automatic closing valve. - Use approved safety containers. - Workers will be aware capacity of fuel tank/container. - Do not "squeeze in" extra gasoline to fill up tank. - Inform gas station attendant of fuel spill.	L
	Explosion	- Ensure that all fuel is in approved safety containers. - No smoking or open flame within 50 feet of fueling area. - Equipment/Motors that use flammable fuel shall be shut down during fueling, servicing, or maintenance. - Turn cell phones off during fueling of vehicle.	L
	Spill on clothing	- Workers should be aware of capacity of fuel tank. - Wear gloves while fueling. - Change clothing if saturated with fuel.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. OSHA Approved Fuel Cans; Approved Fire Extinguishers; Bonding Strap; Funnels; Drip Pans, and Absorbent Material 2. Hand Tools 3. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2A:10BC fire extinguisher or greater shall be present in vehicles. Fueling station location shall have 40-BC extinguisher available 4. Other vehicles designated as personnel conveyance will be equipped with – a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing 5. Forms of Communications a. Project supplied or personal Cellular Phone	<u>Qualified Personnel</u> 1. First Aid/CPR – SSHO and one other individual. 2. All personnel operating any mechanized equipment will provide proof of competency (documentation of training or experience) to the SSHO prior to operating the equipment. <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training 9. All personnel engaged in the operation of heavy equipment and machinery will have knowledge and experience in working with and operating the equipment they must show proof of competency.	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Vehicles will be inspected daily by operator prior to use. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. SSHO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SSHO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SSHO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations or relocate to re-establish communications link with the Field Office or SSHO. <u>3. Weekly</u> – First Aid/CPR kit(s) and fire extinguisher(s). <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: FUELING HEAVY EQUIPMENT		Overall Risk Assessment Code (RAC) (Use highest code)				L	
Project Location: Fort Monmouth, Oceanport, NJ		Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012		Severity	Probability				
Date Prepared: 24 October 2012			Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, gloves (as needed), and high visibility vest. Ear plugs/muffs, if necessary.		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
		"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.					RAC Chart
		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					E = Extremely High Risk
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.					H = High Risk
							M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Fueling the equipment	Overflow/Spills of fuel on to pavement	- Ensure that fuel pumps have a UL listed automatic closing valve. - Workers will be aware capacity of fuel tank. - Do not "squeeze in" extra fuel to fill up tank. - Have berms or absorbent pads available.	L
	Explosion	- Ensure that all fuel is in approved safety containers. - No smoking or open flame within 50 feet. - Equipment/Motors that use flammable fuel shall be shut down during fueling, servicing, or maintenance. - Turn cell phones off during refueling vehicle. - Ensure that all heavy equipment has a fire extinguisher.	L
	Spill on clothing	- Workers should be aware of capacity of fuel tank. - Wear gloves while fueling. - Change clothing if saturated with fuel.	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
	Site Location	▪ Provide refueling driver with directions to site and accessible route to equipment/machinery. ▪ Ensure that there is road (gravel, mats) for refueling truck to drive/park on.	L
	Hazardous Site contamination	▪ Decontaminate equipment/machinery prior to refueling and remove from exclusion zone. ▪ Decontaminate refueling truck if contact with potential contaminated material. ▪ Provide training/awareness to driver, escort on site if need be.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. OSHA Approved Fuel Cans; Approved Fire Extinguishers; Bonding Strap; Funnels; Drip Pans, and Absorbent Material 2. Hand Tools 3. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit a. Serviceable 2A 10-BC extinguisher in vehicles. 40-BC extinguisher present at refueling station 4. Other vehicles designated as personnel conveyance will be equipped with – a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing 5. Forms of Communications a. Project supplied or personal Cellular Phone	<u>Qualified Personnel</u> 1. First Aid/CPR –SSHO and one other individual. 2 All personnel operating any mechanized equipment will provide proof of competency (documentation of training or experience) to the SSHO prior to operating the equipment. <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Medical monitoring program 4. First aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc. as applicable 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. SSHO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SSHO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SSHO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations or relocate to re-establish communications link with the Field Office or SSHO. <u>3. Weekly</u> – First Aid/CPR kit(s) and fire extinguisher(s) <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: ACTIVITIES INVOLVING PERSONNEL DECONTAMINATION	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Level D ensemble with gloves. Decontamination procedures may vary for each work area. Personnel will follow decontamination procedures outlined in the site-specific SOP. PPE and decontamination water will be collected and disposed of according to the Fort Monmouth Waste Management Plan.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.					RAC Chart
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.					
					E = Extremely High Risk	
					H = High Risk	
					M = Moderate Risk	

Work Activities	Potential Hazards:	Hazard Control Measures:	RAC
Decontaminate personnel exiting from the exclusion zone.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (safety glasses, gloves, and steel-toe boots).	L
	Eye injury	PPE (safety glasses, chemical goggles) will be worn as required in the HASP.	L
	Slips trip and falls	Be aware of tripping hazards. If personnel are wearing Tyvek suits, provide a chair to use while removing PPE.	L
	Heat Injuries	Implement heat stress control program.	L
Support rescue personnel (as required).	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE. Personnel will follow decontamination procedures outlined in the site-specific SOP.	L
	Bloodborne Pathogens	Personnel will be trained in risks associated with bloodborne pathogens, in accordance with the Health and Safety Plan.	L
	Heat injuries	Implement heat stress control program. Dress appropriately. Provide adequate drinking water.	L
	Slips trip and falls	Be aware of tripping hazards.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
- Decontamination Equipment – - Decontamination solution of 5% bleach - Scrub Brushes 5-gal Decontamination Buckets - Hand Sprayers - Detergent (Soap) - Water - Designated Site vehicles will be equipped with the minimum - - Map and Directions to site medical facility - Project Emergency Contact Telephone Listing - Serviceable First Aid Kit - Serviceable 2A:10BC fire extinguisher or greater - Other vehicles designated as personnel conveyance will be equipped with – - Map and Directions to site medical facility - Project Emergency Contact Telephone Listing - Forms of Communications - Project or personal Cellular Phone	<u>Qualified Personnel</u> - First Aid/CPR – SSHO and one other individual. <u>Training</u> - Site-specific WP, SOP and AHA - OSHA 40 hour and applicable 8 hour - Equipment operation - Heat/Cold Stress - Biological hazards - Flora/Fauna endangered/threatened - Daily safety and operational briefing - Site visitor training	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. SSHO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SSHO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SSHO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communications. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SSHO. <u>3. Weekly</u> – First Aid/CPR kit(s) and fire extinguisher(s). <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Activity/Work Task: LARGE EQUIPMENT DECONTAMINATION		Overall Risk Assessment Code (RAC) (Use highest code)				L	
Project Location: Fort Monmouth, Oceanport, NJ		Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012		Severity	Probability				
Date Prepared: 24 October 2012			Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, gloves, and high visibility vest. Ear plugs/muffs, splash goggles, hard hat, steel-toed boots, nitrile outer gloves and latex inter gloves, Tyvek coveralls or splash apron if necessary.		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
		"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.					RAC Chart
		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					E = Extremely High Risk
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.					H = High Risk
			M = Moderate Risk				

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Process items through decontamination in accordance with the SSHP	Site Hazardous Material Exposure	- Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. - Appropriate PPE will be worn by decon personnel. - Personnel will follow decontamination procedure	L
	Slips, Trips, Falls	- Workers will be aware of potentially slippery surfaces and tripping hazards. - Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. - Personnel will clean up all spills immediately. - Personnel will notify the SSHO of any unsafe conditions.	L
	Heat and Cold Stress	- Implement the cold/heat stress control program. - SSHO will monitor workers for Heat/Cold stress symptoms.	L
	Eye Injury	PPE (safety glasses, etc.) will be worn.	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Hot Water High Pressure Spray/Steam Clean	Hot Water Burns	- Prior to decontamination of large equipment, personnel will ensure that all other workers are outside of the decontamination areas. - Personnel will wear appropriate PPE (e.g. gloves, tyvek, splash goggles, etc.).	L
	Injury and/or Damage to Personnel and Project Equipment	- Personnel will use caution in directing the spray/stream of the pressure washer. - Personnel will ensure the workspace is clear of other personnel and equipment prior to operating a pressure washer. - Personnel will not direct the pressure washer in the direction of any other personnel or equipment.	L
	Spill/Leak of contaminated Water	- Decontamination area will be designed to collect all contaminated wash/rinse water and to prevent the spread of run off. - Berms and absorbent pads will be available for use in controlling spills.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Decontamination Equipment – a. Decontamination solution of 5% bleach b. Scrub Brushes c. 5-gal Decontamination Buckets d. Hand or high pressure sprayer(s) e. Detergent (Soap) f. Water 2. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2A:10BC fire extinguisher 3. Other vehicles designated as personnel conveyance will be equipped with – a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing 4. Forms of Communications a. Project supplied or personal Cellular Phone	<u>Qualified Personnel</u> 1. First Aid/CPR – SSHO and one other individual. 2. All personnel operating heavy equipment will provide proof of competency (documentation of training or experience) to the SSHO prior to operating the equipment. <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour, and medical surveillance 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. SSHO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SSHO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SSHO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SSHO. <u>3. Weekly</u> – First Aid/CPR kit(s) and fire extinguishers <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: PORTABLE TOOL DECONTAMINATION	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, gloves, and high visibility vest. Ear plugs/muffs, splash goggles, hard hat, steel-toed boots, nitrile outer gloves and latex inter gloves, Tyvek coveralls or splash apron, if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
General	Site Hazardous Material Exposure	- Training and safety awareness of potential exposure to contaminants at the site and decontamination procedures. - Appropriate PPE will be worn (e.g., gloves, splash goggles, Tyvek, etc.). - Personnel will follow decontamination procedures.	L
	Eye Injury	PPE (safety glass, etc.) will be worn.	L
	Slips, Trips, Falls	- Workers will be aware of potentially slippery surfaces and tripping hazards. - Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. - Personnel will clean up all spills immediately. - Personnel will notify the SSHO of any unsafe conditions.	L
Remove gross contamination with brush.	Damaging equipment or tools	To clean instrumentation: follow manufacturer's instructions.	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Place in decontamination bucket or rinse with decontamination solution	Spill/leakage	- Workers will have berms or spill absorbent pads nearby to prevent the spread of contaminated water. - Decontamination area will be designed to minimize exposure and maintain spill containment.	L
Clean with wash solution	Chemical reaction with wash solution	- A fire extinguisher will be located in an accessible location on site. - Review the chemicals of concern and use appropriate wash solution.	L
Rinse with water	Contamination remains	Personnel will repeat proper decontamination procedure.	L
Hot Water High Pressure Spray/Steam Clean	Hot Water Burns	- Prior to decontamination of large equipment, personnel will ensure that all other workers are outside of the decontamination areas. - Personnel will wear appropriate PPE (e.g. gloves, tyvek, splash goggles, etc.).	L
	Injury and/or Damage to Personnel and Project Equipment	- Personnel will use caution in directing the spray/stream of the pressure washer. - Personnel will ensure the workspace is clear of other personnel and equipment prior to operating a pressure washer. - Personnel will not direct the pressure washer in the direction of any other personnel or equipment.	L
	Spill/Leak of contaminated Water	- Decontamination area will be designed to collect all contaminated wash/rinse water and to prevent the spread of runoff. - Berms and absorbent pads will be available for use in controlling spills.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Decontamination Equipment – a. Decontamination solution of 5% bleach b. Scrub Brushes c. 5-gal Decontamination Buckets d. Hand Sprayers e. Detergent (Soap) f. Water 2. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2A:10BC fire extinguisher or greater extinguisher present 3. Other vehicles designated as personnel conveyance will be equipped with – a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing 4. Forms of Communications a. Project supplied or personal Cellular Phone	<u>Qualified Personnel</u> 1. First Aid/CPR – SSHO and one other individual. 2. Site Manager <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour, and medical surveillance 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. SSHO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SSHO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SSHO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SSHO. <u>3. Weekly</u> – First Aid/CPR kit(s) and fire extinguisher(s). <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: SAMPLE COLLECTION	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Nitrile gloves, safety glasses, steel toes boots, hard hat, and high visibility vest.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
					H = High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				M = Moderate Risk	

Work Activity	Potential Hazards	Hazard Control Measures	RAC
Sampling	Inhalation and contact with hazardous substances	- Provide field personnel with proper PPE based on the exposure hazards - Review hazardous properties of site contaminants and control measures, including PPE, prior to field operations - Position operator crosswind (i.e. perpendicular to the direction of the wind) ; stay upwind - Keep all sampling supplies and bottles upwind or crosswind - Minimize exposure to liquid IDW by containerizing and covering bailed groundwater. - Review MS	L
	Struck by/against flying particles, protruding objects, liquid splashes	- Wear safety glasses, gloves, and steel-toed safety boot at all times - Wear safety glasses and gloves when filling sample bottles and performing field test kit analyses.	L
	Back injuries; musculoskeletal disorders (MSD)	- Observe proper lifting/carrying techniques - Obey sensible lifting limits (50 lb. maximum per person for manual lifting) - Use mechanical lifting equipment (handcarts, trucks) or more than one person to move large, awkward loads	L

Work Activity	Potential Hazards	Hazard Control Measures	RAC
		Avoid performing the same strenuous activity for extended periods.	
Sampling (Cont.)	Injuries from improper use of hand tools and equipment	- Maintain all tools in a safe, good working condition - Provide training on proper operation of tools and equipment - Keep guards in place during use - All power tools will have insulated handles, be electrically grounded, battery operated or double insulated - When using cutting tool, always cut away from body and hands - Take damaged or worn tools out of service	L
	Heat stress	- Provide fluids to prevent work dehydration - Give frequent breaks	L
	Slip, Trip, Fall, Loss of Balance	- Site safety briefing - Stay alert - Maintain firm footing - Use "buddy" system - Watch for obstacles	L
	Vehicle and heavy equipment traffic in work area	- All workers will follow the Traffic Control Plans and review it daily in tailgate meetings. - Operation of heavy equipment in accordance with the site-specific SOP. - Be alert when working around heavy equipment. - Ground guide for the backing of all vehicles. - No heavy equipment will be operated without a ground guide. - Barriers, warning signs, designated walkways, or other safeguards will be provided in accordance with the traffic control plan.. - Obtain the attention of the operator before moving into the area of the equipment. - High visibility apparel will be worn when working near roadways or heavy equipment.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Hand and Power Tools 2. Appropriate PPE for selection operation, at a minimum – a. Nitrile gloves b. Safety glasses c. Steel toes boots d. Hard hat e. High visibility safety vest f. Safety Glasses, when required g. Additional PPE to conduct other operations, as directed 3. Heavy Equipment, as needed or specified by WP or SSHP 4. Sampling Equipment, at a minimum a. Sampling Bowls and Spoons b. 6-mil plastic sheeting and bags c. Cleaning Solution, Water and Soap d. 5-gal Buckets e. Nitrile Gloves f. Supplied jars and shipping containers g. Miscellaneous sampling supplies 5. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2A:10BC or greater fire extinguisher 6. Other vehicles designated as personnel conveyance will be equipped with a. Map and Directions to site medical facility b. Project Emergency Contact 7. Forms of Communications a. Project supplied or personal Cellular Phone	<u>Qualified Personnel</u> 1. First Aid/CPR –SSHO and one other individual. 2. Site Manager 3. Drilling equipment shall be operated only by qualified (by training and experience) personnel who are authorized by their respective employer to operate subject equipment. Documentation of competency will be provided to the SSHO prior to the start of drilling operations <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training	<u>1. Initial (Site Selection)</u> – General inspection of assigned or designated area. Before any machinery or mechanized equipment is placed in use it shall be inspected and tested in accordance with the manufacturer’s recommendations and shall be certified in writing by a competent person/mechanic to meet the manufacturer’s recommendations. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. Prior to bringing earth drilling equipment on the job site, a survey shall be conducted to identify overhead electrical hazards and potential ground hazards, such as contact with unexploded ordnance, hazardous agents in the soil, or underground utilities. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. Periodic communication checks between Field Office or SSHO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SSHO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SSHO. <u>3. Weekly</u> – First Aid/CPR kit(s) and fire extinguisher(s). <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: SAMPLE PROCESSING	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, gloves, and high visibility vest. Ear plugs/muffs, if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Packing sample for off-site shipment to lab	Accidental breakage of glass bottles	- Wear cut-resistant gloves during packaging of glass bottles. - Immediate clean-up of spills.	L
	Back Injury, muscle strain/stress	Personnel will utilize proper lifting techniques or ask for help with moving/lifting objects.	L
	Hazardous Material Exposure	- Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. - Appropriate PPE will be worn (e.g., safety glasses, gloves, etc.). - Personnel will follow decontamination procedure. - Screen for COCs with PID over samples and in workers breathing zone. - Ventilate work area with fans or vents (as needed)	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
	Slips, Trips, Falls	- Workers will be aware of potentially slippery surfaces and tripping hazards. - Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. - Personnel will clean up all spills immediately. - Personnel will notify the SSHO of any unsafe conditions	L
	Heat and Cold Stress	- The SSHO will implement the cold/heat stress control program as appropriate to conditions. - SSHO will monitor workers for heat/cold stress symptoms.	L
	Eye Injury	PPE (safety glasses, etc.) will be worn.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Appropriate PPE for selection operation, at minimum – a. Long Sleeve Shirt b. Long Legged Pants c. Sturdy Work Boots d. Gloves e. Safety Glasses, when required f. Hard Hat, when required g. High visibility safety vest, when required h. Ear plugs, when required i. Additional PPE to conduct other operations, as directed 2. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2A:10BC or greater fire extinguisher 3. Other vehicles designated as personnel conveyance will be equipped with – a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing 4. Forms of Communications a. Project supplied or personal cellular phone	Qualified Personnel 1. First Aid/CPR - SSHO and one other individual. Training 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. DOT Training for personnel handling hazardous materials 9. Only qualified personnel will be allowed to operate hand and power tools.	1. Initial (Site Selection) – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. 2. Daily- Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. SSHO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SSHO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SSHO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communications. In the event that a field crew fails to make a communications check, they will cease operations or relocate to re-establish communications link with the Field Office or SSHO. 3. Weekly – First Aid/CPR kit(s), fire extinguisher(s), vehicles and equipment. 4. Final (Site Departure) – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: POWER/HAND TOOL OPERATION	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, gloves, and high visibility vest. Ear plugs/muffs, if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
					H = High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				M = Moderate Risk	

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Using Power/Hand Tools.	Electrical Fires/Shock/Burns	- Use proper engineering controls when working with electricity (i.e., grounding, bonding, insulation, GFCI, guarding, etc.) - Check insulation of wiring. - Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions.	L
	Rain	Be aware of work conditions and do not work in wet areas with live electricity	L
	Lightning	Do not begin or continue work until lightning subsides for 20 minutes.	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
	Slips, Trips, Falls	- Workers will be aware of potentially slippery surfaces and tripping hazards. - Work slowly during transit. Jumping, running, and horseplay are prohibited. - Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. - Clean up all spills immediately. - Personnel will notify the SHSO of any unsafe conditions.	L
	Injury from Hand Tool Operation	- Ensure that all tools used onsite are in proper working order and are in good condition, clean, oil free, and have insulated grips. - Do not leave hand tools lying around where they could become a hazard. - Personnel to inform SHSO or Site Manager if tools require repair or replacement. - Keep tools in non-conductive container and be aware of metal on tool belts. - Take tools out of service and remove from work vicinity if they are not working correctly.	L
	Injury from Power Tool Operation	- All tools will be in good working order and properly grounded. - No damaged equipment will be issued until repaired or replaced. - When power operated tools are designed to accommodate guards, the guard must be in place on the tool. - Do not overload electrical circuits and use a GFCI. - Take tools out of service and remove from work vicinity if they are not working correctly. - Follow operations and maintenance procedures for each piece of equipment used on site.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Hand and Power Tools, at a minimum a. Wrenches b. Multitool c. Screwdriver 2. Appropriate PPE for selection operation, at minimum – a. Long Sleeve Shirt b. Long Legged Pants c. Sturdy Work Boots d. Leather Gloves e. Safety Glasses, when required f. Hard Hat, when required g. High visibility safety vest, when required h. Steel-toed boots, as directed i. Additional PPE to conduct other operations, as directed 3. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2A:10BC or larger fire extinguisher 4. Other vehicles designated as personnel conveyance will be equipped with – a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing 5. Forms of Communications a. Project or personal cellular phone	<u>Qualified Personnel</u> 1. First Aid/CPR – SHSO and one other individual. 2. Site Manager <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Equipment (tools) will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SHSO will perform audits and spot checks to verify compliance. SHSO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SHSO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SHSO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SHSO. <u>3. Weekly</u> – First Aid/CPR kit(s), fire extinguisher(s), vehicles and equipment. <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Printed Name	Signature	Date

Activity/Work Task: DRILLING, WELL INSTALLATION, WELL ABANDONMENT	Overall Risk Assessment Code (RAC) (Use highest code)					M
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, gloves, and high visibility vest. Ear plugs/muffs, if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Drilling, Well Installation, and Well Abandonment	Failure of Equipment	- Proper site-specific safety training for operator and crew - Daily inspection to include: - Vehicle/equipment condition - Properly block and level machine - Proper equipment storage - Condition of all fittings, drive rods, and hydraulic lines - Presence and check first aid kit and fire extinguisher	L
	Inhalation and Contact with Hazardous Substances or Vehicle Exhaust	- Provide workers proper skin, eye, and respiratory protection (as needed) based on the exposure hazards and vehicle exhaust present - Review hazardous properties of site contaminants and vehicle exhaust with workers before sampling operations begin - Orient operator cross-wind - Keep all sampling supplies and bottles upwind or cross-wind	L
	Contact with Utilities	- Use Underground Utility Avoidance procedures: - Contact Fort Monmouth and geophysical subcontractor to mark utilities	M

Work Activities	Potential Hazards	Hazard Control Measures	RAC
		- Have emergency telephone number available - Mark known utilities - Maintain safe distance from overhead electrical lines (See Table below)	
	Struck by/Against Flying Particles, Protruding Objects, Liquid Splash	- Wear hard hats, safety glasses with side shields and steel-toed safety boots at all times. - Keep hands clear of rod prior to it being driven - Wear splash shields and safety goggles when cleaning, decontaminating drilling equipment	L
	High Noise Levels	- Use hearing protection when exposed to excessive noise levels (greater than 85 dBA) - The need to raise your voice at 1 foot or shout at 3 feet is a sign hear protection is required	L
	Musculoskeletal Disorders (MSD)	- Observe proper lifting techniques - Obey sensible lifting limits (50 lb. maximum per person manual lifting) - Use mechanical lifting equipment (hand carts, trucks) or more than one person to move large, awkward loads.	L
	Sharp Objects	- Use Geoprobe[®] tool or hook bladed utility knife to cut acetate sleeves - Maintain all tools in a safe condition - Keep guards in place during use - Always cut away from body and hands	L
	Caught In/Between Moving Parts	- Identify and understand parts of equipment which may cause crushing, pinching, rotating, or similar injuries - Assure guards are in place to protect from these parts of equipment during operation - Provide and use proper work glove when the possibility of pinching, or other injury may be caused by moving/handling large or heavy objects - Maintain all equipment in safe condition - Keep all guards in place during use - De-energize and lock-out machinery before maintenance or service - Do not wear loose clothing or jewelry	L
	Flammable, Explosive Atmospheres	- Monitor air with a PID during drilling - Turn engine off before refueling - Eliminate sources of ignition from the work area - Prohibit smoking in well drilling area - Provide a charged ABC fire extinguishers with a tag documenting inspections - Store flammable liquids in well ventilated areas - Prohibit storage of flammable liquids in plastic containers - Store combustible materials away from flammables - Separate flammables and oxidizers by 20 feet minimum	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
	Vehicle and heavy equipment traffic in work area	• All personnel will follow the traffic control plans-developed by the traffic control subcontractor. The traffic control plans will be reviewed by all workers during the site orientation training and in all morning tailgate meetings. • Barriers, warning signs, designated walkways, or other safeguards will be provided according to the traffic plans. • High visibility safety vest will be worn when working near roadways or heavy equipment. • Operation of heavy equipment in accordance with the HASP. • Be alert when working around heavy equipment. • Use ground guides for the backing of all vehicles. No heavy equipment will be operated without a ground guide. • Obtain the attention of the operator before moving into the area of the equipment.	L
	Heat Stress	• Monitor for heat stress in accordance with health and safety procedures • Provide fluids to prevent work dehydration • Give frequent breaks • Dress appropriately	L
	Slips, Trips, and Falls	• Good housekeeping	L

Minimum Clearance from Energized Overhead Electrical Line

Nominal System Voltage	Minimum Required Clearance
–Up to 50 kV	10 feet
51 - 200 kV	15 feet
201 - 350 kV	20 feet
351 - 500 kV	25 feet
501 - 650 kV	30 feet
651 - 800 kV	35 feet

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Hand and Power Tools 2. Appropriate PPE for selection operation, at minimum – a. Hard hat b. Steel-toe boots c. Safety glasses d. Gloves e. High visibility safety vest f. Ear plugs/muffs, if necessary g. Additional PPE to conduct other operations, as directed 3. Heavy Equipment, as needed or specified by WP or SSHP 4. Air Monitoring Equipment (Photo Ionization Detector – PID) 5. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2A:10BCor larger fire extinguisher 6. Other vehicles designated as personnel conveyance will be equipped with – a. Map and Directions to site medical facility b. Project Emergency Contact 7. Forms of Communications a. Project supplied or personal cellular phone	<u>Qualified Personnel</u> 1. First Aid/CPR – SSHO and one other individual. 2. Site Manager 3. Drilling equipment shall be operated only by qualified (by training and experience) personnel who are authorized by their respective employer to operate subject equipment. Proof of qualification will be provided to the SSHO prior to the start of drilling operations <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training 9. Only qualified personnel are allowed to operate hand and power tools	<u>1. Initial (Site Selection)</u> – General inspection of assigned or designated area. Prior to bringing earth drilling equipment on the job site a survey shall be conducted to identify overhead electrical hazards and potential ground hazards, such as contact with unexploded ordnance, hazardous agents in the soil, or underground utilities. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SSHO will perform audits and spot checks to verify compliance. Periodic communication checks between Field Office or SSHO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SSHO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SSHO. <u>3. Weekly</u> – First Aid/CPR kit(s), fire extinguisher(s), vehicles and equipment. <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Printed Name	Signature	Date

Activity/Work Task: DRUM MOVING / FILLING / EMPTYING	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Gloves, steel-toe boots, and high visibility vest.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards:	Preventive or Corrective Measures:	RAC
Transfer drums to / from transport vehicle/fill drums/empty drums	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.	L
	Heat/cold stress injuries	Implement heat/cold stress control program.	L
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the SSHP. Be alert when working around heavy equipment. Ground guide for the backing of all vehicles. No heavy equipment will be operated without a ground guide. Barriers, warning signs, designated walkways, or other safeguards will be provided in accordance with the traffic control plan. All workers will follow the control plan and review it daily in tailgate meetings. High visibility safety vest will be worn when working near roadways or heavy equipment. If a forklift is used to move drums, the forklift cannot be loaded above its rated capacity. Under all travel conditions the forklift shall be operated at a speed that will permit it to be brought to a stop in a safe manner. On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface	L
	Noise	Hearing protection will be worn in hazardous noise areas.	L
	Injury from Hand Tool Operation	Personnel awareness of potential hazards from hand tool operation. SHSO will ensure that all tools used on site are in proper working order and are in good condition. Personnel to inform SHSO or project manager if tools require repair or replacement.	L

Work Activities	Potential Hazards:	Preventive or Corrective Measures:	RAC
	Back injury	Personnel will utilize proper lifting techniques, and team-lift techniques where needed. There is a 50-lb lift limit per individual. Containers exceeding this limit should be lifted by two or more individuals. Proper technique includes bending at the knees not the hip or back in order to support the weight of the load on legs.	L
	Operation of Motor Vehicle	Drivers will have a valid driver's license and will wear a seat belt at all times. Drivers are prohibited from using any communication devices (e.g., cell phones) while operating any motor vehicles. Personnel will practice defensive driving techniques. Adhere to Base speed limits.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Drum dolly and skid/steer loader or forklift with drum grappler. 2. Appropriate PPE for selection operation, at minimum – a. Long Sleeve Shirt b. Long Legged Pants c. Steel toed safety Work Boots d. Leather Gloves e. Safety Glasses, when required f. High visibility safety vest when required g. Additional PPE, as directed	<u>Qualified Personnel</u> 1. First Aid/CPR – SHSO and one other individual. 2. Site Manager 3. The forklift operator must be certified as having been trained and evaluated in accordance with 29 CFR 1910.178. 5. Only qualified personnel will be allowed to operate drum dolly and skid/steer loader or forklift with drum grappler. <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Enrolled in a medical monitoring program 7. Current occupational physical and physician’s certificate in accordance with 29 CFR 1910.120(f)	1. <u>Initial (Site Selection)</u> – All PPE will be inspected by workers prior to use. Before any machinery or mechanized equipment is placed in use it shall be inspected and tested in accordance with the manufacturer’s recommendations and shall be certified in writing by a competent person/mechanic to meet the manufacturer’s recommendations. 2. <u>Daily</u> – All machinery and equipment shall be inspected daily to ensure safe operating conditions. Inspections shall be performed by a competent person.

Training Acknowledgement:

Printed Name	Signature	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Activity/Work Task: HIGH PRESSURE WASHING	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Angie Welch	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Gloves, ear plugs/muffs, splash goggles, steel-toed boots, Tyvek coveralls or splash apron if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
General	Site Hazardous Material Exposure	- Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. - Appropriate PPE will be worn by decon personnel. - Personnel will follow decontamination procedure	L
	Slips, Trips, Falls	- Workers will be aware of potentially slippery surfaces and tripping hazards. - Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. - Personnel will clean up all spills immediately. - Personnel will notify the SHSO of any unsafe conditions.	L
	Heat and Cold Stress	- Implement the cold/heat stress control program. - SHSO will monitor workers for Heat/Cold stress symptoms.	L
	Eye Injury	PPE (safety glasses, goggles, etc.) will be worn.	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Hot Water High Pressure Spray/Steam Clean	Hot Water Burns	- Prior to decontamination of large equipment, personnel will ensure that all other workers are outside of the decontamination areas. - Personnel will wear appropriate PPE (e.g. gloves, tyvek, splash goggles, etc.).	L
	Injury and/or Damage to Personnel and Project Equipment	- Personnel will use caution in directing the spray/stream of the pressure washer. - Personnel will ensure the workspace is clear of other personnel and equipment prior to operating a pressure washer. - Personnel will not direct the pressure washer in the direction of any other personnel or equipment.	M
	Spill/Leak of contaminated Water	- Decontamination area will be designed to collect all contaminated wash/rinse water and to prevent the spread of runoff. - Berms and absorbent pads will be available for use in controlling spills.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Power Washer 2. Hand and Power Tools 3. Appropriate PPE for selection operation, at minimum – a. Long Sleeve Shirt b. Long Legged Pants c. Sturdy Work Boots d. Leather Gloves e. Safety Glasses or goggles, f. Hard Hat, when required g. High visibility safety vest, when required h. Hearing Protection, as directed i. Steel-toes boots, if required j. Apron or tyvek as necessary k. Additional PPE to conduct other operations, as directed 5. Additional equipment to conduct other operations, that may include – a. Spill Containment System; Sumps; 6-mil plastic sheeting; scrub brushes; soap; cleaning solvent b. 55-gal poly drums for “grey water” collection 6. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2-A:10BC or greater fire extinguisher 7. Forms of Communications a. Project or personal cellular phone	<u>Qualified Personnel</u> 1. First Aid/CPR – SHSO and one other individual. 2. Site Manager <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SHSO will perform audits and spot checks to verify compliance. SHSO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SHSO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SHSO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SHSO. <u>3. Weekly</u> – First Aid/CPR kit(s), fire extinguisher(s), vehicles and equipment. <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:		
Printed Name	Signature	Date

Activity/Work Task: ACTIVITIES INVOLVED WITH PROJECT MOBILIZATION AND DEMOBILIZATION	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Hard hat, steel-toe boots, safety glasses, gloves, high visibility vest. Ear plugs/muffs, if necessary.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
					H = High Risk	
Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				M = Moderate Risk		

Work Activities	Potential Hazards:	Hazard Control Measures:	RAC
Mobilization / Set up Work Area	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.	L
	Heat/cold stress injuries	Implement heat/cold stress control program. Dress appropriately. Provide adequate drinking water.	L
	Biological Hazard (ticks, bees, mosquitoes, spiders, etc.)	Personnel awareness of potential exposure to biological hazards. Wear appropriate clothing (hat, long-sleeve shirt, long pants, gloves, and boots) and insect repellants. Wear thick gloves when clearing plants or debris from work area.	L
	Operation of Motor Vehicle	Drivers will have a valid driver's license and will wear a seat belt at all times. Drivers are prohibited from using any communication devices (e.g., cell phones) while operating any motor vehicles. Personnel will be aware of road conditions and hazards. Personnel will practice defensive driving techniques. Adhere to Base speed limits.	L
	Vehicle and heavy equipment traffic in work area	Be aware of any vehicles or heavy equipment in area and be certain to wear a hard hat, safety glasses, and a high visibility safety vest when working around heavy equipment. Operation of heavy equipment in accordance with the APP. Establish arm and hand signals or radio communication with the equipment operator. Use of ground guides when vehicle(s) are not equipped with an audible warning device and/or has an obstructed view. No heavy equipment will be operated without a ground guide. Obtain the attention of the operator before moving into the area of the equipment. High visibility apparel will be worn when working near roadways or heavy equipment.	L
	Noise	Hearing protection will be worn in hazardous noise areas.	L

Work Activities	Potential Hazards:	Hazard Control Measures:	RAC
Demobilization / Restore site.	Hand tools	All tools will be in good working order. No damaged equipment will be used until repaired or replaced. Damaged equipment must be tagged and taken out of service.	
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.	
	Heat stress injuries	Heat stress control program. Dress appropriately. Provide adequate drinking water.	
	Biological Hazard (ticks, bees, mosquitoes, snakes, spiders, etc.)	Personnel awareness of potential exposure to biological hazards. Wear appropriate clothing (hat, long-sleeve shirt, long pants, gloves, and boots) and insect repellants. Wear thick gloves when clearing plants or debris from work area.	
	Vehicle and heavy equipment traffic in work area	Be aware of any vehicles or heavy equipment in area and be certain to wear a hard hat, safety glasses, and a high visibility safety vest when working around heavy equipment. Operation of heavy equipment in accordance with the APP. Establish arm and hand signals or radio communication with the equipment operator. Use of ground guides when vehicle(s) are not equipped with an audible warning device and/or has an obstructed view. No heavy equipment will be operated without a ground guide. Obtain the attention of the operator before moving into the area of the equipment. High visibility safety vest will be worn when working near roadways or heavy equipment.	
	Noise	Hearing protection will be worn in hazardous noise areas.	
	Hand tools	All tools will be in good working order. No damaged equipment will be used until repaired or replaced. All safety guards designed on equipment will remain in place. If any safety device on equipment is missing, that piece of equipment will be placed out of service until it can be repaired or replaced	

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Hand and Power Tools 2. Appropriate PPE for selection operation, at minimum – a. Long Sleeve Shirt b. Long Legged Pants c. Sturdy Work Boots d. Leather Gloves e. Safety Glasses, when required f. Hard Hat, when required g. High visibility Safety Vest, when required h. Additional PPE to conduct other operations, as directed 3. Designated Site vehicles will be equipped with the minimum - a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing c. Serviceable First Aid Kit d. Serviceable 2A:10BC or larger fire extinguisher 4. Other vehicles designated as personnel conveyance will be equipped with – a. Map and Directions to site medical facility b. Project Emergency Contact Telephone Listing 5. Forms of Communications a. Project supplied or personal Cellular Phone	<u>Qualified Personnel</u> 1. First Aid/CPR - SHSO and one other individual. 2. Site Manager 3. Certified Electrician 4. All personnel operating any mechanized equipment will provide proof of competency (documentation of training or experience) to the SHSO prior to operating the equipment. <u>Training</u> 1. Site-specific WP, SOP and AHA 2. OSHA 40 hour and applicable 8 hour 3. Equipment operation 4. Heat/Cold Stress 5. Biological hazards 6. Flora/Fauna endangered/threatened 7. Daily safety and operational briefing 8. Site visitor training 9. Only qualified personnel will be allowed to operate hand and power tools.	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SHSO will perform audits and spot checks to verify compliance. SHSO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SHSO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SHSO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations or relocate to re-establish communications link with the Field Office or SHSO. <u>3. Weekly</u> – First Aid/CPR kit(s), fire extinguisher(s), vehicles and equipment. <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Printed Name	Signature	Date

Activity/Work Task: Trailer Towing	Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Required Personal Protective Equipment: Hard hat, steel toed work boots, Long sleeve shirt and pants, safety glasses, and hearing protection (as required),	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Drive a truck towing a trailer to move equipment from one place to another.	- Traffic accidents - Trailer accidents	Every trailer shall be coupled with safety chains or cables to the towing vehicle. Such chain or cable shall prevent the separation of the vehicles in case of tow bar failure. Use appropriate tow vehicle Use wheel chocks when parked All towing devices used on any combinations of vehicles shall be structurally adequate for the weight drawn and shall be properly mounted Use appropriately sized ball and hitch Use ground guide when backing up Use appropriate lifting techniques Pre-departure checklist: - Tire Pressure - Wheel Lug Nuts - Adjustment of hitch, ball, coupler mechanism (locking pin), safety chain, and other equipment connecting trailer to tow vehicle - Check wiring is properly connected - Running, brake, hazard, and turn-signal lights - Trailer and tow vehicle brakes	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
		• All items are securely fastened in the trailer • Trailer jack and tongue support are raised • Load distribution balanced • Side and rear view mirror visibility • Wheel chocks and jack stands present Persons shall not be permitted to get between a towing vehicle and the piece of towed equipment until both have been completely stopped with all brakes set and wheels chocked on both vehicle and equipment	
	• Weather extremes	• Monitor the weather • Know and observe for the warning signs of adverse weather • Identify a safe shelter prior to field work.	L
	• Noise	Hearing protection will be worn in hazardous noise areas.	L
	• Back strain	Personnel will utilize proper lifting techniques, and team-lift techniques where needed.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
- Hand and Power Tools - Appropriate PPE for selection operation, at a minimum – - Hard hat - Steel-toe boots - Safety glasses - Leather gloves - High visibility safety vest, if necessary - Ear plugs/muffs, if necessary - Heavy Equipment, as needed or specified by WP or SSHP - Designated Site vehicles will be equipped with the minimum - - Map and Directions to site medical facility - Project Emergency Contact Telephone Listing - Serviceable First Aid Kit - Serviceable 2A:10BC or larger fire extinguisher - Other vehicles designated as personnel conveyance will be equipped with – - Map and Directions to site medical facility - Project Emergency Contact Telephone Listing - forms of Communications - Project or personal cellular phone	<u>Qualified Personnel</u> - First Aid/CPR – SHSO and one other individual. - Site Manager - All personnel operating any mechanized equipment will provide proof of competency (documentation of training or experience) to the SHSO prior to operating the equipment. <u>Training</u> - Site-specific WP, SOP and AHA - OSHA 40 hour and applicable 8 hour - Equipment operation - Heat/Cold Stress - Biological hazards - Flora/Fauna endangered/threatened - Daily safety and operational briefing - Site visitor training	<u>1. Initial (Site Selection)</u> – General inspection of assembly area. Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SHSO will perform audits and spot checks to verify compliance. SHSO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SHSO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SHSO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SHSO. <u>3. Weekly</u> – First Aid/CPR kit(s), fire extinguisher(s), vehicles and equipment. <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: Forklift	Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) Required Personal Protective Equipment: Hard hat, safety glasses, steel toe/shank work boots, hearing protection, Tyvek, (as necessary), high visibility safety vest, two person work team.	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Prestart up	Unqualified operators	Only trained personnel are to operate forklift operators. Operator training must meet requirements of 1910.178(l)	L
	Obstructions	Walk areas prior to mobilization for obstructions that could impact the load	L
	Slips/Trips/Falls	Ensure area around the forklift is clear of debris. Operator should also maintain three-points of contact while entering and exiting the forklift.	L
Moving augers from staging area to well location	Pinch Points	Wear work gloves when securing straps to augers.	L
	Falling objects	- Secure augers to forklift with straps to ensure augers do not roll off of forklift. - The folk lift cannot be loaded above its rated capacity. - The forklift shall be operated at a speed that will permit it to be brought to a stop in a safe manner	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
		On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface	
	Overhead Obstructions	Walk areas prior to mobilization of high profile equipment. Use a spotter to secure area prior to egress	L
	Struck-by	- Pre-determine appropriate traffic routes for the forklift. Use a spotter to walk those routes for potential obstructions. Keep personnel out of traffic routes. Personnel must make eye contact with the operator and receive an OK from him before ground personnel enter the path of travel. Ground personnel must wear reflective vests when working around traffic.	L
Moving piping from staging area to well location	Pinch Points	Wear leather work gloves when securing straps to piping	L
	Falling objects	- Secure PVC piping to forklift with straps to ensure pipes do not roll off of forklift. - The folk lift cannot be loaded above its rated capacity. - The forklift shall be operated at a speed that will permit it to be brought to a stop in a safe manner - On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface	L
	Obstructions	Walk areas prior to mobilization to identify obstructions that could be impacted by the load. Use a spotter to verify clearance during transport.	L
	Struck-by	Pre-determine appropriate traffic routes for the forklift. Use a spotter to walk those routes for potential obstructions. Keep personnel out of traffic routes. Personnel must make eye contact with the operator and receive an OK from him before ground personnel enter the path of travel. Ground personnel must wear reflective vests when working around traffic.	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Moving Bags of Sand from Staging area to Well Location	Cuts/Lacerations	Wear work gloves to avoid cuts due to splinters from pallets	L
	Falling objects	Place bags of sand on a pallet (in good condition) and secure bags with strapping.	L
	Obstructions	Walk areas prior to mobilization of high profile equipment. Use a spotter to walk the area prior to egress	L
	Struck-by	Pre-determine appropriate traffic routes for the forklift. Use a spotter to walk those routes for potential obstructions. Keep personnel out of traffic routes. Personnel must make eye contact with the operator and receive an OK from him before ground personnel enter the path of travel. Ground personnel must wear reflective vests when working around traffic.	L
Demobilization of Forklift	Slips/Trips/Falls	Ensure that all cuttings have been removed from the ground surrounding the forklift. Do not leave soil wear operator can slip getting into forklift. Operator should also maintain three-points of contact while entering and exiting the forklift.	L
	Obstructions	Walk areas prior to mobilization equipment.	L
	Struck-by	- Pre-determine appropriate traffic routes for the forklift. Use a spotter to walk those routes for potential obstructions. - Keep personnel out of traffic routes. Personnel must make eye contact with the operator and receive an OK from him, and the operator come to a full stop before ground personnel can entering the path of travel. - Ground personnel must wear reflective vests when working around traffic.	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
- Hand and Power Tools - Appropriate PPE for selection operation, at minimum – - Long Sleeve Shirt - Long Legged Pants - Sturdy Work Boots - Leather Gloves - Safety Glasses, when required - Hard Hat, when required - High visibility safety vest, when required - Steel-toed boots, as directed - Additional PPE to conduct other operations, as directed - Forklift Equipment, as needed or specified by WP or SSHP - Designated Site vehicles will be equipped with the minimum - - Map and Directions to site medical facility - Project Emergency Contact Telephone Listing - Serviceable First Aid Kit - Serviceable A:BC rated 15.5lb or larger fire extinguisher - Other vehicles designated as personnel conveyance will be equipped with – - Map and Directions to site medical facility - Project Emergency Contact Telephone Listing - Forms of Communications - Project or personal cellular phone	<u>Qualified Personnel</u> - First Aid/CPR – SHSO and one other individual. - Site Manager - All personnel operating any forklift equipment will provide certificate of training to the SHSO prior to operating the equipment. - Competent Person to evaluate equipment (normally an experienced operator). <u>Training</u> - Site-specific WP, SOP and AHA - OSHA 40 hour and applicable 8 hour, and medical surveillance - Equipment operation - Heat/Cold Stress - Biological hazards - Flora/Fauna endangered/threatened - Daily safety and operational briefing - Site visitor training - Operator training (1910.178[l])	<u>1. Initial (Site Selection)</u> –Equipment will be inspected daily by operator prior to use in accordance with the manufacturer’s instructions. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. Inspect the paperwork of the forklift operators to determine that they have licensing/certification paperwork on-hand prior to initial operation; Inspect for low hanging utilities, guide wires, tree branches, and other obstructions; Inspect paperwork for operators to ensure operators and all personnel have been trained in forklift operations and all personnel follow good housekeeping techniques; Inspect work gloves and pallets prior to use; Inspect straps prior to use; Look for the safest route; Inspect fasteners to verify they clamp properly to hopper. <u>2. Daily-</u> Housekeeping of assembly and work areas for debris and hazards. SHSO will perform audits and spot checks to verify compliance. SHSO will update site’s MSDS files on all items, supplies and material brought onto site. Periodic communication checks between Field Office or SHSO and Field Crews, as deemed necessary, to ensure crew’s status and relay emergency information. Field Office and SHSO will maintain a telephonic roster of all site personnel’s cellular phone numbers to ensure a form of communication. In the event that a field crew fails to make a communications check, they will cease operations and relocate to re-establish communications link with the Field Office or SHSO. <u>3. Weekly</u> – First Aid/CPR kit(s), fire extinguisher(s), vehicles and equipment. <u>4. Final (Site Departure)</u> – Inspection of the entire area to ensure the site is left in the same or better than when we arrived.

Training Acknowledgement:

Printed Name	Signature	Date

Activity/Work Task: Ladder Use	Overall Risk Assessment Code (RAC) (Use highest code)				L	
Project Location: Fort Monmouth, Oceanport, NJ	Risk Assessment Code (RAC) Matrix					
Contract Number: W912DY-09-D-0062-0012	Severity	Probability				
Date Prepared: 24 October 2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Julia Liu	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): Ed Grunwald, CIH / Project Health and Safety Officer	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Ladder selection	Fall	Use only Type IA or Type I ladder	L
		Determine the proper type and size of ladder for the task (i.e. straight/extension or step ladder; length of ladder)	L
		Check steps and rungs to make sure they are secure. Inspect metal/aluminum and fiberglass ladders for bends and breaks. Inspect wooden ladders for cracks and splits in the wood.	L
	Slip	Be sure metal steps and rungs are grooved or roughened to prevent slipping	L
	Electric shock	Use a wood or fiberglass ladder if working around electrical equipment or wires	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
Ladder setup	Fall	Place ladder feet firmly and evenly on the ground or floor. Make sure the ladder is sitting straight and secure before climbing it. If one foot sits in a low spot, build up the surface with firm material.	L
		Check ladder feet and brace the foot of the ladder with stakes or place stout boards against the feet if there is any danger of slipping.	L
		If pedestrian or vehicle traffic is nearby, erect warning signs or barricades to guide traffic away from the foot of the ladder. If this is not possible, have someone hold and guard the bottom of the ladder	L
		Set the ladder at an angle using the 4 to 1 rule (i.e. the bottom of the ladder is 1 ft away from the base for every 4 ft in height). Use the diagram on the side of the ladder as a guide.	L
Ladder climbing and standing	Slip/fall	Follow the 3-point rule (i.e. two hands and 1 foot or 2 feet and one hand in contact with the ladder at all times). Do not carry tools or objects in hands	L
		Keep the steps and rungs of ladders free of grease, oil, wet paint, mud, snow, ice, paper and other slippery materials. Also clean such debris off your shoes before climbing a ladder	L
		Always face a ladder when climbing up or down. Use both hands and maintain a secure grip on the rails or rungs	L
		Never carry heavy or bulky loads up a ladder. Climb up yourself first, and then pull up the material with a rope	L

Work Activities	Potential Hazards	Hazard Control Measures	RAC
		Never stand on the two top rungs of a straight or extension ladder, or top step of a step ladder	L
Ladder use	Fall	Do not overreach from a ladder, or lean too far to one side. A good rule is to always keep your belt buckle inside the rails of a ladder. Work as far as you can reach comfortably and safely, then move the ladder to a new position	L
		Do not try to move a ladder while you are on it by rocking, jogging or pushing it away from a supporting wall	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Appropriate PPE for selection operation, at minimum – a. Long Sleeve Shirt b. Long Legged Pants c. Sturdy Work Boots d. Rain gear, when required e. Goggles, when dusty	<u>Qualified Personnel</u> None required. <u>Training</u> 1. OSHA 40 hour and applicable 8 hour 2. Additional training (such as first aid/CPR) as applicable. 3. Equipment operation	1. Determine whether the maximum weight capacity of the user and materials is less than 300 lbs (Type IA) or 250 lbs (Type I). Ladders shall be inspected for visible defects on a daily basis and after any occurrence that could affect their safe use. Broken or damaged ladders shall be immediately tagged " DO NOT USE ," or with similar wording, and withdrawn from service until restored to a condition meeting their original design

Training Acknowledgement:

Printed Name	Signature	Date

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APPENDIX C

STANDARD OPERATING PROCEDURES

LIST OF STANDARD OPERATING PROCEDURES

1	Medical Surveillance, Control/Access to Employee Medical Records, and Emergency Care	C-1
2	Emergency Response and Fire Prevention Plan	C-5
3	Heavy Equipment and Vehicle Safety	C-15
4	Severe Weather Operations.....	C-31
5	Heat Stress	C-38
6	Lockout/Tagout Program	C-48
7	Hearing Conservation Program.....	C-50
8	Handling of Drums, Roll-offs, and Other Containers	C-52
9	Fire Fighting Plan	C-55

SOP #1 – MEDICAL SURVEILLANCE, CONTROL/ACCESS TO EMPLOYEE MEDICAL RECORDS, AND EMERGENCY CARE

1.1 INTRODUCTION

The medical surveillance program is a major element in the Health and Safety Program. The three major components of the medical surveillance program are: (1) routine medical monitoring of the health of personnel whose work may expose them to health hazards, (2) arrangements for emergency medical care in the event of a work-related injury, and (3) maintenance of employee medical records.

1.2 MEDICAL SURVEILLANCE

1.2.1 Enrollment Criteria

1.2.1.1 A medical examination is essential to assess and monitor a worker's health and fitness both before placement and during the course of work. The criteria for medical surveillance enrollment are dependent upon the employee's exposure potential. An employee whose work involves the regular, potential exposure to toxic substances or physical agents above established short-term exposure limits (STELs), OSHA permissible exposure limits (PELs), OSHA action levels, or American Conference of Governmental Industrial Hygienist (ACGIH) threshold limit values (TLV) shall be enrolled in the medical surveillance program. Examples of operations where employee enrollment would be necessary include.

- Field investigations or remedial operations at gasoline stations or bulk storage terminals;
- Field investigations in a designated exclusion zone;
- Work requiring respirator usage;
- Laboratory use of hazardous substances;
- Asbestos or lead sampling or abatement;
- Stack sampling and source evaluation operations; and
- Industrial wastewater and process water characterization surveys.

1.2.1.2 An employee assigned to a task where there is no reason to believe there is a potential for exposure above STELs, OSHA PELs, OSHA action levels, or ACGIH TLVs would be exempt from the medical surveillance program. Examples of exempted operations would include the following:

- Project management oversight from support zone;
- Property transfer audits where there is no environmental sampling;

- Laboratory operations confined to dip and read tests;
- Brush clearing and land survey operations; and
- Ecological surveys.

1.2.2 Medical Oversight Contractor

1.2.3 Clinic Selection

The Site Safety and Health Officer (SSHO) will perform initial clinic selection.

1.2.4 Pre-Placement Screening

All employees who will be involved in the medical surveillance program will have an initial physical examination before assignment to work requiring regular health monitoring. The pre-placement screening has two major functions: (1) to determine the employee's fitness for duty, including the ability to work while wearing protective equipment and (2) to establish a baseline physiological profile for comparison with future medical data.

1.2.5 Periodic Examinations

Physical examinations are repeated annually for personnel involved in hazardous, toxic, and radiological wastes (HTRW) and ordnance explosive (OE) projects. Records of project personnel working on this project will be checked to ensure that periodic examination has occurred within the last year.

1.2.6 Termination Examination

A physical examination shall be performed as a part of the checkout procedure for terminating employees.

1.2.7 Special Examination

Special medical examinations and counseling will be provided in cases of known or suspected exposure to a toxic substance above its occupational exposure limit. The SSHO must approve special testing after consulting the Corporate Health and Safety Manual (CHSM).

1.2.8 Information Provided to the Examining Physician

Each employee participating in the medical surveillance program will present to the examining physician a completed History and Physical Form at the time of the examination. The History and Physical Form is designed to elicit information necessary for the physician to understand the employee's past and current health status. Additionally, the form provides an opportunity for the employee to express possible concerns about his or her occupational environment.

1.2.9 Medical Examination Reports

1.2.9.1 Data obtained during the examination is sent to the Medical Oversight Contractor (MOC) physician for analysis. After reviewing the data, the CHSM will forward the results to the SSHO. This report contains the following information:

- Physician's opinion of the employee's fitness to perform their assigned duties;
- Any recommended limitations upon the employee's assigned duties; and
- Statement that the employee has been informed of the physician's findings and of any medical conditions that require further examination or treatment.

1.2.9.2 Additionally, the employee receives a report from the physician that discusses all aspects and findings of the medical examination.

1.2.10 Disposition of Medical Records of Terminated Employees

When an employee is terminated, the contracted physician shall seal the employee's medical file for archiving. The medical file will be maintained in the custody of the physician for 30 years after the employee's termination date.

1.2.11 Confidentiality of Reports

The medical report that is submitted to the CHSM and forwarded to the SSHO shall not reveal any specific findings or diagnoses unrelated to occupational exposures, illnesses, or accidents. Reports shall be maintained either electronically (encrypted) or in paper format (in file with access restricted). Access to the physician's report shall only be accessible to the SSHO and Program Health and Safety Manager unless authorized in writing by the employee or except where the opinions are required for settlement of workers' compensation claims.

1.2.12 Subcontractor Medical Certification

Subcontractors assigned to work on the project are required to furnish the Project Manager (PM) or SSHO a doctor's certification of each assigned employee's ability to wear personal protective equipment. The certification should be dated not more than 1 year before the employee begins onsite work.

1.3 EXPOSURE MONITORING

1.3.1 A fundamental approach to evaluating and controlling potential workplace hazards is the use of air sampling.

1.3.2 Airborne monitoring will be conducted for volatile organic compounds and dust when these items are expected to be present and may constitute a hazard. The SSHO will ensure that all sampling results that may be used to characterize potential worker exposures are recorded and transferred confidentially to the appropriate Health and Safety representative.

1.3.3 Exposure records (to include non-detections) will be prepared by SSHO. Records will include workers name, social security number if available, and monitoring results (with description of source/equipment used to generate results; time/date; duration of sampling time; type of sample-personal, area or breathing zone; and concentration). Records will be prepared for all measurements that can be used to characterize exposures to site workers.

1.3.4 Exposure sampling results that indicate an over exposure will immediately be brought to the attention of the following to the company's (if subcontractors are used) CHSM.

1.4 EMERGENCY MEDICAL CARE

1.4.1 Emergency treatment is integrated into the Emergency Response and Fire Prevention Plan. This plan requires posting of the name, a map showing its location, phone number, and address of the nearest emergency care center. In addition, phone numbers and procedures for contacting fire, police and ambulance services are included in the emergency response portions of this plan. The Emergency Response and Fire Prevention Plan designates roles and responsibilities to be assumed by personnel in an emergency. At least two members of the field team will be currently certified in cardiopulmonary resuscitation (CPR) and first aid.

1.4.2 A map with directions to the nearest medical facility will be posted at the worksite. All personnel working at the site should know the location of the nearest medical facility. The SSHO will report all incidents requiring emergency medical attention to the CHSM.

1.5 PROGRAM RESPONSIBILITY

The SSHO is responsible for assuring that site workers are in compliance with this SOP. In addition the SSHO sets-up employee exam through the MOC.

1.6 PROGRAM COSTS

Routine medical monitoring is the responsibility of the company, and the company will bear the entire cost of the program. Special, project-specific medical examinations will be included in the project budget.

SOP #2 - EMERGENCY RESPONSE AND FIRE PREVENTION PLAN

2.1 PRE-EMERGENCY PLANNING

2.1.1 Situations requiring emergency response can be minimized by planning and approaching the circumstances in a calm, deliberate manner.

2.1.2 Agencies that may provide emergency response, such as the Emergency Management Agencies (EMAs), police department, fire department and medical support services will receive an operations schedule on a daily or weekly basis.

2.1.3 The SSHO will be the on-site project emergency coordinator (as conditions dictate) in case of an accident or incident requiring emergency response. All personnel will be briefed at the morning tailgate safety meetings the location of the cellular telephones and who has on-site radio communications. This information will also be included in all visitor briefings.

2.1.4 A warning system using a series of three five-second blasts on portable air horns or vehicle horns will notify site personnel that an accident or incident has occurred and evacuation is required. Upon hearing the evacuation warning, all personnel will immediately clear the site and respond to the designated rally point. This rally point will be revised based upon prevailing weather conditions and will be briefed by the SSHO at the morning tailgate safety briefing. At the rally point, all personnel will be accounted for and interviewed to assure no one has sustained injuries because of the accident or incident.

2.1.5 If an emergency response rescue operation is required, no personnel will re-enter the area until the situation has been assessed and it is determined that resources are on-hand to handle the rescue without jeopardizing additional personnel.

2.2 PERSONNEL ROLES AND LINES OF AUTHORITY

2.2.1 This plan describes the various roles, responsibilities, and communication procedures that will be followed by personnel working on this project in the event of an emergency.

2.2.2 The primary On-Site Project Emergency Coordinator for this site is the on-site SSHO or his designee (Field Team Leader). The On-Site Project Emergency Coordinator will determine the nature of the emergency and take appropriate action.

2.2.3 Prior to field activities, the SSHO shall plan emergency egress routes and discuss them with all personnel who will be conducting fieldwork. Initial planning includes establishing and testing emergency warning signals and evacuation routes to prevent delays in the event of an emergency.

2.3 EMERGENCY CONTACTS

Emergency telephone numbers for the closest hospitals capable of providing emergency service, EMAs, Poison Control Center, local police and fire department, and key safety and management personnel from the U.S. Army Engineering and Support Center, Huntsville (USAESCH), U.S. Army Corps of Engineers – New York District (CENAN), and Fort Monmouth (FTMM) will be listed in the appropriate plans and will be kept immediately available in the field vehicles. The SSHO will be responsible for taking necessary action and contacting the appropriate emergency contacts.

2.4 EMERGENCY RECOGNITION AND PREVENTION

Emergencies can take many forms: exposure to chemical agents or industrial chemicals of various types, illnesses or injuries, chemical exposure, fires, or sudden changes in the weather. The remaining sections of the Emergency Response and Contingency Plan (ERCP) outline general emergency and contingency planning procedures to be followed at the site. Emergency information and instructions shall be posted as appropriate.

2.5 FIRST AID

2.5.1 At least two people trained and certified in First Aid/CPR will be present on-site at all times during intrusive activities. Life support techniques such as CPR and treatment of life threatening problems such as shock will be given top priority. Professional medical assistance shall be obtained at the earliest possible opportunity.

2.5.2 To provide first-line assistance to field personnel in the case of illness, injury, or fire the following items will be immediately available:

- First aid kit;
- Portable emergency eye wash;
- Supply of clean water and 5 percent bleach solution;
- Fire extinguisher;
- Portable spill kit or equivalent (30 gallon size);
- Air horn; and
- Cellular telephone or 2-way radio

2.6 EMERGENCY ACTIONS

If actual or suspected serious injury occurs, these steps shall be followed:

- Remove the exposed or injured person(s) from immediate danger.
- Render first aid if necessary.
- Obtain paramedic services or ambulance transport to local hospital. This procedure shall be followed even if there is no visible injury.

- Other personnel in the work area shall be evacuated to a safe distance until the Emergency Coordinator determines that it is safe for work to resume. If there is any doubt regarding the condition of the area, work shall be delayed until all hazard control issues are resolved.
- Notify USAESCH, CENAN, and FTMM, and Project Health and Safety Officer. CENAN will make the required notifications to State and County Agencies.

2.7 EMERGENCY EVACUATION PLAN

2.7.1 General Evacuation Plan

2.7.1.1 In the case of an operational shutdown due to severe weather conditions, or if other hazards exist on-site, the Emergency Coordinator or Field Team Leader will sound the alarm (three blasts each of five second duration on an air horn). All personnel in the work area will secure their equipment and proceed to the off-site assembly point, located a safe distance (designated at morning safety meeting) at an upwind location from the site. The Emergency Coordinator or his alternate will obtain the site entry/exit logs to ensure that all personnel have been safely evacuated. The Field Team Leader will coordinate with the Emergency Coordinator to determine when it is safe to re-enter the site and resume work.

2.7.1.2 In the general case of a large fire, explosion, or toxic vapor release, a site evacuation shall be ordered and the following steps implemented:

- Sound the alarm (three blasts each of a five-second duration on an air horn), notify appropriate emergency response agencies, and advise USAESCH, CENAN, and FTMM and project management personnel.
- Evaluate downwind impact in order to assist emergency response agencies. All personnel will evacuate in the upwind direction.
- All personnel will assemble in an upwind area when the situation permits, and a head count will be taken.
- Determine the extent of the problem. Dispatch a response team in protective clothing and self-contained breathing apparatus on-site to evacuate any missing personnel (when conditions do not endanger safety of rescue personnel) and to correct the problem.

2.7.2 Evacuation Signals and Routes

2.7.2.1 Two-way radio communication, direct voice communication, or an air-horn (three blasts - each of five seconds duration) will be used to notify employees of the necessity to evacuate an area involved in a release/spill of a hazardous material. Each work location will have a two-way radio. A two-way radio will be in the command post to monitor for emergencies. Total site evacuation will be initiated only by the Emergency Coordinator. However, in his absence, the decision to preserve the health and safety of employees will take precedence.

2.7.2.2 Evacuation routes will be discussed and described in tailgate safety meetings. The route to the Medical Center will be located in each field vehicle. Periodic drills (before each new

phase of work) will be conducted to familiarize each employee with the proper routes and procedures.

2.7.3 Evacuation Procedures

In the event evacuation is necessary, the following actions will be taken:

- The alarm will be activated.
- No further entry of visitors, contractors, or trucks will be permitted. Vehicle and equipment traffic within the site will cease to allow safe exit of personnel and movement of emergency equipment.
- Shut off all machinery and equipment, if safe to do so.
- All on-site personnel, visitors, and contractors in the Support Zone will assemble at the office trailer, or other designated area, for a head count and wait for further instructions from the Emergency Coordinator.
- Upon completion of the head count, the senior person will provide the information to the Emergency Coordinator.
- Visitors will also be accounted for.
- A final tally of persons will be made by the Emergency Coordinator or his designee. No attempt will be made to find persons not accounted for if the rescue attempt involves endangering the lives of employees.
- Personnel will be assigned by the Emergency Coordinator to be available at the main entrance point to direct and brief emergency responders.
- Re-entry into the site will be made only after clearance has been given by the Emergency Coordinator. At his direction, a signal or other notification will be given for re-entry into the facility.
- Drills will be held at the beginning of the intrusive fieldwork and at intervals during the intrusive work. Drills will be treated with the same seriousness as an actual emergency.

2.8 EMERGENCY ALERTING AND RESPONSE

To minimize hazards to the environment or to human health, the procedures listed below are to be implemented in the event of a spill or discharge involving a hazardous substance. It is the responsibility of on-site employees to report any such emergencies to the on-site Emergency Coordinator who will be responsible for implementing emergency response procedures.

2.8.1 Initial Notification

- STEP 1: Notify appropriate management personnel in the following order until one of these people are contacted. Senior ranking person will take over responsibilities when they arrive.

Contact

1st. Field Team Leader
2nd. SSHO
3rd. Field Teams

- STEP 2: If the emergency coordinator determines that assistance is needed to respond to the emergency, he/she can notify the appropriate personnel. The Emergency Contact List will be posted onsite.
- STEP 3: If the on-site Emergency Coordinator determines that a spilled material is “in such quantity or concentration as may be harmful or poses a foreseeable risk of harm to public health or welfare or to natural resources,” the coordinator will immediately notify the appropriate personnel.
- STEP 4: The USAESCH, CENAN, and FTMM will be notified immediately and given a copy of the spill report within 48 hours. He/she will be advised concerning all notification and response actions. Depending on type of spill, it may be necessary to notify State HAZMAT agencies. Determinations as to reportable quantities for specific chemicals or materials will be obtained by the Field Team Leader. The state notification will be accomplished after notifying USAESCH, CENAN, and FTMM and following emergency response actions.
- STEP 5: The on-site emergency coordinator will contact the National Response Center (800-824-8802) when a hazardous substance is released in excess of the reportable quantity.

2.9 EMERGENCY SERVICES

All personnel shall be provided concise and clear directions and accessible transportation to local emergency services. A map outlining directions to the nearest hospital will be located in all field vehicles.

2.9.1 Emergency Equipment

In the decontamination area, an emergency equipment station will be present. This station will consist of a combination emergency eye wash station, first aid kit, two-way radio or cellular phone, emergency alarm (e.g., air horn), and a fire extinguisher. Each piece of heavy equipment, site trailer (if applicable), and each vehicle will be equipped with a fire extinguisher.

2.9.2 Critique of Response and Follow-up

All response actions will be evaluated for effectiveness by SSHO and Field Team Leader. Corrective actions will be communicated to personnel and procedures will be revised as required.

2.10 SPILL INCIDENT REPORTS

A written report detailing the spill or discharge shall include, at a minimum, the cause and resolution of the incident, the date the incident occurred, and any outside agencies involved. The report shall be submitted to the USAESCH, CENAN, and FTMM within 48 hours of the incident.

2.10.1 Special Notifications and Procedures in the Event of a Spill

Additional notifications, including emergency telephone numbers, if needed, for local, state, and federal agencies which may require notification are included in the Notification Plan kept onsite.

- If the incident threatens human health or the environment outside of the project site boundaries, the emergency coordinator will notify the local Police Department first, then the local Fire Department, and the Emergency Management Agency. Assistance will be provided to these organizations to determine if public evacuation is necessary.
- If a reportable quantity of a hazardous material is released off-site, the Emergency Coordinator will notify the National Response Center (800-424-8802). The following information will be provided to the National Response Center:
 - Name and telephone number
 - Name and address of facility
 - Time and type of incident
 - Name and quantity of materials involved, if known
 - Possible hazards to human health and/or the environment outside of the facility
- If hazardous waste has been released or produced through control of the incident, ensure that:
 - Waste is collected and contained
 - Containers of waste are removed or isolated from the immediate site of the emergency
 - Treatment or storage of the recovered waste, contaminated soil or surface water, or any other material that results from the incident or its control is provided
 - Ensure that all emergency equipment used is decontaminated, recharged, and ready for use before site operations are resumed

2.11 FIRE PREVENTION AND CONTINGENCY MEASURES

2.11.1 Because flammable materials are present at this site, fire is an ever-present hazard. Parsons and subcontractor personnel are not trained professional fire fighters. Personnel will attempt to extinguish incipient (early) stage fires using portable fire protection equipment. Therefore, in the event of any fire that cannot be extinguished using portable extinguishers, personnel will notify the Emergency Coordinator by radio and evacuate the area. The Emergency Coordinator will immediately notify the local Fire Department.

2.11.2 The following procedures will be used to prevent the possibility of fires and resulting injuries.

- Sources of ignition will be kept away from areas where flammable materials are handled or stored.

- The air will be monitored for explosive vapors before and during hot work and periodically where flammable materials are present, and during confined space work. Hot work permits will be required for all such work.
- Fire extinguishers will be placed in all areas where a fire hazard may exist.
- Before workers begin operations in an area, the senior person will give instruction on egress procedures and assembly points.

2.11.3 The following procedures will be used in the event of a fire:

- Anyone who sees a fire will notify his or her Supervisor who will then contact the Emergency Coordinator by radio. Portable fire extinguishing equipment will be used to the extent practicable or the Emergency Coordinator will activate the emergency alarm (three blasts for site evacuation) and notify the local Fire Department.
- When the emergency alarm sounds, workers will disconnect electrical equipment in use (if possible) and proceed to the nearest exit point/assembly area.
- Work crews will be comprised of pairs of workers (buddy system) who join each other immediately after hearing the fire alarm and remain together throughout the emergency. Workers will assemble at the assembly point for the site for a head count.
- When a small fire has been extinguished, the Emergency Coordinator will be notified.

2.12 HAZARDOUS WEATHER CONTINGENCY MEASURES

2.12.1 The Emergency Coordinator will be responsible for assessing hazardous weather conditions (i.e., high winds, tornado, etc.) and notifying personnel of specific contingency measures. Notifications will include:

- Employees, subcontractors, and visitors
- USAESCH, CENAN, and FTMM.

2.12.2 Operations will not be started or continued when the following hazardous weather conditions are present:

- Lightning
- Heavy Rains/Snow
- High Winds (>40 mph)

2.12.3 The response to these conditions includes the following actions:

- Excavation/soil stockpiles will be covered with visqueen/plastic and temporary barricades will be placed along perimeter of open excavation.
- All equipment will be shut down and secured to prevent damage.
- Personnel will be moved to safe refuge, initially crew trailers. The Emergency Coordinator will determine when it is necessary to evacuate personnel to off-site locations.

2.13 CHEMICAL SPILLS OR RELEASES

The occurrence of chemical leaks or spills is anticipated to be remote, due to the preventative measures implemented on the site and the nature of the contaminated materials present. There is, however, a potential for the occurrence of spills or leaks during excavation operations or due to spills from fuels, oils, etc., used in servicing heavy equipment. Salvage drums, spill containment, and sorbent material will be available for personnel to respond in the event that such a release should occur. Safe handling procedures will be implemented in order to minimize the handling required to over-pack the drums and stage them in a designated area. The following actions will be taken in the event of a release of any chemical, fuel, or contaminated water at the site:

- **Small Quantity Spill:** This will be defined as 25 gallons or less of liquid material. Before responding, make sure personnel are in the appropriate level of protection. Use sorbent material as necessary to effect cleanup, and containerize all liquids and debris. Make sure the incident is immediately reported to the USAESCH, CENAN, and FTMM.
- **Large Quantity Spill:** This will be defined as over 25 gallons of liquid material. Immediate notification will be made to the Field Team Leader and USAESCH, CENAN, and FTMM. The Field Team Leader will direct efforts to contain and mitigate the spill, as well as coordinate with the USAESCH, CENAN, FTMM and local officials to determine if additional notification or area evacuation is required.

2.14 SPILL PREVENTION AND CONTROL PROCEDURES

2.14.1 During site preparation, primary staging areas will be constructed. Proper bermed and lined staging areas will reduce the amount of cleanup required as a result of spills or leaking drums.

2.14.2 A sufficient supply of appropriate emergency response cleanup and personal protective equipment will be visually inventoried and inspected on a weekly basis by the SSHO.

2.14.3 The materials listed below will be kept on-site for spill control. Small quantities of appropriate materials may be placed on pallets and located in the active work areas.

- Sand or clay to solidify/adsorb liquid spills.
- Five percent bleach solution to decontaminate chemical agent.

The following equipment will be kept on-site and dedicated for spill cleanup:

- Sausage-shaped absorbent booms for diking liquid spills, drains, or sewers;
- Sorbent sheets (diapers) for absorbing liquid spills;
- Over-pack drums for containing leaking spills; and
- Fifty-five gallon open-top drums for containing waste materials.

2.14.4 All contaminated soils, absorbent materials, solvents, and other materials resulting from the cleanup of spilled or discharged substances will be properly stored, labeled, and disposed of off-site.

2.15 CHEMICAL SPILL CONTINGENCY MEASURES

In the event of release or spill of a hazardous material the following measures will be taken immediately:

- Administer first aid to injured/contaminated personnel. Any person observing a spill or release will act to remove and/or protect injured/contaminated persons from any life-threatening situation. First aid and/or decontamination procedures will be implemented as appropriate.
- Warn unsuspecting person/vehicles of the hazard. All personnel will act to prevent any unsuspecting persons from coming in contact with spilled materials by alerting other nearby persons.
- Stop the spill at the source, if possible. This may involve activities such as uprighting a drum, closing a valve, or temporarily sealing a hole with a plug.
- Using radio communications, notify the Emergency Coordinator of the spill/release, including information on material spilled, quantity, personnel injuries, and immediate life threatening hazards.
- Follow procedures outlined earlier for the notification of proper on-site personnel and off-site agencies.

2.15.1 Containment and Control Measures

2.15.1.1 The Emergency Coordinator will make a rapid assessment of the spill/release and direct confinement, containment and control measures. Depending upon the nature of the spill, measures may include, but not be limited to:

- Constructing a temporary containment berm using on-site clay absorbent earth.
- Digging a sump, installing a polyethylene liner, and diverting the spill material into the sump placing drums under the leak to collect the spilling material before it flows over the ground.
- Transferring the material from its original container to another container.

2.15.1.2 Supplies necessary to clean up a spill will be immediately available on-site. Such items may include, but are not limited to: backhoe or trackhoe, shovel, rake, clay absorbent, polyethylene liner, personal safety equipment, and miscellaneous hand tools. The major supply of material and equipment will be located in a supply trailer in the Support Zone. Smaller quantities of supplies will be kept at active work locations for emergencies.

2.15.2 Cleanup Inspection and Notification

2.15.2.1 The Emergency Coordinator/Field Team Leader will jointly inspect the spill site to determine that the spill has been cleaned up. If necessary, soil, water or air samples may be taken and analyzed to demonstrate the effectiveness of the spill clean-up effort.

2.15.2.2 The Emergency Coordinator will determine the cause of the spill and determine remedial steps to ensure that recurrence is prevented. The Emergency Coordinator will review the cause with the SSHO, CHSM, USAESCH, CENAN, and FTMM to obtain concurrence with the remedial action plan.

2.16 TRANSPORTATION SPILL INCIDENTS

Spillage resulting from site transportation incidents will be immediately reported to the Emergency Coordinator, who will send personnel to contain and clean up the spill (if possible without risk to personnel). Any soils contaminated by the spill incident will be removed and processed as described in the Work Plan.

SOP #3 – HEAVY EQUIPMENT AND VEHICLE SAFETY

3.1 INTRODUCTION

3.1.1 Motor vehicle usage presents the most significant work risk to employees. The United States Bureau of Labor Statistics indicates that motor vehicle deaths and injuries continue to be the number one cause of work-related death and serious injury. Accordingly, it is essential that an effective vehicle safety program be instituted for each worksite.

3.1.2 This section establishes requirements for safe operation of vehicles and heavy equipment. Vehicles are defined as any automobile (car, truck, or otherwise) used on the project to transport personnel or haul equipment to, around, and from the site. Heavy equipment refers to backhoes, track hoes, skid loaders, forklifts, or any other piece of heavy machinery used to move equipment or for excavation. This procedure is an overview of the guidelines in the EM385-1-1 chapters 16, "Machinery and Mechanized Equipment" and 18 "Motor Vehicle and Aircraft Safety".

3.2 OBJECTIVE

The objective of this document is to outline requirements and safe practices for operation of heavy equipment and vehicles.

3.3 PURPOSE

This document provides information and procedures in order for personnel to operate heavy equipment and vehicles safely.

3.4 REFERENCES

Procedures and information contained in this document were obtained from the below listed references:

- USACE EM 385-1-1, Safety and Health Requirements Manual;
- USACE EP 385-1-95a, Basic Safety Concepts and Considerations for Ordnance and Explosives Operations;
- USACE EP 1110-1-18, Engineering and Design;
- OSHA Regulation 29CFR1926, Subpart P, Appendix A and 29CFR1926.652, Subpart P, Appendix F, Safety and Health Requirements for Construction;
- AR 385-55, Prevention of Motor Vehicle Accidents;
- DA Pam 385-16, System Safety Engineering and Management; and

3.5 RESPONSIBILITIES

3.5.1 Driver/Operator

The driver of contractor owned, rented, or leased vehicles or heavy equipment is responsible for:

- Operating the motor vehicle while in possession of a valid driver's license;
- Operating the vehicle in a safe and legal manner;
- Refraining from eating, drinking, smoking, or using a cellular telephone while the vehicle is in motion;
- The safety of passengers; and
- Reporting immediately any motor vehicle that is found to be defective or not operating properly.

3.5.2 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) is responsible for the following:

- Ensuring that all vehicle accident reports are processed and the required number of copies submitted to local, state, and federal agencies, to the resource manager and to the insurance carrier.
- Ensuring that appropriate individuals, beginning with the Project Safety and Health Officer, are notified by telephone of accidents that involve fatalities or multiple serious injuries.
- Verifying that all accidents are documented and investigated. The investigation should be of sufficient depth to determine the cause and action required to prevent recurrence. Copies of all motor vehicle investigations shall be forwarded to the Project Safety and Health Officer (PSHO) and the Corporate Health and Safety Manager.
- Ensuring that during the selection process for leased or purchased vehicles, consideration is given to obtaining vehicles with essential safety devices. Such devices include anti-locking brakes, air bags, both front and rear seat shoulder harnesses, and all season traction tires. Motor vehicles must be equipped with first aid kits. Shoulder safety belts must not be attached to doors.

3.5.3 Inspections

3.5.3.1 Before initial use, equipment not otherwise inspected by State or local authorities will be inspected by a qualified mechanic and found in safe operating condition. The inspection will be documented in writing and available upon request.

3.5.3.2 The vehicle and heavy equipment operators are responsible for inspecting their equipment daily to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use:

- Service brakes, including trailer brake connections;
- Parking system (hand brake);
- Emergency stopping system (brakes);
- Tires;
- Horn;
- Steering mechanism;
- Coupling devices;
- Seat belts;
- Operating controls;
- Accessories including lights, reflectors, windshield wipers, and defrosters where such equipment is necessary; and
- Safety devices.

3.5.3.3 Records of inspection and maintenance will be kept at the site and available upon request. All vehicles operated during the night will have the following lights:

- Two headlights, one on each side of the front;
- At least one red taillight and one red or amber stoplight on each side of the rear;
- Directional signal lights (both front and back); and
- Three emergency flares, reflective markers, or equivalent portable warning device.

3.5.4 Brake systems

All vehicles, except trailers having a gross weight of 5,000 pounds or less will be equipped with service brakes and manually operated parking brakes. Service and parking brakes will be adequate to control the movement of, to stop, and to hold the vehicle under all conditions of service. Service brakes on trailers and semi-trailers will be controlled from the driver's seat of the prime mover. Braking systems on every combination of vehicle will be designed in approximate synchronization on all wheels and develop the required braking effort on the rear-most wheels first. The design will also provide for application of the brakes by the driver of the prime mover from the cab. The only exception is vehicles in tow by an approved tow bar hitch.

3.5.5 Required equipment

3.5.5.1 All motor vehicles (cars and trucks) will have the following equipment:

- An operable speedometer;
- An operable fuel gage;
- An operable audible warning device (horn) in operating condition;
- A windshield equipped with an adequate windshield wiper;

- An operable defrosting and defogging device;
- An adequate rear view mirror or mirrors;
- Cabs, cab shields, and other protection to protect the driver from the elements and falling or shifting materials;
- Non-slip surfaces on steps; and
- A power-operated starting device
- Lap and shoulder belts
- Operating brakes

3.5.5.2 Glass in windshields, windows, and doors will be safety glass. Any cracked or broken glass will be replaced.

3.5.6 Defects

All defects shall be corrected before the vehicle is placed in service. These requirements also apply to equipment such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, etc., where such equipment is necessary.

3.6 SEAT BELTS

OSHA has determined that the use of seat belts in motor vehicles can significantly reduce the seriousness of occupational motor vehicle accidents. Accordingly, all contractor employees driving motor vehicles on this project (including rental cars, pick-up trucks, personal vehicles which are used for company compensated business travel, etc.) shall ensure that all occupants use seat belts, both shoulder and lap belts.

3.7 STATE AND LOCAL LAWS

- Drivers shall operate vehicles in accordance with the law (i.e., posted speed limits).
- Drivers shall not operate vehicles that are known to be defective or in violation with the law.
- Drivers are responsible for the consequences of state and community violations.
- The use of devices designed to identify active police speed detection systems (i.e., radar detectors) is prohibited in all company and subcontractor owned, leased, and rented vehicles, and in personal vehicles used for company compensated business travel.

3.8 SAFE DRIVING PRACTICES

- Personnel shall operate vehicles in a defensive manner, i.e., being always on the alert and trying to anticipate what might occur under the existing conditions and driving in such a manner as to avoid hazards.
- Personnel operating vehicles shall be considerate of, and courteous to, the traveling public and/or pedestrians and should yield the right-of-way to avoid accidents.

- Headlights will be switched to low beam when approaching oncoming traffic.
- Personnel will have headlights on during periods of darkness and during fog, smoke, rain, or unfavorable atmospheric conditions.
- Personnel shall drive at speeds consistent with posted speed limits and prevailing conditions, such as weather, traffic, and road conditions.
- Personnel shall drive at all times with sufficient space around the vehicle to provide time to see conflicts arising, to react quickly, and to stop. These five keys to defensive driving will help accomplish a good space cushion.
 - Aim high in steering;
 - Get the big picture;
 - Keep your eyes moving;
 - Leave yourself an out; and
 - Make sure they see you.

3.9 GENERAL SAFETY RULES

- **Blind Curves** - Slow down and sound horn when approaching a blind curve.
- **Driver's License** - Operation of a vehicle without a valid operator's license is prohibited. Personnel operating vehicles regulated by the United States Department of Transportation (DOT) shall have a current commercial driver's license (CDL).
- **School Buses** - Obey school bus laws. Slow down and prepare to stop when approaching school buses, children on foot, or on bicycles.
- **Emergency Vehicles** - Give ambulances, fire-fighting equipment, and other vehicles the right-of-way during emergencies and lend assistance if required.
- **Gasoline** - Gasoline and other flammable/combustible liquids shall not be carried in or on vehicles other than in permanent gas tanks or in UL approved safety cans. UL approved safety containers must be properly secured when being carried in the back of pick-up trucks.
- **Laws and Regulations** - Learn and obey all local, state, and federal laws.
- **Parking** - Equipment and vehicles shall be parked off roads and highways whenever possible. When it is not possible, the vehicle shall be marked by red lights or flares at night and red flags during the day. Wheels should be blocked or chocked. Vehicles will be attended until the motor has been shut off and the key removed from the ignition.
- **Passing** - Do not pass when visibility is restricted for any reason.
- **Pedestrians** - Be constantly alert for pedestrians. Remember they have the right-of-way.
- **Slow Down** - Slow down and use caution at blind intersections and crossings when visibility is limited or when passing work crews.

- **Speeding** - Speeding is strictly prohibited.
- **Visibility** - Make sure all windshields, side and rear windows, mirrors, and lights are clean before moving vehicles.
- **Warning Signs and Traffic Signals** - Be alert for and strictly obey all directional and warning signs and signals.
- **Seat Belts** - Operator and passengers must keep seat belts fastened at all times when vehicle is in motion.

3.10 DOT-REGULATED VEHICLES/EQUIPMENT

- **Commercial Driver's License** - All project and subcontractor personnel operating a DOT-regulated vehicle must hold a valid Commercial Driver's License from their state of residence.
- **Defensive Driving Training** - All project personnel are required to complete Defensive Drivers training classes.
- **Backing Up** - Never start or back up equipment or vehicles until you are sure the way is clear. If necessary, have another person guide you safely. Back up alarms, when required, must be working and audible over the surrounding noise.
- **Ear Protection** - Earplugs or other approved ear protection shall be worn when necessary. Use of earplugs in cars or trucks on public highways may be against local laws.
- **Fueling and Repair** - No fueling or repair shall be made to equipment while it is in operations. The motor shall be turned off and the bucket, blade, gate, or boom shall be lowered to the ground or blocks.
- **Housekeeping** - Operators should keep deckplates, steps, rungs, and hand rails on equipment free of grease, oil, ice, and mud. The inside of the cabs shall also be kept clean and free of tools, equipment, and flammable items.
- **Inspections** - Equipment and vehicles shall not be used until known defects or discrepancies are corrected. Inspections shall be made daily and defects or discrepancies shall be reported to the supervisor immediately.
- **Jumping** - Jumping on or off equipment is prohibited. When climbing on or off equipment or vehicles, face the unit and use secure hand and foot holds to prevent slips and falls. Always look where you are stepping.
- **Know Your Equipment or Vehicle** - It is your responsibility to be thoroughly familiar with all features and manuals and if you are in doubt as to correct operating techniques or safety features, ask your supervisor at once.
- **Overloading** - Avoid overloading vehicle beds and equipment buckets and beds. Excessive material can damage the unit and falling material can cause serious injury.
- **Power Lines** - When operating trucks, cranes, shovels, or other units, always use caution around power lines and maintain a minimum safe clearance of 10 feet or more depending upon the voltage.

- **Riders** - Only authorized persons will be permitted to ride in equipment or vehicles. The number of passengers in a passenger-type vehicle will not exceed the number that can be seated.
- **Securing Loads** - The operator of the vehicle is responsible for ensuring that their load is secure and will not shift during transport.
- **Long Hauls** - On long hauls, binders should be checked periodically (at least during each rest or service stop) to make sure they are still secure and tight.
- **Overhanging and Oversize Loads** - When it is necessary to transport overhanging or oversize loads, the appropriate signs and red flags (not less than 144 in2) and red lights will be used. When necessary, use flag cars.
- **Safety Chains** - Safety chains of sufficient size and strength shall be installed on all trailers being towed. Personnel are not permitted between towed loads and towing vehicles except when hooking or unhooking.
- **Safety Hooks** - Use safety hooks with latches on all winch truck cables.
- **Side Roads and Railroad Tracks** - Stop and look both ways before crossing railroad tracks or before driving onto a highway from a side road.
- **Stopping** - Do not stop vehicles in the middle of the road to talk to occupants in another vehicle. Always pull to the side or off the road to maintain a clear, safe road.
- **Turn Signals** - Always use turn signals, emergency and other signals as appropriate when turning, stopping, passing, or performing other vehicle operations.
- **Vehicle Maintenance** - It is the driver's responsibility to see that his vehicle is in good mechanical condition before and during operation. Special emphasis should be placed on ensuring the brakes, lights, horn, windshield wiper, tires, and steering assembly are in good order. Defects must be reported and corrected immediately.

3.11 HEAVY EQUIPMENT OPERATIONS

3.11.1 Team Composition

The minimum team make-up will be:

- One qualified operator;
- One ground guide, the Safety Observer can fill this role if conditions permit; and
- One Safety Observer

Team Leader - Field Team Leader (FTL) will serve as the overall Safety Observer, directing the site personnel and equipment during the operation. Depending on the complexity of the operation, he may also serve as the backup guide. The FTL will be trained as a competent person for excavation operations when required.

Ground Personnel - Team members working on heavy equipment operations will be qualified through on-the-job training (OTJ) and will perform such tasks as magnetometer checks, manual excavation and checks of the excavation.

Equipment Operators - All site personnel, regardless of affiliation, who operate heavy equipment, will be qualified formal training, equivalent previous employment experience or OJT. Documentation of operator training will be kept on file at the site. As a minimum, the operator will perform daily inspection and maintenance of equipment as stated in the operation manual for that piece of equipment. Daily inspections must be documented (See figure 3.1).

3.11.2 Equipment Procedures

3.11.2.1 The hazards associated with heavy equipment involve moving parts and exposure to possible pinch points. Safe operating procedures for each type of equipment or activity must be reviewed and followed. Safety protection, including equipment guards, which must not be removed, shall be provided to mitigate this problem. Site personnel operating or working within close proximity to heavy equipment will wear hard hats, eye protection, steel-toed boots, and hearing protection (as necessary).

3.11.2.2 Heavy equipment used on the site must meet the requirements of OSHA, DOT, and general industry standards. The operator will be responsible for completing daily written inspections of all heavy equipment and provide copies of the inspection as well as required certifications to the FTL. All personnel who operate equipment must use any safety devices, such as seat belts, that the equipment is equipped with during operation. All operators will follow the following heavy equipment operating rules:

- Only personnel trained in the operation of heavy equipment are permitted to operate such equipment;
- Personnel may only operate equipment for which they have received training and certification. Trainees may operate heavy equipment, but only under competent supervision;
- Before operating any heavy equipment, the operator must conduct a pre-operational check of the piece of equipment. Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be checked daily and maintained in good working order throughout the duration of its use. If it is found to be unsafe, the operator must report the condition immediately to the appropriate supervisor, and the piece of equipment placed in an unserviceable status until it has been repaired or replaced.
- Heavy equipment will not be backed up unless the vehicle has a reverse signal alarm audible above the surrounding noise level or a ground guide is used.
- Heavy equipment will be provided with necessary safety features including seat belts, roll-over protection, emergency shut-off during roll-over, backup warning lights, and audible alarms as applicable.

- Blades and buckets will be lowered to the ground and parking brakes will be set before shutting off any heavy equipment.
- Special consideration must be given to the proper functioning of tires, horns, lights, batteries, controllers, lift systems (including forks, chains, cable and limit switches), brakes, and steering mechanisms;
- All heavy equipment must be operated at an authorized safe speed, consistent with conditions, and at a safe distance from other vehicles. Heavy equipment must be under positive control at all times;
- No riders other than the driver are permitted on heavy equipment at any point;
- When heavy equipment is left unattended, loads must be lowered, controls neutralized, power shut off, and brakes set. Wheels should be chocked if the equipment is parked on an incline.
- Backhoe outriggers shall be equipped with cleated pads (or cribbing used) when operating in soft sandy soil rather than rubber pads (for hard surfaces).
- When working near a backhoe or excavator, field personnel will maintain sight contact with the operator. Field personnel shall not work within the swing radius of the equipment while the equipment is operating. The swing radius will be defined with traffic cones, barrier tape, or other suitable means, such as inscribing the radius on the soil surface using the backhoe bucket.
- Personnel will not cross the demarcated line without first establishing eye contact with the operator. The operator will cease vehicle operations and remove his hands and feet from the controls and/or turn the equipment off, before allowing personnel access to the area within the swing radius. Operations will resume only after all personnel have left the area within the swing radius.

3.11.3 Personnel Protective Equipment (PPE)

Level D PPE will be required for personnel engaged in heavy equipment operations. Clothing items will be:

- Coveralls or work clothing as prescribed by Accident Prevention Plan (APP);
- Work gloves, leather or canvas, as prescribed by APP;
- Safety glasses - as wind conditions and airborne particulate matter dictates;
- Hardhats;
- Highly Visible Safety Vests;
- Work Boots, steel toe - Sturdy and of sufficient height to aid in ankle support;
- Hearing Protection - Will be determined through a Noise Survey for any heavy equipment brought on site. Until the survey is completed and the degree of attenuation determined, personnel on the team will wear appropriate hearing protection; and
- Dust Masks - as wind conditions and airborne particulate matter dictates.

NOTE: If the heavy equipment is being used in support of other operations, PPE will be in accordance with (IAW) that specific matrix.

3.12 GENERAL HEAVY EQUIPMENT SAFETY PRECAUTIONS

3.12.1 Underground Utilities

Utilities companies shall be contacted within established or customary local response times advised of the proposed work and asked to locate underground utilities (sewer, telephone, electric, water, gas or any other utility) prior to start of actual excavation. When these locations cannot be established, the excavation may proceed, provided the heavy equipment operation does so with caution, and only after site personnel, using detection equipment, have made an attempt to locate utilities. While the excavation is opened, and underground utilities exposed, they shall be protected, supported or removed as necessary to safeguard workers.

3.12.2 Exposure to Vehicle Traffic

Team members exposed to vehicular traffic shall be provided and wear warning vests or other suitable garment with a highly visible (reflector) material. Traffic direction paddles or saw horse type barricades may also be required to halt or redirect vehicular traffic around the excavation site.

3.12.3 Exposure to Falling Loads

No worker shall be permitted underneath loads handled by lifting or digging equipment. Workers are required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling material.

3.12.4 Equipment Warning Device

All heavy equipment will be equipped with an audible warning system that sounds when the equipment is backing up. Heavy equipment needing to be moved adjacent to an excavation or approach the edge, and the operator does not have a clear and direct view of the edge, will institute a warning system, such as barricades, stop logs or arm and hand signals from the safety observer.

3.12.5 Loose Rock or Soil

Workers will be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. All equipment or materials will be placed at least 2 feet (.61m) from the edge of excavations, or by use of retaining devices that are sufficient to prevent the equipment or material from falling or rolling into the excavation. Also scaling the excavation face to remove loose rock or soil and the installation of protective barriers at intervals on the face to stop or contain falling material will be used when appropriate.

3.12.6 Cave-In

Excavations will be protected from cave-ins by adequate protective systems (sloping and benching or shielding and support).

3.12.7 Operation of Heavy Equipment

Heavy equipment will not be operated without a spotter. This includes moving, repositioning, and using the front and rear attachments. Prior to starting an excavation, a safety arc will be etched in the ground with the front or rear boom, fully extended. If operating on a hard surface, the safety arc will be marked on the ground, with bright spray paint. Prior to anyone entering the safety arc, the operator will:

- Swing the boom fully to one side;
- Lower the bucket to the ground;
- Place engine in idle speed; and
- Hold his hands clear of the controls or in the “Hands Up” position.

3.12.8 UXO Precautions

Unexploded ordnance (UXO) and ordnance-related items are not expected to be encountered at any of the FTMM sites. However site personnel should be alert for UXO and ordnance and explosives contamination (OE) and OE-related scrap. It is possible that personnel involved in field activities may encounter UXO that has been fired, disposed, or abandoned and it still intact and live. All heavy equipment operations will adhere to the MSD, if applicable, as described in the site specific Work Plan. The lateral distances will be maintained when conducting heavy equipment operations on a UXO site. These distances may be reduced or extended by the USACE Site Safety Representative, based on an assessment of site history, size of site, expected UXO, terrain features or other such factors that may apply. The following distances shall apply as applicable:

- 200 feet minimum or the K50 factor distance (whichever is greater) from non-UXO trained site personnel, unrelated to the operation.
- 200 feet minimum or the K50 factor distance (whichever is greater) from another heavy equipment operation or other manual intrusive operations.
- All excavations will be conducted offset laterally for the suspected UXO item or anomaly being investigated.
- The heavy equipment will uncover no more than six (6) inches of earth per dig.
- The heavy equipment will not be used to excavate closer than 12 inches from UXO.
- Suspend all operations immediately upon approach of an electrical storm.
- Observe the hazards of electromagnetic radiation (EMR) precautions when working in the vicinity of electrically initiated or susceptible UXO.
- Do not handle any munitions and explosives of concern (MEC) unnecessarily.

- Incorporate appropriate property protective measures for shock and fragmentation when conducting MEC operations.

3.13 HEAVY EQUIPMENT TRAINING

The FTL will serve, as the “Competent Person” for all heavy equipment operations. The Project Health and Safety Officer (PHSO) or Certified Industrial Hygienist (CIH) will conduct this training, during the site specific training. This training will be documented and kept on file. Minimum elements of training will include:

- Review of OSHA Regulation for Safety and Health Requirement for Construction/Excavations – OSHA Regulation 29CFR1926, Subpart P, Appendix A and 29CFR1926.652, Subpart P, Appendix F, (Annex A of this SOP);
- Proper Shoring and Sloping Techniques;
- Soil classification and evaluation at the excavation site; and
- Responsibilities of a Competent Person.

1 **FIGURE 3.1 Heavy Equipment Inspection Report**

Date:	Vehicle Make:	Rental/Lease/Private <i>(circle one)</i>
Lic Plate #:		Veh VIN#:
Starting Mileage/Hours for Week:		Ending Mileage/Hours for Week:
General Vehicle Inspection		

2 Check { } with R for repair needed; X for OK; / for adjustment made

1. Windshield { }	3. Vehicle Interior { }
2. Vehicle Exterior { }	4. Leaks { }
5. Lights: a. Headlights { } d. Brake Lights { } b. Tail lights { } e. Back-up Alarm { } c. Turn Signals { }	
6. Brakes { }	10. Belts { }
7. Horn { }	11. Defroster { }
8. Tires/Tracks (Tread wear/pressure) { }	12. Radiator/Hoses (DON'T check when hot) { }
9. Windshield Wipers/Washer { }	13. Battery { }
14. Fluid Levels: (Circle approximate level) a. Oil Full 1qt low Added _____ b. Coolant: Full Need coolant Added _____ c. Transmission: Full 1pt low Added _____ d. Fuel: Full ½ ¼ Empty	
e. Hydraulic Fluid Full 1qt low Added _____ f. Grease Fittings Full Added _____ g. ROPS Certificate Yes No	
Comments/Repairs/Service(s) Needed: Next Service @ _____ hrs	

1
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ANNEX A

**SOIL CLASSIFICATION FOR
HEAVY EQUIPMENT OPERATIONS**

1.0 SOIL TYPES

The following soil types may be encountered in the course of excavating soil. Knowledge of soil characteristics of the soil types is beneficial to understanding the hazards associated with each.

- **Cemented Soil** – A soil in which a chemical agent, such as calcium carbonate, holds the particles together whereas a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.
- **Cohesive Soil** – A fine grained soil (clay) or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical side-slopes and is “plastic” when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.
- **Dry Soil** – A soil that does not exhibit visible signs of moisture content.
- **Fissured Soil** – A soil material that has a tendency to break along definite planes of fracture with little resistance or a material that exhibits open cracks, such as “tension cracks,” in an exposed surface.
- **Granular Soil** – Means gravel, sand, or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.
- **Layered System** – Means two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.
- **Moist Soil** – Means a condition in which a soil looks and feels damp. Moist cohesive soils can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.
- **Plastic Soil** – means a property of a soil, which allows the soil to be deformed or molded without cracking, or appreciable volume change.
- **Saturated Soil** – Means a soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a penetrometer or shear vane.

2.0 SOIL CLASSIFICATION

If personnel are to enter the excavation, the soils of the excavation must be classified to determine the design of the appropriate protective system. Each soil and rock deposit at an

excavation site must be classified by a competent person, as either stable rock, Type A, Type B, or Type C soil.

The soil classification results must be made based on the results of at least one visual test (tension cracks or signs that the soil has been previously disturbed) and one manual test (use of pocket penetrometer or shear-vane to measure unconfined compression strength). The definitions of the various soil classifications are presented below.

- **Stable Rock** is natural solid mineral matter that can be excavated with vertical sides and will remain intact while exposed.
- **Type A Soils** are cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (tsf) (144 kPa) or greater. Examples of Type A cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. A soil cannot be classified as Type A if it is fissured; subject to vibration from traffic, pile driving, or similar effects; has previously been disturbed, is part of a sloped, layered system where the layers dip into the excavation on a slope of 4 horizontal to 1 vertical (4H:1V) or greater; or has seeping water.
- **Type B Soils** are cohesive soils with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa). Examples of other Type B soils are: angular gravel; silt; silt loam; previously disturbed soils unless otherwise classified as Type C; soils that meet the unconfined compressive strength or cementation requirements of Type A soils but are fissured or subject to vibration; dry unstable rock; and layered systems sloping into the trench at a slope less than 4H:1V (only if the material would be classified as a Type B soil).
- **Type C Soils** are cohesive soils with an unconfined compressive strength of 0.5 tsf (48 kPa) or less. Other Type C soils include: granular soils such as gravel, sand and loamy sand, submerged soil, soil from which water is freely seeping, and submerged rock that is not stable. Also included in this classification is material in a sloped, layered system where the layers dip into the excavation or have a slope of four horizontal to one vertical (4H: 1V) or greater.

Table 1-1: Maximum Allowable Slopes

Soil or Rock Type	Maximum Allowable Slopes (H:V) for Excavations less than 20 feet in depth	
Stable Rock	Vertical	(90 deg.)
Type A	¾:1	(53 deg)
Type B	1:1	(45 deg)
Type C	1 ½:1	(34 deg)

Exception: Simple slope excavations, which are open 24 hours, or less (short term) and 12 feet or less in depth shall have a maximum allowable slope of ½:1.

SOP #4 – SEVERE WEATHER OPERATIONS

4.1 PURPOSE

The purpose of this procedure is to provide the minimum requirements and site personnel actions in the event of site evacuation, as a result of severe weather at any operation.

4.2 SCOPE

This Standard Operating Procedure (SOP) applies to all site personnel involved in field operations regardless of affiliation. This SOP is not intended to contain all of the requirements needed to ensure complete compliance, and should be used in conjunction with project plans and applicable Federal, state and local regulations. Consult the documents listed in Section 4.3 of this SOP for additional compliance issues.

4.3 REFERENCES

Applicable sections and paragraphs in the documents listed below will be used as references for the conduct of Severe Weather operations:

- Corporate Safety and Health Program;
- EP 385-1-95a, USACE Basic Safety Concepts and Considerations for Ordnance Explosive (OE) Operations;
- EM 1110-1-4009, Ordnance and Explosive Response; and
- EM 385-1-1, USACE, Safety and Health Requirements Manual

4.4 RESPONSIBILITIES

4.4.1 Site Safety and Health Officer (SSHO)

4.4.1.1 Upon notification that a severe weather situation exists, the SSHO will notify site personnel, by radio, cellular phone or sound a horn for 3 five-second blasts. If operations, that might put site personnel at risk, are on going at the time, either the SSHO will cease all operations and have all teams/crews evacuate to either the site office (if applicable) or the closest “Safe Haven.”

4.4.1.2 The SSHO will direct site personnel as to the nature of severe weather and to ready site vehicles for evacuation. During this type of emergency, site personnel should not be concerned with assigned vehicles. Time permitting, a select number of site personnel will attempt to safely secure mission essential equipment (e.g. Geophysical GPS/Radio Relay Systems, RTK GPS Systems, computers, etc.) and prepare to evacuate the area to the recommended “Safe Haven.” The SSHO will maintain radio communications with all site personnel, necessary support elements and record the events in the site Safety Log. If a personal

lightning detector is used at the site, the SSHO will operate, monitor, and maintain the instrument.

4.4.1.3 Upon arrival at the “Safe Haven,” the SSHO will conduct a head count of all site personnel and Site Visitors, using that day’s Daily Safety Brief Sign-In Roster and Site Visitors Log.

4.4.2 Individual/Personnel initially reporting Severe Weather

The individual or personnel initially spotting a severe weather situation (lightning, tornado) will immediately report it to the SSHO, by the quickest means possible.

4.4.3 Site Personnel

Upon the notification to evacuate the work site for the designated rally point, site personnel will do so in an orderly manner. Vehicle operators will not exceed the posted or site enforced speed limit, unless directed by FTMM personnel; however that speed will not exceed the conditions of the roadway.

4.4.4 USACE On-Site Safety Representative

Severe weather occurring before normal working hours, the USACE Site Safety Representative or designee will decide whether a work delay is required and notify the SSHO. The SSHO will begin a site recall procedure with all site section supervisors, who will in turn notify their personnel.

4.5 GENERAL INFORMATION

4.5.1 The majority of field operations are conducted at either heavily wooded sites, or sites that consist of large rolling and sloping pastures and grasslands, consisting of clay or loose sand, and some even contain large areas of ravines and drop-offs. As a result of this, even small amounts of rain could cause vehicle entry/exit problems and personnel slipping hazards that may result in damage or injury to site personnel and equipment.

4.5.2 Almost all of the areas are susceptible to severe thunderstorms, with heavy downpours of rain, lightning, hail, strong microburst winds, flash floods and tornadoes. These storms are known to manifest themselves very quickly and leave very little time to react. In the event of severe weather in the area, the SSHO maintains a portable Severe Weather Alert radio and the Field Team Leader (FTL) will have access to the National Weather Advisory system, via the internet or by phone.

4.5.1 Thunderstorms

4.5.1.1 Thunderstorms affect relatively small areas when compared with hurricanes and winter storms. Despite their small size, ALL thunderstorms are dangerous. The typical thunderstorm is 1.5 miles in diameter and lasts an average of 30 minutes. In order for a thunderstorm to form it needs three things; Moisture – to form clouds and rain; Unstable Air –

warm air that can rise rapidly; and Lift – cold or warm fronts, sea breezes, mountains, or the sun's heat are capable of lifting air to help form thunderstorms.

4.5.1.2 The life cycle of a thunderstorm constitutes three distinct stages, which are detailed below:

- Developing Stage – Towering cumulus cloud indicates rising air; little if any rain during this stage; and occasional lightning.
- Mature Stage – Most likely time for hail, heavy rain, frequent lightning, strong winds, and tornadoes; storm occasionally has a black or dark green appearance; and lasts an average of 10 – 20 minutes but may last much longer in some cases.
- Dissipating Stage – Rainfall decreases in intensity; can still produce a burst of strong winds; and lightning remains a danger.

4.5.1.3 How Far Away is the Thunderstorm?

- Count the number of seconds between a flash of lightning and the next clap of thunder.
- Divide the number of seconds by five (5) to determine the distance to the lightning in miles.

4.5.2 Lightning

4.5.2.1 Lightning poses the greatest potential threat to site personnel and site operations, due to its unpredictable nature. Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas. Rising and descending air within a thunderstorm separates these positive and negative charges. Water and ice particles also effect distribution.

4.5.2.2 A cloud-to-ground lightning strike begins as an invisible channel of electrically charged air moving from the cloud toward the ground. When one channel nears an object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike.

4.5.2.3 In accordance with current USACE policies, all operations cease when lightning is observed and the "Flash to Bang Time" is 30 seconds or less (approximately 6 miles from site). The safe evacuation of personnel is paramount and equipment is secondary. Using a personal lightning detector, such as the Strike Alert Personal Lightning Detector, will allow the field team to monitor whether lightning is occurring in the vicinity, the nearest distance that lightning is occurring, and whether the storm is approaching or receding. The personal lightning detector should be operated, monitored and maintained by the SSHO. Personal lightning detectors will provide an extra measure of safety, especially when storms are approaching; however, the other lightning safety measures described below must still be maintained.

4.5.2.4 Those site personnel in and around the site office will seek shelter inside the building. Site personnel working out in the field will seek shelter inside a site vehicle with the windows rolled up and the doors closed.

4.5.2.5 Site personnel that are using any electronic equipment with an antenna (i.e. RTK system, G-858 or EM-61, etc.) will cease all operations and seek shelter upon visually seeing lightning at any distance.

4.5.2.6 30/30 Lightning Safety Rule

- Go indoors or seek shelter if, after seeing lightning, you cannot count to 30 before hearing thunder.
- Stay indoors or under shelter for 30 minutes after hearing the last clap of thunder.

4.5.2.7 Lightning Safety Rules

- Move to a sturdy building or car. Do not take shelter in small sheds, under isolated trees, or in convertible automobiles. Stay away from tall objects such as towers, fences, telephone poles, and power lines.
- If lightning is occurring and a sturdy shelter is not available, get inside a hard top automobile and keep the windows up. Avoid touching any metal.
- Utility lines and metal pipes can conduct electricity. Unplug appliances, office machines etc. not necessary for obtaining weather information. Avoid using the telephone or any electrical item. Use phones ONLY in an emergency.

4.5.2.8 If Caught Outdoors and No Shelter is Available

- Find a low spot away from trees, fences, and poles. Make sure the place you pick is not subject to flooding.
- If you are in the woods, take shelter under the shorter trees.
- If you feel your skin tingle or your hair stand on end, squat low to the ground on the balls of your feet. Place your hands over your ears and your head between your legs. Make yourself the smallest target possible and minimize your contact with the ground. DO NOT lay down.

4.5.3 Tornadoes

4.5.3.1 Tornadoes produce extreme high destructive winds and devastation. Tornadoes are generally produced along the leading edges of thunderstorms that form, with little or no warning. Before thunderstorms develop, a change in wind direction and an increase in wind speed with increasing height create an invisible, horizontal spinning effect in the lower atmosphere. Rising air within the thunderstorm updraft tilts the rotating air from horizontal to vertical. An area of rotation, 2 to 6 miles wide, now extends through much of the storm. Most tornadoes form within this area of strong rotation.

4.5.3.2 Most project sites do not afford adequate tornado “Safe Havens,” or adequate “Safe Havens” are so far away that they afford little or no help to those site personnel working in remote site locations.

4.5.3.3 The SSHO and FTL will attempt to locate those “Safe Havens” and brief site personnel of their locations, during the Daily Tailgate Safety Briefing.

4.5.3.4 When and Where Tornadoes Occur

- Tornadoes can occur any time of the year.
- Tornadoes have occurred in every state, but they are most frequent east of the Rocky Mountains during the spring and summer months.
- In the southern states, peak tornado occurrence is March – May, while peak months in the northern states are during the late spring and summer.
- Tornadoes are most likely to occur between 3 and 9 p.m., but can occur anytime.
- The average tornado moves from southwest to northeast.
- Tornadoes can accompany tropical storms and hurricanes as they move onto land.

4.5.3.5 Tornado Safety Rules

- In a building, move to a pre-designated shelter, such as a basement.
- If a below ground shelter is not available, move to a small interior room or hallway on the lowest floor and get under a sturdy piece of furniture. Put as many walls as possible between you and the outside.
- Stay away from windows.
- Get out of automobiles.
- Do not try to outrun a tornado in your car; instead, leave it immediately for safe shelter.
- If caught outside or in a vehicle, lie flat in a nearby ditch or depression and cover your head with your hands.
- Be aware of flying debris. Flying debris from tornadoes causes most fatalities and injuries.
- Office trailers, even if tied down, offer little protection from tornadoes. You should leave an office trailer and go to the lowest floor of a sturdy nearby building, or follow the procedures detailed in the 6th bullet above.

4.5.4 Flash Floods/Floods

4.5.4.1 Due to the massive amounts of rain that can be dropped from thunderstorms, the site may be susceptible to flash floods. Some of the existing roads may be unimproved dirt and are easily turned into mud, creating an unsafe driving environment. Those roadways that are paved also place the vehicle in low-lying areas that may be washed out. Do not attempt to cross any roadway that has become submerged by water.

4.5.4.2 Flash Flood/Flood Safety Rules

- If you are in a low lying area, at the first sign of rain evacuate to high ground.
- Designate an evacuation route in the event of flooding.
- Avoid walking or driving in flood waters.
- Stay away from high water, storm drains, ditches, ravines, or culverts. If the water is moving swiftly, even water only six (6) inches deep can knock you off your feet.
- If you come upon flood waters, stop, turn around, and go another way.

4.5.5 Straight-line/High Winds

4.5.5.1 When this is associated with a passing front generating potential severe weather, the winds can increase in speed rather rapidly. Dust and debris pose an eye hazard. High winds can rip vehicle doors and rear hatches from site personnel's grasp causing damage and injury. Site personnel in the field should select an area or park the vehicle in such a manner that provides a windbreak. If this can not be accomplished, open doors and hatches with care. Vehicles should not be left with doors, hoods or hatches open.

4.5.5.2 Straight-line/High Winds Safety Rules

- In a building, move to a pre-designated shelter, such as a basement.
- If a below ground shelter is not available, move to a small interior room or hallway on the lowest floor and get under a sturdy piece of furniture. Put as many walls as possible between you and the outside.
- Stay away from windows.
- If caught outside, lie flat in a nearby ditch or depression and cover your head with your hands.
- Be aware of flying debris. Flying debris from tornadoes causes most fatalities and injuries.
- Office trailers, even if tied down, offer little protection from straight-line/high winds. You should leave an office trailer and go to the lowest floor of a sturdy nearby building, or follow the procedures detailed in the 4th bullet above.
- Move to a sturdy building or car. Do not take shelter in small sheds, under isolated trees, or in convertible automobiles.
- If high winds are occurring and a sturdy shelter is not available, get inside a hard top automobile and keep the windows up.

4.5.6 Hail

4.5.6.1 Hail can occur in conjunction with a thunderstorm and can cause damage to equipment and injuries to personnel. Hail occurs when strong rising currents of air within a storm, called updrafts, carry water droplets to a height where freezing occurs. These water droplets become frozen and the ice particles grow in size, becoming too heavy to be supported by

the updraft, and fall to the ground. Speeds of the falling ice particles, hail, can exceed 100 miles an hour, with size exceeding that of a softball.

4.5.6.2 Hail safety Rules

- Seek shelter, preferably in a building, or hard-top automobile.
- If in the open seek shelter in a culvert if there is no flooding under a rock outcrop or under trees if there is no lightning associated with the hail storm.
- Exercise caution when driving on hail, it is very slippery, so avoid it if at all possible.
- If driving when a hail storm starts pull under an overpass if possible, if not pull well off the road with your lights on in order that advancing motorists can see you.

SOP #5 – HEAT STRESS

5.1 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide recommendations to improve worker productivity in hot environments without increasing worker risk for heat related illness.

5.2 SCOPE

To establish a policy to protect personnel engaged in field activities from potential overexposure to Heat Stress.

5.3 PHYSIOLOGY

Body temperature depends upon the balance between heat production and heat loss to the environment. Metabolic heat production maintains the body temperature well above that of the surroundings in a cool environment. When the ambient temperature approaches normal body temperature, the task of losing heat becomes difficult. The body loses heat by increasing the flow of blood to the skin and through sweating. Cooling is initially accomplished by the dilation of blood vessels near the body surface. This causes heat to be moved from the body core to the skin surface where it can be dissipated by air convection over the skin surface. Sweating occurs when there is insufficient flow of blood to the skin to meet the requirements for heat loss. Sweat represents an important source of cooling only if it is evaporated. The evaporation rate of sweat is controlled by humidity and air velocity. Employees working in hot environments with high humidity and little air movement are most susceptible to heat-related illness because of the lack of evaporative cooling.

5.4 HEAT BALANCE AND HEAT EXCHANGE

5.4.1 An essential requirement for continued normal body function is that the body core temperature be maintained within the acceptable range of about $37^{\circ}\text{C} \pm 1^{\circ}$ ($98.6^{\circ}\text{F} \pm 1.8^{\circ}$). To achieve this temperature equilibrium requires a constant exchange of heat between the body and the environment. The amount of heat that must be exchanged is a function of 1) the total heat produced by the body (metabolic heat), which may range from 1 kcal per kilogram of body weight per hour (1.16 watts) at rest to 5 kcal per kilogram body weight per hour (7 watts) for moderately hard work; and 2) the heat gained from the environment. The rate of heat exchanged with the environment is a function of ambient air temperature and humidity, air velocity, evaporation of sweat, radiant temperature, skin temperature, and characteristics of clothing worn.

- The basic heat balance equation is:
 - o $S = M \pm C \pm R - E$
- Where:
 - o S = change in body heat content
 - o M= metabolic rate
 - o C= convective heat exchange
 - o R= radiative heat exchange
 - o E= evaporative heat loss

5.4.2 Heat stress can only be reduced by modifying one or more of the following factors: metabolic heat production, heat exchange by convection, heat exchange by radiation, or heat exchange by evaporation. Environmental heat load (C, R, and E) can be modified by engineering controls and protective clothing and equipment; whereas metabolic heat production can only be modified by work practices and, where possible, the application of labor reducing devices. These control strategies are discussed below. Implementation of these practices will increase worker productivity in a hot environment.

5.5 ENGINEERING CONTROLS

The environmental factors that can be modified by engineering procedures are those involving radiant, convective and evaporative heat losses.

5.5.1 Radiant Heat Control

The only engineering approach to controlling radiant heat gain in the field is to shield the worker from the sun's rays. This can be accomplished by installing a reflective canopy over the work area. Radiant reflective shielding can reduce the radiant heat load by as much as 80-85%.

5.5.2 Convective Heat Control

5.5.2.1 The environmental variables concern with convective heat exchange between the worker and the ambient environment are air temperature and air velocity. When air temperature is higher than the mean skin temperature (of 35°C or 95°F) heat is gained by convection. The rate of heat gained is dependent on temperature differential ($t_{air} - t_{skin}$) and air velocity.

5.5.2.2 Engineering approaches to enhancing convective heat exchange in the field is limited to modifying air movement. When t_{air} is less than t_{skin} , increasing air movement across the skin through the use of fans or blowers will increase the rate of body heat loss. This approach is most effective when level D or modified level D operations are being performed. When t_{air} exceeds t_{skin} the use of fans or blowers will be ineffective in reducing body heat load by convective cooling.

5.5.3 Evaporative Heat Control

5.5.3.1 As mentioned earlier, sweat represents an important source of cooling only if it is evaporated. The maximum evaporative capacity is a function of air velocity (V_a) and the water pressure difference between the ambient air (p_a) and the wetted skin (p_{sk}). The equation for this relationship wearing a normal work ensemble (one-layer permeable clothing) is:

- $E = 14V_a^{0.6}(p_{sk} - p_a)$
- Where:
 - o E = evaporative heat loss, kcal/h
 - o V_a = air velocity, m/sec
 - o p_a = water vapor pressure of ambient air, mmHg
 - o p_{sk} = vapor pressure of water on skin assumed to be 42mmHg at 35°C skin temperature

5.5.3.2 Practical engineering approaches to increasing evaporative heat loss in the field includes using fans or blowers to increase air movement and the use of air conditioning in heavy equipment vehicles to lower humidity and ambient temperature. The use of fans to increase

1 evaporative cooling is only effective when workers are dressed in permeable clothing (level D or
2 modified level D operations) and the relative humidity is low.

3 **5.6 WORK PRACTICES AND ADMINISTRATIVE CONTROLS**

4 When engineering controls for heat stress are not practical or complete, other solutions
5 should be sought to prevent the occurrence of heat strain.

6 **5.6.1 Screening Workers for Heat Intolerance**

7 5.6.1.1 The ability to tolerate heat stress varies considerably among individuals. One
8 way to reduce the risk of incurring heat illness and disorders within a heat exposed workforce is
9 to reduce or eliminate the exposure of heat intolerant individuals.

10 5.6.1.2 Older, healthy workers perform well in hot jobs if allowed to proceed at a self-
11 regulated pace. Under demands for sustained work output in heat, the older worker is at a distinct
12 disadvantage compared with younger colleagues. The reasons for this are: 1) the older worker
13 has less cardiovascular reserve and 2) the older worker compensates for heat loads less
14 effectively than do younger persons, as indicated by higher core temperature and peripheral blood
15 flow for the same output of work. This occurs because of a delay in the onset of sweating and a
16 lower sweat-rate capacity with age, thus resulting in greater heat storage during work and a
17 longer time needed for heat recovery (rest period). Epidemiological studies of gold miners
18 indicate that the incidence rate for heatstroke is 10 times greater for men over 40 than for men
19 less than 25 years of age.

20 5.6.1.3 In addition, the physical fitness of a worker should be considered when evaluating
21 heat tolerance. Physical conditioning enhances heat tolerance by increasing the functional
22 capacity of the cardiovascular system. Because tolerance to physical work in a hot environment
23 is related to physical work capacity, heat tolerance might be predictable from physical fitness
24 tests. A simple physical fitness test that could be administered by a physician could be used to
25 screen for heat intolerant individuals.

26 5.6.1.4 Medical screening for heat intolerance in otherwise healthy normal workers
27 should include a history of any previous incident of heat illness and a review of any medications
28 that the worker is taking that would make them more susceptible to heat illness. Workers who
29 have experienced a heat illness are less heat tolerant.

30 **5.6.2 Enhancing Tolerance to Heat**

31 Stimulating heat adaptive mechanisms can significantly increase the capacity to work in
32 heat. There is, however, a significant variability of people to adapt to heat that must be kept in
33 mind when considering any group of workers.

- 34 1. A properly designed and applied heat acclimation program can dramatically increase
35 the ability of workers to work at a hot job and will decrease the risk of heat related
36 illness. Heat acclimation can usually be induced in 5 to 7 days of exposure to the hot
37 job. An acclimation regimen would involve the gradual increase in worker exposure
38 time during the first week of operations (particularly when the tasks involve the use
39 of level C, B, or A ensembles).
- 40 2. As mentioned above, physical fitness should be considered when assigning a worker
41 to a hot job. Being physically fit for the job will enhance heat tolerance for both heat

- 1 acclimated and unacclimated workers. The time required to develop heat
2 acclimatization in unfit individuals is about 50% greater than in physically fit
3 workers.
- 4 3. To ensure that water loss due to sweating is replaced, workers should drink at least
5 16oz of water immediately before donning a level C, B, or A ensemble and 10oz at 40
6 minute intervals thereafter. For level D operations a cup of water (4oz) should be
7 consumed every 20 minutes.
- 8 4. Sodium chloride lost in sweat must be replaced. A typical diet (10-15 grams/day of
9 salt) supplies the needs of an acclimated worker producing 6 to 8 kg sweat during a
10 single shift (for whom 1kg of sweat contains 1-2grams of salt). During acclimation,
11 however, workers require additional salt. Although maximum sweat rates in
12 unacclimated workers are lower, salt concentrations are higher than after
13 acclimatization. Thus, an unacclimated worker may lose between 18-30 grams of salt
14 per day. Salt supplements in the form of tablets should not be used since they can
15 cause a sudden electrolyte imbalance; a preferred practice is to use extra salt on
16 foods.

17 5.6.3 Using Real-Time Physiological Monitoring Data to Determine Exposure Time

18 5.6.3.1 In order to control exposures to heat stress, the American Conference of
19 Governmental Industrial Hygienists (ACGIH) and the National Institute for Occupational Safety
20 and Health (NIOSH) have published evaluation schemes. These evaluation schemes assess the
21 level of heat stress and once it exceeds a threshold, recommend countermeasures that may
22 mitigate the corresponding strain. The countermeasures are a prioritized incorporation of
23 engineering controls, administrative controls, and personal protection (auxiliary cooling devices).
24 When engineering controls are not effective in eliminating heat stress, administrative controls are
25 appropriate. Stay time is a commonly used administrative control to limit the time a worker is
26 exposed to a hot environment. When coupled with a prescribed recovery time, it becomes a
27 work/rest cycle. Because of individual differences in response, the work cycle duration is
28 established to protect the least heat tolerant individual, knowing that nearly all workers can
29 safely be exposed for longer times. Because an index is used to approximate heat stress, the
30 appropriate threshold value must also be conservative (the level of stress associated with the
31 index must be tolerated by most workers). The conservative nature of the indices (ACGIH and
32 NIOSH) ensures that virtually all workers are safely exposed, but productivity is severely
33 limited. Thus, adherence to index work cycle times as an absolute limit to heat stress exposure
34 becomes practical only if an adequate pool of workers are available to share the job demands
35 (this is rarely the case).

36 5.6.3.2 An alternative to using indices to establish work cycle duration would be to
37 perform real-time physiological monitoring of the worker. A personal heat stress monitor, such
38 as Metrosonics' hs-3800 monitor¹, allows the wearer to safely extend their stay time to
39 acceptable limits of physiological strain by providing real-time accurate measurement and
40 display of heart rate and body temperature. The instrument can be set to alarm when the

¹ It should be noted that this is a self-monitoring method for the detection of heat strain. There are radio telemetry monitors available, however these medical devices are very expensive (\$>10,000), require specialized training to operate, and the signal can be disrupted by weather conditions and terrain

worker's body temperature or heart rate reach pre-set critical levels, alerting the worker to take a rest break.

5.6.3.3 The advantages of real-time monitoring are: 1) real-time monitoring would detect the early signs of heat strain (elevated temperature and pulse) notifying the worker to take a break before the onset of heat exhaustion and 2) if the worker is in good physical condition and acclimated to the heat the stay time would likely be longer than the work cycle based upon an index.

5.7 AUXILIARY COOLING DEVICES

When unacceptable levels of heat stress occur, there are generally only four approaches to a solution: 1) modify the worker by heat acclimatization; 2) modify the clothing or equipment; 3) modify the work; or 4) modify the environment. To do everything possible to improve human tolerance would require that the workers should be fully heat acclimated, should have training in the use and practice in wearing the protective clothing, should be in good physical condition, and should be encouraged to drink as much water as necessary to compensate for water loss through sweating. If these modifications are not enough to alleviate the heat stress and reduce the threat of heat illness some form of auxiliary body cooling should be used. Auxiliary cooling systems can range from simple approaches such as ice vest to more complex systems. Three auxiliary cooling approaches, ice vests, water-cooled garments, and air-cooled garments are evaluated below.

5.7.1 Ice Vest

5.7.1.1 There are approximately 25 manufacturers that produce ice vests for personal cooling. These vests contain ice packets or ice bladders that are inserted into pouches along the perimeter of the garment. The cooling provided by each packet or bladder varies with time and contact pressure with the body. In environments of 29.4°C (84.9°F) at 85% relative humidity (rh) and 35°C (95°F) at 62% rh an ice vest can provide some cooling for up to 4 hours of operation (about 2-3 hours of effective cooling is usually the case when the worker is wearing normal work clothes). Since ice vests do not provide continuous, regulated cooling over an indefinite time period, prolonged exposure to a hot environment would require redressing with backup frozen packets or bladders every 2 hours.

5.7.1.2 Ice vests have advantages over other auxiliary body cooling garments in that the cooling is supplied noise free and independent of any energy source or umbilical cord that would limit workers' mobility. Ice vests are also less expensive than other cooling approaches (most vests are priced under \$200).

5.7.2 Water-Cooled Garments

5.7.2.1 Water-cooled garments include: 1) water-cooled hoods that provide cooling to the head, 2) water-cooled vests that provide cooling to the torso, and 3) water-cooled undergarments that provide cooling to the torso and arms. These garments require a battery driven circulating pump and container where the circulating fluid is cooled by the ice. The weight of batteries, ice container, and pump should be considered when selecting the garment. The capacity of the ice container determines the effective use time of the garment.

5.7.2.2 The range of cooling provided by water-cooled garments versus the cooling water inlet temperature has been studied by NIOSH. The rate of increase in cooling with decrease in

cooling water inlet temperature is 3.1 watts (W)/ °C for the water-cooled cap and 17.6W/°C for the water-cooled undergarment. A “comfortable” cooling inlet temperature of 20°C (68°F) should provide 46W of cooling using the water-cooled cap; 66W using the water-cooled vest; and 264W using the water-cooled undergarment.

5.7.3 Air-Cooled Garments

5.7.3.1 Air-cooled suits that distribute cooled air next to the skin are available to reduce the potential for heat stress. Total heat exchange provided by the suit is a function of inlet air temperature and airflow rate. Both heat exchange and cooling power increase with airflow and decrease with increasing cooling inlet temperature. For an air inlet temperature of 10°C (50°F) at 20% rh and a flow rate of 10ft³/ min, the total heat exchange over the body surface would be 233W in an environment where the ambient temperature is 29.4°C (85°F) and rh is 85%. Increasing the inlet temperature to 21°C (69.8°F) and 10% rh would decrease the total heat exchange to 148W.

5.7.3.2 Use of this garment requires a constant source of compressed air supplied through an air hose, thus the mobility of the worker is limited to the reach of the air hose. Additionally, the use of an air-cooled suit during level C , B, and A operations is only possible when the chemicals present are not corrosive or skin toxins. The reason for this is because the air-cooled suit is effective only if it is worn inside the chemical protective garment, thus the air hose would have to penetrate through the protective clothing, allowing a pathway for chemical exposure. Obviously, this configuration is impractical for investigations at Chemical Warfare Material (CWM) sites. It should also be noted that air-cooled devices are often considered inferior to ice vest or water –cooled garments because of the low heat capacity of air, and any advantage air-cooled garments have in evaporative cooling would be lost when impermeable clothing is worn.

5.7.4 Increasing Performance Using Auxiliary Cooling Systems

5.7.4.1 There are very few studies that compare the effectiveness of different auxiliary cooling devices in reducing heat strain. One of the better studies, published in 1986 (Epstein et al), compares the cooling effectiveness of 5 different devices (ice vest, air-cooled hood, air-cooled vest, water-cooled hood, and water-cooled vest). The effectiveness of the cooling devices were evaluated under similar hot/dry conditions (50°C, 30% rh). A strain index (SI), based on sweat rate, change in core temperature, and heart rate was used to evaluate the physiological status of the subject during the 4-hour exposure period. The results of this study are presented in Table 1.

Table 1
Cooling Capacity and Physiological Index of Heat Strain (SI) for Different Devices

Device	Cooling Capacity (W)	SI
Ice vest	140	0.55
Water-cooled vest	134	1.29
Air-cooled vest	36	1.03
Water-cooled hood	34	2.01
Air-cooled hood	24	2.20
Control	NA	3.41

5.7.4.2 In the above table, the ice vest had the highest cooling capacity of 140W. This was manifested by the smallest change in physiological response as reflected in the low SI. Greater physiological strains were noted in subjects that used the water-cooled and air-cooled vests with water-cooled and air-cooled hoods proving to be the least effective devices for reducing heat strain.

5.7.4.3 In 1992, the University of South Florida published a study, commissioned by Mine Safety Appliance (MSA) Company, that measures worker performance using various cooling systems. In this study, five commercially available cooling systems (ice vest; water-cooled vest; water-cooled vest with hood; air-cooling system [Suitable-Aire™Respirator], and the portable Core-Control™ system from MSA [now manufactured by Geomet]) were compared to a control group. A wet bulb globe temperature (WBGT) monitor of 32°C (90°F) was used to form the basis for the comparison (the five subjects wore vapor-barrier clothing with full-face air purifying respirators [except when Suitable-Aire™Respirator was use] and exercised on a treadmill [work rate of 225kcal/hr]). Exposure time for each trial was determined by the time at which a subject reached a core temperature of 38.5°C, a heart rate of 90% maximum heart rate or untoward symptoms (the maximum exposure time was limited to 120 minutes). The results of the study are summarized in Table 2.

Table 2
Average Exposure Duration Using Various Auxiliary Cooling Systems

Cooling Treatment	Mean Metabolism (W)	Mean Exposure Time (min)
Control	271±71	31±8
Suitable-Aire respirator™	264±36	120
Ice Vest	271±77	62±20
Water-cooled vest w/Hood	270±52	49±24
Water-cooled vest	244±68	43±8
Portable Core-Control™ System	266±87	120

5.7.4.4 From the above data it is clear that auxiliary cooling systems can improve exposure times. Since the Core Control™ system provides cooling to a larger surface area (torso and arms) than the other systems tested, it was no surprise that a longer exposure time was observed.

5.7.4.5 This study also demonstrates that air-cooled respirators can provide substantial cooling. The configuration of these systems frequently involves the incorporation of a vortex tube in the airline. The vortex tube can reduce the temperature of the breathing air to 10°C (50°F), slowing the rate of increase in core body temperature during strenuous operations.

5.8 RECOMMENDATIONS

With proper attention to health and safety considerations, a hot work environment can be a safe place to work. Below are recommendations that should be implemented to prevent the occurrence of heat illness and increase productivity.

5.8.1 Medical Screening.

The first step to preventing heat illness is to screen workers for heat tolerance. Thus, a physician must be intimately involved in efforts to protect workers exposed to potentially hazardous levels of heat stress. In order to ascertain a worker's fitness for placement or continued work in a hot environment, numerous characteristics (e.g., age, gender, weight, chronic or irreversible health characteristics, and acute medical conditions) of individual workers must be assessed. As a component of the baseline and periodic examinations, the physician should evaluate the heat tolerance of workers that are assigned to hot work tasks. Currently, physicians are not reporting heat tolerance restrictions in the worker's health status report.

5.8.2 Heat Acclimation Program

Heat Acclimation Program. During the first week of site operations it is imperative that the Site Safety and Health Officer (SSHO) establish a heat acclimation program. The program must include extensive heat stress training (signs and symptoms of heat illness, protective measures, fluid replacement schedule, etc) and a gradual increase in worker exposure time. Acclimation is

particularly important if tasks involve impermeable ensembles. Guidance for acclimation is presented in Table 3.

5.8.3 Engineering Controls

The role of engineering controls is to help sustain a rate of bodily heat loss equal to the imposition of heat from the environment. Cost effective engineering controls that can be implemented by the SSHO are: 1) increasing the velocity of air across the body, a technique useful during level D operations and within certain limits of temperature and humidity and 2) providing a barrier to reduce radiant heat exposure. Erecting a canopy over the work area is a very effective means for reducing radiant heat exposure. A canopy constructed of reflective materials can reduce radiant heat exposure by 80%.

Table 3
Guidelines for Acclimation and Re-acclimation as a Percentage of Effort

	Acclimation Guidelines	
	Activity (percent of full work assignment)	
Day	Experienced	New
1st	50%	20%
2nd	60%	40%
3rd	80%	60%
4th	100%	80%
5th		100%

5.8.4 Real-time Physiological Monitoring

Real-time monitoring of the worker body temperature and heart rate should be used to determine work duration. The advantage of using a real-time monitor, such as the Metrosonics' hs-3800 monitor, is that production time for fit, acclimated workers would increase when compared to the present method of using the conservative ACGIH WBGT or NIOSH indices to determine work duration. Safety would not be sacrificed since the monitor would alarm when the early signs of heat strain are manifested (elevated temperature or pulse). Real-time physiological monitoring should be used in place of heat stress indices during level C, B, and A operations.

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SOP #6 – LOCKOUT/TAGOUT PROGRAM

6.1 INTRODUCTION

6.1.1 Objective

This procedure shall be used by Parsons and subcontractor personnel to ensure that the machine or equipment being worked on is isolated from all potential hazardous energy sources, and locked out or tagged out before an employee performs any servicing or maintenance activity where the unexpected energization, start-up, or release of energy could cause an injury. Energy sources can be electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

6.1.2 Purpose

This procedure establishes the minimum safety requirements to ensure the proper deactivation of movable, electrically energized, pressurized equipment and systems; and systems containing hazardous materials prior to repairing, cleaning, oiling, adjusting, or similar work. This procedure complies with the requirements in 29 CFR 1910.147.

6.1.3 Requirements

This procedure applies to all equipment that receives energy from electrical power, hydraulic fluid under pressure, compressed air, steam, energy stored in springs, potential energy from suspended parts, or any other source that may cause unexpected movement when it is necessary to perform work on that system. It also applies to similar functions performed on systems containing hazardous materials.

6.1.4 Definitions

Lockout – The placement of a lockout device on an energy isolating device, in accordance with this procedure, is ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed. The lockout device can be key operated or a combination device.

Tagout – The placement of a tagout device on an energy isolating device, in accordance with this procedure, is to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed by the authorized person who originally placed the tagout device in position.

Authorized employee – A person who locks or implements a tagout system procedure on machines or equipment to perform the servicing or maintenance on that machine or equipment.

6.2 LOCKOUT/TAGOUT STEPS

Prior to initiating any repairs, modifications, and/or adjustments to operating equipment, these steps will be followed:

1. The immediate supervisor with jurisdiction over the equipment and all affected employees will be notified that the energy sources are to be deactivated.
2. All sources of power that must be locked out, blocked, or released will be identified by the immediate Supervisor and the employee who will work on the equipment.
3. In order to ensure that the equipment cannot be re-energized while maintenance activities are performed, the employee will lockout/blank out all potential energy sources. (Employees will be assigned padlocks with their names or identification numbers affixed to the locks. The locks will be individually keyed to prevent another employee from removing the lock inadvertently.) If more than one employee is assigned to work on the equipment, a multi-lockout hasp will be used so that all employees working on the equipment can apply their locks and ensure their safety.
4. A tagout device will be affixed to all components or systems de-energized to indicate that lockout has been performed.
5. After the servicing and/or maintenance is complete and the equipment is ready for normal operations, check the area around the machine or equipment. After all tools have been removed from the machine or equipment, guards have been reinstalled, remove all lockout or tagout devices. Operate the energy isolating devices to restore energy to the machine or equipment.

6.3 SPECIAL CONDITIONS

6.3.1 During certain operations, it may be necessary to energize the equipment for a short period of time. Employees in the immediate area will be notified and directed to stay clear of the equipment. If the equipment is to be deactivated again, the employee should repeat steps 3 to 5 of this procedure before work resumes.

6.3.2 If the work is completed and a lock remains on the equipment, it shall not be removed until the employee responsible for the lock is found or the supervisor of the employee investigates and ascertains that the equipment is safe to operate. Unauthorized removal of a lock will subject the violator to disciplinary action up to dismissal.

6.4 TRAINING

Initial and annual training will be given to all employees to ensure that the purpose and function of this energy and control program are understood.

6.5 PERIODIC INSPECTION

The Site Safety and Health Officer will conduct an annual audit of the energy control program to ensure that the requirements of these procedures are being followed. A record of annual audits will be kept to comply with the requirement for periodic inspections.

SOP #7 – HEARING CONSERVATION PROGRAM

7.1 INTRODUCTION

The purpose of this Hearing Conservation Program is to provide protection for employees from adverse health effects associated with occupational exposure to noise. The program consists of: annual audiometric testing of workers, annual employee training, selection and use of hearing protection, and noise monitoring. All Parsons employees and subcontractors must comply with this program.

7.2 AUDIOMETRIC TESTING PROGRAM

7.2.1 Audiometric testing shall be made available to all employees whose exposures equal or exceed an 8-hour time - weighted average of 85 decibels or equivalently a dose of 50 percent. Audiometric tests shall be performed by a licensed or certified audiologist, otolaryngologist, or physician who is certified by the Council of Accreditation in Occupational Hearing Conservation (CAOHC). Each employee assigned to noisy operations must receive a baseline audiogram prior to assignment and yearly testing thereafter for as long as that employee is exposed to excessive noise levels (8-hour time-weighted average of 85 decibels or greater). Each employee's annual audiogram is compared to that employee's baseline audiogram to determine if the audiogram is valid and if a standard threshold shift has occurred. (A standard threshold shift is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2,000, 3,000, and 4,000 Hz in either ear.) This comparison should be done by a physician.

7.2.2 If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift has occurred, the employee shall be informed of this fact in writing, within 21 days of the determination. The following steps are taken by the SSHO when a standard threshold shift occurs:

- Employees not using hearing protectors shall be fitted with hearing protectors, trained in their use and care, and required to use them.
- Employees already using hearing protectors shall be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary.
- The employee shall be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary.
- The employee is informed of the need for an otological examination if a medical pathology of the ear that is unrelated to the use of hearing protectors is suspected.

7.2.3 Audiometric tests shall be pure tone, air conduction, and hearing threshold examinations, with test frequencies including as a minimum 500, 1000, 2000, 3000, 4000, and 6000 Hz. Tests at each frequency shall be taken separately for each ear. Audiometric tests shall

be conducted with audiometers (including microprocessor audiometers) that meet the specifications of, and are maintained and used in accordance with, American National Standard Specification for Audiometers. The functional operation of the audiometer shall be checked before each day's use by testing a person with known, stable hearing thresholds, and by listening to the audiometer's output to make sure that the output is free from distorted or unwanted sounds. Audiometer calibration shall be checked acoustically at least annually in accordance with OSHA requirement (29 CFR 1910.95 Appendix E).

7.3 HEARING PROTECTORS

The SSHO shall make hearing protectors available to all employees and subcontractors exposed to an 8-hour time-weighted average of 85 decibels or equivalently a dose of 50 percent. Hearing protection for this project will consist of earmuffs or foam fitting earplugs. The selection of hearing protector will be based upon noise attenuation requirements for the task and worker comfort.

7.4 EMPLOYEE TRAINING

The SSHO will develop a hearing conservation training program for all employees assigned to noisy work. This training will be a component of the initial site safety training. As a minimum, the training shall consist of:

- The effects of noise on hearing.
- The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care.
- The purpose of audiometric testing, and an explanation of the test procedures.

7.5 NOISE MONITORING

7.5.1 When operations are anticipated to exceed the 8-hour time-weighted average of 85 decibels, the SSHO may implement a noise-monitoring program. The sampling shall be used to:

- Verify that appropriate hearing protection is being used by employees
- Identify the boundaries of the noise hazard area in accordance with Section 05.C.07 of EM 385-1-1.

7.5.2 Noise level monitoring instruments used to measure employee noise exposure shall be calibrated to ensure accuracy.

SOP #8 – HANDLING OF DRUMS, ROLL-OFFs AND OTHER CONTAINERS

8.1 INTRODUCTION

Operations for handling potentially contaminated soil must follow a basic set of rules or procedures. This standard operating procedure (SOP) provides the necessary guidelines for placing potentially contaminated soil in drums, roll-offs, or other containers.

8.2 EQUIPMENT

The following equipment will be needed:

- Excavator, to move soil from excavation or soil pile;
- Skid-steer loader or forklift to move pallets and drums;
- Drum funnel;
- Hand tools, for moving soil from excavator bucket to drum, sealing drums, etc;
- Air monitoring equipment including photo ionization detector (PID).

8.3 GENERAL REQUIREMENTS

- Drums should be staged in one of three locations based on their status:
 - Clean, empty drums may be staged where convenient but not with drums that have been used.
 - Drums that have been filled but have not been cleared based on head-spacing or low-level analysis of samples must remain in a down range holding area
 - Drums, for which head-spacing and low-level results of samples are available, may be staged to the Drum Staging Area to await offsite disposition.
- Drums should be placed on pallets close to the excavation and within reach of the excavator.
- Roll-off containers should be placed within reach of the excavator, or a loader can be filled by the excavator and then used to dump the soil into the roll-off.
- PPE Levels worn will be determined based on air monitoring as described in the work plan.
- Drums should remain down range until the following criteria are met:

- the drum exteriors are decontaminated, if required; and
- the results of headspacing and/or sampling indicate the disposition of the drum, i.e. - whether the contents require decontamination, or that they may be staged for disposal.

8.4 DRUMS

The following steps will be followed when moving soil from the excavation or from a soil pile:

1. The day's operation of pallets and drums will be staged near the area of the excavation or soil pile to be drummed.
2. A pallet will be placed on an elevated platform (such as two 4x4 boards) and the drums placed on the pallet.
3. The drums will be pre-marked in accordance with (IAW) the work plan so that proper tracking can be accomplished.
4. Perforated pipes with end caps will be placed within the drums for future decontaminating, if it becomes necessary.
5. A soil funnel will be placed in the first drum to be filled.
6. The excavator will extract a bucket of soil from the excavation or soil pile and hold it over the drum. The soil/drum handlers will pull the soil off of the bucket with hand tools while the operator gently shakes the soil out. The handlers will watch for anything unusual such as metal, glass, big limbs, etc. Soil samples may be collected during this process.
7. Once the drum is approximately 1/2 to 2/3 full, the funnel will be moved to the next drum and the procedure repeated until the drums on the pallet are all 1/2 to 2/3 full, or the specified soil has been drummed.
8. When all the drums are filled, they will be sealed and secured to the pallet. The pallet will then be moved to the Holding Area.
9. Any soil samples collected in association with the pallet being moved to the Holding Area can be given to the loader/forklift operator. The pallets with drums will be staged in the Holding Area on the east side of road in a designated area depending on disposition. The drums that require decontamination will be kept separate and will be accumulated until either room is needed or the excavation operation is completed; at that time bleach can be added to decontaminate the soil.

8.5 ROLL-OFFS

Materials from the excavation or soil pile (if applicable) will be placed in a roll-off container with the following considerations.

- Roll-offs will be used for wastes that will be sent to a landfill for disposal;
- The excavator will fill the roll-off directly while the handler and safety observer watch the excavation hole for unusual debris;
- Following completion of the day's activities, the roll-off must be covered with a lid or tarp to prevent the infiltration of rainwater or other materials;
- Once the roll-off is full it will be staged for further disposition.

8.6 OTHER CONTAINERS

Other containers, such as one cubic yard containers, may be used instead of roll-offs.

SOP #9 – FIRE FIGHTING PLAN

9.1 PURPOSE

The purpose of this standard operating procedure (SOP), Fire Fighting Plan is to define the general procedures to protect human health and the environment both in the event of a fire at the site.

9.2 SOURCES

Although fires and explosions may arise spontaneously, they are more commonly the result of carelessness during the conduct of site activities, such as moving drums, mixing/bulking of site chemicals, and during refueling of heavy or hand held equipment. Some potential causes of explosions and fires include:

- Mixing of incompatible chemicals, which cause reactions that spontaneously ignite due to the production of both flammable vapors and heat.
- Ignition of explosive or flammable chemical gases or vapors by external ignition sources.
- Ignition of materials due to oxygen enrichment.
- Agitation of shock or friction-sensitive compounds.
- Sudden release of materials under pressure.

9.3 IMMEDIATE ACTION

9.3.1 Upon detecting a fire/explosion, employees will determine whether the fire is small enough to readily extinguish with immediately available portable extinguishers or water, or if other fire-fighting methods are necessary. Non-essential personnel will be directed away from the area of the fire. If it is judged that a fire is small enough to fight with available extinguishing media, employees will attempt to extinguish the fire provided that:

- They are able to approach the fire from the upwind side, or opposite to the direction of the fire's progress.
- The correct extinguisher is readily available. (Type ABC fire extinguishers will be provided in work areas and on vehicles.)
- No known complicating factors are present, such as the likelihood of rapid spread, imminent risk of explosion, or gross contamination.

9.3.2 Personnel leaving a fire/explosion area will account for all employees in that work area as soon as possible. The SSHO or designee will perform a head count for that work area.

9.4 NOTIFICATION

The SSHO will be notified as soon as possible of the location, size, and nature of the fire/explosion. As conditions dictate, the SSHO will declare an emergency, initiate the remedial procedures, request assistance from the Fire Department by dialing 911, and make the necessary telephone notifications to the U.S. Army Engineering and Support Center, Huntsville (USAESCH), U.S. Army Corps of Engineers – New York District (CENAN), and Fort

Monmouth (FTMM). Outside personnel responding to the fire/explosion may seek assistance from the SSHO with regard to the routing of equipment within the incident site to the most favorable and safe position while minimizing and/or avoiding exposure to any site contaminants.

9.5 RESCUE

If employee(s) are unable to evacuate themselves from a fire/explosion area for any reason, their rescue will be the first priority of responders. The SSHO will determine whether on-site resources are sufficient to proceed, or if rescue must be delayed until the Fire Department responders arrive.

9.6 FIRE PROTECTION

9.6.1 To ensure adequate fire protection, the SSHO will inspect the site to ensure all flammable and combustible materials are being safely stored in appropriately configured storage areas and containers. The SSHO will also ensure that no flammable/combustible materials are stored near any sources of ignition, and that sources of ignition are located a safe distance from storage areas. If needed, storage areas will be segregated from the remainder of the site using flagging.

9.6.2 Explosions and fires not only pose the obvious hazards of intense heat, open flames, smoke inhalation, and flying objects, but may also cause the release of toxic chemicals into the environment. Such releases can threaten both personnel on-site and members of the public living or working nearby. Site personnel involved with potentially flammable material or operations shall follow the guidelines listed below and EM 385 1-1 to prevent fires and explosions:

- Potentially explosive/flammable atmospheres involving gases or vapors shall be monitored using a combustible gas indicator.
- Prior to initiation of site activities involving explosive/flammable materials, all potential ignition sources shall be removed or extinguished.
- Non-sparking and explosion-proof equipment shall be used whenever the potential for ignition of flammable/explosive gases/vapors/liquids exists.
- Dilution or induced ventilation may be used to decrease the airborne concentration of explosive/flammable atmospheres.
- Smoking shall be prohibited at, or near, operations that may present a fire hazard, and the area shall be conspicuously posted with signs stating "No Smoking or Open Flame within 50 Feet."
- Flammable and/or combustible liquids must be handled only in approved, properly labeled containers equipped with flash arrestors and self-closing lids.
- Transfer of flammable liquids from one metal container to another shall be done only when the containers are electrically bonded if capacity is greater than 5 gallons; otherwise, the containers are kept in metallic contact.
- The motors of all equipment being fueled shall be shut off during the fueling operations.

- Metal drums used for storing flammable/combustible liquids shall be equipped with self-closing safety faucets, vent bung fittings, grounding cables and drip pans, and shall be stored outside buildings in an area approved by the SSHO.

9.7 DECONTAMINATION

At the conclusion of fire fighting activities, the SSHO will:

- Determine, to the extent practical, the nature of the contaminants encountered during the incident.
- Equipment not easily decontaminated shall be labeled and isolated for further action, such as determining specific contaminants by wipe sampling or awaiting the delivery of specific decontamination media and supplies.

9.8 FIRE EXTINGUISHER INFORMATION

9.8.1 The four classes of fire, along with their constituents, are as follows:

Class A - Wood, cloth, paper, rubber, many plastics, and ordinary combustible materials.

Class B - Flammable liquids, gases, and greases.

Class C - Energized electrical equipment.

Class D - Combustible metals such as magnesium, titanium, sodium, and potassium.

9.8.2 Examples of proper extinguishing agents are as follows:

Class A - Water or ABC Dry Chemical

Class B - ABC Dry Chemical

Class C - ABC Dry Chemical

Class D - Metal-X Dry Chemical (not anticipated and not on-site.)

1
2

APPENDIX D FORMS



DAILY SITE TRAINING OUTLINE

Mobilization

Topics Covered:

Completed/Initials

Personnel responsible for health and safety

- Site Safety & Health Officer
- Project Manager
- Site Manager or Field Team Leader

Heat/Cold Injuries

- Heat Stress
- Exhaustion
- Stroke
- Hypothermia

Slips, trips, falls

- Holes, pits, ditches
- Steep and uneven grades
- Guy wires and ropes
- Slippery surfaces
- Sharp objects or vegetative debris

Health and safety procedures

	<u>Topics Covered:</u>	<u>Completed / Initials</u>
1		
2	Safe work practices	_____
3	• Equipment Spotters	
4	• Recognized hand signals	
5	Engineering controls	_____
6	Emergency procedures/Rally Point	_____
7	• Emergency Signal	
8	• Rally Point	
9	Biological Hazards	_____
10	• Poison Ivy/Oak/Sumac	
11	• Snakes	
12	• Bees/Wasps	
13	• Ticks	
14	• Spiders	
15	• Chiggers	
16	• Fire ants	
17	• Mosquitoes	
18	Radios/Cellular Phones/GPS	_____
19	• Channel Frequency	
20	• Cellular Phones (List of assigned numbers)	
21	• GPS	
22	• Communications Checks (Twice all site elements)	
23	Vehicle/Heavy Equip traffic	_____
24	• Use of Seat Belts	
25	• Sound Horn prior to backing vehicles without warning device	
26	• Vehicle speeds on the roads	

	<u>Topics Covered:</u>	<u>Completed / Initials</u>
1		
2	MSDS Logs/Records	_____
3	• Located at field office	
4	Personnel Protective Equipment	_____
5	• Safety Glasses	
6	• Boots	
7	• Safety Vests	
8	• Leather Work Gloves	
9	• First Aid Kit (per vehicle)	
10	• Fire Extinguisher (per vehicle)	
11	Hospital/Routes	
12	• <u>All Site Related Injuries</u>	_____
13	Team will transport to closest Medical Facility	
14	• List those facilities/phone numbers/provide maps	
15	o After Hours – Site personnel will go to XXXX	
16	Today's operations (Site Manager's)	_____
17		
18		
19		
20	_____	_____
21	SSHO's Signature/Date	
22		

RESPIRATOR FIT TEST LOG

Maintain a copy of this record in the project files in the Parsons Field office/trailer.

Employee: _____ Date of Test: _____

Fit Test
Administrator: _____ Date of Last Physical: _____

RESPIRATOR INFORMATION

Manufacturer: _____ Model: _____

Size: _____ I.D. Number: _____

TEST RESULTS

Test Protocol

Comfort

Pressure fit check:

positive _____

negative _____

comfortable _____

intolerable _____

Test atmosphere:

isoamyl acetate _____

stannic oxychloride _____

needs prescription inserts: yes / no
(full-face respirator only)

fit _____
no fit _____

Date of next fit test: _____

Remarks:

Safety Inspection

2

PARSONS

Risk Mitigation Two-Week Look-Ahead Form

Safety plan for week ending:	_____	Subcontractor:	_____
Project/ Location:	_____	Meeting date:	_____
Plan Prepared by:	_____	Dated:	_____

Next Two Weeks Scope of Work:

Identified Risks/Exposures/Hazards:

Control Measures:

Additional Activity Hazards Analysis Required:

Subcontractors Mobilizing/Demobilizing:

Audit/Inspections Scheduled:

Competent Person Changes:

Planned Orientation/Training:

Recommendations/Comments/Concerns:

Note: This information should be incorporated into the meeting minutes.

1
2

Site Visitors Log

Contract#:

Delivery Order#:

Page ____ of ____ Pages

Week Ending:

Name (Print)	Signature	Company	Escort Required (Yes/No) & Who	Date Time In	Date Time Out	On Site Safety Brief (Date)

PARSONS

**Notice of Subcontractor Violation
of Safety and Health Regulations**

Date: _____

Contractor Name: _____

Address: _____

Attention: _____

This letter officially notifies you that you have been found to be in violation of the following Safety Regulations:

on (date) _____, by _____.

Confined Space Entry	_____	Lockout/Tagout	_____	Hot Work	_____	Personal Protective Equipment	_____
Knowledge of the environment	_____	Awareness of warning alarms	_____	Evacuation routes	_____	Back-up Alarms	_____
Assembly locations	_____	Fall Protection	_____	Scaffolding	_____	Environmental/Hazardous Material Storage	_____
Trenching	_____	Safe Work Practices	_____	Security Practices	_____		_____

Other: _____

This/These violations occurred at the following locations: _____

at the following times _____ and dates _____

The name of the employees was/were _____

under the supervision of _____.

(For Safety Staff only)	REPORT NO.	EROC CODE	UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT (For Use of this Form See Help Menu and USACE Suppl to AR 385-40)		REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)
1. ACCIDENT CLASSIFICATION					
PERSONNEL CLASSIFICATION		INJURY/ILLNESS/FATAL		PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED
GOVERNMENT ☐ CIVILIAN ☐ MILITARY		☐		☐ FIRE INVOLVED ☐ OTHER	☐
☐ CONTRACTOR		☐		☐ FIRE INVOLVED ☐ OTHER	☐
☐ PUBLIC		☐ FATAL ☐ OTHER		XXXXXXXXXX	
2. PERSONAL DATA					
a. Name (Last, First, MI)		b. AGE	c. SEX ☐ MALE ☐ FEMALE		d. SOCIAL SECURITY NUMBER
f. JOB SERIES/TITLE		g. DUTY STATUS AT TIME OF ACCIDENT ☐ ON DUTY ☐ TDY ☐ OFF DUTY		h. EMPLOYMENT STATUS AT TIME OF ACCIDENT ☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER (Specify) _____	
3. GENERAL INFORMATION					
a. DATE OF ACCIDENT (month/day/year)	b. TIME OF ACCIDENT (Military time) hrs	c. EXACT LOCATION OF ACCIDENT			d. CONTRACTOR'S NAME
e. CONTRACT NUMBER ☐ CIVIL WORKS ☐ MILITARY ☐ OTHER (Specify) _____		f. TYPE OF CONTRACT ☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER (Specify) _____		g. HAZARDOUS/TOXIC WASTE ACTIVITY ☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER (Specify) _____	
d. CONTRACTOR'S NAME (1) PRIME: (2) SUBCONTRACTOR:					
4. CONSTRUCTION ACTIVITIES ONLY (Fill in line and corresponding code number in box from list - see help menu)					
a. CONSTRUCTION ACTIVITY		b. TYPE OF CONSTRUCTION EQUIPMENT			
(CODE) #		(CODE) #			
5. INJURY/ILLNESS INFORMATION (Include name on line and corresponding code number in box for items e, f & g - see help menu)					
a. SEVERITY OF ILLNESS/INJURY		b. ESTIMATED DAYS LOST	c. ESTIMATED DAYS HOSPITALIZED	d. ESTIMATED DAYS RESTRICTED DUTY	
(CODE) #					
e. BODY PART AFFECTED		g. TYPE AND SOURCE OF INJURY/ILLNESS			
PRIMARY (CODE) #		TYPE (CODE) #			
SECONDARY (CODE) #		SOURCE (CODE) #			
f. NATURE OF ILLNESS/INJURY (CODE) #					
6. PUBLIC FATALITY (Fill in line and correspondence code number in box - see help menu)					
a. ACTIVITY AT TIME OF ACCIDENT (CODE) #		b. PERSONAL FLOATATION DEVICE USED? ☐ YES ☐ NO ☐ N/A			
7. MOTOR VEHICLE ACCIDENT					
a. TYPE OF VEHICLE		b. TYPE OF COLLISION		c. SEAT BELTS	
☐ PICKUP/VAN ☐ AUTOMOBILE ☐ TRUCK ☐ OTHER (Specify) _____		☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER (Specify) _____		USED NOT USED NOT AVAILABLE	
				(1) FRONT SEAT	
				(2) REAR SEAT	
8. PROPERTY/MATERIAL INVOLVED					
a. NAME OF ITEM		b. OWNERSHIP		c. \$ AMOUNT OF DAMAGE	
(1)					
(2)					
(3)					
9. VESSEL/FLOATING PLANT ACCIDENT (Fill in line and correspondence code number in box from list - see help menu)					
a. TYPE OF VESSEL/FLOATING PLANT (CODE) #		b. TYPE OF COLLISION/MISHAP (CODE) #			
10. ACCIDENT DESCRIPTION (Use additional paper, if necessary)					

1

11. CAUSAL FACTOR(S) (Read Instruction Before Completing)			
a. (Explain YES answers in item 13) DESIGN: Was design of facility, workplace or equipment a factor? YES NO ☐ ☐ INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor? YES NO ☐ ☐ PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor? YES NO ☐ ☐ OPERATING PROCEDURES: Were operating procedures a factor? YES NO ☐ ☐ JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred? YES NO ☐ ☐ HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident? YES NO ☐ ☐ ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident? YES NO ☐ ☐	a. (CONTINUED) CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident? YES NO ☐ ☐ OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident? YES NO ☐ ☐ SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task? YES NO ☐ ☐ PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident? YES NO ☐ ☐ DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident? YES NO ☐ ☐ b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT? ☐ YES (If yes, attach a copy.) ☐ NO		
12. TRAINING			
a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? ☐ YES ☐ NO	b. TYPE OF TRAINING. ☐ CLASSROOM ☐ ON JOB	c. DATE OF MOST RECENT FORMAL TRAINING. (Month) (Day) (Year)	
13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES (See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)			
a. DIRECT CAUSE			
b. INDIRECT CAUSE(S)			
14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).			
DESCRIBE FULLY:			
15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.			
a. BEGINNING (Month/Day/Year)		b. ANTICIPATED COMPLETION (Month/Day/Year)	
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT		d. DATE (Mo/Da/Yr)	e. ORGANIZATION IDENTIFIER (Div, Br, Sect)
CORPS _____			
CONTRACTOR _____			f. OFFICE SYMBOL
16. MANAGEMENT REVIEW (1st)			
a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS			
SIGNATURE _____		TITLE _____	DATE _____
17. MANAGEMENT REVIEW (2nd - Chief Operations, Construction, Engineering, etc.)			
a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS			
SIGNATURE _____		TITLE _____	DATE _____
18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW			
a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS			
SIGNATURE _____		TITLE _____	DATE _____
19. COMMAND APPROVAL			
COMMENTS			
COMMANDER SIGNATURE _____			DATE _____

10.	ACCIDENT DESCRIPTION <i>(Continuation)</i>
13a.	DIRECT CAUSE <i>(Continuation)</i>

Page 3 of 4 pages

13b.	INDIRECT CAUSES <i>(Continuation)</i>
14.	ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) <i>(Continuation)</i>

Page 4 of 4 pages

OSHA's Form 300 (Rev. 01/2004)
Log of Work-Related Injuries and Illnesses

Year _____

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

Form approved OMB no. 1218-0176

City _____ State _____

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Page 1 of 1

(1)	(2)	(3)	(4)	(5)	(6)
Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses

1

PARSONS Take 5 for Safety!

Date: _____
Job Description: _____
Employee Name: _____
Supervisor: _____
Work Location: _____

Job Hazards? (New or unusual hazards)

1. Hazards: _____
Mitigation: _____
2. Hazards: _____
Mitigation: _____
3. Hazards: _____
Mitigation: _____
4. Hazards: _____
Prevention: _____
5. Hazards: _____
Prevention: _____
6. Hazards: _____
Prevention: _____

Pre-Work Controls	YES	NO	N/A
Permits attained?	☐	☐	☐
Body harness/Lanyard needed?	☐	☐	☐
Sufficient railings?	☐	☐	☐
Lockout/Tagout in place?	☐	☐	☐
Work area clean?	☐	☐	☐
Proper PPE worn?	☐	☐	☐
Work place lighting adequate?	☐	☐	☐
Confined space?	☐	☐	☐
Applicable AHAs reviewed?	☐	☐	☐

Standard PPE (Hard hat, safety glasses, gloves, safety-toed boots, hi-vis vest)
Additional PPE: _____

Briefly review hazards and mitigations after lunch.

PARSONS Take 5 for Safety!

Date: _____
Job Description: _____
Employee Name: _____
Supervisor: _____
Work Location: _____

Job Hazards? (New or unusual hazards)

1. Hazards: _____
Mitigation: _____
2. Hazards: _____
Mitigation: _____
3. Hazards: _____
Mitigation: _____
4. Hazards: _____
Prevention: _____
5. Hazards: _____
Prevention: _____
6. Hazards: _____
Prevention: _____

Pre-Work Controls	YES	NO	N/A
Permits attained?	☐	☐	☐
Body harness/Lanyard needed?	☐	☐	☐
Sufficient railings?	☐	☐	☐
Lockout/Tagout in place?	☐	☐	☐
Work area clean?	☐	☐	☐
Proper PPE worn?	☐	☐	☐
Work place lighting adequate?	☐	☐	☐
Confined space?	☐	☐	☐
Applicable AHAs reviewed?	☐	☐	☐

Standard PPE (Hard hat, safety glasses, gloves, safety-toed boots, hi-vis vest)
Additional PPE: _____

Briefly review hazards and mitigations after lunch.

1

PARSONS Take 5 for Safety!

Before you begin any new task pause for 30 seconds and ask yourself the following questions:

- ☐ Do I have the skills and competencies to safely perform my assigned tasks?
- ☐ Do I fully understand the procedures relating to this job?
- ☐ Do I have a safe means of access/egress to my work area?
- ☐ I have the means and know how to summon emergency assistance?
- ☐ Do I have any unanswered questions for my supervisor today?
- ☐ Have today's tasks been coordinated with other contractors on-site?
- ☐ Do I have the correct tools and equipment for today's tasks?
- ☐ Can I focus on my work today—or am I distracted?
- ☐ Do I have all the required PPE?
- ☐ What are the unsafe behaviors that can cause an injury?
- ☐ Have I been properly trained to safely perform my assigned task?
- ☐ Have I inspected my work area for safety hazards?

Each of these questions should be answered to your full satisfaction before you proceed with the work. Remember, no job is so important that you cannot take time to do it safely – **THE FIRST TIME!**

Crew members
Print:

Signature:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Supervisors Signature _____

Auditor Signature _____ **Auditor Signature** _____

Briefly review hazards and mitigations after lunch.

PARSONS Take 5 for Safety!

Before you begin any new task pause for 30 seconds and ask yourself the following questions:

- ☐ Do I have the skills and competencies to safely perform my assigned tasks?
- ☐ Do I fully understand the procedures relating to this job?
- ☐ Do I have a safe means of access/egress to my work area?
- ☐ I have the means and know how to summon emergency assistance?
- ☐ Do I have any unanswered questions for my supervisor today?
- ☐ Have today's tasks been coordinated with other contractors on-site?
- ☐ Do I have the correct tools and equipment for today's tasks?
- ☐ Can I focus on my work today—or am I distracted?
- ☐ Do I have all the required PPE?
- ☐ What are the unsafe behaviors that can cause an injury?
- ☐ Have I been properly trained to safely perform my assigned task?
- ☐ Have I inspected my work area for safety hazards?

Each of these questions should be answered to your full satisfaction before you proceed with the work. Remember, no job is so important that you cannot take time to do it safely – **THE FIRST TIME!**

Crew members
Print:

Signature:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Supervisors Signature _____

Auditor Signature _____ **Auditor Signature** _____

Briefly review hazards and mitigations after lunch.

<i>(For Safety Staff only)</i>	REPORT NO.	EROC CODE	UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT <i>(For Use of this Form See Help Menu and USACE Suppl to AR 385-40)</i>		REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)
1. ACCIDENT CLASSIFICATION					
PERSONNEL CLASSIFICATION		INJURY/ILLNESS/FATAL		PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED
GOVERNMENT ☐ CIVILIAN ☐ MILITARY		☐		☐ FIRE INVOLVED ☐ OTHER	☐
☐ CONTRACTOR		☐		☐ FIRE INVOLVED ☐ OTHER	☐
☐ PUBLIC		☐ FATAL ☐ OTHER		☐	☐
2. PERSONAL DATA					
a. Name (Last, First, MI)		b. AGE	c. SEX ☐ MALE ☐ FEMALE		d. SOCIAL SECURITY NUMBER
f. JOB SERIES/TITLE		g. DUTY STATUS AT TIME OF ACCIDENT ☐ ON DUTY ☐ TDY ☐ OFF DUTY		h. EMPLOYMENT STATUS AT TIME OF ACCIDENT ☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER (Specify) _____	
3. GENERAL INFORMATION					
a. DATE OF ACCIDENT (month/day/year)	b. TIME OF ACCIDENT (Military time) hrs	c. EXACT LOCATION OF ACCIDENT			d. CONTRACTOR'S NAME
e. CONTRACT NUMBER ☐ CIVIL WORKS ☐ MILITARY ☐ OTHER (Specify) _____		f. TYPE OF CONTRACT ☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER (Specify) _____		g. HAZARDOUS/TOXIC WASTE ACTIVITY ☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER (Specify) _____	
d. CONTRACTOR'S NAME (1) PRIME: (2) SUBCONTRACTOR:					
4. CONSTRUCTION ACTIVITIES ONLY (Fill in line and corresponding code number in box from list - see help menu)					
a. CONSTRUCTION ACTIVITY _____ (CODE) # _____		b. TYPE OF CONSTRUCTION EQUIPMENT _____ (CODE) # _____			
5. INJURY/ILLNESS INFORMATION (Include name on line and corresponding code number in box for items e, f & g - see help menu)					
a. SEVERITY OF ILLNESS/INJURY _____ (CODE) # _____		b. ESTIMATED DAYS LOST	c. ESTIMATED DAYS HOSPITALIZED	d. ESTIMATED DAYS RESTRICTED DUTY	
e. BODY PART AFFECTED PRIMARY _____ (CODE) # _____ SECONDARY _____ (CODE) # _____		g. TYPE AND SOURCE OF INJURY/ILLNESS TYPE _____ (CODE) # _____ SOURCE _____ (CODE) # _____			
6. PUBLIC FATALITY (Fill in line and correspondence code number in box - see help menu)					
a. ACTIVITY AT TIME OF ACCIDENT _____ (CODE) # _____		b. PERSONAL FLOATION DEVICE USED? ☐ YES ☐ NO ☐ N/A			
7. MOTOR VEHICLE ACCIDENT					
a. TYPE OF VEHICLE ☐ PICKUP/VAN ☐ AUTOMOBILE ☐ TRUCK ☐ OTHER (Specify) _____		b. TYPE OF COLLISION ☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER (Specify) _____		c. SEAT BELTS USED NOT USED NOT AVAILABLE (1) FRONT SEAT (2) REAR SEAT	
8. PROPERTY/MATERIAL INVOLVED					
a. NAME OF ITEM (1) (2) (3)		b. OWNERSHIP		c. \$ AMOUNT OF DAMAGE	
9. VESSEL/FLOATING PLANT ACCIDENT (Fill in line and correspondence code number in box from list - see help menu)					
a. TYPE OF VESSEL/FLOATING PLANT _____ (CODE) # _____		b. TYPE OF COLLISION/MISHAP _____ (CODE) # _____			
10. ACCIDENT DESCRIPTION (Use additional paper, if necessary)					

ENG FORM 3394, MAR 99 Version 2

EDITION OF SEP 89 IS OBSOLETE.

Page 1 of 4 pages (Proponent: CESCO)

11. CAUSAL FACTOR(S) (Read Instruction Before Completing)			
a. (Explain YES answers in item 13) DESIGN: Was design of facility, workplace or equipment a factor? ☐ YES ☐ NO INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor? ☐ YES ☐ NO PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor? ☐ YES ☐ NO OPERATING PROCEDURES: Were operating procedures a factor? ☐ YES ☐ NO JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred? ☐ YES ☐ NO HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident? ☐ YES ☐ NO ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident? ☐ YES ☐ NO	a. (CONTINUED) CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident? ☐ YES ☐ NO OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident? ☐ YES ☐ NO SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task? ☐ YES ☐ NO PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident? ☐ YES ☐ NO DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident? ☐ YES ☐ NO b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT? ☐ YES (If yes, attach a copy.) ☐ NO		
12. TRAINING			
a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? ☐ YES ☐ NO	b. TYPE OF TRAINING. ☐ CLASSROOM ☐ ON JOB	c. DATE OF MOST RECENT FORMAL TRAINING. (Month) (Day) (Year)	
13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES (See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)			
a. DIRECT CAUSE _____ b. INDIRECT CAUSE(S) _____			
14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S). DESCRIBE FULLY: _____ _____ _____			
15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.			
a. BEGINNING (Month/Day/Year) _____		b. ANTICIPATED COMPLETION (Month/Day/Year) _____	
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT CORPS _____ CONTRACTOR _____		d. DATE (Mo/Da/Yr) _____	e. ORGANIZATION IDENTIFIER (Div, Br, Sect) _____
f. OFFICE SYMBOL _____			
16. MANAGEMENT REVIEW (1st)			
a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS _____ _____			
SIGNATURE		TITLE	DATE
17. MANAGEMENT REVIEW (2nd - Chief Operations, Construction, Engineering, etc.)			
a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS _____ _____			
SIGNATURE		TITLE	DATE
18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW			
a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS _____ _____			
SIGNATURE		TITLE	DATE
19. COMMAND APPROVAL			
COMMENTS _____ _____			
COMMANDER SIGNATURE			DATE

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10.	ACCIDENT DESCRIPTION <i>(Continuation)</i>
13a.	DIRECT CAUSE <i>(Continuation)</i>

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13b.	INDIRECT CAUSES <i>(Continuation)</i>
14.	ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) <i>(Continuation)</i>

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