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April 12, 2006

Mr. Lonnie Wolfe
Program Manager, Alternatives Funds Division
HQ AFCEE/IWA-COR
3300 Sidney Brooks, Building 532
Brooks City-Base, TX 78235-5112

Mr. Stephen Absolom
BRAC Environmental Coordinator
Department of the Army
Seneca Army Depot Activity
5786 State Route 96
Romulus, NY 14541

SUBJECT: Parsons Project Safety Plan and Site-Specific Health and Safety Plan for Munitions Response and CERCLA Closure Program, Seneca Army Depot Activity; Contract FA8903-04-D-8675, Task Order 26, CRDL A005.

Dear Mr. Wolfe and Mr. Absolom:

Parsons Infrastructure & Technology Group, Inc. (Parsons) is pleased to submit the Project Safety Plan (PSP) and Site-Specific Health and Safety Plan (HASP) for the Munitions Response and CERCLA Closure Project at the Seneca Army Depot Activity (SEDA) located in Romulus, New York. The health and safety plan is provided as Appendix A to the Project Safety Plan. This combined PSP/HASP is submitted in partial fulfillment of CRDL

This update of the required Health and Safety Plans was performed in accordance with the Scope of Work (SOW) for Delivery Order 0027 under Contract DACA87-02-D-0005. Once approved, it is Parsons intention to sue this document as the primary health and safety document for activities performed for the Seneca Army Depot Activity under Contracts DACA87-02-D-0005 and DACA87-95-D-0031. This document complies with the requirements of EM 385-1-1. Parsons ability to implement scheduled field activities in March – April 2005 is contingent on your timely review and approval of this document.

Parsons appreciates the opportunity to provide you with this Accident Prevention Plan and Health and Safety Plan. Should you have any questions, please do not hesitate to call me at (617) 449-1405 to discuss them.

Sincerely,

Todd Heino, P.E.
Program Manager

Enclosure

cc: R. Battaglia (CENAN)
T. Battaglia (CENAN)
C. Boes (AEC)
K. Hoddinott (USACHHPM)
AFCEE/MSCD (cover letter only)

US Army Corps of Engineers

Air Force Center for Environmental Excellence

Seneca Army Depot Activity
Romulus, New York

01893

PROJECT SAFETY PLAN AND SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR MUNITIONS RESPONSE AND CERCLA CLOSURE SENECA ARMY DEPOT ACTIVITY

SEAD-46 (3.5" Rocket Range), SEAD-57 (former Explosive Ordnance Disposal {EOD} Range), SEAD-002-R-01 (Rumored EOD Range #2 and #3), and SEAD-007-R-001 (Grenade Range)

AFCEE CONTRACT NO. FA8903-04-D-8675
TASK ORDER NO. 0026
CDRL A005
EPA SITE ID# NY0213820830
NY SITE ID# 8-50-006

PARSONS
APRIL 2006

PARSONS PROJECT SAFETY PLAN
MUNITIONS RESPONSE and CERCLA CLOSURE
Seneca Army Depot Activity, Romulus New York
Contract No. FA8903-04-D-8675, Delivery Order 26

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This Project-specific Health and Safety Plan (HASP) was prepared in support of work being conducted by Parsons Infrastructure & Technology Group Inc. (Parsons) at the Seneca Army Depot Activity (SEDA) in Romulus, New York under Delivery Order 26, Contract FA8903-04-D-8675 with the Air Force Center for Environmental Excellence (AFCEE), Brooks City-Base, Texas. This Project-specific HASP has been prepared in accordance with requirements established by Parsons under its corporate Safety, Health, and Risk Program (SHARP) and by the Occupational Safety and Health Administration (OSHA) under Title 29 Code of Federal Regulations (29CFR) Parts 1910.120 and 1926.126. Additionally, guidance provided within U.S. Army Engineering Manual EM 385-1-1 "**Safety and Health Requirements Manual"** (Army, November 2003) has also been considered and incorporated, as necessary and appropriate. Required, corporate- and project-specific information is presented in the main portion of this Project Safety Plan, while the more traditional information associated with a site- or task-specific hazardous waste operations (HAZWOPER) safety plan is provided as attachments and appendices. Please refer to **Appendix A** for all site-specific information.

1. SIGNATURE SHEET

- Plan Approved By:

Name: Timothy Mustard, CIH	Title: Project Safety Manager
Signature: Date: April 5, 2006	Phone Number: 303-764-8810

- Plan Approved By:

Name: Todd Heino, P.E.	Title: Project Manager
Signature: Date: April 5, 2006	Phone Number: 617-449-1405

- Plan Approved By:

Name: Michael Short	Title: OE Operations Manager
Signature: Date: April 5, 2006	Phone Number: 678-969-2451

2. BACKGROUND INFORMATION

- **Contractor**

Parsons Infrastructure & Technology Group Inc. (Parsons)
150 Federal Street, 4th Floor
Boston, Massachusetts 02110-1713
(617) 946-9400 telephone
(617) 946-9777 facsimile

- **Contract Number**

FA8903-04-D-8675, Delivery Order 26

- **Program Name**

Munitions Response and CERCLA Closure at the Seneca Army Depot Activity in Romulus, New York

- **Brief Program Description, Description of Work to be Performed, and Location**

Parsons will perform munitions response and CERCLA closure activities for four sites at the former Seneca Army Depot in Romulus, New York. The four sites are the 3.5-inch Rocket Range (SEAD-46), the former EOD Range (SEAD-57), the Rumored EOD Range (SEAD-002-R-01) and the Grenade Range (SEAD-007-R-001). Parsons will provide the services identified below for the Army and the Air Force under this contract.

- Prepare and develop project work plans and cost proposals for SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001;
- Clear vegetation from the four designated sites;
- Maintain general site security;
- Perform geophysical surveys;
- Process geophysical survey data;
- Reacquire target anomalies;
- Perform appropriate intrusive investigations for all anomalies over 50 mV response;
- Excavate six inches of soil from saturated response areas (SRAs);
- Remove all Material Potentially Posing an Explosive Hazard (MPPEH) from excavated soils using a soil screening process;
- Dispose of encountered MPPEH by demolition or demilitarization (crush, cut or smelt);
- Inspect oversize material from screening process for MPPEH;

- Perform sampling and analysis of excavated and surface soils for disposition and closure of sites;
- Prepare all draft and final project reports including the Proposed Plan (PP) and Record of Decision (ROD);
- Complete necessary surveys and mappings.

The basis of the work needed at each of the identified sites is provided in the following documents:

- Final Geophysical Investigation Munitions Destruction Areas SEADs 46 and 57, Seneca Army Depot Activity (SEDA) (Shaw, April 2005);
- Draft SEAD-46 and SEAD-57 Remedial Investigation Report, Seneca Army Depot Activity (SEDA) (Parsons, December 2001);
- Final Ordnance and Explosives Engineering Evaluation/Cost Analysis Report, Seneca Army Depot Activity (SEDA) (Parsons, February 2004);
- Final Work Plan Ordnance and Explosives Engineering Evaluation/Cost Analysis, Seneca Army Depot Activity (SEDA) (Parsons, May 2000);
- Expanded Site Inspection, Three Moderately Priority SWMUs (Parsons, December 1995);
- Federal Facilities Agreement for Seneca Army Depot, Romulus, New York (January 1993).

Parsons will be responsible for the overall program management, design, specification, construction management, field sampling, reporting, and client and regulatory liaison activities. Parsons and subcontractors will perform excavation, screening, MPPEH dispositions, removal or blow-in-place (BIP) demolition, all offsite transportation and disposal work, surveying, and physical and chemical analyses.

Identified field activities will occur at the Seneca Army Depot Activity in Romulus, New York. The location of the Seneca Army Depot Activity is shown in **Figures 1** and **2** below. **Figure 3** shows the locations of SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001. Administrative and technical support will be provided by the Boston, Massachusetts, Syracuse and Buffalo, New York and San Antonio, Texas, offices of Parsons, as well as at site offices located at the Seneca Army Depot Activity in Romulus, NY.

Figure 1: Location of Seneca Army Depot, Romulus, New York – Map copied from www.mapquest.com

Figure 2: Location of Seneca Army Depot, between Cayuga and Seneca Lakes –
Map copied from www.mapqquest.com.

A detailed site map, with SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001 annotated, is provided below.

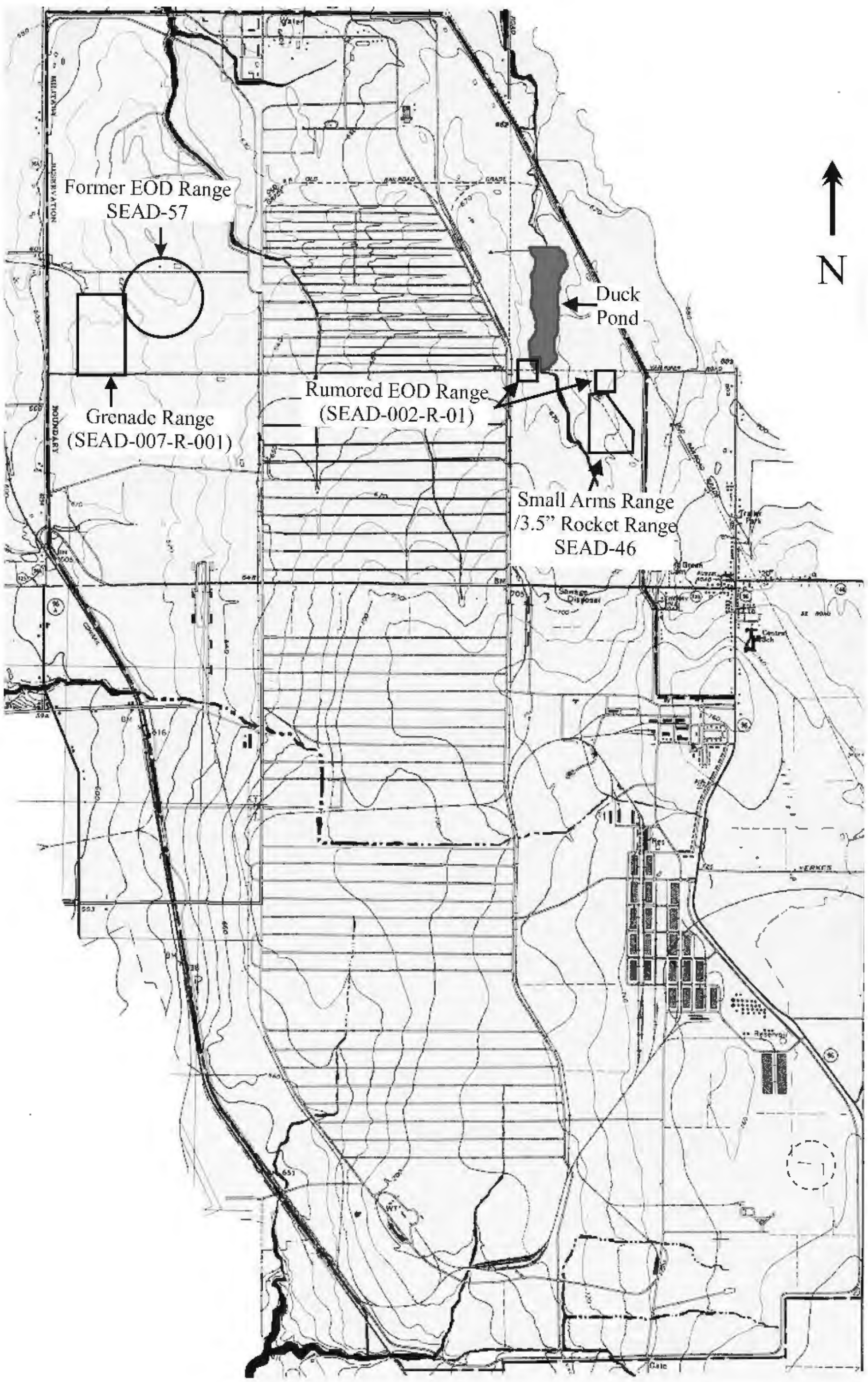


Figure 3: Location of SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001.

2.1 SITE HISTORY AND DESCRIPTION

The SEDA previously occupied approximately 10,600 acres of land located in the Towns of Varick and Romulus in Seneca County, New York. The former military facility was owned by the U.S. Government and operated by the Army between 1941 and 2000, when the SEDA's military mission ceased. During its active life, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items, including munitions and equipment.

On July 14, 1989, the United States Environmental Protection Agency (USEPA) proposed SEDA for inclusion on the National Priorities List (NPL). The USEPA recommendation was approved and finalized on August 30, 1990, when SEDA was listed in Group 14 of the Federal Facilities portion of the NPL.

In 1995, the SEDA was designated for closure under the Department of Defense's (DoD's) Base Realignment and Closure (BRAC) process. With SEDA's inclusion on the BRAC list, the Army's emphasis expanded from expediting necessary investigations and remedial actions at prioritized sites to include the release of non-affected portions of the Depot to the surrounding community for their reuse for beneficial, non-military purposes (i.e., industrial, municipal, and residential).

Since the inclusion of the SEDA in the BRAC program, the Army has transferred approximately 8,000 acres to the community. An additional 250 acres of land have undergone a federal-to-federal transfer for continued use by the U.S. Coast Guard.

The objective of this project is to complete necessary munitions response and CERCLA closure activities to gain regulatory closure of four historic sites where materials potentially posing explosive hazards (MPPEH) have been used. The sites of concern are the Small Arms Range (3.5" Rocket Range) (SEAD-46); the Former Explosive Ordnance Demolition (EOD) Range (SEAD-57); the Rumored EOD Range (SEAD-002-R-01); and, the Grenade Range (SEAD-007-R-001). The approximate location of each of these sites is shown on **Figure 3**.

Contractor Accident Experience

Parsons' Reportable Incident Rate for 2005 was 0.56; for 2004 it was 0.93. Please see the attached corporate safety statistics and trend analysis in **Appendix E** and **Appendix F**.

Listing of Phases of Work and Hazardous Activities requiring an Activity Hazard Analysis (AHA).

1. Driving to and on the installation
2. Site Walk/Visit
3. Project Mobilization / Demobilization

4. Decontamination Area Set-up
5. Personnel Decontamination
6. Tool / Equipment Decontamination
7. Soil Sampling (with drill rig)
8. Soil Sampling (with hand tools)
9. Surveying / GPS
10. Building Soil Piles
11. Soil Excavation, Backfill, Compaction and Reseeding
12. Power and Hand Tool Operation
13. Heavy and Motorized Equipment Operation
14. Trenching
15. Test Pits
16. Materials Loading and Hauling
17. Hazardous Waste Characterization
18. UXO Avoidance
19. UXO Manual Brush Removal
20. UXO Mechanical Brush Removal
21. UXO Disposal Operations
22. MPPEH demilitarization

Note: These AHAs are included as Attachment A to the Site-Specific Health and Safety Plan (See Appendix A) for Munitions Response and CERCLA Closure work.

3. STATEMENT OF SAFETY AND HEALTH POLICY

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

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

To meet its health and safety objectives, all 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.

Parsons will take all reasonable action to meet or exceed the applicable occupational health 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.

James F. McNulty
Chairman and Chief Executive Officer
2004

3.1 Implementation of Parsons Corporate Safety and Health Policy

Parsons' Safety, Health, and Risk Management Program (**SHARP Management**) is one of the most important tools in our corporate commitment to implementing best practices in achieving zero incidents. **SHARP Management** formalizes our corporate Zero Incident management approach. The Zero Incident philosophy originated with a study by the Construction Industry Institute (CII) that identified specific control measures shown to dramatically reduce the probability of incidents. These control measures, known as Zero Incident Techniques, provide the framework for SHARP Management. SHARP Management is Parsons' proactive approach to manage the three interrelated areas of safety, health, and risk management.

To ensure the success of the SHARP Management, Parsons' safety culture must be dynamic and evolving. This begins with training all management personnel in the foundations and philosophy of SHARP Management through Supervisory Training in Accident Reduction Techniques, known as the START program. This training lays the groundwork for SHARP Management by creating accountability and responsibility for the safety and risk process with all employees. All Parsons' supervisors must complete START training.

SHARP Management is based on nine Zero Incident Techniques, each essential to the success of our project safety programs. Details of the Zero Incident Techniques are provided in **Table 1**. These techniques establish the distinct Parsons Safety culture by standardizing our safety, health, and risk program and empowering every employee to take action to eliminate injury and enhance safety.

3.2 The Project Safety Plan or Design/Office Safety Plan

The Project Safety Plan (PSP) or Design/Office Safety Plan (DSOP) is essential to the successful and consistent implementation of Parsons' safety program on all projects. For construction or other high-risk projects, developing a PSP/DOSP, the first work element in the SHARP Management, is one of a Project Manager's highest priorities after receiving notice to proceed. A clear and concise PSP/DOSP helps ensure effective implementation of the overall safety program.

Each project PSP/DOSP must be tailored to the risks of the job. Some of our projects that involve a variety of complex hazards require a substantial PSP/DOSP containing comprehensive guidance. On less complex projects, the PSP/DOSP may be a simple, brief document that covers the basic elements of SHARP Management. In all cases, the PSP/DOSP must have sufficient detail to ensure the safe management and performance of all project work.

TABLE 1 Zero Incidents Techniques: A Snapshot of What and Why		
Key Technique		**What and Why**
1	Demonstrated Management Commitment	All levels of management consistently display their commitment to the SHARP Management process. As organization leaders, managers are role models whose actions send a strong message to employees.
2	Staffing for Safety	Each GBU funds a full-time Safety Director to assist in implementing and administering Parsons' safety program and SHARP Management. The safety director consults with line organizations, helping to emphasize that safety is the responsibility of each employee on the project, not just the safety department.
3	Safety Planning – Pre-project/Pre-task	Planning safety into design and construction by using activity hazards analyses is key to eliminating accidents and incidents in the workplace. Planning job tasks with safety as a key component raises safety awareness of supervisors and employees. Pre-task planning improves productivity and reduces the negative impact of direct and indirect costs of accidents.
4	Safety Training and Education	Orientations, daily and weekly training sessions are conducted at all levels of an organization. Specialized training is also conducted to provide specific knowledge about hazardous work activities. Ongoing safety orientation and training gives employees the knowledge and skills to complete their job tasks without injury.
5	Worker Involvement and Participation	Empowering employees to identify hazards in the workplace is a valuable tool to increase safety awareness. Conducting labor-management safety committee meetings allows a forum to coordinate and resolve safety issues. When employees identify and have the ability to correct hazards in the workplace, safety motivation and awareness increase and fewer accidents occur.
6	Recognition and Rewards	Employee recognition programs to reward and recognize employees for safe behavior can be based on individual or group accomplishments. Safe behavior is positively reinforced through management involvement, personal contact, communication, and training.
7	Subcontractor Management	Project Managers must ensure subcontractors comply with safety and health rules and regulations in accordance with contractual requirements. Aggressive management of subcontractor safety reduces accidents and incidents on the jobsite and reduces the risk of general liability claims against the company.
8	Accident/Incident Reporting and Investigation	Each project must investigate accidents and incidents immediately and report to the appropriate GBU personnel. The investigation process includes root cause determination and recommendations to prevent future occurrences.
9	Drug and Alcohol Testing	Employees are tested for drugs and alcohol where and when permitted by state law and local collective bargaining agreements during pre-employment, at random, post-accident, and when reasonable suspicion exists. Testing employees for drugs and alcohol reduces the likelihood of serious injuries as a result of workers being impaired while working on a project.

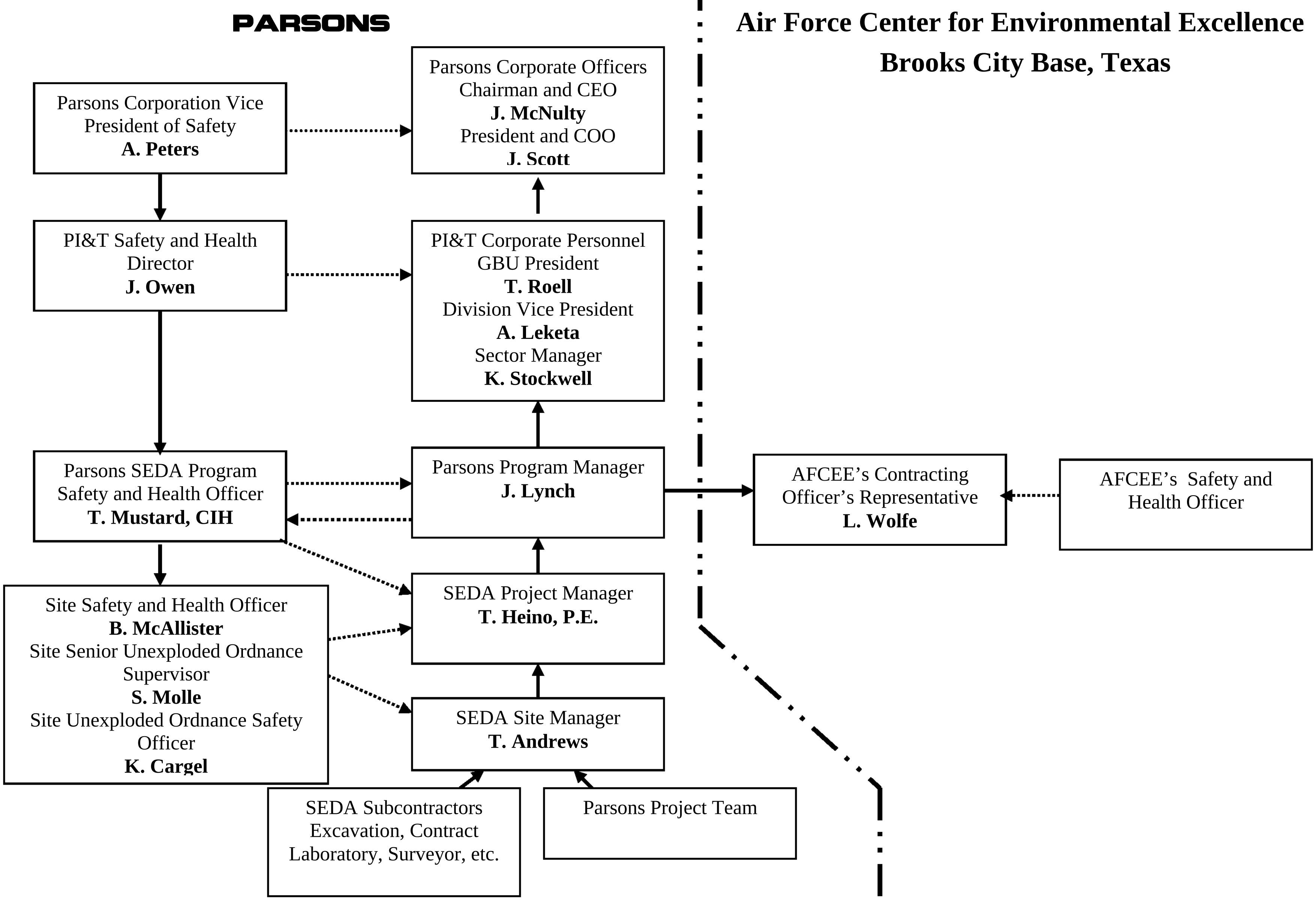
4. RESPONSIBILITIES AND LINES OF AUTHORITY

Work performed by Parsons is run and managed at the Project/Program level, with administrative guidance and assistance provided at both the Global Business Unit (GBU, e.g., Parsons Infrastructure & Technology Group Inc.) and Parsons Corporate levels. A listing of the personnel responsible for the implementation and maintenance of Parsons' SHARP Management is provided in **Table 2**. A figure identifying the lines of communication and reporting (Organizational Chart) is provided in **Figure 4**. Additional information regarding project responsibilities is provided in **Appendix A** - Health and Safety Plan for Munitions Response and CERCLA Closure, Section 4.

TABLE 2 Seneca Army Depot Activity Program/Project Level Authority and Responsibility	
Program Manager/Project Manager ***Mr. John Lynch/Mr. Todd Heino, P.E.***	Reports to upper-level management, has authority to direct response operations, assumes total control over Program/Project site activities.
Program Health and Safety Officer (PHSO) ***Mr. Timothy (Time) S. Mustard, CIH***	Advises the Program/Project Manager, SHSO, UXOSO, and RSO on all aspects of health and safety.
Site Health and Safety Officer (SHSO) ***Mr. Benedict (Ben) McAllister***	Reports to the PHSO on all aspects of Safety and Health onsite, performs day-to-day H&S tasks, and stops work if any operation threatens workers or public health and/or safety.
Senior Unexploded Ordnance Supervisor (SUXOS) ***Mr. Salvatore (Sal) Molle***	Reports to PHSO and advises PM on all MPPEH and MEC health and safety; stop work if any operation threatens workers or public health and/or safety.
Unexploded Ordnance Safety Officer (UXOSO) ***Mr. Kenneth (Ken) Cargel***	Advises the Project Manager on all aspects of health and safety on site, stop work if any operation threatens work or public health or safety.
Parsons Project Staff and Subcontractors ***Mr. Tom Andrews (Site Manager)*** ***Mr. John Lanier (Technical Director - Construction)*** ***Driller*** ***Contract Laboratory*** ***Surveyor*** ***Waste Transport*** ***Waste Disposal***	Act proactively with regard to project-specific and general health.
Corporate Authority and Responsibility	
Parsons CEO/Chairman ***Mr. James F. McNulty***	Provides leadership and company-wide direction on SHARP Management goals and objectives.
Parsons COO/President ***Mr. John A. Scott***	Provides leadership and company-wide direction on SHARP Management goals and objectives.
Corporate Safety ***Mr. Andrew D. Peters***	Provides technical and programmatic content to the CEO/President and company-wide direction and leadership on SHARP Management processes.
Global Business Unit Authority and Responsibility	
PI&T President ***Mr. Thomas L. Roell***	Defines GBU expectations and accountability consistent with corporate SHARP Management goals and objectives.
PI&T Business Development Manager ***Mr. Todd Wager***	Establishes requirements applicable to each project.
PI&T Safety Director ***Mr. Jim L. Owen***	Provides oversight, technical guidance, training, and support to project safety managers; leads safety audit efforts; and champions implementation of safety initiatives.
PI&T Quality Manager ***Mr. Subash Damle***	Audits SHARP Management processes as part of the quality assurance audit of project management plans (PMPs).
PI&T Risk Manager ***Mr. Edward (Ed) C. Bishop***	Establishes requirements applicable to each project.
Environment and Resource Management Division Manager ***Mr. Anthony (Tony) F. Leketa***	Establishes division-level safety initiatives; monitors development and use of PSP (Project Safety Plan)/DOSPs (Design/Office Safety Plan) for all division projects.
Restoration and Design Sector Manager ***Mr. Kenneth (Ken) J. Stockwell***	Works closely with Project Managers to ensure PSP/DOSP implementation.

FIGURE 4

b. Lines of Authority



5. SUBCONTRACTORS AND SUPPLIERS

Parsons will identify, and select, subcontractors and suppliers necessary to support this effort. Selected subcontractors or suppliers may include contract analytical laboratory services, excavation contractors or equipment providers, waste haulers and disposal organizations, other architect-engineering firms, geophysicists, surveyors, etc.

It is Parsons' policy to strictly comply with all applicable requirements of the Federal Acquisition Regulations (FARs) and other Federal, state or local laws and regulations in the procurement of services (subcontracts) or goods (purchase orders) under federally funded contracts. The FARs establish and define uniform policies and procedures of acquisition by all federal executive agencies. The FARs are the primary document governing acquisitions by the federal government. The FARs are supplemented by individual agency regulations, which prescribe additional policies and procedures as necessary to satisfy the specific needs of the agency. The FARs address all phases of procurement by the US government including acquisition planning, contracting methods and types, socioeconomic programs, general and special contracting requirements, contract management, solicitation provisions, and contract clauses and forms. All federal contracts embody the policies and procedures mandated by the FARs, as reflected in the contract terms and conditions.

Program Managers/Project Managers, in conjunction with Subcontract Administrators and Purchasing Agents, are responsible for defining the FAR requirements of a particular contract and describing the flow down and other applicable and necessary provisions that must be incorporated in Parsons subcontracts and purchase orders. Contract flow-down provisions are to be appropriately tailored and incorporated into the "Special Provisions" section of the subcontract and purchase order forms.

Parsons' procurement process under our contract vehicles with the Army includes defining technical and FARs task order subcontractor or supplier requirements, identifying potential sources, solicitation and evaluation/selection of the supplier or subcontractor, award of the purchase order (PO) or subcontract (SC), PO/SC administration, and PO/SC close-out.

Parsons' Health and Safety Program requires each subcontractor to submit with its proposal a completed Subcontractor Safety Data Questionnaire form. Health and Safety also provides the following criteria to evaluate supplier responses. Projects should consider eliminating from consideration suppliers that fail to complete or return partially completed questionnaires. Acceptable supplier responses for each of the following areas are:

1. Workers Compensation Insurance
   - Current Workers Compensation Insurance Experience Modification Rate (EMR) less than or equal to 1.00.
   - Current EMR is greater than 1.00, but the trend for the past 3 years is downward and no single EMR during that period was above 1.20. (For example, a firm whose

EMR's for the last 3 years have been 1992-1.19; 1993-1.13; and 1994-1.05 is acceptable).

- Some subcontractors may not provide a true EMR because they have been in business less than 1 year, they have less than 5 full-time employees, or they are self-insured. In such cases consider a firm with an Occupational Safety and Health Administration (OSHA) Recordable Incident Rate less than or equal to 15 injuries and illnesses per 200,000 man-hours is acceptable.

2. OSHA Recordable Incidents
   - Many firms are not required to maintain an OSHA 300 log because they have fewer than 10 employees at any time during the calendar year or are exempted by virtue of the services they perform (SIC categories 52-89 [excluding 52-54, 70, 75, 76, 79, and 80]). These firms should be evaluated on the basis of their safety program and EMRs.
   - Firms not exempt from OSHA record keeping requirements that fail to complete Part B of the questionnaire should be eliminated from consideration.
   - An acceptable OSHA Recordable Incident Rate is less than or equal to 15 injuries and illnesses per 200,000 man-hours and no fatalities. The rate is calculated as follows:

$$\text{OSHA recordable Incident rate} = \frac{\text{(total number of recordable injuries and illnesses)}}{\text{(total hours worked last year from Question B-2)}}$$

Prior to the mobilization of personnel to the site, each subcontractor to Parsons must submit a written subcontractor safety plan (SSP) for review and approval. Contract specifications require all subcontractors to accept Parsons PSP and prepare their own subcontractor safety plan (SSP) for presentation to Parsons Project Manager at least 10 days before site mobilization. At a minimum, subcontractor safety and health plans must meet the requirements of Parsons' PSP and provide safety equipment and safeguards suitable for the hazards involved. The SSP shall comply with the contract and shall contain information to detail specific issues relating to the following topics (as applicable).

- Accountability/Responsibility/Key Line Personnel
- Statement of Subcontractor's Safety and Health Policy
- Identification of Competent/Qualified Persons
- Scope of Work Evaluation
- Hazard/Risk/Exposure Assessment
- Control Measures/Activity Hazard Analysis
- Subcontractor Periodic Safety Audits/Inspections
- Subcontractor's Weekly Safety Planning – Weekly Look Ahead Plan
- Compliance Requirements and Policy
- Written Progressive Disciplinary Program

- Hazard Correction System
- Training and Instruction
- Project Site Orientation
- Communication System
- Record keeping
- Accident/Exposure Investigation
- Emergency Action Plan
- Site-Specific Medical Emergency Plan
- Written Hazard Communication Program
- Written Trenching and Shoring Plan (if applicable)
- Written 100% Fall Protection Plan (if applicable)
- Other written programs as specified by regulatory agency or contract Requirements
- List of Attachments

If necessary, the Program Manager/Project Manager may present workshops on how to develop a safety program to help subcontractors comply with the contract.

6. TRAINING

Training is the foundation upon which all of Parsons' other protective measures depend. All Parsons' employees, including managers and supervisors, must be trained by qualified personnel on general and job-specific safety and health practices. The content and extent of health and safety training depends on the nature of the work and the responsibilities of the personnel performing the work. All Parsons health and safety training programs will cover:

- Parsons health and safety policy
- Hazards of the work
- General office safety
- Safe work practices
- Protective clothing, equipment, or engineering controls (where appropriate)
- Emergency procedures
- Employee rights and responsibilities

Specific instruction in hazards unique to a program/project assignment or location must supplement this training, as necessary. For example, all site personnel who work in the following areas applicable to SEDA activities must receive training before beginning work.

- Laboratories
- Hazardous wastes field investigations
- Industrial field investigations

Introductory safety training will be provided by the corporate health and safety staff, qualified designees, or outside training providers. Training on specific office or field safety procedures is the responsibility of the Project Facility Health and Safety Representative. Project-specific training will be conducted by the Project Health and Safety Officer or other qualified persons.

Health and safety staff who have specific responsibilities for health and safety guidance on site, such as Project Health and Safety Officers, must have the same training provided to site workers and advanced training in health and safety issues, policies, and techniques.

The Project Health and Safety Officer is responsible for verifying that Parsons subcontractors are in compliance with federal and state safety training requirements relevant to their field operations. (Safety training covering the work performed by a subcontractor is the responsibility of the subcontractor. It is not the responsibility of Parsons to provide that training unless specific training arrangements have been agreed upon in writing between Parsons and the subcontractor.)

All employees working on site as general site workers (such as equipment operators, general laborers and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site. This training is commonly referred to as 40 hour OSHA or HAZWOPER training. Additionally, each worker shall also receive a minimum of three days actual field experience under the direct supervision of a trained experienced supervisor. Combined, such training shall include review of:

- Health and Safety Plan overview
- Project rules and disciplinary policies
- Reporting incidents and unsafe conditions
- Location-specific hazards
- Site personnel roles and responsibilities
- Site description
- Site characterization
- Chemical and physical hazards communication
- Heat stress and cold stress
- Site layout, site control measures, and work zones
- Personal Protective Equipment
- Air and personnel monitoring
- Safe work practices and engineering controls
- Emergency response plan
- Evacuation procedures
- Emergency and personnel protective equipment
- Emergency telephone numbers
- Directions to the hospital
- Medical surveillance requirements
- Health and safety training

Employees working on site only occasionally for a specific limited task (such as, but not limited to, ground water monitoring, land surveying, or geophysical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Employees working regularly on site in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Employees with 24 hours of training who subsequently become general site workers or who are required to wear respirators, shall have the additional 16 hours and two days of field experience under the direct experience of a trained experienced supervisor.

On-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations shall receive 40 hours initial training, and three days of supervised field experience and at least eight additional hours of specialized training at the time of job assignment on such topics as, but not limited to, the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques. This training may be reduced to 24 hours and one day of supervised field experience if the only area of their responsibility is employees who require 24 hour training.

Additional training in the following areas will be provided to employees as necessary for individual assignments:

- Emergency Response
- UXO recognition and hazards
- Current CPR and First Aid certifications

At least two individuals will possess current First Aid and CPR certification and training to provide immediate response to an accident situation until medical assistance arrives on the site. The selected employee is trained in CPR and first aid for emergency use only. Indoctrination to the bloodborne pathogens standard (29 CFR §1910.1030) will be provided to all employees either during their first aid training, and/or during the initial site health and safety meeting.

Note: these requirements may require emergency response training, check each one for details:

- Procedures and tests (01.E.01)
- Spill plans (01.E.01, 06.A.02)
- Firefighting plan (01.E.01, 19.A.04)
- Posting of emergency telephone numbers (01.E.05)
- Wild land fire prevention plan (09.K.01)
- Man overboard/abandon ship (19.A.04)

These sections (where applicable) are addressed below in Section 12.

Site-Specific Orientation and Training

The Project Manager is responsible for implementing a site-specific orientation and training program, to ensure that safety and health policies and procedures are clearly communicated and understood.

The Project/Construction Manager, Field Engineer, Site Manager, Project-, Site- or UXO Safety Officer or Human Resources Representative may conduct the training. The orientation and training will include an overview of the key elements in the HASP, such as personal protective equipment (PPE) requirements, disciplinary policies, communication plans, emergency plans, employee rights and responsibilities, and reporting of hazards and injuries. All site personnel will attend the training prior to commencing work on the site. Anyone assigned to the project after the initial training has been given will be presented the same material prior to being permitted to work on the site.

Subcontractors are typically contractually required to provide orientation to all their employees and visitors consistent with Parsons' requirements. In some cases, contractual arrangements may allow one group to provide orientation for all workers and visitors to the site (regardless of their company).

Copies of the site-specific training and orientation presentation materials will be maintained on site, and employees will sign a statement acknowledging their understanding of the material covered. The length of the training depends on the expected hazards at the project jobsite; the training can be a 5 minute presentation or a complex multi-day training program with demonstrations of personal protective equipment and other emergency procedures. Due to the nature of this work, it is expected that the training for the SEDA munitions response and CERCLA closure will be a minimum of eight hours.

Supervisory Safety Meetings:

Parsons requires that a safety committee be established when five full-time Parsons employees or 25 subcontractor employees are assigned to a field project. The Project Manager is responsible and accountable for establishing the safety committee, developing its charter, and carefully considering committee recommendations. All Parsons corporate offices have a safety committee, and project staff may utilize the local office safety committee safety programs.

The committee membership is decided on a case-by-case basis, but will reflect a balance between management and workers, and participation is voluntary. The committee will meet as needed, typically once per month for field projects, and once per quarter for office work. The safety committee makes recommendations to the Project Manager or senior management representative, who has the authority to act on, modify, or reject the recommendations. Meeting minutes will be kept, and posted on the bulletin board.

7. SAFETY AND HEALTH INSPECTIONS

Mr. Timothy Mustard, CIH is Parsons' Seneca Army Depot Activity Program Health and Safety Officer. His qualifications are attached. Also attached (**Appendix B**) are the names and qualifications of other qualified individuals who will assist Mr. Mustard in the performance of his Program duties.

Mr. Mustard CIH, or his designee, will be responsible for scheduling and conducting all safety inspections, the Project Manager is responsible for the safety inspection program. The safety inspection program will be developed as the Project Safety Plan (PSP) is written, or when a review of technical specifications indicates unique hazards are not included in the standard protocol (e.g., Seneca Generic RI/FS Work Plan). Parsons' policy requires that at least one corporate audit is conducted during each year of the contract by the GBU Safety Manager, the Quality Control Manager, or representatives of the Corporate Safety Staff. Additional audits may be scheduled by the Program/Project Managers or the Program Health and Safety Officer during periods of more labor intensive on-site activities, upon the receipt of an employee complaint of unsafe conditions, in the event of an occupational injury or illness, or upon the introduction of new substances, processes, procedures or equipment that presents potential new hazards in the workplace. . In addition the sector requires that any project involving MEC be audited for safety and quality every 45 – 60 days by the Ordnance and Explosives Technical Director, Mr. Michael E. Short, or his designee.

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 on an inspection form, and all corrective actions will be tracked to completion by the Project Manger, Project Quality Manager, or Safety Manger. The goal of the safety inspection process is to identify potential process failures and improvement opportunities.

All programs/projects must establish record keeping procedures consistent with the records retention policy on Parsons PWeb (number 47 under Corporate Policies). At a minimum, each project must maintain the following records to document their safety program (these records will be audited):

1. Records of hazard assessment inspections, including the name of the person conducting the inspection, unsafe conditions and work practices identified, and action taken to correct unsafe conditions and work practices. This data is recorded on a hazard assessment and correction form.
2. Documentation of safety and health training for each employee, including name or other identifier, training dates, type of training, and name of instructors are recorded on a worker training and instruction form. Inspection records and training documentation are maintained in the project office.
3. Parsons monthly safety report and all detailed incident reports.
4. OSHA 300 log (Report of Injuries and Illnesses).

5. Other records as required by Parsons or local, state, or federal regulation.

All work performed under the Seneca Army Depot Activity Program is conducted under the supervision of a Professional Engineer (PE). In addition, any UXO work will be supervised by a UXO Safety Officer.

8. SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE

As is stated in our Corporate Statement of Policy, Parsons shares the National Safety Council's Safety and Health Code of Ethics as the principles guiding our Corporate-commitment to safety. These principles include:

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

To meet our health and safety objectives, all 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.

Parsons will take all reasonable action to meet or exceed the applicable occupational health 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. It is Parsons' goal to continue to reduce the EMR to the lowest achievable number, with zero incidents and zero lost-work hours.

Each Program/Project Manager is responsible for developing and implementing a safety program that ensures the safety of all project employees, contractors, 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 may include the presentation of a plaque for demonstrated dedication to creating a safe and healthy environment; assignment of a dedicated prime parking space for the use of the individual who has recognized a hazard and has eliminated it or devised a method of managing it; or to let an individual's or group's peers know, in some way, that individual or group has taken an extra step where safety is involved, are all types of award best appreciated by the professional.

Just as Parsons recognizes the importance of a program that rewards exemplary conduct, it also recognizes the need for disciplinary actions that are assessed when unsafe procedures or practices occur. Again, Program/Project Managers are responsible for the establishment and application of a fair and consistent project policy for the disciplinary process related to health and safety violations. Parsons Corporate policies include a progressive discipline system for corrective action for performance or behavior that does not meet expectations. The corrective action used, the sequence, and the duration may vary depending on the issue and related circumstances. Progressive steps typically include counseling, written warning, unpaid suspension, and termination. In general, employees or subcontractors that create or contribute to situations that are immediately dangerous to life and health may be subject to immediate termination. However, the Project Manager must ensure that the handling of discipline matters is consistent with applicable contracts or local and national collective bargaining agreements.

Parsons' Program/Project Managers are held fully responsible and accountable for the following safety related issues:

- Ensuring that a formal hazards analysis is based on final contractual documents and is performed shortly after award. Typically leads the review.
- Ensuring the Project Safety Plan is in place and functioning from the beginning of the project; participates in PSP development.
- Scheduling and conducting the stakeholder PSP meeting prior to commencement of site work"
- Ensuring that awareness materials are posted in a highly visible location or distributed to project employees.
- Working with project human resources and safety representatives to ensure that new and transferred employees promptly receive safety orientation.
- Ensuring that project employees receive appropriate general and project-specific safety training"
- Establishing the safety committee and its charter for the Program/Project and for carefully considering committee recommendations.
- Ensuring that all incidents are reported and investigated in a timely manner and that appropriate corrective actions are identified and implemented; may participate in or lead investigations"
- Submitting incident reports and monthly reports of hours. Provides reports of selected metrics to the project team.
- Ensuring that routine internal safety inspections are performed at least one a month; tracks corrective actions to completion; performs monthly inspections.
- Ensuring that pre-construction safety planning and review are complete before RFPs are issued.

- Developing the orientation program to ensure that safety and health policies and procedures are clearly communicated and understood.
- Scheduling and conducting the meetings (between unions, OSHA and other Agencies).
- Ensuring a process is in place to review all subcontractor safety programs before construction begins.
- Ensuring that a premobilization meeting takes place with every major subcontractor.
- Participating in progress meetings and reviews mitigation plans (which include the following: upcoming scope of work risks and hazards, control measures, activity hazard analyses required, subcontractor mobilization or demobilization, scheduled audits or inspections, competent person changes or additions, planned orientations and training, recommendations, comments, concerns, and lessons learned.
- Ensuring that Activity Hazard Analyses are included in the project schedule and are conducted as planned.
- Ensuring that all workers participate in daily and weekly training; participates in weekly toolbox meeting as a trainer or participant.
- Ensuring that they or their staff conducts routine site walks at least weekly.
- Ensuring that a comprehensive final safety report is developed and issued for projects where a final safety report is required.
- Appointing a records custodian and implements a comprehensive records storage and retention plan.

9. ACCIDENT REPORTING

Exposure Data

All 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 no-field time labor hours within Parsons' Financial Reporting System. Parsons' Managers, Program Managers, Project Managers 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 Army with information pertinent to the labor hours expended on all projects performed.

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 GBU management personnel:

- Parsons has 5 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
- Parsons is contractually responsible for safety on the project

Programs/projects not surpassing these baseline levels do not need to provide internal reports to GBU management. Instructions and details on Parsons online man-hour reporting are provided in **Appendix C**.

Accident and Incident Notification

Program/Project Managers measure and report accidents and incidents, injuries, near misses, and property damage as part of the ongoing process of enhancing project safety performance. Parsons' policy is that all incidents must be reported through the local supervisor and Project Manager to the GBU Safety Manager within four hours of the initial incident. See **Appendix C** for instructions how to use the Parsons Online Safety Reporting System. If internet access is not available, the Incident/Accident Report Form in Appendix C may be used. The GBU Safety Manager is responsible for notifying the Corporate Workers Compensation Analyst.

If an incident results in a lost workday case (LWDC) or worse, the Project Manager and immediate supervisor must call the GBU President and notify the client within four hours. Any fatality, injury of a private citizen, property loss or damage in excess of $50,000, or catastrophes require immediate notification of the GBU or Corporate Safety Manager. Parsons will also notify the Army of any lost workday or worse incident. Army guidance and requirements regarding accident reporting, and the ENG Form 3394 are included as **Appendix D**.

OSHA requires reporting any work site fatality or accidents involving the hospitalization of three or more employees to the nearest OSHA office within eight hours. Reporting to OSHA is coordinated through the GBU or Corporate Safety Manager.

In addition to the required reporting of incidents, Project Managers establish key safety metrics appropriate to the work. These metrics, which include both leading and lagging indicators, are typically measured each month and reported to all project staff as a quality improvement measure. Common performance metrics are shown in **Table 3**.

TABLE 3
Safety and Health Performance Metrics

Category	Metrics
Accident Rates	Recordable Incident Frequency Rate Days Away from Work Incident Frequency Rate Severity Rate (numbers of days away from work)
Accident Costs	Total incurred workers compensation costs Loss ratios (W/C losses/premium)
Near Misses	Number of near misses reported and investigated
Training	START training participation Zero Incident Techniques training participation Parsons University monthly/quarterly participation Project-specific training participation
Inspections	Number and results (scored) of management inspections Audit results
Meetings	Participation in daily huddles or weekly toolbox meetings

Accident Investigations, Reports and Logs

Incident investigations are an important element of Parsons' safety program because they provide useful information to prevent similar incidents. Incident investigations identify root causes, system failures, unsafe acts and conditions, and noncompliance with or inadequacy of the PSP. All significant near miss, injury, illness, or major equipment or property damage incidents (including process interruptions) require an investigation.

The Project Manager and Safety Manager must conduct the on-site investigation immediately and prepare an incident investigation report. Additional participants may include the Project Controls Manager and the Project Human Resources Manager. The GBU Safety Manager or a designee completes the on-line safety reporting system incident investigation tab while Corporate Safety disseminates the results of the completed investigation throughout the Corporation as appropriate to implement lessons learned.

The purpose of an investigation is to identify all possible contributing root causes to prevent future incidents of a similar type. The investigation also determines factors that may affect Parsons' legal liability. Simple incidents may require only a brief investigation by the Project Manager or Safety Manager while more complex or significant incidents require a formal team investigation as described below. The investigation team must perform its job diligently and professionally.

The incident report must contain only facts, avoiding personal opinions, speculation, or conclusions. A paper copy of the report is maintained at the project site; electronic copies are submitted to the on-line safety reporting system as attachments to the investigation page.

10. MEDICAL SUPPORT

At least one member of each field team will be trained in first aid and CPR. They, along with (or including) the Site Health and Safety Officer will be available to provide treatment as necessary.

Phone numbers for emergency personnel are posted at the jobsite and included in each site vehicle along with directions to the designated medical treatment facilities. The nearest hospital is Geneva Hospital; driving directions are included in **Appendix A**, the Health and Safety Plan for Munitions Response and CERCLA Closure, **Figure A-8**.

11. PERSONAL PROTECTIVE EQUIPMENT

The Project Manger leads the Activity Hazard Analysis effort, and will be supported by the contracts department (to identify all contractual obligations), construction/other technical department (to identify the potential hazards of the project work), and the Safety Director, the Project Health and Safety Officer and Site-Specific Health and Safety Officer (to identify all applicable site and regulatory requirements). The process of identifying all potential hazards begins following the issuance of final contract documents.

The selection and use of PPE is specified in **Section 6** of the Health and Safety Plan for Munitions Response and CERCLA Closure, (included as **Appendix A** of this document). Due to the unknown nature of hazardous waste site work and the possibility of changing conditions during the conduct of the work, changes in the personal protective equipment may be required. When changes in personal protective equipment become necessary, these changes shall be made in accordance with the action levels and criteria set for the in this plan. Routine site work will be performed in Level D protection, augmented with protective toe boots, inner surgical gloves, and chemical-resistant outer gloves. In the event that PPE is ripped, torn, or become unserviceable, it will be immediately replaced.

12. PLANS (PROGRAMS, PROCEDURES) REQUIRED BY THE SAFETY MANUAL (AS APPLICABLE)

See attached Health and Safety Plan for Munitions Response and CERCLA Closure, (**Appendix A**) for information.

13. CONTRACTOR INFORMATION

See Health and Safety Plan for Munitions Response and CERCLA Closure, (**Appendix A**) for information.

14. SITE-SPECIFIC HAZARDS AND CONTROLS

See Health and Safety Plan for Munitions Response and CERCLA Closure, (**Appendix A**) for information.

REFERENCES

U.S. Army, EM-385-1-1, "Safety and Health Requirements Manual," Revised 3 Nov 03

Title 29 Labor Code of Federal Regulations Part 1910.120, Revised 7 Nov 02

SHARP Management Manual, August 2004, Version 1.0

APPENDIX A SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR MUNITIONS RESPONSE AND CERCLA CLOSURE

SEAD-46 (3.5" Rocket Range), SEAD-57 (former Explosive Ordnance Disposal Range), SEAD-002-R-01 (Rumored EOD Range #2 and #3), and SEAD-007-R-001 (Grenade Range).

SITE-SPECIFIC HEALTH AND SAFETY PLAN

MUNITIONS RESPONSE AND CERCLA CLOSURE
SENECA ARMY DEPOT

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Prepared By:

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Timothy S Mustard, CIH

Signed:	**Health and Safety Officer – Timothy Mustard, CIH**	**April 5, 2006** **Date**
Signed:	**Project Manager – Todd Heino, P.E.**	**April 5, 2006** **Date**
Signed:	**OE Operations Manager – Michael Short**	**April 5, 2006** **Date**

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1.0 INTRODUCTION

The purpose of this Health and Safety Plan (HASP) is to establish personnel protection standards and mandatory safety practices and procedures for munitions response activities under Delivery Order 26, Contract No. FA8903-04-D-8675, Munitions Response and CERCLA Closure at the Seneca Army Depot Activity (SEDA), Romulus, New York. This plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise during field work related to munitions response activities occurring at the following four Munitions Response Areas (MRAs) at the Seneca Army Depot, Romulus, New York:

- Small Arms Range (3.5" Rocket Range) (SEAD-46)
- Former Explosive Ordnance Demolition (EOD) Range (SEAD-57)
- Rumored EOD Range (SEAD-002-R-01)
- Grenade Range (SEAD-007-R-001)

The standard operating procedures and safety practices presented in this plan shall be followed by all personnel conducting work at the SEDA that are related to the identified munitions response activities.

The provisions of this plan are mandatory for all personnel engaged in on-site munitions response activities and hazardous waste operations. Subcontractors working for Parsons must conform to the standards identified in this HASP, and must either provide Parsons with a copy of their own activity- or site-specific HASP governing their work at the site, or use the Parsons HASP. All Parsons employees and contract personnel who engage in project activities must be familiar with this plan and comply with its requirements. These personnel must sign the Health and Safety Plan Signature Form, included at the end of this HASP. The signed original forms will be kept on site for the duration of the project and becomes part of the permanent project files. Copies of these forms will be submitted to the Program Health and Safety Officer (PHSO).

2.0 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

2.1 SITE HISTORY AND DESCRIPTION

The Seneca Army Depot Activity (SEDA or the Depot), shown in **Figure A-1** was initially constructed by the U.S. Government in 1941 and was an active U. S. Army facility until September 30, 2000. Beginning with its inception in 1941, SEDA's primary mission was the receipt, storage, maintenance, and supply of military items, including munitions and equipment. The Depot's mission changed in 1995 when the Department of Defense (DOD) recommended closure of the SEDA under its Base Realignment and Closure (BRAC) process. Since 2000, more than 8,000 of the 10,587-acre facility located in the towns of Varick and Romulus, Seneca County, New York have been transferred to other parties including the State of New York, the U.S. Coast Guard, and the Seneca County Industrial Development Agency (SCIDA). The recommended future use for land at the SEDA is shown in **Figure A-1**. The locations of SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001 are also identified on **Figure A-1**.

SEAD-46, Small Arms Range (3.5" Rocket Range)

The Small Arms Range, also known as 3.5-inch (3.5") Rocket Range, (SEAD-46) covers approximately 40 acres and is situated to the northeast of the center of the Depot (**Figure A-2**). The area has a number of small, rolling hills, a large earthen berm, and contains a dirt road that traverses the central portion of the site from the southeast to the northwest. Subsequent to Army's use of SEAD-46 as a firing rage, a number of small trees have grown up in the area.

Through 1960, SEAD-46 was used for testing firing tracers, 3.5-inch rockets and possibly other ammunition. Depot personnel reported that they have seen spent rocket motors (munitions debris) on the ground, although none were encountered during the archives search report (ASR) site visit conducted in 1998. Aerial photos from 1954 show the site as a long open area. It is believed that the large berm currently located at the north end of the area was used as the target berm, into which the rockets were fired.

In January 1980, the Small Arms Range was identified by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) as a location of known or suspected waste materials. In 1987, the Small Arms Range was deleted from the solid waste management unit (SWMU) submission list by the U.S. Army Environmental Hygiene Agency based on its determination that wastes were not handled at the unit. The Small Arms Range was added back to the SWMU list in August 1988 by the New York Department of Environmental Conservation (NYSDEC).

The Small Arms Range was included in the final list of SWMUs located at SEDA that was attached to the Federal Facilities Agreement (FFA) issued under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 120 (Docket Number: II-CERCLA-FFA-00202), that was signed by the U.S. Environmental Protection Agency (USEPA), US Army and NYSDEC in 1993. In accordance with the decision process outlined in the Interagency Agreement (IAG) between the U.S. Army Corps of Engineers (USACE), the USEPA Region 2, and NYSDEC, SEAD-46 was classified as a Low Priority Area of Concern (AOC) under CERCLA.

SEAD-57, Explosive Ordnance Disposal (EOD) Range

SEAD-57, the Explosive Ordnance Disposal (EOD) Range consists of approximately 58 acres located in the northwestern portion of SEDA (**Figure A-3**). The overall area is characterized as grassy and open. The primary feature in this area is a C-shaped earthen berm with exterior dimensions of approximately 100 ft. long by 85 ft. wide. The opening in the berm allows access to the middle of the berm, which is located in the northwest corner. The interior of berm measures approximately 40 feet in diameter. The tapered, earthen walls of the berm measure roughly 25 ft. thick at their base and 4 to 6 ft. thick at the top, and all walls are approximately 6 to 8 ft in height. The berm is located near the center of the of the 58-acre site. This berm was not observed in aerial photos until after 1978.

The disposal area was used by Army EOD personnel for the disposal of conventional ammunition or explosives weighing less than 10 pounds. The site was active from 1941 until 1993. Because of the nature of EOD work, open detonations at the site were performed irregularly. According to one former SEDA employee however, training missions were performed nearly every month. The open detonation at the site was performed inside the rectangular, bermed enclosure. Before the berm was constructed, detonations were reportedly performed in one of four open pits that were located immediately west of the existing berm, beyond the unpaved road, as shown in **Figure A-3**. Each of these pits measured approximately 15 ft by 30 ft in size.

SEAD-57 is classified as a Moderately High Priority AOC under the CERCLA.

SEAD-002-R-01, Rumored EOD Range

The Rumored EOD Range, designated as site SEAD-002-R-01, is comprised of two distinct areas, EOD Area #2 (**Figure A-4**) and EOD Area #3 (**Figure A-5**). EOD Area #2 is located northeast of the center of the Depot, near the southern end of the Duck Pond and west of SEAD-46, the Small Arms Range. EOD Area #3 is located approximately 0.5 miles east of EOD Area #2 and the Duck Pond, and to the north of SEAD-46.

A 1963 aerial photo shows EOD Area #2 as a small open area located approximately 500 ft southeast of the intersection of East-West Baseline Road and Fayette Road. Based on the 1963 photograph, the EOD Area #2 is classified as a non-vegetated track of land, surrounded by grassland areas. Based on a 1991 photograph, EOD Area #2 appears to be located near, but just to the west of the southwestern edge of the Duck Pond (**Figure A-4**). Originally, the EOD Area #2 was rumored to be where explosive devices were used; subsequent to the flooding of the area it has been rumored that non-explosive metal projectiles were thrown into the water.

EOD #3 area is located directly to the north of SEAD-46 (**Figure A-2**). The most obvious feature in the identified location is a 150-foot diameter pit that was reported to be the EOD disposal area. Early photos show the pit as a bare spot, with the surrounding area covered with short vegetation (grass). While the area of the pit itself was still open at the time of the ASR site visit in 1998, large trees and thick brush had grown up in the area surrounding the clearing. An earthen berm surrounded most of the clear area, with the exception of the southern edge. No evidence of ordnance was discovered during the 1998 site visit.

SEAD-007-R-001, Grenade Range

The Grenade Range, designated as site SEAD-007-R-001, is located in the northwest portion of SEDA. The northeast corner of this rectangular-shaped open tract of land is located approximately 1,500 feet west of SEAD-57, and the rectangle extends to the south for approximately 2,000 feet and to the west for approximately 900 feet (**Figure A-6**). The Grenade Range is typified as roughly 40 acres of relatively flat and treeless land at which 40-mm rifle-fired grenades were shot. Today, the Grenade Range is still a large open area covered with some scrub brush and containing a number of mannequins, wooden structures, and armored vehicles that were previously presumably used as targets during firing exercises at the range. The ASR site visit suggested that the majority of the 40-mm grenades fired at the range were practice grenades, as there was no evidence that the targets or the ground had been damaged by high explosives (HE). A number of intact 40-mm practice grenades were found during the 1998 ASR site visit.

2.2 PLANNED SITE ACTIVITIES

The following activities are planned as part of the Munitions Responses at the Small Arms Range (3.5" Rocket Range, SEAD-46) and the Former EOD Area (SEAD-57):

- Site mobilization:
- Clearing and grubbing of the sites:
    - 40 acres at SEAD-46.
    - 58 acres at SEAD-57.
- Geophysical survey of accessible areas partially surveyed previously, accessible areas previously not surveyed, and previously surveyed areas that did not have clearly defined 50 mV responses to acquire suspect MEC targets and define locations requiring Munitions Response (MR) actions. Geophysical surveys will also be performed in areas previously surveyed to reacquire targets in high density anomaly areas and in low density anomaly areas with 50 mV responses clearly defined.

- Munitions and Explosives of Concern (MEC) and Materials Presenting Potential Explosive Hazards (MPPEH) clearance activities will be performed as discussed below:
  - Areas with high density anomalies will be cleared of MEC / MPPEH in the following manner:
    - Excavation of soil to 6-inches below ground surface; and stage excavated soil in 500 cubic yard (cy) piles with protective covering for later screening.
    - Excavated soils will be screened through a mechanical sorting process. Soil will be separated into three distinct piles:
      - greater than 6-inch oversize (rocks, roots, misc. metal debris, etc.);
      - greater than 0.75-inch oversize (soil, small rocks, MEC, misc. metal debris, etc); and
      - less than 0.75-inch (fines).
    - Geophysical surveys will be repeated in excavated areas to determine if additional anomalies are present at greater depths. If additional anomalies are identified, the area will be excavated to the necessary depth to remove the anomalies. This step maybe repeated until the area is cleared of anomalies.
    - Oversized material greater than 0.75-inches in size will be processed under a cross belt magnet to separate ferrous material which will be deposited in a scrap container for subsequent processing.
    - The less than 0.75-inch soil will be inspected and certified as clear of MPPEH items. Soil from the oversize piles (greater than 0.75-inch and 6-inch) will be spread out in 100-ft by 100-ft by 1-ft ‘lifts’ and UXO technicians will inspect each lift for MEC / MPPEH. If identified anomalies are munitions debris and free of reactive material, they will be staged for subsequent thermal treatment. If identified anomalies are MEC / MPPEH, they it will be collected and stored for later destruction if acceptable to move or destroyed in place if they are deemed too hazardous to move.
    - Once inspected, cleared soil/debris will be certified as clear of MEC / MPPEH.
    - Recovered MEC / MPPEH material that does not contain energetic material will be heated to 1200 ^{o}F for 15 minutes to achieve a 1000 ^{o}F surface temperature on treated MPPEH materials. Once the 1000 ^{o}F surface temperature for surface materials is achieved it can be certified 5X clean. MEC / MPPEH having energetic material will either be stored on site for later destruction, if acceptable to move, or BIP, if not.
    - Clean MEC / MPPEH will be hammer-milled to render it unrecognizable munitions debris.
    - Confirmation samples of MEC- / MPPEH-free certified soil will be collected, at a rate of 1 sample per 500 cy, and analyzed for metals. Soil found to meet NYSDEC’s TAGM 4046 soil cleanup objective levels based on the confirmational sampling and analysis will be used as site backfill. Soil piles

that do not met TAGM cleanup objectives will be transported and disposed of off-site at a non-hazardous waste landfill.

- Areas with low density anomalies with 50 mV responses clearly defined will be cleared of MEC / MPPEH in the following manner:
    - Anomalies will be reacquired in the field using previously determined coordinates, a Global Positioning System (GPS) and EM61.
    - Soil surrounding the anomaly on two sides will be excavated using a small excavator.
    - UXO technicians will hand dig the target area and push covering soil into the excavations identified above.
    - MEC / MPPEH anomalies will either be removed for later destruction or blown in place, if determined as too hazardous to move. Recovered anomalies free of energetic materials will be staged for thermal treatment and hammer-milling as appropriate
- Accessible areas not previously surveyed or areas where an incomplete survey was previously performed will be cleared of MEC in the following manner.
    - Geophysical surveys will be performed to identify anomalies greater than 50 mV.
    - Previously identified anomalies will be reacquired in the field using documented coordinates, a GPS and EM61.
    - In inaccessible areas where geophysical surveys were not completed due to the presence of woods, thick brush, etc., new surveys will be completed on 10% of area to verify the presence of suitable targets is minimal. The instrument-aided removal (manual "mag and flag") technique will be used for these areas utilizing handheld EM61-Mk2 or equivalent and GPS units. Anomalies will be flagged using brightly colored surveyor's flags.
    - Once anomalies are found and flagged, they will be removed. Anomalies will be removed either by small excavator (described previously) or manually depending on the soil type and level of contamination. Soils with high clay content are anticipated to require the use of a small excavator; whereas soils with minimal clay content may possibly be excavated using hand tools.

The following site activities are planned for the Rumored EOD Range (SEAD-002-R-01) and the Grenade Range (SEAD-007-R-001):

- Site mobilization;
- Clearing and grubbing of the sites.
    - 10 acres at SEAD-002-R-01;
    - 30 acres at SEAD-007-R-001.

- Geophysical survey of accessible areas partially surveyed previously, accessible areas previously not surveyed, and previously surveyed areas that did not have clearly defined 50 mV responses to acquire possible MEC / MPPEH targets and define locations requiring MR actions. Geophysical surveys will also be performed in areas previously surveyed to reacquire targets in high density anomaly areas and in low density anomaly areas with 50 mV responses clearly defined.
- MEC / MPPEH clearance activities will be performed as discussed below:
  - Areas with low density anomalies with 50 mV responses clearly defined will be cleared of MEC / MPPEH in the following manner:
    - Anomalies will be reacquired in the field using previously determined coordinates, a GPS and EM61.
    - Soil surrounding the anomaly on two sides will be excavated using a small excavator.
    - UXO technicians will hand dig the target area and push covering soil into the excavations identified above.
    - MEC / MPPEH anomalies will either be removed for later destruction or blown in place, if determined as too hazardous to move. Recovered anomalies free of reactive materials will be staged for thermal treatment and hammer-milling as appropriate
  - Areas with low density anomalies with 50 mV responses not defined will be cleared of MEC / MPPEH in the following manner:
    - Geophysical surveys will be performed to identify anomalies with responses greater than 50 mV.
    - Anomalies will be reacquired in the field with GPS and EM61 based upon previously determined anomaly coordinates.
    - Anomalies will be removed either by small excavator (described previously) or manually depending on the soil type and level of contamination. Soils with high clay content are anticipated to require the use of a small excavator; whereas soils with minimal clay content it may be possible to excavate using hand tools.
  - Areas with incomplete survey or non-surveyed areas will be cleared of MEC / MPPEH in the following manner:
    - New geophysical survey will be performed to identify anomalies greater than 50 mV.
    - Previously identified anomalies will be reacquired in the field using documented coordinates, a GPS and EM61.
    - In inaccessible areas where geophysical surveys were not completed due to the presence of woods, thick brush, etc., new surveys will be completed on 10% of area to verify the presence of suitable targets is minimal. The instrument-aided removal (manual “mag and flag”) technique will be used

for these areas utilizing handheld EM61-Mk2 and GPS units. Identified anomalies will be flagged

- Once anomalies are found and flagged, they will be removed. Anomalies will be removed either by small excavator (described previously) or manually depending on the soil type and level of contamination. Soils with high clay content are anticipated to require the use of a small excavator; whereas soils with minimal clay content may possibly be excavated using hand tools.

The following phases of work are expected to be required to complete these activities. Activity Hazard Analyses (AHAs) identifying potential health and safety concerns and issues during the performance of these work phases are provided in **Attachment A.**

1. Driving to, from and on the installation
2. Site Walk/Visit
3. Project Mobilization / Demobilization
4. Decontamination Area Set-up
5. Personnel Decontamination
6. Tool / Equipment Decontamination
7. Soil Sampling (with drill rig)
8. Soil Sampling (with hand tools)
9. Surveying / GPS
10. Building Soil Piles
11. Soil Excavation, Backfill, Compaction and Reseeding
12. Power and Hand Tool Operation
13. Heavy and Motorized Equipment Operation
14. Trenching
15. Test Pits
16. Materials Loading and Hauling
17. Hazardous Waste Characterization
18. UXO Avoidance
19. Manual Brush Removal
20. Mechanical Brush Removal
21. Disposal Operations
22. Geophysical Survey and Mapping
23. MEC / MPPEH

2.3 SITE CONTAMINATION CHARACTERIZATION

Small Arms Range (3.5" Rocket Range) (SEAD-46)

Potential contaminants, which may be encountered during field activities at SEAD-46, include BTEX, SVOCs (mainly PAHs), pesticides, and metals. Munitions debris and munitions constituents (MC) may also be encountered during field activities at the site. A list of compounds known or suspected at the site is provided in **Table A-1**; **Section 3** of this HASP provides risk information for the more prominent compounds detected at the site.

Former EOD Range (SEAD-57)

Potential contaminants, which may be encountered during field activities at SEAD-57, include BTEX, SVOCs (mainly PAHs), pesticides, and metals. MEC, MC and munitions debris items may also be encountered during field activities at the site. A list of compounds known or suspected at the site is provided in **Table A-2**; **Section 3** of this HASP provides risk information for the more prominent compounds detected at the site.

Rumored EOD Range (SEAD-002-R-01)

The Rumored EOD Range has not been investigated previously. Potential contaminants, other than MC and munitions debris, which may be encountered during field activities at SEAD-002-R-01, include those chemicals found at other sites at the Depot including VOCs, SVOCs (mainly PAHs), pesticides/PCBs, nitroaromatics, and metals.

Grenade Range (SEAD-007-R-001)

The Grenade Range has not been investigated previously. Potential contaminants, other than MC and munitions debris, which may be encountered during field activities at SEAD-002-R-01, include those chemicals found at other sites at the Depot including VOCs, SVOCs (mainly PAHs), pesticides/PCBs, nitroaromatics, and metals.

3.0 HAZARD/RISK ANALYSIS

The chemical and physical hazards that may be encountered at the SEDA sites are described below. **Table A-3** presents a summary of Activity Hazard Analysis (AHA) for tasks that may be conducted at the Depot, including geophysical and GPS surveying, excavation, trenching, sampling and general site activities. The AHAs listed in **Table A-3** are included in **Attachment A-1**.

3.1 CHEMICAL HAZARDS

Health hazards and the exposure limits associated with prominent chemicals of concern are presented in **Table A-4** for SEAD-46 and **Table A-5** for SEAD-57. The Rumored EOD Range (SEAD-002-R-01) and the Grenade Range (SEAD-007-R-001) have not previously been investigated, thus specific chemical hazards are not precisely known; however, it is likely that metals and the possibility of munitions constituents are potential contaminants at both sites. Other potential contaminants at these two sites include the other chemicals found at other sites around the Depot (e.g., VOCs, SVOCs including PAHs, pesticides/PCBs, and nitroaromatics. Lists of all chemicals known or presumed present at the sites are identified in **Section A-2**, and should be reviewed by all site personnel prior to commencement of field activities. Questions regarding chemicals not listed in **Tables A-4** and **A-5** should be directed to the SHSO, or researched by the individual [Material Safety Data Sheets (MSDSs – see **Section 9.7.2** for more information) are a useful resource].

3.2 PHYSICAL HAZARDS

3.2.1 Heat Stress

Heat stress is one of the most common (and potentially serious) illnesses that affect field personnel. When site personnel are engaged in operations involving hot environments, a number of physiological responses can occur which may seriously affect the health and safety of the workers. Heat stress can result in health effects ranging from transient heat fatigue to serious illness or death.

The use of Level C protective equipment, or greater, may promote heat stress. Monitoring of personnel wearing personal protective clothing should commence once the ambient temperature reaches 72^{o}F or greater. **Table A-6** presents the suggested frequency for such monitoring. Monitoring frequency should increase as ambient temperature rises or as slow recovery rates are observed. The SHSO should refer to **Table A-7** to assist in assessing when the risk for heat related illness is likely. To use this table, the ambient temperature and relative humidity must be determined (site-specific measurements or a regional weather report may be used). Heat stress monitoring should be performed by the SHSO, who will be able to recognize symptoms related to heat stress:

- **Prickly Heat** (Heat rash)
  - Painful, itchy red rash. Occurs during sweating, on skin covered by clothing.
- **Heat Cramps**
  - Painful spasm of arm, leg or abdominal muscles, during or after work.
- **Heat Exhaustion**
  - Headache, nausea, dizziness. Cool, clammy, moist skin. Heavy sweating. Weak, fast pulse. Shallow respiration, normal temperature.
- **Heat Fatigue**
  - Weariness, irritability, loss of skill for fine or precision work. Decreased ability to concentrate. No loss of temperature control.
- **Heat Syncope** (Heat Collapse)
  - Fainting while in a hot environment.
- **Heat Stroke**
  - Headache, nausea, weakness, hot dry skin, fever, rapid strong pulse, rapid deep respirations, loss of consciousness, convulsions, coma.
  - ***THIS IS A LIFE-THREATENING CONDITION.***

Do not permit a worker to wear a semi-permeable or impermeable garment when they are exhibiting signs or symptoms of heat-related illness.

To monitor the worker, the SHSO should measure:

- Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period.
  - If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
  - If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle again by one-third.

- Oral temperature. Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).
  - If oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the length of the rest period.
  - If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following work cycle by one-third.
  - Do not permit a worker to wear a semi permeable or impermeable garment when oral temperature exceeds 100.6°F (38.1°C).

Prevention of Heat Stress

Proper training and preventative 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 illness. To avoid heat stress the following steps should be taken:

- Adjust work schedules.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day, if possible, or at night, if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, i.e., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water is consumed 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^{o} to 60^{o}F (10^{o} to 16.6^{o}C).
    - Provide small disposal cups that hold about four ounces (0.1 liter).
    - Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work. Coffee is not an accepted beverage for maintaining fluid balance.
    - Urge workers to drink a cup or two every 15 to 20 minutes, or during each monitoring break period. 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 illness.

Documentation of Heat Stress

The SHSO will be responsible for recording all heat stress related information. This will include training sessions and monitoring data. Initial training will be included in the site-specific training and any subsequent training sessions will be documented on the Documentation of Training Form (**Attachment A-2**), and other heat-related information will be recorded in the Safety Log. All documentation will be maintained in the project files.

3.2.2 Cold-Related Illness

Cold-related illness, like heat stress, is very common and can seriously affect field personnel if the appropriate controls are not established. If work on this project begins in the winter months, thermal injury due to cold exposure can become a problem for field personnel. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally called frostbite.

Hypothermia - Hypothermia is defined as a decrease in a person's core temperature below 96.8°F. The body temperature is normally maintained by a combination of central (brain and spinal cord) and peripheral (skin and muscle) activity. Interferences with any of these mechanisms can result in hypothermia, even in the absence of "cold" ambient temperatures. The first symptom of systemic hypothermia is shivering. Maximum shivering starts when the core body temperature drops below 95°F. The next set of symptoms as the body's cooling progresses is apathy, listlessness, and sleepiness. The person remains conscious and responsive with normal blood pressure and a core temperature of 93.2°F. The person must be removed immediately to a heated location. As hypothermia advances beyond this point, the person has a glassy stare, slow pulse, slow respiratory rate, and may lose consciousness. Severe hypothermia starts when the core body temperature reaches 91.4°F. Finally, the extremities start to freeze hard and death could result.

Progressive Clinical Symptoms of Hypothermia

Core Temperature °F	Clinical Signs
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
Core Temperature °F	**Clinical Signs**
79°	Victim rarely conscious
70° - 72°	Maximum risk of ventricular fibrillation

Frostbite - Frostbite is both a general and medical term given to areas of local cold injury. Frostbite has progressive degrees and this progression may continue until systemic hypothermia occurs. Unlike systemic hypothermia, frostbite rarely occurs unless the ambient temperatures are less than freezing and usually less than 20°F. Frostbite symptoms are a sudden blanching or whitening of the skin; a waxy or white appearance of the skin and it is firm to the touch; tissues are cold, pale, and solid. Superficial frostbite occurs when the skin is white but the underlying tissue is firm. The skin will return to shape when depressed. Deep frostbite causes the underlying tissue to freeze. The skin will either not depress when pressed by the finger or it will depress but not return to the original contour. ***DEEP FROSTBITE IS A SERIOUS INJURY***.

Prevention of Cold-Related Illness

In preventing cold stress, the SHSO must consider factors relating both to 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.

1. Training - Recognizing the early signs and symptoms of cold stress can help prevent serious injury. Thus, workers will be trained during the site-specific training to recognize the symptoms of hypothermia and frostbite and have appropriate first-aid instruction. When the air temperature is below 50°F, the SHSO will inform workers of the proper clothing requirements and any work practices that are in effect to reduce cold exposure.

2. Administrative Controls - The SHSO 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, or drops below, 0 °F.

3. 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.

3.2.3 Ultraviolet Radiation

The sun emits ultraviolet radiation (UV) as heat and light. The skin's natural defense mechanisms attempt to reject the UV by distributing melanin pigmentation where needed. However, overexposure to direct sunlight can cause inflammation or blistering of the skin (sunburn). The use of sunscreen, long sleeve shirts, and wide brim hats can help prevent sunburn. Chronic exposure to UV radiation is known to cause skin cancer. In case of sunburn, do not apply burn ointment, cold cream, or butter to relieve pain. Use a dry dressing and get medical attention for severe, extensive sunburns.

3.2.4 Noise

Operating heavy equipment can be a potential noise source. Noise monitoring will be conducted at the outset and appropriate hearing protection shall be worn to attenuate the hazard by personnel operating in a recognized high noise area regardless of the activity. Extra hearing protection will be kept on-site for all additional personnel who would like to use it.

3.3 SAFETY HAZARDS

3.3.1 Slip, Trip, and Fall Hazards

The site may contain slip, trip, and fall hazards for site workers, such as:

- Holes, pits, or ditches.
- Slippery surfaces.
- Steep grades.
- Uneven grades.
- Sharp objects, such as nails, metal shards, and broken glass.
- Cut vegetation.

Site personnel will be instructed to look for potential safety hazards and immediately contact the SHSO if hazards are discovered. The SHSO will inform team members of the locations of known slip, trip, and fall hazards during daily site safety briefings.

3.3.2 Weather Hazards

During the course of field operations, severe weather, including tornados, thunderstorms, lightning, rainstorms, snow, hail, sleet, ice storms, high winds, and extreme temperatures, may be encountered. 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 or severe storm watches or warnings in place for the area including the site;
- Visible lightning;
- Extreme temperatures (e.g., greater than 100 °F or less than 32 °F); or
- Heavy downfalls or accumulations of precipitation (e.g., rainfall, snow, sleet, etc.) that make footing treacherous or limit visibility.

3.3.3 Fire Hazards

Although fires and explosions may arise spontaneously, they are more commonly the result of carelessness during the conduct of site activities. Common site activities such as moving drums of solvents, mixing/bulking of site chemicals and refueling of fossil-fuel heavy or hand-held equipment; all represent potential occasions where fires or explosions can occur. 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;
- Detonations causing fires; and
- Sudden release of materials under pressure.

Fire prevention and control are described in **Section 9**.

3.4 BIOLOGICAL HAZARDS

Biological hazards can result from encounters with mammals, birds, insects, snakes, spiders, ticks, plants, parasites, and pathogens. Mammals and birds can bite, scratch or peck when cornered or surprised. The bite or scratch can result in local infection or infection with systemic pathogens or parasites. Insect and spider bites can result in severe allergic reactions in sensitive individuals. Exposure to poison ivy, poison oak or poison sumac results in skin rash. Ticks are vectors for a number of serious diseases. Dead animals, organic wastes, and contaminated soil and water can harbor parasites and pathogens. Pictures of poison ivy, snakes, spiders, and ticks are provided in **Attachment A-3**.

3.4.1 Poison Ivy

Poison ivy, poison sumac, and poison oak are all present at location throughout SEDA; however, poison ivy is probably the most prevalent and visible. An allergic may result when skin touches these or comes into contact with oil, called urushiol that is contained in the plant. Individuals may be affected either via direct contact with the plants, or via secondary routes such as contact with tools, cloth or other objects that have had direct contact with the plant or oil or inhalation or contact with smoke produced during the burning of the poison plant. The symptoms of an allergic reaction to poison ivy, sumac, or oak include the following, from least serious to most serious:

- Itching, often intense;
- Red blotches that can be either raised or flat blisters, which may show up in lines;
- Fever;
- Headache;
- Swelling of your throat and eyes;
- Overall swelling of your body;
- General feeling of discomfort; and
- Stomach cramps, nausea, vomiting, diarrhea.

Typically, reactions to incidental or direct contact with poison plants begin a few hours after the exposure occur, but they also may be delayed for 24 to 48 hours.

The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each (see figure in **Attachment A-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.

Avoidance of plant/sap contact is the only effective means of preventing the poisoning. Site personnel should know how to recognize the poison ivy plant (see figures in **Attachment A-3**) and avoid walking through, or placing equipment and tools in areas of heavy growth. If you must walk through areas of poison ivy, keep extremities covered and avoid contact of bare skin with poison ivy leaves and stems. When digging in areas of poison ivy growth, avoid contact with the roots; these too can produce a reaction.

A person experiencing symptoms of poisoning should remove contaminated clothing; wash all exposed areas thoroughly with soap and water. Oils from the poison ivy plant can adhere to clothes. Wash clothes exposed to poison ivy before wearing again. Apply calamine or other recommended lotion if the rash is mild. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity. A more thorough washing of skin and clothing can be used after site work at the end of the day, or after potential exposure to reduce severity of irritation.

3.4.2 Ticks and Lyme Disease

Ticks may be common during the spring, summer, and fall at SEDA. Two types of ticks may be encountered: the dog tick and the deer tick. The dog tick is the larger, more common tick. After biting, the dog tick will remain attached to the victim until engorged with blood. Dog ticks may transmit Rocky Mountain Spotted Fever and other diseases.

The deer tick is much smaller, ranging from poppy seed to grape seed size, and it does not remain attached to the skin for very long after biting. Deer ticks can transmit Lyme Disease, which can have serious, long-term health effects if left untreated. Lyme disease is characterized by a bulls-eye type rash; light in the center with an outer red area. Flu-like symptoms may also occur. These signs may occur at different times and the rash may not appear.

If you discover any bites on the skin, wash the affected area and seek medical attention if a rash or flu-like symptoms appear.

Lyme Disease is caused by a bacterium that may be transmitted by the bite of a tick. Ticks carrying Lyme Disease may be found throughout the U. S. living in grassy and wooded areas, and feeding on mammals such as mice, shrews, birds, raccoons, opossums, deer, and humans. Not all ticks are infected with the bacterium. When an infected tick bites, the bacterium is passed into the bloodstream of the host, where it multiplies. If detected early, Lyme Disease can be treated with antibiotics.

The illness typically occurs in the summer months and is characterized by a slowly expanding red rash that develops a few days to a few weeks after the bite of an infected tick. The illness can be accompanied by flu-like symptoms, headache, stiff neck, fever, muscle aches, and/or general malaise. At this stage, treatment by a physician is usually effective; but if left alone, these early symptoms may disappear and more serious problems may follow. The most common late symptom of the untreated disease is arthritis; other problems include meningitis, neurological, and cardiac abnormalities. *NOTE: Some people do not get the characteristic rash but progress directly to the later manifestations. Treatment of follow-on symptoms is more difficult than early symptoms and is not always successful.*

Rocky Mountain Spotted Fever is another tick borne disease. Nearly all cases of infection occur in the spring and summer, generally several days after exposure to infected ticks. The onset of illness is abrupt and often accompanied by high fever, headache, chills, and severe weakness. After the fourth day of fever, victims develop a spotted pink rash that usually starts on the hands and feet and gradually extends to most of the body. Early detection and treatment significantly reduces the severity of illness. The disease responds to antibiotic therapy with tetracycline or chloramphenicol.

<u>Prevention</u>

The following steps should be taken to limit the likelihood of getting tick bites:

- Wear long pants and long sleeved shirts that fit tightly at the ankles and wrists; tape cuffs if necessary. Tuck pants legs into socks.
- Wear hat.
- Wear light colored clothing so ticks can be easily spotted.
- Tick repellents such as DEET (vapor-active repellant) and Permethrin may be useful. Apply DEET to any exposed skin surface (except eyes and lips) or clothes and permethrin to field clothing only, do not apply to skein (allow to dry prior to wearing).
- Inspect clothing frequently while in tick habitat.
- Inspect head and body thoroughly when you return from the field.
- Shower immediately after work and wash work clothes daily.

<u>First Aid</u>

If found crawling on a person, ticks should be removed and killed by burning or crushing it between two hard objects (e.g., rocks). If the tick has not embedded itself, the tick may be removed by covering the tick with the sticky side of adhesive tape, which is then removed and collected. Do not use the bare hand to remove a tick, and wash hands thoroughly after removing a tick. Hot showers should also be taken as soon as possible after departure from the site to wash away all ticks that have not adhered to the skin.

If a tick has bitten and is embedded in a person's skin, remove it by gently tugging it out using tweezers or one of the special tick removing devices that are designed to lift ticks off your skin. During removal, grasp the tick as close to the skin and the tick's mouth as possible, and lift it with a slow, steady pulling motion. Do not twist or rock the tick during removal; instead pull it out using a straight and steady motion. Be very careful NOT to crush the body of the tick, as this may cause the tick to inject its stomach contents into the open wound. DO NOT apply substances such as petroleum jelly, finger nail polish, finger nail polish remover, repellents, pesticides, or a lighted match to the tick while it is attached. These materials are either ineffective, or worse, might agitate the tick and cause it to salivate or regurgitate infective fluid into the wound site. Once the tick has been removed, inspect the site, using a magnifying glass, to ensure that all parts have been removed. If parts are still observed, remove all parts of the tick with tweezers or other suitable device. If this fails, seek medical assistance. Once the tick is partially or completely removed, wash and disinfect the bite site with alcohol or other suitable antiseptic. Collect any removed tick in a jar filled with rubbing alcohol to kill the insect. Save the tick for future identification, as necessary.

After removal of a tick from the skin, monitor the area of the bite for several days to several and 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. Also look for the signs of the onset of Rocky Mountain Spotted Fever (RMSF), such as an inflammation that 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.

3.4.3 Mosquitoes and West Nile Virus (WNV), Eastern Equine Encephalitis (EEE) and California Encephalitis

West Nile Virus (WNV), Eastern Equine Encephalitis (EEE), and California Encephalitis can all be spread by the bite of an infected mosquito or tick. WNV can infect people, horses, many types of birds (including crows), and some other animals. EEE can affect people, horses and many varieties of captive birds. California encephalitis is only reported to have affected people, and is particularly of concern in children. WNV, EEE, and California Encephalitis are all generally classified as arborviral viruses.

Most people who become infected with WNV will have either no symptoms or only mild ones. Mild flu-like symptoms include fever, headache, body aches, and possibly a rash. On rare occasions, WNV infection can result in a severe and sometimes fatal illness known as West Nile encephalitis (an inflammation of the brain). People tend to develop symptoms of WNV between three and 14 days after being bitten by an infected mosquito. People over the age of 50 are at higher risk for developing more serious reactions to WNV. There is evidence to suggest that WNV can be spread from person to person through blood transfusions and organ transplants.

EEE is transmitted by the bite of an infected mosquito. Mosquitoes become infected by feeding on infected birds. Infected mosquitoes will then occasionally feed on horses, humans and other mammals. Several species of mosquitoes can become infected with the EEE virus. The virus that causes EEE is spread only by mosquitoes. People and horses do not directly spread the disease to horses or people. The incubation period of EEE is between five and 15 days after the bite of an infected mosquito.

Infection with EEE can cause a range of illnesses. Some people bitten by an infected mosquito will not develop any symptoms; others get only a mild flu-like illness with fever, headache, and fatigue. In rare cases, infection of the central nervous system occurs, causing sudden fever, muscle pains and a headache of increasing severity, often followed quickly by seizures and coma. Inflammation and swelling of the brain, called encephalitis, is the most dangerous complication. The case fatality rate for EEE (the percentage of people who develop the disease who will die) is between 30 – 70%. It is estimated that 35% of the people who survive EEE will have mild to severe disabilities.

Prevention

Human illness from WNV, EEE, and California encephalitis is rare, even in areas where the virus has been reported. The chance that any one person is going to become ill from a mosquito bite is low. The following steps can further reduce the risk of being bitten by a mosquito:

- When outdoors, use an insect repellent containing DEET. Apply DEET to any exposed skin surface (except eyes, lips, or cuts) or outer surfaces of clothing. Do not apply DEET to skin that is covered with clothing. Only apply permethrin to field clothing (allow to dry prior to wearing); do not apply permethrin to skin.
- Wear long sleeves when outdoors. Wear light-colored clothing so mosquitoes can be easily spotted.
- When possible, stay indoors at down, dusk, and in the early evening, which are peak mosquito biting times.
- Remove standing water from buckets, barrels, or other areas where water can pool up – these areas are used as mosquito breeding sites.
- Shower immediately after work and wash work clothes daily.

First Aid

There is no specific treatment for WNV, EEE, and California Encephalitis infection. In cases with milder symptoms, the symptoms subside naturally. If severe symptoms arise, such as unusually severe headaches, muscle pain, or confusion develops, medical attention should be sought immediately. Serious cases of any arborviral virus usually require hospitalization.

3.4.4 Poisonous Snakes

Poisonous snakes are not common to the area of SEDA, though central New York is within the range of rattlesnakes and copperheads. Descriptions of these snakes are presented below.

Copperhead: These snakes are commonly found near water sources in wooded areas. Copperheads are generally less than four feet in length and are not particularly aggressive. Coloration ranges from golden brown to tan. These snakes have a banded pattern.

Timber Rattlesnake: These are large, not particularly aggressive snakes with yellow through or gray to black, with dark back and side blotches on front of body and blotches fused to form cross bands on rear of body. Head is unmarked and the tail is black. They can be found in many habitats including rocky hillsides, swampy areas, and canebrake thickets.

Eastern Diamondback Rattlesnake: These snakes are commonly found in dry habitats throughout the coastal plain including pine and oak hills, pine flatwoods, and abandoned farmland. They are the largest rattlers ranging from 3 to 8 feet in length. These thick-bodied snakes have highly destructive venom and are considered the most dangerous snakes in North America. The back of the snake is distinctively patterned with dark diamonds with light centers and bordered by cream to yellow-colored scales.

Prevention

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

- Learn to identify poisonous snakes – this shall be reviewed during site-specific safety training. The features identified in **Table A-8** will assist in properly identifying a snake as poisonous or non-poisonous.
- Watch where you sit and place your hands and feet. Do not put hands and feet where you have not looked.
- Avoid rock piles, stacks of old boards, and weeds 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 "dead" snakes; they may not be completely dead. Do not attempt to capture or kill ***ANY*** snakes. Caution should be used if any snake is encountered.
- Step heavily. Snakes can feel footfalls through the ground and will avoid you if they can.

- Wear heavy leather boots and loose fitting pants.

First Aid

A snakebite 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.

Physical reactions are aggravated by acute fear, anxiety, 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.

The rules to follow if someone is bitten by a snake are:

1. DO NOT cut "Xs" over the bite area as this will intensify the effect of the venom.
2. DO NOT apply suction to the wound since this has a minimal effective in removing venom.
3. DO NOT apply a tourniquet since this will concentrate the venom and increase the amount of tissue damage in the immediate area.
4. If possible, try to get a good look at the snake so it can be identified for proper selection of anti-venom.
5. DO NOT allow the victim to run for help since running increases the heart rate and will increase the spread of the venom throughout the body.
6. Calm, reassure and keep the victim calm and immobile. Do not delay evacuation.
7. Have the victim hold the affected extremity lower than the body while waiting for medical assistance.
8. Transport the victim to medical attention immediately.

An incision through the fang marks is not advisable; this procedure is too hazardous to underlying structures and at best removes only 20% of the venom. Do not use cold compresses, ice, dry ice, chemical ice packs, spray refrigerants, or other methods of cold therapy. The caregiver must consider several other factors. A person bitten by a snake should try to lie still and be quiet. If the bite is in the arm or leg, keep the bite lower than the heart. Staying still and holding the bite lower than the heart will help to slow any poison spreading through the body. Get medical care as soon as possible, even if the snake was known to be non-poisonous. The use of snake bite kits is prohibited.

3.4.5 Bees, Wasps, Hornets, and Other Insects

Symptoms of an insect bite are normally a sharp, immediate pain in the body part bitten. Poisonous insects and insect-like creatures that may be encountered at former Seneca Army Depot sites include the following:

- Bees (honeybees, bumble bees, wasps, and hornets);
- Scorpions;
- Caterpillars; and
- Beetles/Bugs.

Site personnel will comply with the following work practices:

- Personnel with a known hypersensitivity to bee, wasp, or hornet stings will inform the PM or SHSO of this condition prior to performing site activities.
- Personnel with a known hypersensitivity condition will keep emergency medication in their possession.
- 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 SHSO to receive treatment, per **Figure A-7**.

3.4.6 Spiders

The two poisonous spiders that may be encountered on the former Seneca Army Depot project are the Brown Recluse and the Black Widow. 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.

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.

Persons that 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.

First Aid

- If possible, catch the spider to confirm its identity. Even if the body is crushed, save it for identification.
- Clean the bitten area with soap and water or rubbing alcohol.
- To relieve pain, place an ice pack over the bite.
- Keep the victim quiet and monitor breathing.

- Seek immediate medical attention.

3.4.7 Bloodborne Pathogens

Bloodborne pathogens enter the human body and blood circulation system through punctures, cuts or abrasions of the skin or mucous membranes. They are not 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.

Potential bloodborne pathogen exposures include:

- Contact with contaminated medical equipment, medical waste, sharps and other potential infectious material
- Medical emergency response operations such as administering first aid or CPR
- Contact with human wastes such as domestic sewage
- All body fluids in situations where it is difficult or impossible to differentiate between body fluid types

An indoctrination to the bloodborne pathogens standard (29 CFR §1910.1030) will be provided to all employees either during their first aid training, and/or during the initial site health and safety meeting. It is important to recognize the concept of universal precautions. Universal precautions require one to assume that all blood and bodily fluids contain pathogens and require the use of protective barriers to prevent exposure. Latex gloves and CPR barriers will be available in the first aid supplies stored at each site and should be used prior to attending to a victim’s needs. Additionally, washing any body part or surface that has been contaminated with blood is an important part of the universal precautions. The SHSO should be notified of any potential contact with blood or bodily fluids resulting from first aid or CPR administered on the job.

4.0 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

Parsons' site personnel and Parsons' subcontractors performing duties or working in areas where there is potential for exposure to hazardous material will meet the training requirements of OSHA 29 CFR §1910.120 before working on-site. Site personnel and their duties are outlined below.

1. Parsons Project Manager is ultimately responsible for all Parsons' personnel and subcontractors on-site. The Project Manager is responsible for providing timely and sufficient funding in support of the needs of the project for personnel and equipment. The PM is the point of contact for all contractual issues and ensures that cost and schedule are tracked, reported and adjusted as appropriate. Parsons' Project Manager for this project is:

   Mr. Todd Heino, P.E.
   Parsons
   150 Federal Street, 4th Floor
   Boston, MA 02110
   Office Phone: 617-449-1405 FAX: 617-946-9777
   Cell Phone: 339-206-7413

   The acting Project Manager, in the event that the Project Manager is absent, is:

   Mr. John Lanier
   Parsons
   180 Lawrence Bell Drive, Suite 104
   Williamsville, NY 14221
   Office Phone: 716-633-7074 ext 222 FAX: 716-633-7195
   Cell Phone: 716-998-3485

   This contact information will be posted on the bulletin board in the field office.

2. The Program Health and Safety Officer (PHSO), Mr. Tim Mustard, CIH (Parsons Denver office), is responsible for oversight and direction to ensure full compliance with all health and safety issues at the project site. The PHSO will oversee all aspects of site safety, including: the preparation of this HASP, performance of the initial site-specific training, and the periodic auditing of site operations to verify OSHA, COE, and HASP compliance.

3. The Site Health and Safety Officer (SHSO), Mr. Ben McAllister (Parsons Boston office), is responsible for carrying out the provisions of the HASP with regard to site work, and will ensure that all personnel entering the site understand and adhere to the provisions of the HASP. The SHSO has "stop work" authority and is responsible for ensuring that personnel meet the training and medical monitoring requirements of 29 CFR §1910.120. Any changes in the

provisions of the HASP shall be made in writing by the SHSO and shall be approved by the PHSO or Corporate Health and Safety Officer. Any personal protective equipment upgrades or downgrades shall be documented in writing by the SHSO. The SHSO shall have the authority to stop an operation or site work if, in the opinion of the SHSO, the site conditions or the manner in which the work is being conducted, presents a hazard to site personnel, surrounding populations, or the environment. The SHSO is responsible for all air monitoring. Air monitoring requirements for this project are set forth in **Section 8.0** of this document.

4. Field personnel will be involved in sampling, inspections, field monitoring, and decontamination, as specified in the Work Plan for each individual site. Site personnel will only perform tasks for which they have received appropriate training.

5. For sites where MEC / MPPEH is involved, designated UXO personnel will be responsible for locating and identifying unexploded ordnance on the site and for clearing access pathways to sampling and work locations. UXO personnel shall not move or dispose of any UXO found, unless they are properly trained and certified to do so (i.e., they are trained UXO technicians). The UXO Safety Officer (UXOSO) will be responsible for all UXO safety on site. The UXOSO has "stop work" authority if any MEC operation threatens work or public health or safety.

A list of program contacts and other important project related information is provided as **Table A-9**.

Site visitors will not be allowed into active work areas [also referred to as exclusion zones (EZs)] without making arrangements with the resident Army client and Parsons well in advance of the planned visit. In addition, Parsons will deny visitors access to any active EZ unless they present written documentation of the following items:

- Appropriate, up-to-date hazardous waste operations training;
- Current participation in a medical surveillance program per requirements of 29 CFR § 1910.120; and
- Evidence of the ability to use a respirator in accordance with 29 CFR §1910.134.

Visitors will not be allowed into EZs associated with UXO operations unless they provide written evidence that they are UXO-qualified personnel or UXO-qualified personnel accompany them. Also, all MEC / MPPEH operations will be suspended when non-UXO qualified personnel are in a UXO EZ.

While Parsons may be able to provide a limited amount of PPE, site visitors will be responsible for coordinating PPE needs and available supplies with Parsons prior to their arrival at the site. Site visitors will be required to wear appropriate PPE, as dictated by Parsons and the HASP 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.

Once visitors have provided Parsons with necessary copies of essential certifications and other information to document their acceptability to visit a site, they will be briefed by a qualified person on the hazards expected on the site and the safety and health controls required. They will be escorted by the site manager, or his/her designee, and will sign the visitor sign-in/out log. All visitors will be required to adhere to advice and instructions provided by the Parsons' Site manager and SHSO. 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. Visitors to the site not satisfying the above conditions will be denied access to active sites under Parsons' control.

Table A-10 describes the responsibilities of all on-site personnel.

5.0 HEALTH AND SAFETY TRAINING

All site personnel involved in hazardous work should meet the training requirements set forth in 29 CFR §1910.120(e). All employees engaged in hazardous waste site work should have received 40 hours of training in hazardous waste site operations and safety procedures. In addition, all field personnel will have had at least three days of field experience under the supervision of a trained supervisor. On-site personnel must provide evidence that their annual HAZWOPER refresher training is current.

All of the project’s direct line management, including the Project Manager, the Site Manager, Team Leaders, the SHSO, and the UXOSO should also receive an additional 8 hours of specialized training focused specifically on the implementation, monitoring and maintenance on the safe site operations prior to the start of the fieldwork. All site personnel should receive annual updated training. Additional training should be provided to those personnel designated to respond to site emergencies. Additional training should be provided to those employees who may be exposed to unique or special hazards (e.g. UXO hazards) at the sites. At least two individuals certified in First Aid and CPR will be on-site during all active operations.

On-site safety training will consist of a detailed safety meeting and training session prior to the beginning of any fieldwork. This meeting will cover all site activities and the corresponding AHAs. All site personnel are required to attend this meeting. Other topics to be discussed will include donning and doffing of personnel protective equipment as well as a brief toxicological review of site-specific known and suspected contaminants. Employees will also review this HASP and the Project Safety Plan (PSP). Sign-off sheets are included in **Attachment A-2**.

Daily safety meetings will also be conducted prior to each day's activities. These meetings will cover the safety measures to be employed during that day's activities and the emergency response and evacuation procedures for each work site and work crew. The safety briefing will also include the days expected weather conditions, any expected visitors, lessons learned, near misses and accidents.

A template site orientation documentation form is contained in **Attachment A-2**, On-Site Documentation Forms. Certificates of training (40-hr, 8-hr refresher, etc) will be maintained in the project file by the SHSO.

5.1 INITIAL SITE TRAINING

The PHSO, SHSO and, as necessary, the UXOSO is responsible for developing a site-specific occupational hazard training program. The PHSO, SHSO and/or the UXOSO are responsible for providing training to all Parsons personnel, Parsons’ subcontractors, or visitors to Parsons’ sites at SEDA. This initial site training for sites workers shall consist of a review of this HASP and shall cover the following topics:

- Site Personnel and Duties;
- Site Description;
- Site Characterization;
- Chemical and Physical Hazards;
- Heat Stress and Cold Stress;
- Biological Hazards (poison ivy, snakes, spiders, and bloodborne pathogens);
- Site Layout, Site Control Measures, and Work Zones;
- Personal Protective Equipment (PPE) donning and doffing;
- Air and personnel monitoring
- Safe Work Practices and Engineering Controls;
- Emergency Response Plan;
- Evacuation Procedures;
- Emergency and Personal Protective Equipment;
- Emergency Telephone Numbers;
- Directions to Occupational clinic and Hospital;
- Medical Surveillance Requirements;
- Health and Safety Training;
- Workers Compensation;
- Blood borne pathogens;
- UXO Recognition and hazards; and
- Accident Investigation and Reporting.

All proposed project personnel will be required to complete this training prior to being allowed to work on site. Each worker's attendance and completion of this training will be documented by the PHSO, the SHSO, or the UXOSO. After the training, each field team member will sign the form in **Attachment A-2** attesting to their understanding and acceptance of the SHSP and copies of these forms will be kept on file.

All field inspectors will be provided training in the use of instruments or equipment prior to their assignment to operate these instruments or equipment.

Personnel 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.
- Notify the emergency response personnel when an emergency occurs.

The buddy system will be used at all times when employees are within an exclusion zone (EZ).

5.2 SAFETY BRIEFINGS

Safety briefings shall be conducted each morning while working at the site and at the beginning of new operations, changes in site conditions, and changes in operating procedures due to weather, new equipment, or additional site information. Topics will include a review of safety procedures for that day's activities. Records of attendance and topics discussed will be maintained by the SHSO.

The topics covered in the safety briefings will include, as appropriate:

- Evacuation routes and emergency procedures;
- Use of additional PPE;
- Terrain hazards;
- Weather hazards;
- New chemical or toxicological information;
- Periodic review of portions of the site-specific SSHP; and
- Review of site incidents, follow-up, and corrective measures.

5.3 CPR/FIRST AID TRAINING

At least two individuals certified in First Aid/CPR will be on site to provide immediate response in the event of an injury, pending the arrival of medical assistance and emergency response personnel at the site. These selected employees are trained in CPR and first aid for emergency use only.

5.4 EMERGENCY RESPONSE TRAINING

All site personnel 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 **Section 14**.

5.5 HAZARD COMMUNICATION TRAINING

In accordance with the OSHA Hazard Communication Standard (29 CFR §1920.1200 and CFR §1926.59), copies of all material safety data sheets (MSDSs) for hazardous chemical materials that are used during site operations or that are present on-site will be available from the SHSO. The SHSO will conduct hazard communication training in accordance with 29 CFR §1920.1200 and CFR §1926.59 and the Hazard Communication Program (See **Section 9**). Training will include, but not limited to, all hazards or potential hazards associated with site activities and any hazardous chemical materials brought to or found on site.

5.6 VISITOR TRAINING

Visitors to the support zone will receive training in the following areas:

- Emergency signals and procedures.
- Work areas and locations.
- Names of field team leader and SHSO.
- Location and description of potential hazards and risks.
- A short briefing about chemical and physical hazards found on-site.
- Areas of the site that are closed to visitors.
- The site excavation plan and emergency procedures.
- Other topics as deemed appropriate.

Site visitors wishing to enter the EZ during site operations will be subject to the same site specific and hazard information training as specified for site personnel. See Section 4 for additional visitor responsibilities and restrictions.

5.7 UXO TRAINING

The UXO technician will have graduated from a and meet the requirements of CEHNC OE-CX Memorandum dated 14 March 2005, Implementation of Defense Explosives Safety Board Technical Paper 18, Minimum Qualifications for UXO Technicians and Personnel, Military Munitions Center of Expertise Interim Guidance Document 05-01, and will have a UXO roster database number.

The UXOSO will provide site-specific basic UXO Recognition and Avoidance Training. The following areas will be included:

1. Basic UXO and UXO component recognition training;
2. UXO avoidance and reporting procedures; and
3. Specific hazards related to UXO.

5.8 TRAINING DOCUMENTATION

Documentation of training requirements is the responsibility of each employee/visitor. Written documentation verifying compliance with 29 CFR §1910.120 (e)(3), (e)(4) (as applicable) and (e)(8) must be submitted to the SHSO prior to entering the EZ. Documentation of worker's current training credentials and site-specific training will be kept in the project file.

6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 LEVELS OF PROTECTION

The tasks associated with the various areas of concern will require use of personal protective equipment (PPE) to properly protect personnel performing tasks, and to mitigate the hazards, which may be present. The levels are described below and reflect the minimum PPE required based on the task and the AHA. They are in accordance with the OSHA, DoD, and Parsons safety standards and are subject to change through upgrading based on site conditions.

6.1.1 Level D

Level D personal protective equipment (PPE) will be worn for initial entry on-site and initially for all activities at SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001. Level D PPE will consist of:

- Standard work clothes with long pants;
- Hearing protection as required based on noise level monitoring;;
- Safety glasses (goggles must be worn when splash hazard is present);
- Protective-toe safety boots[1];
- Hard hat when an overhead hazard exists and when working around heavy equipment[1];
- Nitrile outer gloves (must be worn during all activities requiring contact with soils); and
- Leather gloves (drilling operations).

6.1.2 Level C

Although not expected at the sites, the level of PPE will be upgraded to Level C if the concentration of volatile organic compounds which can be detected with a photo-ionization detector (PID) in the breathing zone equals or exceeds the specified action limits and the contaminants of concern have characteristic warning properties appropriate for air purifying respirators (e.g. taste, odor). Level C PPE will consist of the following equipment:

- Full-face air-purifying respirator;
- Combination HEPA filter/organic vapor cartridges; (Cartridges will be disposed at the end of each day’s use);
- Poly-coated Tyvek® suits;
- Protective-toe safety boots[1];

[1] UXO technicians are not required to wear protective toe footwear when operating magnetometers or hard hats when bending over to handle MEC.

- Nitrile outer gloves and PVC inner gloves must be worn during all activities requiring contact with soils;
- Hard hat when an overhead hazard exists and when working around heavy equipment[1].

6.1.3 Level B (Retreat)

If the concentration of volatile organics that can be detected with a PID equals or exceeds the specified action levels, all field personnel associated with the project will immediately retreat to a location up-wind of the source of contamination. At this point the SHSO must consult with the PHSO to discuss appropriate actions.

6.2 SUMMARY OF ACTION LEVELS AND RESTRICTIONS

It is imperative that action levels are established prior to any task being performed. The action levels must be in accordance with accepted OSHA standards and be sufficient to properly mitigate the hazard. The action levels listed below are subject to change based on other site conditions and are the minimum conditions under which action will be taken.

6.2.1 Conditions for Level D:

All areas

- PID readings < 1 ppm above background levels.

6.2.2 Conditions for Level C:

All areas

- PID readings > 1 ppm and < 25 ppm above site background, and
- Draeger® Benzene 2/a Tube readings <=0. 5 ppm, or
- Any visible fugitive dust emissions from site activities that disturb contaminated soil

6.2.3 Conditions for Level B (or retreat):

All areas

- PID readings > 25 ppm above site background, or
- Draeger® Benzene 2/a Tube readings > 0.5 ppm.

6.2.4 OSHA Requirements for Personal Protective Equipment

All PPE used during the course of this project must meet the following OSHA standards:

Type of Protection	Regulation	Source
Eye and Face	29 CFR 1910.133 29 CFR 1926.102	ANSI Z87.1-1968
Respiratory	29 CFR 1910.134 29 CFR 1926.103	ANSI Z88.1-1980
Head	29 CFR 1910.135 29 CFR 1926.100	ANSI Z89.1-1969
Foot	29 CFR 1910.136 29 CFR 1926.96	ANSI Z41.1-1967

ANSI = American National Standards Institute

The respirator equipped with the appropriate cartridges specified for use in Level C protection must be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910.1025; 29 CFR 1910.134).

Based on performance criteria of air purifying respirators, they cannot be worn under the following conditions:

- Oxygen deficiency;
- IDLH concentrations;
- High relative humidity; and
- If contaminant levels exceed designated use concentrations.

6.2.5 Work Changes

If work tasks are added to the SOW after approval of the HASP, the Corporate HSO or PHSO shall identify and assess the task hazards, complete and sign an AHA form and designate the level and type of PPE to be used during conduct of the task. The new AHA, along with any other additions, changes, or modifications to the approved HASP shall be approved by the client and Corporate HSO and PM prior to implementing the changes. In the event of an emergency change the approval can be verbal, all other changes must be approved in writing.

In the event that PPE is ripped, torn, or unserviceable, it will be removed and replaced as soon as possible. Depending on the circumstances the individual with the defective PPE may be required to cease working until the PPE issue can be corrected.

6.3 EQUIPMENT

First aid kits for the treatment of minor injuries and burns shall be maintained on-site. The first aid kits shall be inspected by the SHSO at least weekly to ensure adequate supplies are available and in proper working order. The contents and number of first aid kits shall be determined by EM-385-1-1, Section 03.B and approved by the SHSO prior to the start of site activities. **Table A-11** lists what EM 385-1-1 requires.

At a minimum, the following general emergency equipment will be available at the site at all times:

Equipment	Location
Fire Extinguishers	Two (10ABC) in any vehicle used to transport explosives; additionally, one in each piece of heavy equipment or site vehicle.
Emergency Eyewash	One for each field team in a location in immediate proximity to the work site and one at the field office.
First Aid Kit	One for each field team in a location in immediate proximity to the work site, one in each site vehicle, and one at the field office.
Stretchers	At least one in the field/site office, and one in the SHSO's vehicle.

7.0 MEDICAL SURVEILLANCE

All personnel conducting work in the exclusion and contamination reduction zones shall be participants in a medical surveillance program that meets the criteria set forth in OSHA 29 CFR Part 1910.120. This rule requires that employees engaged in hazardous waste site work receive a medical examination at least annually, and that they be certified by the examining physician to wear a respirator without restrictions. All subcontractors performing hazardous waste work shall be enrolled in a medical surveillance program. Written certification of completion of medical exams will be maintained in the project by the SHSO. The medical surveillance program requires all field personnel receive medical examinations:

- Prior to site activities;
- Annually;
- Upon termination;
- Following exposure or injury; and
- Additionally as needed on a case-specific basis.

SEDA employees who will be performing activities in active work areas at SEDA will be required to participate in SEDA's medical surveillance program.

7.1 PHYSICAL EXAMINATIONS

OSHA (29 CFR Part 1910.120 [f]) requires the enrollment of personnel engaged in operations involving hazardous materials in a medical surveillance program. The content of the examination must be sufficiently detailed to determine an individual's fitness for duty, including ability to work while wearing PPE, specifically respirators. The results of these examinations will be kept on file at least 30 years after employment has been terminated.

All personnel engaged in hazardous waste operations on this project will present the SHSO with a physician's certification of completion of a comprehensive medical monitoring examination within 12 months of the beginning of field activities. Additionally, the SHSO will ensure that workers' medical monitoring remain current throughout the duration of their involvement on the field project. The certification shall attest to the individual's fitness for duty, including his or her ability to work while wearing PPE (e.g., respirator, impermeable clothing, etc.). Copies of employees' health certifications will be provided to the SHSO prior to the commencement of field operations.

8.0 EXPOSURE MONITORING/AIR SAMPLING PROGRAM

8.1 MONITORING REQUIREMENTS

Air monitoring of the workers breathing zone will be conducted continuously during all intrusive activities. Organic vapors will be monitored with a photo-ionization detector (PID) equipped with an 11.7 eV lamp. Background PID levels will be taken initially upwind from planned site activities. If, during site activities, sustained PID readings reach 1 ppm above background levels (and are sustained for 15 minutes), then all personnel will upgrade to Level C PPE. Upon upgrading to Level C, a Draeger® Benzene 2/a color detector tube (part number 8101231) will be used to verify the absence of Benzene. If Benzene is detected at greater than 0.5 ppm, all personnel will immediately retreat to an up-wind location and consult with the SHSO to determine whether to (1) don Level B protection and continue work, or, (2) wait until the concentration of volatile organics falls below the established action levels for Level B work (see **Section 6**).

Should visible dust emissions occur in potentially impacted areas, real time aerosol monitoring or upgrading to Level C may be warranted for affected personnel.

8.2 COMMUNITY AIR MONITORING PLAN

Real-time air monitoring for volatile compounds and particulates at the perimeter of the EZ will be performed.

- 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, (work areas relative to the excavation) and, if necessary, evacuation procedures.

- Volatile organic compounds will be monitored at the downwind perimeter of the EZ if total organic vapors in the worker breathing zone exceed 1 ppm above background or at least twice every hour. Monitoring will be conducted with a PID equipped with an 11.7 eV lamp. If total organic vapor levels exceed 1 ppm above background at the perimeter, excavation activities must be halted and monitoring continued under the provisions of a Vapor Emission Response Plan (see **Section 8.2.1**). All readings must be recorded and be available for review.

- If dust becomes a concern, particulates will be monitored downwind of the hot zone with a portable particulate monitor that will have an alarm set at 150 $\mu g/m^3$. Background particulate levels will be established at the start of work. If downwind particulate levels, integrated over a period of 15 minutes, exceed 150 $\mu g/m^3$, then particulate levels upwind of the survey or work site will be measured. If the downwind particulate level is more than 100 $\mu g/m^3$ greater than the upwind particulate level, then excavation activities will be stopped and dust suppression techniques will be employed. Activities will also cease and corrective action will be taken if particulate levels exceed 2.5 times the background particulate level. All readings must be recorded and be available for review. These action levels will be modified if particulates are better characterized and identified.

8.2.1 Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 1 ppm above background at the perimeter of the EZ, excavation activities will be halted or odor controls will be employed, and monitoring continued. If the organic vapor level decreases below 1 ppm above background, excavation activities can resume provided:

- The organic vapor level 200 ft. downwind of the hot zone or half the distance to the nearest residential or commercial structure, whichever is less, is below 1 ppm over background, and
- More frequent intervals of monitoring, as directed by the SHSO, are conducted.

If the organic vapor level is greater than 1 ppm above background at the perimeter of the EZ, work activities must be shut down or odor controls must be employed. When work shut-down occurs, downwind air monitoring as directed by the SHSO will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section (**Section 8.2.2**).

8.2.2 Major Vapor Emission

If any organic levels greater than 1 ppm over background are identified 200 feet downwind from the work site, or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted or odor controls must be implemented.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 1 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the hot zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If either of the following criteria is exceeded in the 20 Foot Zone, the Major Vapor Emission Response Plan (**Section 8.2.3**) shall be automatically implemented.

- Sustained organic vapor levels approaching 1 ppm above background for a period of more than 30 minutes, or

- Organic vapor levels greater than 5 ppm above background for any period.

8.2.3 Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

1. The local police authorities will immediately be contacted by the SHSO and advised of the situation.

2. Frequent air monitoring will be conducted at 30 minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the SHSO; and

3. All Emergency contacts (see **Table A-9**) will go into effect, as appropriate.

9.0 STANDARD OPERATING SAFETY PROCEDURES, ENGINEERING CONTROLS, AND SAFE WORK PRACTICES

Safe work practices and engineering controls shall be implemented to comply with OSHA 29 CFR §1910.120 to limit employee exposure to hazardous substances or conditions. The use of PPE has limitations and presents hazards of its own, such as physical stress and interference with peripheral vision, calling for the consideration and implementation of work practices and engineering controls prior to beginning site tasks and before the use of PPE is instituted. The safe work practices and engineering controls described below apply to general site procedures.

9.1 SAFE WORK PRACTICES

The following work practices are intended for use when site activities involve potential exposure to hazardous substances or conditions.

1. Certain SWMUs are known to contain various types of MEC and/or MPPEH; therefore, all ingress and egress and in and around movement on the site shall be along cleared roads and pathways, which will be clearly marked with surveyors flags, wooden stakes, etc.. **PERSONNEL SHALL NOT STRAY FROM THE CLEARED PATHWAYS AND ROAD! PERSONNEL SHALL NOT TOUCH, KICK, OR OTHERWISE DISTURB ANY MATERIALS WHICH MAY BE MEC and/or MPPEH.**
2. The buddy system will be utilized at all times within the EZ.
3. Entry into and exit from zones within the site must be made via the established access control points.
4. Prescribed PPE must be worn as directed by the SHSO or the UXOSO.
5. Assumptions will not be made concerning the nature of materials found on the site. Should any unusual situations occur, operations will cease, and the SHSO, UXOSO, and the Site Manager will be contacted for further guidance.
6. Communication hand signals must be understood and reviewed regularly.
7. Ground fault circuit interrupters shall be used on all field electrical equipment. Improperly grounded/guarded tools shall be tagged out-of-service and the Site Manager shall be notified immediately.
8. If any piece of equipment fails or is found to be in need of repair, it will be immediately tagged out-of-service and the Site Manager shall be notified. This equipment will not be returned to service until repairs have been completed and the equipment has been tested by a competent individual.
9. Unsafe conditions shall be reported immediately.
10. Unusual odors, emissions, or signs of chemical reaction shall be reported immediately.

11. Workers will minimize contact with hazardous materials by:
    - Avoiding areas of obvious contamination
    - Using poly sheeting to help contain contaminants
    - Avoiding contact with toxic, hazardous or potentially explosive materials
12. Only essential personnel will be permitted in the work zones.
13. Whenever possible, personnel will be located upwind during material handling.
14. Upon detection of odors or once an employee begins experiencing any signs or symptoms of exposure to toxic materials (this information will be discussed during the daily meeting and can be found on the appropriate Chemical Hazard Evaluation Sheets), the employee will alert the rest of the team, immediately leave the area and report the incident to the SHSO, the UXOSO, and Site Manager. The work site shall be evacuated when evidence of a situation that could result in possible hazardous condition is identified.
15. Smoking will be allowed only in designated areas of the SZ.
16. Talking on cellular phones while driving, even with a headset, is prohibited (see Parsons cell phone policy **Figure A-8**).

9.2 SANITATION

9.2.1 Drinking Water

Only approved potable water systems shall be used for the distribution of drinking water. Tap water supplies located in several administrative buildings (Buildings 123 and 125) at SEDA can be used as drinking water. Drinking water supplied from other sources approved by Federal, State, or local health authorities can also be used. A drinking water cooler will be provided in the site office.

Portable containers used to dispense drinking water shall be tightly closed and equipped with a tap. Containers will be clearly marked with their contents and shall not be used for other purposes. Water shall not be dipped from containers. Where single service cups are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

Outlets dispensing non-potable water will be conspicuously posted "**CAUTION – WATER UNFIT FOR DRINKING, WASHING, OR COOKING.**"

9.2.2 Toilets

Permanent sanitary facilities are not available at, or in the immediate vicinity of, any of the SWMUs of concern under this project. Therefore, one of the following types of sanitary 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.

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

Number of employees	Minimum facilities (per sex)
1 to 10	One
11 to 20	Two
21 to 199	One toilet seat and one urinal for every 40 workers
200 or more	One toilet seat and one urinal for every 50 workers

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.

Permanent sanitary facilities are available in Building 125.

9.2.3 Washing Facilities

Washing facilities will be provided at the decontamination facilities. The main decontamination facilities at SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001 will be located in the CRZ approximately 50 meters from the SZ. These facilities will be used for vehicle, heavy equipment, and personnel decontamination. Each washing facility will be maintained in a sanitary condition and provided with water (either hot and cold running water or tepid running water), soap, brush, and individual means of drying.

9.2.4 Personal Hygiene Practices

The following personal hygiene practices will apply to fieldwork conducted during this project:

1. No smoking or chewing of tobacco or gum shall be allowed within the EZ or CRZ.
2. No eating or drinking shall be allowed in the EZ or CRZ.
3. On-site personnel shall remove protective clothing and wash face and hands prior to leaving the CRZ.
4. Disposable outerwear will be placed in clearly labeled drums located in the personnel decontamination area. Drums will be staged on-site at a central location for later disposal.

9.3 FIRE CONTROL

9.3.1 Fire Prevention

Explosions and fires not only pose the obvious hazards of intense heat, open flames, and dense smoke, 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 will follow the guidelines listed below and EM 385-1-1 Section 9, 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 MEC and MPPEH work sites, or in the vicinity of, operations which may present a fire hazard, and the area will 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 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;
- 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 SHSO.

9.3.2 Protection

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

- Flammable/combustible liquid storage areas will have at least one 4A:20:B:C fire extinguisher located within 25-75 feet, marked with the appropriate fire symbol and no smoking signs;
- The field office will be equipped with a fire extinguisher with a rating of not less than 10:A:B:C;
- At least one portable fire extinguisher having a rating of not less than 20:A:B:C will be

located at each work site;

- At least one portable fire extinguisher having a rating of not less than 20:B:C will be located at flammable storage areas and in each vehicle used for site work;
- At least one portable fire extinguisher having a rating of not less that 5:B:C will be located on each bulldozer or front-end loader used at the site;
- At least one portable fire extinguisher having a rating of not less that 10:B:C will be located on each cranes used at the site;
- At least one portable fire extinguisher having a rating of not less that 20:B:C will be located on each tank truck used for transporting flammable or combustible liquids;
- At least one portable fire extinguisher having a rating of not less that 2A:10B:C will be located on each truck with a 1.5 ton carrying capacity or greater; 2 fire extinguishers with a rating of not less than 2A:10B:C are required if the bus or truck is used to transport flammable cargo;
- At least one portable fire extinguisher having a rating of not less that 10B:C will be located on each vehicle used to transport explosive materials.

9.4 CONFINED SPACE ENTRY PROCEDURES

Confined space is not an expected condition of work within this project. If confined space entry becomes necessary during the implementation or performance of the work, a confined space entry AHA will be added to this HASP and appropriate training will be provided for designated individuals prior to allowing any confined space entry. Parsons confined space work policies are included as **Attachment A-4**.

9.5 SITE INSPECTIONS

Site inspections will be conducted daily by the SHSO and UXOSO to ensure that site work is accomplished in accordance with the approved safety plan, contract requirements, and federal regulations. Observations and findings of daily inspections will be documented in the safety logs and if a form was used it will be made available as appropriate and maintained in the project files.

9.6 POWER TOOL OPERATION, HAND TOOL OPERATION, MATERIAL LIFTING, HEAVY EQUIPMENT OPERATION, AND MOTORIZED EQUIPMENT OPERATION

Safe practices for all anticipated work activities are included as AHAs in **Attachment A-1** of this document. Additional information regarding Parsons' standard operating procedures and policies is provided as follows:

Subject:	Source of Additional Information:
Power and Hand Tool Operation	**Attachment A-5**
Motor Vehicle and Heavy Equipment Operation	**Attachment A-6**

9.7 HAZARD COMMUNICATION PROGRAM

The OSHA Hazard Communications Standard (29 CFR§ 1910.1200) was promulgated to ensure that all chemicals would be evaluated and information regarding the hazards associated with these chemicals would be communicated to employers and employees. The goal of the standard is to reduce the number of chemically related occupational illnesses and injuries.

In order to comply with the OSHA Hazard Communication Standard, this written program has been established by Parsons for work at SEDA. All Parsons and subcontractor personnel working at SEDA are included in this program. Copies of this written program will be available for review by any employee at the field office, by contacting the SHSO, UXOSO or the PHSO.

9.7.1 Hazardous Chemical Inventory List

The Site Manager or his/her designee must compile a list of hazardous chemical substances that Parsons' employees and subcontractors bring to the site. An updated copy of the hazardous chemical substance list shall be maintained in the Boston office and on-site. As new substances are purchased or old ones are discontinued, the inventory shall be updated to reflect these changes.

9.7.2 Material Safety Data Sheets (MSDS)

MSDSs are prepared by manufacturers or producers to provide specific information on the safety precautions and health effects of a particular chemical or mixture. The MSDS 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 MSDS preparation
- Name and address of manufacturer

When chemicals are ordered, the Site Manager or his designee will specify on the purchase order that chemicals are not to be shipped without the applicable MSDSs. When chemicals and MSDS arrive, the SSHO or his designee will review them for completeness. Should any MSDS be missing or incomplete, the manufacturer will be notified immediately and arrangements made to correct the problem as soon as possible. Parsons or its subcontractors will not accept any shipped chemical materials without an MSDS.

A complete file of MSDSs for all hazardous chemicals to which site personnel may be exposed will be kept on either a clip board or in a binder in the site office. In the event that a MSDS is missing the employee should immediately contact the SHSO, UXOSO or PHSO.

9.8 LABELS AND SIGNS

The Hazard Communication Standard requires that hazardous chemicals be labeled by manufacturers. The label must contain the following:

- Chemical identity
- Appropriate warnings
- Name and address of manufacturer, importer, or other responsible party.

If the labels are incomplete or missing, Parsons' personnel will refuse the shipment.

When chemicals are transferred from the manufacturer's container to secondary containers, the SHSO or UXOSO will ensure that the containers are labeled with the identity of the chemicals and appropriate hazard warnings. Labels for secondary containers can be obtained from the SHSO.

Signs, tags, and labels shall be provided at the site to give adequate warning and caution of hazards and instruction and directions to on-site personnel and the public. Section 8 of EM 385-1-1 (USACOE, 3-Nov 2003) shall be observed.

9.9 MATERIAL HANDLING PROCEDURES

9.9.1 Material Lifting

Many types of objects are handled in normal day-to-day operations. Care should be taken in lifting and handling heavy or bulky items because they are the cause of many joint and back injuries. The following fundamentals address the proper lifting of materials to avoid joint and back injuries:

- The size, shape, and weight of the object to be lifted must be considered. Site personnel will not lift larger or heavier objects than they can handle comfortably. The rule of thumb is to not lift any object weighing more than 50 pounds alone;
- A firm grip on the object is essential, therefore the hands and object shall be free of oil, grease, and water, any of which could prevent the establishment of a firm grip;
- The item will be inspected prior to lifting for metal slivers, jagged edges, burrs, rough or slippery surfaces and pinch points;
- Gloves shall be used, where necessary and prudent, to protect the hands;
- The hands, and especially the fingers, shall be kept away from any point that could cause them to be pinched, crushed, punctured or cut, especially when setting the object down;
- The feet will be placed far enough apart to ensure good balance and stability during lifting and carrying;
- Personnel will ensure that solid footing is available prior to lifting the object;
- When lifting, get as close to the load as possible, bend the legs at the knees, and keep the back as straight as possible;
- To lift the object, the legs are straightened from their bending position;
- Never carry a load that you cannot see over or around;
- When placing an object down, the stance and position are identical to that for lifting: with the back kept straight and the legs bent at the knees, the object is lowered;
- Back support devices will be provided to aid in preventing back injury during lifting activities, if requested; and
- Materials and objects will not be moved over or suspended above personnel unless positive precautions have been taken to protect the employees from falling objects and materials.

When two or more people are required to handle an object, coordination is essential to ensure that the load is lifted uniformly and that if at all possible the weight is equitably divided between the individuals carrying the load. One person will be designated as “leader” of the carrying crew from the time the load is lifted until it is set down. The leader will direct the pick up, transfer, set down and release of the load, to ensure coordination. When carrying the object, each person, if possible, shall face the direction in which the object is being carried.

9.9.2 Material Handling

On-site personnel shall avoid contact with potential MEC and MPPEH, unidentified metal objects, or contaminated substances to the fullest extent possible. Only UXO personnel may dig or handle MEC and MPPEH items or components. All investigation-derived waste materials (PPE, decontamination waste, excess drill cuttings, and well purge/development water) will be placed in 55-gallon drums and labeled appropriately. The drums will be temporarily stored on-site awaiting characterization results, in a secure area specified by the Site Manager. Under no circumstances is the waste to leave the site prior to characterization and subsequent disposal of the waste materials.

9.10 DRUM/CONTAINER HANDLING PROCEDURES AND PRECAUTIONS

The handling of HTRW drums and containers shall be kept to the minimum. Drum/container handling procedures and precautions presented in Section 28.H of the Safety and Health Requirements Manual (USACOE, 1996) shall be observed. Note: This section of the Safety and Health Requirements Manual is not included in the Nov. 3, 2003 version of EM 385-1-1. An AHA for drum handling is included in **Attachment A-1**.

9.11 LOCKOUT/TAGOUT

Hazardous energy (lockout/tagout) conditions are not expected at the sites. Should this change for SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001, an AHA will be developed for lockout/tagout procedures and added to this HASP. Necessary site-training will be conducted prior to the initiation of any process requiring lockout/tagout. **Attachment A-7** contains Parsons' lockout/tagout energy control procedures.

9.12 GUARDING OF MACHINERY AND EQUIPMENT

All machinery and equipment that is designed to have a guard will be equipped with a functional guard, and will be operated according to manufacturer's instructions. All reciprocating, rotating, and moving parts of equipment shall be guarded if exposed to contact by employees or otherwise create a hazard as required by EM 385-1-1 (USACOE, 3-Nov 2003).

9.13 FALL PROTECTION

Work at heights is not anticipated as part of the work scope at SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001. If work at heights occurs, safety practices presented in Section 21 of the Safety and Health Requirements Manual (USACOE, 3-Nov-03) and Parsons Fall Protection Program (**Attachment A-9**) shall be followed.

9.14 ENGINEERING CONTROLS

As part of the AHA that is performed prior to any field activity, the PHSO will examine each task and recommend engineering controls for each action, as applicable. These controls will be followed by all site personnel to ensure tasks are completed in the safest possible manner.

9.15 ILLUMINATION

Illumination requirements presented in Section 7 of the *Safety and Health Requirements Manual* (EM-385-1-1, 3 Nov 2003) shall be observed. Construction areas, stairs, ramps and storage areas where work is in progress must be lighted with either natural or artificial illumination. Minimum illumination intensities for several activities are listed in **Table A-12**. Under no circumstances are any operations involving MEC to be conducted until 30 minutes after sunrise and no later than 30 minutes prior to sunset.

9.16 HAUL ROADS

Temporary construction roads will be built at SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001 sites to allow access during field activities. An AHA for haul roads is presented as part of **Attachment A-1**, which identifies the steps involved, the associated hazards, and the recommended controls.

9.17 EXCAVATION AND TRENCHING

9.17.1 Inspections

Daily inspections of excavations and trenches must be made by a designated competent person. If evidence of potential cave-ins, slides, or water accumulation is found, all work in the excavation or trench must cease until the necessary precautions have been taken to safeguard on-site personnel. A designated competent person must inspect all excavations and trenches after every rainstorm or other possible hazard-increasing occurrence, and safeguards against slides and cave-ins must be increased, as warranted. Relevant OSHA regulations (i.e., 29 CFR §1926.650-652) shall be used as a reference guide for angling of repose and shoring techniques used in excavations and trenches. Added measures must be taken if conditions warrant.

Any mobile equipment, including earth-moving machinery, shall be operated in strict compliance with the manufacturer's instructions, specifications, and limitations, as well as any applicable regulations. The operator is responsible for inspecting the equipment daily to assure that it is functioning properly and safely. This inspection will include all parts subject to faster than normal wear and all lubrication points.

All field personnel shall recognize and avoid hazards associated with motorized equipment; an AHA for working with motor vehicles and heavy equipment is included in **Attachment A-1**. Personnel that observe an equipment condition believed to be unsafe shall advise the equipment operator of the unsafe condition.

9.17.2 Utility Line Identification

The SHSO, UXOSO or site manager shall identify overhead and buried utility lines before invasive site operations (e.g., excavation, trenching or drilling) begin. The locations of any underground installations such as sewer lines and electric lines will be marked before invasive operations begin. Utility companies shall be notified of the proposed work, and they will be required to establish the locations of utility installations before the start of work. All such installations must be appropriately identified for the safety of persons working nearby. If any overhead or buried utility lines exist, the SHSO, UXOSO or site manager shall implement an appropriate safety plan (including an AHA) to protect utility lines from damage or displacement and to protect site personnel from any danger associated with the utility line.

All areas in which invasive operations will be conducted will be swept with a metal detector before work begins. Should any underground obstructions be encountered, the site manager must immediately notify the Parsons PM who in turn will notify the USACE Project Manager and other appropriate personnel for their assistance in identification of the obstruction and its possible removal or re-routing. A pre-drilling/subsurface checklist for intrusive fieldwork is attached in **Attachment A-2**.

9.17.3 Personal Protective Equipment

All site personnel must wear the designated PPE for the task being performed, which is identified in **Section 6** of this HASP. The SSHO and UXOSO will include PPE as part of their daily safety inspections.

9.17.4 Protection Systems (Controls)

Excavations 5 ft or more deep must be shored or sloped in an approved manner unless they are made entirely in stable rock. Sides of trenches above the 5-ft level may be sloped in lieu of shoring, but the slope may not be steeper than 1-1/2 H:1 V.

All protective systems installed at excavation sites must be designed by a registered professional engineer when it is not feasible to attain required slope configurations in accordance with 29CFR §1926.652(b)(1), (2) and (3). A registered engineer must approve sloping or benches greater than 20 ft deep.

The registered professional engineer's recommended protective systems must be documented in sufficient detail to establish compliance with OSHA excavation requirements. The recommendations must be signed by the registered professional engineer, and the report must be maintained at the jobsite.

When manufactured support systems are used, the manufacturer's written specifications, recommendations, and limitations must be maintained at the jobsite.

A designated competent person must monitor the construction and maintenance of the recommended protective systems and their use in excavations.

9.17.5 General Requirements

For each trench where workers are working at depths of 3 ft or more, ladders must be used to provide a safe exit. There must be no more than 25 ft of lateral travel distance to the location of the nearest ladder. No excavated soil, debris or other material will be placed or stored closer than 2 ft from the edge of any excavation. Surface encumbrances that create a hazard must be moved or supported, as necessary.

Personnel shall not be allowed to become positioned, intentionally or unintentionally, under loads that are being mechanically lifted and moved (e.g., by cranes, derrick, front end loaders or steam shovels, forklifts, etc.). When mobile equipment operates adjacent to, or approaches the edge of, an open excavation, a warning system such as barricades, hand or mechanical signals, or stop logs must be used. A competent person must monitor the use of water control and removal equipment. A registered professional engineer must design sloping or benching excavations greater than 20 ft deep.

If the possibility exists in an excavation of an oxygen deficient atmosphere (less than 19.5% oxygen) or an atmosphere in excess of 20% of the lower flammable limit (or lower explosive limit) of a gas, atmospheric testing must be conducted before personnel enter the excavation. Proper respiratory equipment and ventilation must be established for each excavation before personnel enter the excavation.

Walkways and bridges over excavations must be provided with standard guardrails. Adequate barriers must be provided at all excavations. All excavations must be barricaded or covered prior to leaving the job site each day, and upon completion of exploration or similar operations, all excavations must be backfilled unless other arrangements have been made.

Attachment A-11 describes Parsons' policies and requirements regarding safe excavation and trenching activities, also see the AHA for soil excavation in **Attachment A-1** for additional information.

10.0 PROCEDURE FOR SITES CONTAINING MUNITIONS AND EXPLOSIVES OF CONCERN OR MATERIAL POTENTIALLY POSING AN EXPLOSIVE HAZARD

The four areas that are the focus of this HASP may be contaminated with MEC and/or MPPEH. Basic considerations for UXO operations are provided in **Attachment A-12**. This section presents procedures that are required for the sites with potential MEC and/or MPPEH hazards.

10.1 PURPOSE

The purpose of this section is to delineate basic procedures necessary to ensure that Parsons entities and their subcontractors conduct munitions response activities including site survey, geophysical surveys, target acquisition, soil sampling, clearance, segregation, isolation, backfill, in an area known or suspected of containing MEC and/or MPPEH.

10.2 SCOPE

These procedures are applicable to all Parsons' personnel and subcontractors involved in operations performed in areas containing MEC and/or MPPEH. This document is to be used in conjunction with the approved Work Plan, Site-Specific Safety and Health Plan (HASP) and Accident Prevention Plan (APP).

10.3 REFERENCES

The following reference documents were researched in preparing this procedure. This document is not intended to contain all of the requirements needed to ensure compliance, and should be used in conjunction with and supplements project plans, in particular the approved Work Plan, and applicable Federal, state and local regulations. Applicable sections and paragraphs from the documents listed below will be used as references.

- Parsons Corporate Safety and Health Program;
- Parsons Ordnance and Explosives Group SOPs;
- OSHA General Industry Standards, 29 CFR 1910;
- USACE EP385-1-95a, Safety Concepts and Basic Considerations for Unexploded Ordnance;
- USACE EM 385-1-1, Safety and Health Requirements Manual;
- DoD 6055.9-STD, DoD Ammunition and Explosives Safety Standards;
- AR 385-64, Ammunition and Explosives Safety;
- AR 385-10, Army Safety Program;
- DA PAM 385-64, Ammunition and Explosives Standards;
- EP 75-1-2, UXO Support During HTRW and Construction Activities; and
- EP 1110-1-18, Ordnance and Explosives Response.

10.4 DEFINITIONS

The following definitions are included for clarity and representative of all of the possible definitions, which could be included. UXO is a subset of MEC and in an effort to reduce confusion hereafter the term UXO will be used to describe any item containing explosives.

- **Cultural Debris** – Debris found on operational ranges or munitions response sites, which may be removed to facilitate a range clearance or munitions response, that is not related to munitions or range operations. Such debris includes, but is not limited to: rebar, household items (refrigerators, washing machines, etc), automobile parts and automobiles that were not associated with range targets, fence posts, fence wire, and magnetic rocks.

- **Discarded Military Munitions (DMM)** – Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include UXO, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations.

- **Munitions and Explosives of Concern (MEC)** – This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks means: (A) Unexploded ordnance (UXO), as defined in 10 U.S.C. 101(e)(5)(A) through (C); (B) Discarded military munitions (DMM), as defined in 10 U.S.C. 2710(e)(2); or (C) Munitions constituents (e.g., TNT, RDX), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard.

- **Material Potentially Presenting an Explosive Hazard (MPPEH)** – Material potentially containing explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal); or material potentially containing a high enough concentration of explosives such that the material presents an explosives hazard (e.g., equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization or disposal operations). Excluded from MPPEH are munitions within DoD's established munitions management system and other hazardous items that may present explosion hazards (e.g., gasoline cans, compressed gas cylinders) that are not munitions and are not intended for use as munitions.

- **Munitions Constituents (MC)** – Any materials originating from UXO, DMM, or other munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

- **Munitions Debris** – Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

- **UXO Avoidance** – Techniques employed on property known or suspected to contain UXO or other munitions that have experienced abnormal environments, to avoid contact with potential explosives or CA hazards, to allow entry to the area for the performance of required operations.

- **Unexploded Ordnance (UXO)** – Military munitions that (A) have been primed, fuzed, armed, or otherwise prepared for action; (B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (C) remain unexploded either by malfunction, design, or any other cause.

10.5 RESPONSIBILITIES

10.5.1 Project Manager

The project manager (PM) will be responsible for ensuring the availability of the resources needed to implement this SOP. The PM will also ensure that necessary detailed procedures are incorporated in work plans, health and safety plans and training prior to the initiation of work at the sites.

10.5.2 Site Manager

The Site Manager will be responsible for the implementation and continued performance of all essential UXO safety procedures during the performance of the work. He will be supported by the Senior UXO Supervisor and UXO Safety Officer to ensure compliance with regulatory requirements and to evaluate the process for improvements.

10.5.3 Senior UXO Supervisor (SUXOS)

The Senior UXO Supervisor will be responsible for monitoring UXO activities and the periodic review of the procedures to ensure compliance with regulatory requirements and to evaluate the process for improvements.

10.5.4 UXO Safety Officer (UXOSO)

The UXO Safety Officer will be responsible for overseeing UXO activities by UXO technicians and has stop work authority for any safety violation or hazard. The UXOSO is also responsible for conducting a UXO Recognition and Hazards Class as part of the initial site-specific training for all assigned site personnel.

10.5.5 UXO Technicians

The UXO technicians conducting the surface clearance, subsurface clearance, and down-hole clearance while practicing subsurface anomaly avoidance techniques, are responsible for safely removing debris and accurately identifying and sorting items into munitions debris or cultural debris. They are responsible for positively identifying any MPPEH and UXO, and treating it in accordance with this SOP and the WP.

10.6 GENERAL PROCEDURES

10.6.1 UXO Recognition Training

Prior to field activities commencing Parsons will present a UXO Recognition and Hazards Training course, which will be mandatory for all site personnel. The training is designed to ensure that all site personnel recognize possible ordnance items and are instructed to report any encounters in accordance with accepted safety standards. Only UXO technicians can handle UXO. If an item is encountered it will be reported immediately to the BRAC Environmental Coordinator and all operations in the immediate area will cease.

10.6.2 UXO Inspection of the Access Routes and Sampling Sites

Parsons will provide the UXO technicians with the equipment required to inspect the access routes and sampling sites for UXO. The UXO technicians will preview the desired footprint on a map with the equipment operator and the site manager prior to conducting a clearance. The UXO technicians will then visually inspect the surface area to ensure it is free of UXO.

10.6.3 Marking Access Routes and Sampling Site Boundaries

Dependent upon the equipment size and quantity being brought into a sampling site, the width of the ingress/egress route will be a minimum of twice the width of the largest piece of equipment. The size of the sampling area will vary but will be a minimum of twice the length of the largest piece of equipment. The desired size of the area being cleared is to make it big enough to permit the piece of equipment to safely maneuver within the cleared area.

The boundaries of the access route and sampling area will be marked at 25' intervals, or closer, with brightly colored survey flags, wooden stakes, or some other means of clearly marking the cleared area. In each case the point at which the marker will be inserted into the ground will be cleared using a magnetometer to ensure it is free of any subsurface anomaly.

10.7 CLEARANCE TECHNIQUES

10.7.1 Access Routes/Sampling Sites

The two UXO technicians, one UXO Tech III and one UXO Tech II, will proceed at the start of the ingress/egress route on either the extreme right or left marker, and standing approximately five-feet apart using a magnetometer, such as the Schonstedt GA 52CX proceed down the inside of the marked route. Upon reaching the sampling area the two man team will turn around and move to the right or left and return down the inside of the marked route to the start of the access route. Each UXO technician will clear a five-foot lane during their progression, for a total cleared width of 10 feet per pass. This procedure will be repeated until the entire width of the route has been cleared. The sampling area will be cleared in a similar manner. This area will normally be a large circle at the end of the access route and the UXO technicians must take precautions to ensure that they clear the entire circle.

10.7.2 Down Hole

The point selected to take a subsurface soil sample or install a monitoring well will be cleared at the surface to a depth of two feet. Once the two-foot depth is reached the auger, or drill will be extracted and a down-hole magnetometer inserted to clear the next two foot section. This procedure will be repeated until the desired depth is reached. In the event an anomaly is encountered by the magnetometer that location will be abandoned and a new borehole started a minimum of two feet from the contaminated one. The contaminated bore hole will be back-filled to prevent any confusion and to eliminate a possible safety hazard.

10.7.3 Clearance Depths

The clearance depth of the ingress/egress routes and sampling area is dependent upon the size and type of equipment being used i.e., its footprint, the type of soil and its condition, and whether it is wet or dry, but at a minimum it should be two feet, unless of course the route is a hard pack dirt or gravel road. This is to ensure that the equipment does not cause an unintentional detonation by running over or miring down and impacting any subsurface UXO. Clearance depth of the sampling hole will be as stated in the WP.

10.7.4 Marking and Handling of UXO

When UXO is encountered it will be positively identified to determine if it is acceptable to move. If it is acceptable to move it will be relocated out of the access route/sampling area and placed in a UXO holding area. The holding area will be clearly marked and protected on three sides with sandbags, earthen berms, or some other means of barricade, with the open end facing in a direction away from the sampling area or structures. The holding area will be marked with a red survey flag at each of the four corners. All UXO that can not be moved will be marked with two red survey flags in order to distinguish it from anything else. Red should only be used to mark UXO. When necessary, UXO that can not be moved will be destroyed in place by UXO qualified personnel. The BRAC Environmental Coordinator will be notified prior destruction of material left in place.

10.8 GENERAL ORDNANCE SAFETY

General ordnance safety procedures are discussed in detail in “Basic Safety Concepts and Considerations for Ordnance and Explosives Operations” (USACOE, EP 385-1-95a) **Attachment A-12** of this document.

11.0 SITE LAYOUT AND CONTROL MEASURES

11.1 WORK ZONES

The support zone (SZ) and command post for the field work at the SWMU areas will consist of the office space, with all equipment stored either in the office or in the con-ex adjacent to the building. The location of the SZ and EZ and if applicable the CRZ for each project will be determined prior to the commencement of field work. MEC / MPPEH EZ will be determined based on the munition with the greatest fragmentation distance (MGFD); this distance will become the minimum separation distance (MSD) at which non-UXO personnel must remain. The MSD will be prominently flagged to keep non-UXO personnel from entering. Areas beyond the areas flagged are to be considered cleared of MEC. These EZs will be set up at individual work locations when necessary.

If surface contamination is created or suspected as a result of the operations, an EZ will be clearly defined using flagging, wooden stakes etc. around the suspected surface contamination until the problem has been mitigated. Mobile operations, such as sediment sampling and geophysical surveying, will not have defined EZs.

11.2 UTILITIES CLEARANCE

Facility maps will be obtained and consulted prior to commencing any intrusive work. Borehole sites will be positioned accordingly, marked with wooden stakes, and then cleared with SEDA. Drilling is to be done at the marked, cleared locations only. Refer to **Section 9.17.2** for additional guidance. A pre-drilling/subsurface checklist for intrusive field work is attached in **Attachment A-2**.

11.3 SITE CONTROL

SEDA is responsible for overall site-wide security. Most of the Seneca Army Depot is surrounded by a security fence, and all of the sites currently retained by the Army pending the completion of CERCLA and munitions response (MR) actions are isolated behind secondary security fences which are secured when no site activity is being conducted. The ammunition area is surrounded by additional fencing with barbed wire, and is kept locked at all times. The Q area is contained within the ammunition area, and is surrounded by two fences with barbed wire, and is kept locked at all times.

Parsons personnel will sign for keys and turn them in to the BRAC Environmental Coordinator onsite. All locked gates are to remain locked, except for passage through the gates, at all times.

All Parsons personnel, subcontractors and visitors will meet at the Parsons' on-site office at the beginning of each day or upon arrival.

11.4 SITE COMMUNICATIONS

The BRAC Environmental Coordinator will be advised of the planned project schedule and will be notified of the number of personnel anticipated to be on sit prior to commencement of work; with verbal updates on project status and activities being communicated daily. There is a phone in the Parsons on-site field office, currently located in Building 125 in the Administrative Area (SZ). On-site communications will be achieved either orally or in high noise areas by use of arm and hand signals, air horn signals, FM two-way radio or cellular phones. Routine site communications will be maintained between all work crews and the SZ via two-way radios.

On-site emergency communications will be maintained by the use of hand signals, air horns, on-site two-way radios or cell phones. Details of the emergency communications are contained in the Emergency Response Plan in **Section 14**.

11.5 UNEXPLODED ORDNANCE CLEARANCE

Certain SWMUs are known to contain various types of MEC and / or MPPEH. Only UXO technicians are authorized to be in the area when any clearance activity involving MEC is in progress, with all other personnel observing the MSD. All movement on these sites shall be along clearly marked cleared roads and pathways, and UXO technicians will be on hand at all times to ensure that non-UXO personnel follow all procedures relative to UXO. Cleared roads and pathways shall be clearly marked using wooden stakes, engineer tape, or some other highly visible means. All site personnel shall be given an Ordnance Recognition and Hazards course prior to commencing field operations.

ON-SITE PERSONNEL SHALL NOT STRAY FROM THE CLEARED PATHWAYS AND ROAD! ON-SITE WORKERS SHALL NOT TOUCH, KICK, OR OTHERWISE DISTURB ANY MATERIALS ON-SITE WHICH MAY BE UXO. IF A UXO IS ENCOUNTERED IT WILL BE REPORTED IMMEDIATELY TO THE UXO TECHNICIAN.

Additional information on UXO clearance is included in **Section 10** of this document.

12.0 WORK ZONES AND DECONTAMINATION

The following decontamination procedures are intended to meet the requirements of 29 CFR §1910.120(k). These procedures shall be monitored by the SHSO and/or UXOSO to determine their effectiveness. Ineffective procedures will be modified and corrected.

12.1 WORK ZONES

To reduce the spread of hazardous materials by workers from the contaminated areas to the clean areas, work zones will be delineated at the site, and the flow of personnel between the zones will be controlled. The establishment of the work zones will help ensure that personnel are properly protected against the hazards present where they are working, work activities and contamination are confined to the appropriate areas, and personnel can be located and evacuated in an emergency.

12.1.1 Exclusion Zone (EZ)

EZs will be established at the sites during the munitions response and CERCLA closure activities. The minimum EZ that must be maintained for personnel not specifically trained for work at MEC / MPPEH sites around sites where MEC / MPPEH is present must be consistent with the "Public Access Exclusion Distance" (PAED) computed using methods described in HNC-ED-CS-S-98-01. At SEAD-57, this site is defined as 1,181 feet and it is based on the 37mm MKII projectile. Appropriate PAEDs will also be determined for each of the other sites and will be defined in the Explosive Safety Submission that is prepared prior to the work. The minimum UXO team separation distance that must be maintained during MEC / MPPEH site operations will be 200 feet.

Planned site visits to MEC / MPPEH sites may be coordinated with the Army and Parsons' UXOSO. When site visits are permitted, site visitors must first meet with the UXOSO for a pre-visit safety orientation. After receiving the site orientation, the visitor will be allowed to enter the site once all ongoing operations are stopped, and only under escort of UXO personnel. The only exception to this procedure is if the visitor is a qualified UXO technician, then and only then may the UXO teams continue their activities. Site visitors will be expected and required to stay within the bounds of cleared and marked access and egress paths, and shall not be allowed to handle any materials present on site.

Once MEC / MPPEH operations are completed and the site or a portion of the site is certified as cleared of MEC / MPPEH, freer access within cleared portions of the SWMU will be allowed. An EZ will be established for all sampling activities where unprotected onlookers may be present. EZ distances will be established to ensure that unprotected onlookers do not approach site features (e.g., open trenches, excavations, etc.) where cave-ins could occur or where hazardous chemical or constituents could be encountered. EZs established around locations where volatile organic compounds or other fumes or dusts could be produced should be established at points that are at least

50 feet upwind of the sampling activities. In the event that volatile organics are detected in the breathing zone as described in **Section 6**, all personnel within the EZ must don Level C protection. EZs will also be established during any activity when Level C protection is established as a result of conditions described in **Section 6**.

All personnel within the EZ will be required to use the specified level of protection. No food, drink, or smoking will be allowed in the EZ or CRZ. Contact lenses and cosmetics are not permitted to be worn or used within the EZ or CRZ.

12.1.2 Contamination Reduction Zone (CRZ)

A CRZ will be established and utilized during field activities. This zone will be established between the EZ and the SZ, and will include the personnel and equipment necessary for decontamination of equipment and personnel (described below). Personnel and equipment in the EZ must pass through this zone before entering the SZ. The CRZ should always be located upwind of the EZ. A seat or bench should always be provided in the CRZ so personnel can decontaminate their footwear while minimizing potential for slips and falls.

12.1.3 Support Zone

The SZ will include the remaining areas of the job site. Break areas, operational direction and support facilities (to include supplies, equipment storage and maintenance areas) will be located in this zone. No equipment or personnel will be permitted to enter the SZ from the EZ without passing through the CRZ. Eating, smoking, and drinking will be allowed only in this area.

12.2 PERSONNEL DECONTAMINATION

Decontamination of personnel will be necessary if Level C or Level B protection is used. Decontamination will not be necessary if only Level D protection is used. However, disposable gloves used during sampling activities should be removed and bagged; personnel should be encouraged to remove clothing and shower as soon as is practicable at the end of the day. All clothing should be machine-washed. All personnel will wash hands and face prior to eating and before and after using the restroom.

The following OSHA-specified procedures include steps necessary for complete decontamination prior to entry into the SZ, and steps necessary if a worker only needs to change a respirator or respirator canister. Modifications can be made to the twelve station decontamination process by the site health and safety officer depending upon the extent of contamination.

Station 1 - Segregated Equipment Drop

Deposit equipment used on the site (tools, sampling devices and containers, monitoring instruments, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Station 2 - Suit, Safety Boots, and Outer Glove Wash

Thoroughly wash chemically resistant suit, safety boots and outer-gloves. Scrub with long-handle, soft-bristle scrub brush and copious amounts of Simple Green/water solution. Necessary equipment includes:

- Wash tub (30 gallon or large enough for person to stand in);
- Simple Green/water solution; and
- Long-handle soft-bristle scrub brushes.

Station 3 - Suit, Safety Boots, and Outer Glove Rinse

Rinse off Simple Green/water solution using copious amounts of water. Repeat as many times as necessary. Necessary equipment includes:

- Wash tub (30 gallon or large enough for person to stand in);
- Spray unit;
- Water; and
- Long-handle, soft-bristle scrub brushes.

Station 4 - Outer Gloves Removal

Remove the outer gloves and deposit in individually marked plastic bags. Necessary equipment includes:

- Plastic bags.

Station 5 - Canister, Air Tank, or Mask Change

If a worker leaves the EZ to change a canister, mask or air tank, this is the last step in the decontamination procedures. The worker's canisters or tank are exchanged, new outer glove donned, and joints taped. Worker returns to duty. Otherwise the worker proceeds to Station 6. Necessary equipment includes:

- Canisters, air tanks, or mask;

- Tape; and
- Gloves.

Station 6 - Removal of Chemically Resistant Suit

With assistance of helper, remove suit. Deposit in container with plastic liner. Necessary equipment includes:

- Container with plastic liner.

Station 7 - Inner-Glove Wash

Wash inner gloves with Simple Green/water solution that will not harm skin. Repeat as many times as necessary. Necessary equipment includes:

- Simple Green/water solution;
- Wash tub; and
- Long-handle, soft-bristle brushes.

Station 8 - Inner-Glove Rinse

Rinse inner-gloves with water. Repeat as many times as necessary. Necessary equipment includes:

- Water; and
- Wash tub.

Station 9 - Respirator Removal

Remove face-piece. Avoid touching face. Wash respirator in clean, sanitized solution, allow to dry and then deposit face-piece in plastic bag. Store in clean area. Necessary equipment includes:

- Plastic bags;
- Sanitizing solution; and
- Cotton.

Station 10 - Inner-Glove Removal

Remove inner gloves and deposit in container with plastic liner. Necessary equipment includes:

- Container with plastic liner.

Station 11 - Field Wash

Wash hands and face. Necessary equipment includes:

- Water;
- Soap;
- Tables;
- Wash basins or buckets; and
- Clean towels.

Station 12 - Redress

If re-entering EZ, put on clean field clothes (e.g., Tyvek®, gloves, etc.). Necessary equipment includes:

- Table; and
- Clothing.

12.3 PREVENTION OF PERSONNEL CONTAMINATION

In an effort to minimize contact with waste and decrease the potential for contamination, the points outlined below will be adhered to during all phases of field investigation and sampling.

1. Personnel will make every effort not to walk through puddles, mud, any discolored surface, and/or any area of obvious contamination.

2. Personnel will not kneel or sit on the ground in the EZ if at all possible and if not first place a drop cloth or plastic tarp on the ground, and in the CRZ, only on the seats or benches provided.

3. Personnel will not place equipment on drums, containers, vehicles, or on the unprotected ground.

4. Where appropriate, personnel will wear disposable outer garments and use disposable equipment.

12.4 EQUIPMENT DECONTAMINATION

The decontamination line at SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001 will be located adjacent to the SZ. Stations 1 – 3 will actually be in the EZ with the balance of the stations located in the CRZ. The CRZ will be located a minimum of 50 meters form the start of the SZ. Equipment and vehicle decontamination will consist of pressure washing followed by steam cleaning. Solvent and 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.

13.0 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

13.1 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

The support zone (see **Section 12**) will have the following emergency equipment:

- Self-Contained Breathing Apparatus (SCBA);
- First Aid Kit (large enough for the number of personnel on site);
- Fire Extinguisher (A, B, C Type);
- l5-Minute Emergency Eyewash Station;
- Air Horn;
- Bolt Cutters (to cut exit gate chains if necessary);
- Latex Gloves;
- A CPR Mask; and
- A copy of this HASP, which includes maps showing the emergency exits and routes to occupational clinic or hospital locations.

Each designated team will have the following emergency equipment readily available:

- First Aid Kit;
- Fire Extinguisher (A, B, C Type);
- Hand-Held Eyewash;
- Air Horn;
- Bolt Cutters (to cut exit gate chains if necessary);
- Latex Gloves;
- A CPR Mask; and
- A copy of this HASP, which includes maps showing the emergency exits and routes to occupational clinic or hospital locations.

The UXO teams will have the following additional equipment readily available:

- Burn blanket;
- Burn kit;
- Fire resistant gloves (welders gloves);
- Fire resistant apron (welders apron);
- Face shield; and
- 5 gallon bucket filled with water.

At least one vehicle at a work site will be a designated the emergency response vehicle. It will be parked at an easily accessible location, **KEYS IN THE IGNITION**, and pointed in the direction of escape. All vehicles on site will have the keys with the car so they can be located easily (on top of the dashboard).

13.2 SPILL CONTROL MATERIALS AND EQUIPMENT

Chemical spills are not expected to occur at the sites. The only chemicals being brought into the site would be fuels and oils for equipment that would be used on the site. This will be brought onto the site in small quantity containers in the amounts needed for that day's operations. If a spill should occur while performing fueling on equipment, the spill would be a small quantity (under a gallon) and it would be cleaned up immediately. Small spill response kits (e.g., paper towel, diaper, etc.) will be on-hand to assist in the clean up. The spill and contaminated soil would be containerized and labeled, properly manifested, and shipped to an approved hazardous waste facility.

14.0 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

The purpose of the Emergency Response and Contingency Procedures (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 RI/FS activities at Seneca Army Depot. The ERCP complies with 29 CFR §1910.120(l) 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 US Army Corps of Engineers requirements for the emergency response plan as presented in *EM 385-1-1 Health and Safety Requirements Manual* (USACE, 2003) and the Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities (USACE, 2000). The following elements are presented in this section.

- Pre-emergency planning and procedures for reporting incidents to appropriate government agencies for potential chemical exposures, personal injuries, fires/explosions, environmental spills and releases, discovery of radioactive materials;
- On-site emergencies;
- Off-site emergencies;
- Personnel roles and lines of authority;
- Emergency communications;
- Evacuation routes from SWMUs to the nearest gate;
- Specific procedures for decontamination and medical treatment of injured personnel;
- List of emergency contacts;
- Route maps to nearest pre-notified medical facility;
- Accident investigation and reporting;
- Emergency recognition and prevention;
- Site topography, layout, and prevailing weather conditions;
- Site security and control;
- Critique of emergency responses and follow-up;
- Emergency alerting and response procedures;
- Safe distances and staging areas.

Emergency equipment and first aid requirements are presented in **Section 13**.

Copies of this plan are to be kept at the field office and work areas. The list of emergency telephone numbers and directions to the nearest exit gate and nearest hospital will be prominently posted on the bulletin board in the field office. Copies of the directions to the nearest hospital will be kept in all site vehicles.

14.1 PRE-EMERGENCY PLANNING

If an emergency develops on site, the procedures delineated herein are to be followed immediately. Emergency conditions exist if:

- Any member of the field crew is involved in an accident and suffers serious injuries 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.

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. **Table A-9** is a list of emergency contacts. The shortest route from each site to the nearest gate is included as **Figure A-9**. Directions to the nearest occupational clinic (Finger Lakes Medical Associates) and hospital facility (Geneva General Hospital) are included as **Figure A-10** and **Figure A-11**, respectively.

<u>In case of emergency, the SHSO or UXOSO will implement the site emergency procedures. The following procedures will be followed:</u>

- Notify the contact listed in **Table A-9 w**hen an emergency occurs. This list is posted prominently in the site office and both the SSHO and UXOSO will have copies with them at all times.
- 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, entire field crew will immediately halt work and act according to the instructions provided by the SHSO, UXOSO, or Site Manager.
- 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.
- If an accident occurs, the SHSO or UXOSO is to complete an accident investigation and submit the required paperwork. Refer to **Section 14.9** for additional accident reporting guidelines.

Follow-up action will be taken to correct the situation that caused the accident / incident.

The SHSO or UXOSO 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 and medical support or evacuation for injured or exposed personnel.
- Determining the cause of the accident / incident and ways to prevent future occurrences.
- Preparing a written accident / incident or near-miss report for submission to the Parsons and USAESCH Project Managers.

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.

14.2 ON-SITE EMERGENCIES

On site emergencies can range from minor occurrences to explosions, fires, and the release of toxic gases. Minor incidents at hazardous waste sites can have serious consequences or may indicate the presence of a previously unknown health and safety hazard. Explosions, fires, and the release of toxic gases will not only involve site workers, but may affect the neighboring populations and the environment.

All incidents will be reported as soon as possible to the SHSO or UXOSO and to the Site Manager who will determine the appropriate steps to be taken.

When the incident is minor, the work may continue. When an incident is considered serious, work will be discontinued until the emergency has been brought under control, the incident has been evaluated, and any conditions, which may have contributed to the emergency, have been mitigated.

All site incidents, including near misses, will be investigated and documented, using the Incident Report Form and Incident Follow-Up Report Form in **Attachment A-2**.

14.3 OFF-SITE EMERGENCIES

In the unlikely event of a vapor release off-site, the contamination source will be secured, if possible. Emergency response contacts will be notified in the following order:

1. SEDA Security and Environmental Office.

2. Parsons and client Safety Officers.
3. Parsons and client Project Managers.

The phone numbers of these contacts are provided in **Table A-9** and will be posted in the field office.

14.4 SITE PERSONNEL AND LINES OF AUTHORITY

A clear chain-of-command in emergencies ensures clear and consistent communication between site personnel, therefore, results in more effective response to the emergency. The duties of site personnel in emergencies are outlined below:

The **SSHO** will direct all emergency response operations, designate duties to other site personnel, and serve as liaison with government officials and emergency response teams, unless the emergency is MEC related at which time the UXOSO is designated as the emergency response manager..

The SSHO or **UXOSO**, whichever is applicable as stated above, 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.

Decontamination personnel will stand by to perform emergency decontamination. Decontamination personnel will also assist the safety officer in rescue operations when necessary.

Field personnel will assist in rescue operations or take over for decontamination personnel when they are required for other duties.

14.5 EMERGENCY SITE COMMUNICATIONS

The emergency communications codes are given in **Table A-13**, On-Site Emergency Communications.

Many areas to be investigated may contain various types of MEC / MPPEH. All movement on the site, **EVEN UNDER EMERGENCY CONDITIONS**, shall be along cleared and marked roads and pathways. **ON-SITE WORKERS SHALL NOT STRAY FROM THE CLEARED PATHWAYS AND ROAD!**

Evacuation from work sites shall be along the access paths cleared to the various worksites. Equipment shall be placed so as not to impede emergency escape and evacuation along the cleared pathways. Evacuation routes from work areas shall be discussed daily for each work crew as a part of the daily safety meeting. **Figure A-9** shows best routes from the SWMUs to SEAD exits.

14.6 EMERGENCY DECONTAMINATION AND FIRST AID

Decontamination procedures used in emergencies will vary greatly with the severity and particulars of the situation. The SHSO or UXOSO will provide advice on the medical and decontamination procedures to be used in each emergency. General guidelines for first aid and decontamination procedures are given below.

14.6.1 Inhalation Exposure

Remove the victim from the exposure area to an area with fresh air. Attempt rescue only if proper protective gear (Level B or C) is available for the rescue team. Remove protective clothing and respiratory protective gear as soon as possible to determine if the administration of CPR is necessary. If so, complete decontamination while CPR is being administered. Continue CPR until emergency medical unit arrives. If CPR is not required, complete decontamination and transport to hospital; administer other first aid as indicated.

14.6.2 Contact Exposure

Remove victim from area and flush affected area with water only. Be careful not to spread the contamination to other parts of the body. Remove protective clothing and flush area with water only. Consult references or MSDS (if applicable) to determine if soap and water wash is indicated. Do not remove respirator until removal of contaminant from body is reasonably assured and the victim is into the CRZ.

14.6.3 Physical Injury

If a physical injury occurs or worker collapses in a clean zone, first aid will be administered as appropriate.

If a physical injury occurs in a contaminated zone, care must be taken to prevent contact of any contaminant with open wounds. The wound can provide easy access to the body for toxic chemicals that are not normally a skin absorption problem. Protective clothing will be removed carefully to avoid additional injury and avoid any exposure of the wound to contaminants on the clothing.

If a worker collapses or loses consciousness in a contaminated zone, remove protective clothing and respiratory protective gear as soon as possible to determine if the administration of CPR is necessary. If so, complete decontamination while CPR is being administered. Continue CPR until emergency medical units arrive. If CPR is not required, complete decontamination and transport to hospital; administer other first aid as indicated. The field site will have at least two persons certified in CPR and first aid per shift.

14.7 EMERGENCY TELEPHONE NUMBERS

Emergency telephone numbers for medical and chemical emergencies are given in **Table A-9**, Emergency Telephone Numbers. These numbers will be displayed prominently near each site phone and in the possession of the SSHO and UXOSO at all times.

14.8 DIRECTIONS TO MEDICAL FACILITIES

Directions to the nearest Occupational Clinic (Finger Lakes Medical Associates) and hospital (Geneva General Hospital) are shown and described in and in **Figure A-10**, Route to Finger Lakes Medical Associates, and **Figure A-11**, Route to Geneva General Hospital, respectively. The map will be displayed in the command post and kept in every site vehicle. All minor injuries, cuts, breaks, etc. will be treated at the Finger Lakes Medical Associates, with major injuries being treated at the Geneva General Hospital.

14.9 ACCIDENT INVESTIGATION AND REPORTING

In case of an accident on-site, the SSHO, UXOSO and Site Manager shall be notified immediately. The SSHO is responsible for initiating first aid and contacting off-site emergency-medical services for non-MEC related injuries, and the UXOSO is responsible in the event of an MEC related injury. The SHSO or the UXOSO will initiate the site Emergency Response Contingency Plan if necessary.

Initial notification of an accident may be verbal, in person, by hand signals, or by an alarm device such as an air horn. In high-hazard areas where radio or other communications are hampered or impractical, air horns and the buddy system shall be used, as will emergency escape or self-rescue provisions for workers. Specific on-site procedures will be given during the site-specific training.

Incident investigations are an important element of Parsons' safety program because they provide useful information to prevent similar incidents. Incident investigations identify root causes, system failures, unsafe acts and conditions, and noncompliance with or inadequacy of the PSP. All significant near miss, injury, illness, or major equipment or property damage incidents (including process interruptions) require an investigation.

The SSHO will be responsible for conducting an investigation of all on-site accidents involving personal injury, illness, death, property damage, or incidents that are regarded as "near misses" For all non-MEC related occurrences. The UXOSO will assume the same responsibilities in the event MEC is involved in the incident. A near miss is defined by OSHA as an incident where no property was damaged and no personal injury sustained, but where, given a slight shift in time or position, damage and or injury easily could have occurred (www.OSHA.gov). The investigation will consist of conducting interviews with witnesses and personnel involved in the accidents; inspecting the accident site and equipment involved in the accident; reviewing the operating procedures, existing site or weather conditions; and qualifications, training, and experience of the workers involved and examination of generally accepted safety procedures and regulations.

The objective of the investigation is to clarify the actual events of the accident, to establish the probable cause or causes, and to determine appropriate preventative or protective measures. The SSHO will prepare a written report of his findings including recommendations for preventing future incidents. The report will be discussed in detail with Parsons and USAESCH.

The conclusions reached regarding the accident and preventative measures will be included in the next day's tailgate safety meeting, and updated at the conclusion of the investigation if appropriate.

14.10 EMERGENCY RECOGNITION AND PREVENTION

14.10.1 Training

All field personnel receive site-specific health and safety training before starting any site activities. The SSHO and the UXOSO is responsible for implementing and enforcing the accident prevention program. An accident prevention program identifies actual and potential site hazards so that no contractor, subcontractor, laborer, operator, mechanic, or other employee is required to work in surroundings or under conditions that are dangerous to their health and safety.

This program must include frequent and regular inspection of the job site to ensure successful implementation. On a day-to-day basis, individual personnel should watch for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. The general elements of an accident prevention program are discussed in this section. Emergencies can be averted by rapid recognition of dangerous situations. At the start of each workday, before assigning tasks, tailgate safety meetings will be held. Discussion should include:

- Tasks to be performed.
- Time constraints (e.g., rest breaks).
- Hazards that may be encountered, including the effects, how to recognize or monitor symptoms, and danger signals.
- Emergency procedures.
- Radio communication.

Hard hats and safety boots must be worn as a minimum within 50 feet of heavy equipment. The Site Manager, and in particular the team leaders supervise the field teams to ensure they are meeting health and safety requirements. The SSHO and UXOSO inspect the teams periodically to determine if there are any deficiencies. If necessary work is stopped and corrective action is taken (e.g., retain/purchase additional safety equipment). A report of health and safety deficiencies and the corrective action taken is forwarded to the Site Manager, Project Manager and PHSO.

All site workers, including subcontractors, will be trained to their level of responsibility before beginning work. In addition to the hazardous waste health and safety training required by 29 CFR §1910.120(e), workers will receive training in the operational and health and safety aspects of site work. This may include use of fire extinguishers, first aid, CPR, drum handling, heavy equipment, electrical hazards, hearing protection, and excavation.

14.10.2 Fire or Explosion

Fire or explosion hazards are presented in **Section 3**. Fire Prevention and Protection is presented in **Section 9**.

14.10.3 Spill Remediation

In the event of a spill, 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.

14.10.4 Traffic Control

Parsons shall utilize traffic control measures to minimize inconvenience to the site and the risk of traffic accidents and pedestrian injuries. These measures will include the use of flagmen, signs, barricades, one way traffic flow and markings, as necessary, for the safe movement of traffic during the remediation activities.

14.10.5 Site Housekeeping

During the course of the project debris could create tripping hazards and shall be kept cleared from work areas, and in and around buildings or other on-site structures or equipment. Site access and egress routes for pedestrian and vehicular traffic will be kept clear. Materials will not be stored under or piled against buildings or in front of doors and exits. Work areas will be cleared and cleaned at least once per shift. However, garbage and debris shall be removed more frequently.

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.

Outdoor flammable/combustible materials storage areas will be: lined and surrounded by a dike of 12 inches in height, and of sufficient volume to contain 110% of the stored materials; located fifty feet from buildings; and kept free of weeds, debris, and other combustible materials.

Any test pits, borings, excavations, or miscellaneous holes will be either covered, backfilled, or adequately flagged at the end of the workday. SEDA personnel will be verbally notified of any holes that will remain open at the end of the project.

14.10.6 Motor Vehicle Accident Report

All vehicular accidents both on and off-site will be reported immediately and investigated. The objective of the investigation is to clarify events of the accident, establish the probable cause or causes, and to determine appropriate preventative or protective measures. The SSHO will prepare a written report of his/her findings, including the recommendations to prevent future accidents. The report will be discussed with the Parsons PM. Vehicular accidents that are recordable, as defined by AR 385-40 and USACE supplement 1 to that regulation, are also to be reported to Parsons and USAESCH PMs via Form ENG 3394 (See **Attachment A-2**). The conclusions reached regarding the accident and preventative measures will be included in the next tailgate safety meeting.

14.11 SITE TOPOGRAPHY, LAYOUT, AND PREVAILING WEATHER CONDITIONS

A map of the SEAD-46, SEAD-57, SEAD-002-R-01, and SEAD-007-R-001 are presented in **Figures A-2** thought **A-6,** respectively.

Weather at the SEDA is generally cool, with temperatures ranging from an average of 23 F in January to 69 F in July. Marked temperature differences are found between daytime highs and nighttime lows during ht summer and portions of spring and autumn. Precipitation is unusually well distributed, averaging approximately three inches per month. This precipitation is derived principally from cyclonic storms that pass from the interior of the country through the St. Lawrence Valley. Lakes Seneca, Cayuga, and Ontario provide a significant amount of the winter precipitation and moderate local climate. The annual average snowfall is approximately 100 inches. Wind velocities are moderate, but during the winter months, there are numerous days with sufficient winds to cause blowing and drifting snow. The most frequently occurring wind directions are westerly and west southwesterly.

Topography for each of the sites is described below.

Small Arms Range (3.5” Rocket Range) (SEAD-46)

SEAD-46 has a number of small rolling hills; a large earth berm located in the northern portion of the site, and a dirt road transverse the central portion of the site.

Former EOD Range (SEAD-57)

SEAD-57 is characterized by an open grassy area with a single earth berm in the center of the site. A dirt access road bisects the site north to south to the west of the earthen berm.

Rumored EOD Range (SEAD-002-R-01)

The Rumored EOD Range (SEAD-002-R-01) is comprised of two distinct area; EOD Area #2 and EOD Area #3. EOD Area #2 is generally flat and is next to the southwestern corner of the Duck Pond. EOD Area #3 is bound by SEAD-46 (to the south) and the East-West Baseline Road (to the north). EOD Area #3 is relatively flat and has a depression in the center of the area. The area surrounding the depression has large trees and thick brush.

Grenade Range (SEAD-007-R-001)

Grenade Range SEAD-007-R-001 has a gentle slope to the west. The entire area is relatively flat and treeless, although some brush is present throughout the range.

14.12 SITE SECURITY AND CONTROL

The purpose of site access control is to protect the public and workers from the site's hazards and prevent vandalism. As described in **Section 11**, SEDA is responsible for overall site security.

For individual sites, site access control will be implemented by the SHSO or UXOSO and will be accomplished through a program that limits movement and activities of people and equipment at the project site. Site control requires the establishment of site work zones, a communications network, an evacuation protocol, and site security. Site access control will be based on site-specific characteristics including:

1. Potential chemical, biological, or physical hazards;
2. Terrain;
3. Expected weather conditions;
4. Planned site activities; and
5. Site proximity to populated areas.

Site access control will include the following:

1. Worker/visitor registration;
2. Escort of visitors;
3. PPE requirements; and

4. Posting of site/work area boundaries.

As described in **Section 11**, an EZ will be defined around the suspected surface contamination. These EZs will be set up at individual work locations when necessary. UXO exclusion zones will include all SWMU areas beyond the areas flagged by UXO personnel. These EZ will be set up at individual work locations when necessary.

14.13 CRITIQUE OF RESPONSE AND FOLLOW-UP

Emergency response plans are based on site-specific needs and experience. It is important to consider previous emergency incidents in preparing an ERP. To date, there have been zero (0) emergency incidents under this contract. The ERP will be reviewed by PHSO and project manager annually and revised accordingly. In addition, the ERP will be reviewed and revised if any emergency accidents or incidents occur at SEDA. The Corporate Health and Safety Officer will review company-wide emergency accidents or incidents and provide critique of emergency responses. Information on Parsons' corporate trends and statistics is included as **Appendix E** and **Appendix F** of the Accident Prevention Plan. Time spent by emergency response employees reviewing incidents will be tracked by the SSHO and credited toward their refresher training requirements.

14.14 EMERGENCY ALERTING AND RESPONSE PROCEDURES

This section of the ERP addresses how employees will be informed that an emergency exists and how they should respond. The alarm systems must inform "all affected employees" that an emergency exists and what their immediate response should be. Depending on the size and the magnitude of the emergency "all affected employees" may include all site personnel, or just personnel from a limited area.

The following list outlines the information necessary to inform the employees of what their immediate response should be. Not all of these criteria may be applicable to all site personnel, depending on the size and nature of the place of work and the preplanning efforts:

- Notification. The SHSO, UXOSO or Site Manager will initiate emergency notification and make the existence of the emergency known. The notification can be conducted using hand signals, horn, cell phone, two-way radio, and the phone in the Parsons on-site field office.
- Level & Type of the required Response. Based on the extent and type of emergency, SSHO, UXOSO and Site Manager will determine the level and type of the required response and notify the associated personnel (local EMS).
- Nature of the Response. The SHSO, UXOSO or Site Manager will notify relevant personnel the emergency condition (e.g., explosion, chemical spill, medical).
- Location. The SHSO, UXOSO or Site Manager will notify relevant personnel the location of the emergency. This is critically important in large facilities such as Seneca.

- Ambient environmental factors and conditions that influence evacuation or response procedures (wind speed and direction).

14.15 SAFE DISTANCES AND STAGING AREAS (SAFETY ZONES)

Figure A-9 presents emergency exit routes and the buildings at Seneca. Specific on-site staging areas and procedures will be given at the site-specific safety meeting. In general, in case of an emergency, the site personnel should:

- Escape the emergency situation;
- Meet at the designated safe staging area, or when the designated staging area is in emergency situation;
- Meet at the Parsons on-site field office located in Building 125 or when the whole Seneca area is in emergency;
- Exit the Seneca Site

The SHSO or UXOSO will conduct a head count to ensure all personnel have evacuated safely.

15.0 ACCIDENT PREVENTION

This section includes the following subsections: safety and health inspections, safety and health expectations, incentive programs, and compliance.

Accident/incident reporting is covered under **Section 16**. Emergency prevention is presented in **Section 14**.

15.1 SAFETY AND HEALTH INSPECTIONS

Each day, the SHSO and UXOSO shall conduct a site inspection to ensure that operations are being performed in accordance with this document, EM 385-1-1, and OSHA regulations. Results of the inspections will be documented daily in the SHSO's and UXOSO's safety logbook. Any health and safety deficiencies or potential problems discovered during the daily site inspections will be discussed at the next tailgate safety meeting. Inspections will be focused on the following areas (as applicable):

- General Site Safety
  - Housekeeping
  - Sanitation
  - Communication equipment
  - Safety/warning signs/labels
  - Security
  - Illumination
  - Excavation
  - Fire hazards
- Emergency Equipment
  - Alarm systems operability/access
  - Fire extinguisher access
  - Safety shower/eyewash access/operability
  - First-aid kit access
  - Spill containment and control supplies access
- Hazardous Materials
  - Warning sign/labels
  - Proper hazard class segregation
  - Gas cylinder storage/use
  - Leakage/spillage protection
  - Unsafe condition/ignition source
- Equipment and Tools
  - PPE
  - Vehicle
  - Mechanical equipment

- Power tools
- Hand tools
- Ropes, chains, and slings

Any problems in implementation of the HASP shall be reported immediately to the SSHO or the UXOSO, and work shall not proceed until all deficiencies have been corrected. Violations of the HASP by workers (including subcontractors) require corrective action. As appropriate, this may include additional training, closer supervision, or disciplinary action.

15.2 SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE

Please see Section 8 of the Accident Prevention Plan for information on Parsons' safety and health expectations, incentive programs, and compliance.

16.0 LOGS, REPORTS, AND RECORD KEEPING

16.1 LOGS

Project logs will be maintained in sufficient detail to permit the reviewer to ascertain the day's events without having to proffer questions to the log keeper. At a minimum, the log will contain the entries as noted in the various logs below.

16.1.1 Operations Log

The site manager will maintain a daily operations log listing the day's operations to include any event impacting operations regardless of its source i.e., mechanical failure, safety, weather, etc.

- Date and recorder of log;
- Operational briefings;
- Personnel present and their assignments, explain any absences**;**
- Machinery on site and its condition (operational vs. deadlined) to include an explanation of its expected repair/replacement;
- Start, stop times and the reason i.e., break, equipment failure etc.;
- Visitors and their observations;
- Significant events affecting operations i.e., equipment failure, weather, MEC etc.;
- Production rates and findings to include performance against schedule;
- Discussions with client; and
- Any other item deemed appropriate to be recorded.

16.1.2 Safety Log

The SHSO or UXOSO will maintain a daily safety log of all safety related activities. The following information will be maintained in the Safety Log:

- Date and recorder of log;
- Safety briefings (time conducted, material discussed, etc.);
- Weather conditions;
- Daily inspections, including findings;
- Significant site events relating to safety;
- Heat / cold stress monitoring data
- Accidents;
- Stop work events related to safety;
- Training (site-specific, special visitor, etc.); and
- Signature of the Site Manager indicating concurrence.

16.1.3 Training Log

The SHSO or UXOSO will maintain a training log documenting the following information:

- Date and recorder of log;
- Nature of training (site-specific, equipment, 1st Aid/CPR, etc.; personnel will complete the appropriate documentation of training form);
- Three days of supervised work (for new employees);
- Visitor training; and
- Signature of both the PM and SHSO indicating concurrence.

16.1.4 Quality Control Log

The SHSO or UXOSO will document all information related QC functions on the site, which includes the following;

- Date and name of recorder;
- Equipment maintenance, calibration, and standardization;
- QC audits to include findings;
- Subcontractor performance;
- Deliverable due dates and date of submittal;
- Non-conformance findings for all site tasks; and
- Signature of the site manager indicating concurrence.

16.2 REPORTS

16.2.1 Man-Hours and Lost Workday Reporting

Man-hours and lost workday (LWD) cases will be submitted to the Contracting Officer (KO) monthly with a copy furnished to the Air Force Center for Environmental Excellence (AFCEE) Brooks City-Base, Texas. The data will be submitted to arrive at AFCEE not later than 10 calendar days after the end of each month. The information cut-off date will be the last day of each month. The monthly submission shall include the title of the report, contract number, task order number, project site, month and year for which the report is made, a point of contact listing both email address and telephone number, and number of lost workday accidents to include total days lost. If no hours are worked on the project/task, a report showing "zero (0)" is required.

16.2.2 Accident, Near Miss Reporting

Once the initial accident has been reported to the SHSO or UXOSO and necessary emergency procedures are initiated, a verbal report will be given to the Parsons PM, Parsons GBU Safety Manager, and the AFCEE Contracting Officer or authorized representative e.g., AFCEE Project Manager within four hours. The GBU Safety Manager is responsible for notifying the workers compensation analyst and the nearest OSHA office (if applicable).

In the event of an accident or near miss, a written accident or near miss report will be submitted using Parsons online reporting system. If internet access is not available, the attached accident report form may be filled out and faxed.

Accident/near miss report forms, instructions and guidelines are included as **Attachment A-2**. Personal injury reports will be completed, filed, and recorded on an OSHA 300 Log of injuries and illnesses.

Depending on the severity of the accident or near miss, it will either be investigated by the SHSO, UXOSO and the site manager, or the Parsons Safety Manager or other designees. The investigation team shall make recommendations for preventing a recurrence of the accident or incident and submit an accident report to the appropriate Parsons safety and management personnel, and the AFCEE PM/COR. A root cause analysis may also be conducted to aid in determining the cause. The accident report will be retained on file at the site, in Parsons' corporate health and safety files. All accidents or incidents that are recordable will be entered on the OSHA 300 log maintained in the Parsons office.

The office health and safety officer and the project health and safety officer shall review the accident report and approve or make additional recommendations for prevention of the future occurrence of the incident. The project health and safety officer shall ensure that the field staff carries out remedial recommendations.

16.3 RECORD KEEPING

The SHSO or UXOS will establish and maintain a filing system on-site for Health and Safety records, reports, and information concerning individual training, medical surveillance, etc. Sections in this filing system will include:

- Training Records -- Certificates for training required by 29 CFR§1910.120 (40-hour initial HAZWOPER, 8-hr refresher, and supervisory training) will be maintained at the site. Additionally, documentation of three days work under supervision, and CPR, 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.
- Plan Acceptance Forms -- Copies of the Plan Acceptance Forms documenting that employees have read and understand the HASP will be maintained at the site.

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

- 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: A copy of this poster shall be hung in the field office or in an area where employees routinely congregate.
- 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 during the month of February.
- 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 site-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, topic 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 this document. Deficiencies will be noted and changes made immediately.
- The safety and health program plan required under 29 CFR §1910.120(b).

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

TABLE A-1
SEAD-46 Detected Compounds
Health and Safety Plan
Seneca Army Depot Activity - Munitions Response and CERCLA Closure

Parameter	Medium Detected	Parameter	Medium Detected
Volatile Organics		**Pesticides/PCBs**	
Benzene	soil	4,4'-DDD	soil
Carbon disulfide	soil, ditchsoil	4,4'-DDE	soil
Ethyl benzene	soil	4,4'-DDT	soil
Methyl ethyl ketone	soil, ditchsoil	Alpha-BHC	soil
Toluene	soil, surface water, ditchsoil	Alpha-Chlordane	soil
Total Xylenes	soil	Beta-BHC	soil
		Dieldrin	soil
Semivolatile Organics		Endosulfan I	soil
2,6-Dinitrotoluene	soil	Endosulfan II	soil
2-Methylnaphthalene	soil	Endrin	soil
4-Methylphenol	soil	Endrin aldehyde	soil
Acenaphthene	soil	Endrin ketone	soil
Acenaphthylene	soil	Gamma-Chlordane	soil
Anthracene	soil		
Benzo[a]anthracene	soil, ditchsoil	**Inorganics**	
Benzo[a]pyrene	soil	Aluminum	soil, groundwater, surface water, ditchsoil
Benzo[b]fluoranthene	soil, ditchsoil	Antimony	soil, groundwater, surface water, ditchsoil
Benzo[ghi]perylene	soil	Arsenic	soil, groundwater, surface water, ditchsoil
Benzo[k]fluoranthene	soil, ditchsoil	Barium	soil, groundwater, surface water, ditchsoil
Bis(2-Ethylhexyl)phthalate	soil	Beryllium	soil, surface water, ditchsoil
Butylbenzylphthalate	groundwater	Cadmium	soil
Carbazole	soil	Calcium	soil, groundwater, surface water, ditchsoil
Chrysene	soil, ditchsoil	Chromium	soil, groundwater, surface water, ditchsoil
Di-n-butylphthalate	soil	Cobalt	soil, surface water, ditchsoil
Dibenz[a,h]anthracene	soil	Copper	soil, groundwater, surface water, ditchsoil
Dibenzofuran	soil	Iron	soil, groundwater, surface water, ditchsoil
Diethyl phthalate	soil	Lead	soil, surface water, ditchsoil
Fluoranthene	soil, ditchsoil	Magnesium	soil, groundwater, surface water, ditchsoil
Fluorene	soil	Manganese	soil, groundwater, surface water, ditchsoil
Indeno[1,2,3-cd]pyrene	soil	Mercury	soil, ditchsoil
Naphthalene	soil	Nickel	soil, surface water, ditchsoil
N-Nitrosodiphenylamine	soil	Nitrate/Nitrite	soil, groundwater, surface water, ditchsoil
Pentachlorophenol	soil	Potassium	soil, groundwater, surface water, ditchsoil
Phenanthrene	soil, ditchsoil	Selenium	soil, groundwater
Phenol	soil, ditchsoil	Silver	soil, groundwater, surface water
Pyrene	soil, ditchsoil	Sodium	soil, groundwater, surface water, ditchsoil
		Thallium	soil, groundwater, ditchsoil
		Vanadium	soil, groundwater, surface water, ditchsoil
		Zinc	soil, groundwater, surface water, ditchsoil

Source: Parsons. 2001. Draft SEAD-46 and SEAD-57 Remedial Investigation Report, December.

TABLE A-2
SEAD-57 Detected Compounds
Health and Safety Plan
Seneca Army Depot Activity - Munitions Response and CERCLA Closure

Parameter	Medium Detected	Parameter	Medium Detected
Volatile Organics		**Pesticides/PCBs (Continued)**	
Benzene	soil	Alpha-Chlordane	soil
Carbon disulfide	soil, ditchsoil	Aroclor-1242	surface water
Choroform	soil	Aroclor-1254	surface water
Methylene chloride	ditchsoil	Aroclor-1260	soil
Methyl ethyl ketone	soil, ditchsoil	Beta-BHC	surface water, ditchsoil
Tetrachloroethene	soil	Dieldrin	soil, surface water
Toluene	soil, surface water, ditchsoil	Endosulfan I	soil
Total Xylenes	soil	Endosulfan II	soil
		Endrin aldehyde	surface water, ditchsoil
Semivolatile Organics		Endrin ketone	surface water, ditchsoil
2-Methylnaphthalene	soil	Gamma-Chlordane	surface water
4-Methylphenol	soil, surface water, ditchsoil	Heptachlor	surface water, ditchsoil
Anthracene	ditchsoil	Heptachlor epoxide	soil, surface water
Benzo[a]anthracene	soil, ditchsoil	Hexachlorobenzene	surface water
Benzo[a]pyrene	soil, ditchsoil		
Benzo[b]fluoranthene	soil, ditchsoil	**Inorganics**	
Benzo[ghi]perylene	soil, ditchsoil	Aluminum	soil, groundwater, surface water, ditchsoil
Benzo[k]fluoranthene	soil, ditchsoil	Antimony	soil, groundwater, surface water, ditchsoil
Bis(2-Ethylhexyl)phthalate	soil, groundwater, surface water, ditchsoil	Arsenic	soil, groundwater, surface water, ditchsoil
Butylbenzylphthalate	groundwater	Barium	soil, groundwater, surface water, ditchsoil
Chrysene	soil, ditchsoil	Beryllium	soil, groundwater, surface water, ditchsoil
Di-n-butylphthalate	soil, surface water, ditchsoil	Cadmium	soil, groundwater, surface water, ditchsoil
Di-n-octylphthalate	soil, surface water	Calcium	soil, groundwater, surface water, ditchsoil
Dibenz[a,h]anthracene	soil, ditchsoil	Chromium	soil, groundwater, surface water, ditchsoil
Diethyl phthalate	soil, groundwater, surface water	Cobalt	soil, groundwater, surface water, ditchsoil
Fluoranthene	soil, ditchsoil	Copper	soil, groundwater, surface water, ditchsoil
Fluorene	soil, ditchsoil	Iron	soil, groundwater, surface water, ditchsoil
Indeno[1,2,3-cd]pyrene	soil, ditchsoil	Lead	soil, groundwater, surface water, ditchsoil
Naphthalene	soil	Magnesium	soil, groundwater, surface water, ditchsoil
N-Nitrosodiphenylamine	soil	Manganese	soil, groundwater, surface water, ditchsoil
Phenanthrene	soil, ditchsoil	Mercury	soil, surface water, ditchsoil
Phenol	soil, surface water, ditchsoil	Nickel	soil, groundwater, surface water, ditchsoil
Pyrene	soil, ditchsoil	Nitrate/Nitrite	soil, groundwater, surface water, ditchsoil
		Potassium	soil, groundwater, surface water, ditchsoil
Pesticides/PCBs		Selenium	soil, groundwater, surface water, ditchsoil
4,4'-DDD	soil	Silver	soil, groundwater, surface water, ditchsoil
4,4'-DDE	soil, surface water	Sodium	soil, groundwater, surface water, ditchsoil
4,4'-DDT	soil, surface water, ditchsoil	Thallium	soil, groundwater, surface water, ditchsoil
Aldrin	surface water	Vanadium	soil, groundwater, surface water, ditchsoil
Alpha-BHC	soil, surface water, ditchsoil	Zinc	soil, groundwater, surface water, ditchsoil

Source: Parsons. 2001. Draft SEAD-46 and SEAD-57 Remedial Investigation Report, December.

TABLE A-3

List of Activity Hazard Analyses (AHAs)

Number	Name
1	Driving in the Ammo Area / “Q”
2	Site Walk/Visit
3	Project Mobilization / Demobilization
4	Decontamination Area Set-up
5	Personnel Decontamination
6	Tool / Equipment Decontamination
7	Soil Sampling (with drill rig)
8	Soil Sampling (with hand tools)
9	Surveying / GPS
10	Building Soil Piles
11	Soil Excavation, Backfill, Compaction and Reseeding
12	Power and Hand Tool Operation
13	Heavy and Motorized Equipment Operation
14	Trenching
15	Test Pits
16	Materials Loading and Hauling
17	Hazardous Waste Characterization
18	UXO Avoidance
19	UXO Mobilization/Demobilization
20	UXO Manual Brush Removal
21	UXO Mechanical Brush Removal
22	UXO Disposal Operation
23	UXO Heavy Equipment
24	UXO Land Survey
25	UXO Geophysical Survey and Mapping
26	UXO MPPEH

Note(s):

1. These Activity Hazard Analyses (AHAs) are included in Attachment A-1.
2. This list will be expanded in the event that additional tasks are added to this project.

TABLE A-4
SEAD-46 Health Hazards of Prominent Contaminants of Concern

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Semi-volatile Organic Compounds					
Benzo(a)anthracene	560 ug/kg (soil), 3.3 ug/kg (ditchsoil)	0.2 mg/m^3	80 mg/m^3	Eye and skin irritation; leukoplakia Irritation; respiratory tract infection.	Probable human carcinogen
Benzo(a)pyrene	500 ug/kg (soil)	0.2 mg/m^3	80 mg/m^3	Eye and skin irritation. Irritation of digestive tract. Respiratory tract infection. Toxic if inhaled.	Possible risk of harm to unborn children. Genetic and reproductive harm.
Chrysene	950 ug/kg (soil), 7.2 ug/kg (ditchsoil)	0.2 mg/m^3	80 mg/m^3	Eye and skin irritation. Irritation of digestive tract. Respiratory tract infection.	Incompatible with strong oxidizing agents.
Dibenzo(a,h)anthracene	120 ug/kg (soil)	0.2 mg/m^3	80 mg/m^3	Eye and skin irritation; leukoplakia Irritation; respiratory tract infection.	Probable human carcinogen
Phenol	22 ug/kg (soil), 33 ug/kg (ditchsoil)	5 ppm	250 ppm	Nausea; headache; respiratory failure; muscular weakness; vomiting; severe depression; collapse; death.	Combustible liquid and vapor.
Pesticides					
Dieldrin	46 ug/kg (soil)	0.25 mg/m^3	50 mg/m^3	Colorless to light-tan, crystalline, organochlorine insecticide with a mild, chemical odor. Causes headaches, dizziness, nausea, vomiting, vague discomfort, sweating, limb jerking, convulsions, and coma. In animals, causes kidney and liver damage and lung, liver, thyroid, and adrenal gland tumors. Mutagen, experimental teratogen, and carcinogen.	
Metals					
Aluminum	500 ug/L (groundwater), 4,610 ug/L (surface water)	5 mg/m^3	ND	Irritation eyes, skin, respiratory system.	None.

TABLE A-4, Continued

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Antimony	5.5 ug/L (groundwater)	0.5 mg/m^3	50 mg/m^3	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly.	Noncombustible Solid in bulk form, but a moderate explosion hazard in the form of dust when exposed to flame.
Arsenic	7.9 mg/kg (soil), 4 ug/L (groundwater), 3.1 ug/L (surface water), 7.2 mg/kg (ditchsoil)	0.010 mg/m^3	5 mg/m^3	Ulceration of nasal septum, dermal, GI disturbances, respirator irritation, hyperpigmentation of skin.	None
Beryllium	1.2 mg/kg (soil), 0.31 ug/L (surface water), 1.2 mg/kg (ditchsoil)	0.002 mg/m^3	4 mg/m^3	Hard, brittle, gray-white, metallic solid. Irritates lungs, skin, eyes, and mucous membranes. Causes berylliosis, anorexia, low-weight, weakness, chest pain, coughing, blue skin, clubbed fingers, pulmonary insufficiency, dermatitis, and lung cancer. Mutagen and carcinogen.	
Copper	203 mg/kg (soil), 7 ug/L (groundwater), 6.3 ug/L (surface water), 32.5 mg/kg (ditchsoil)	1 mg/m^3	100 mg/m^3	**Eye:** Fine powders are mild irritants. **Skin:** Repeated contact has been reported to cause hardening of the hands. Causes dermatitis. **Ingestion:** May cause G.I. disturbances; vomiting usually occurs promptly.	None.
Lead	913 mg/kg (soil), 5.7 ug/L (surface water), 22 mg/kg (ditchsoil)	0.100 mg/m^3	100 mg/m^3	Weak, facial pallor, low-weight, malnutrition, constipation, abdominal pain, anemia, kidney disease, irritant in eyes, hypotension.	Noncombustible solid in bulk form.
Mercury	0.17 mg/kg (soil), 0.07 mg/kg (ditchsoil)	0.05 mg/m^3	10 mg/m^3	Inhalation of high levels of mercury vapor can lead to severer respiratory irritation, chest pains and breathing difficulties which may be fatal if the respiratory irritation is severe.	Metallic mercury.

TABLE A-4, Continued

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Nickel	44.7 mg/kg (soil), 6.7 ug/L (surface water), 47.4 mg/kg (ditchsoil)	1 mg/m^3	10 mg/m^3	Sensitization dermatitis, allergic asthma, pneumonitis, eye irritation.	None.
Silver	0.46 mg/kg (soil), 2.2 ug/L (groundwater), 1.4 ug/L (surface water)	0.01 mg/m^3	10 mg/m^3	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	None.
Thallium	3.4 mg/kg (soil), 4 ug/L (groundwater), 3.7 mg/kg (ditchsoil)	1.3 mg/m^3	20 mg/m^3	Irritant to eyes and skin	None.
Zinc	115 mg/kg (soil), 3.9 ug/L (groundwater), 32.5 ug/L (surface water), 82.5 mg/kg (ditchsoil)	15 mg/m^3	ND	Irritation of the eyes, skin, and lungs; burning; sneezing; coughing.	None.

Notes:

1. This table is a representative list of contaminants of potential concern at SEAD-46, and is not comprehensive. Please consult Material Safety Data Sheets (MSDSs) for other chemicals of interest. Please consult Material Safety Data Sheets (MSDSs) for other chemicals of interest.

ND – Not Determined

TABLE A-5
SEAD-57 Health Hazards of Prominent Contaminants of Concern

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Semi-volatile Organic Compounds					
Benzo(a)anthracene	24 ug/kg (soil), 62 ug/kg (ditchsoil), 490 ug/kg (debris)	0.2 mg/m^3	80 mg/m^3	Eye and skin irritation; leukoplakia Irritation; respiratory tract infection.	Probable human carcinogen
Benzo(a)pyrene	20 ug/kg (soil), 76 ug/kg (ditchsoil), 820ug/kg (debris)	0.2 mg/m^3	80 mg/m^3	Eye and skin irritation. Irritation of digestive tract. Respiratory tract infection. Toxic if inhaled.	Possible risk of harm to unborn children. Genetic and reproductive harm.
Benzo(b)fluoranthene	25 ug/kg (soil), 67 ug/kg (ditchsoil), 820 ug/kg (debris)	0.2 mg/m^3	80 mg/m^3	No symptoms have been reported.	Possible carcinogen.
Bis(2-Ethylhexyl)phthalate	3,400 ug/kg (soil), 20 ug/L (groundwater), 0.5 ug/L (surface water), 38 ug/kg (ditchsoil), 400 ug/kg (debris)	5 mg/m^3	5,000 mg/m^3	Colorless to light-colored, oily liquid with slight odor. Irritates eyes and mucous membranes. Also affects respiratory system, CNS, and gastrointestinal tract. In animals, causes liver damage, liver tumors, and teratogenic effects. Carcinogen.	
Chrysene	42 ug/kg (soil), 110 ug/kg (ditchsoil), 620 ug/kg (debris)	0.2 mg/m^3	80 mg/m^3	Eye and skin irritation. Irritation of digestive tract. Respiratory tract infection.	Incompatible with strong oxidizing agents.
Dibenzo(a,h)anthracene	6.4 ug/kg (soil), 24 ug/kg (ditchsoil), 200 ug/kg (debris)	0.2 mg/m^3	80 mg/m^3	Eye and skin irritation; leukoplakia Irritation; respiratory tract infection.	Probable human carcinogen

TABLE A-5, Continued

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV Ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Phenol	51 ug/kg (soil), 0.24 ug/L (surface water), 24 ug/kg (ditchsoil)	5 ppm	250 ppm	Nausea; headache; respiratory failure; muscular weakness; vomiting; severe depression; collapse; death.	Combustible liquid and vapor.
Pesticides/PCBs					
4,4'-DDE	32 ug/kg (soil), 0.02 ug/L (surface water), 8.3 ug/kg (debris)	NA	NA	White, crystalline, solid, organochlorine pesticide. Toxic through all routes of exposure. Irritates skin, eyes, nose, and throat. Affects kidneys, liver, and central nervous system. Mutagen and carcinogen. Use Level B protection.	
4,4'-DDT	23 ug/kg (soil), 0.014 ug/L (surface water), 2.9 ug/kg (ditchsoil), 20 ug/kg (debris)	1 mg/m^3	500 mg/m^3	Colorless crystals or off-white, powdered, organochlorine pesticide, odorless or with a slight aromatic odor. Irritates eyes and skin. Causes tingling of tongue, lips, face, and hands; tremors; apprehension; dizziness; confusion; vague discomfort; headache; fatigue; vomiting; convulsions; and partial paralysis of the hands. Also affects kidneys and liver. In animals causes liver, lymphatic, and lung tumors. Mutagen, teratogen, and carcinogen. Use Level B protection.	
Aldrin	0.0044 ug/L (surface water), 1.3 ug/kg (debris)	0.25 mg/m^3	25 mg/m^3	Colorless to pale-yellow liquid with an unpleasant odor. Irritates eyes and skin. Causes asphyxia, headaches, sneezing, nausea, vomiting, weakness, lightheadedness, skin vesicles, scaling dermatitis, brain tumors, and lung and bowel cancer. Mutagen, experimental teratogen, and carcinogen.	

TABLE A-5, Continued

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Aroclor-1242	0.13 ug/L (surface water),	1 mg/m^3	5 mg/m^3	Colorless to light-colored, viscous liquid with a mild, hydrocarbon odor. Irritates eyes and skin. Causes chloracne, liver damage, gastrointestinal disturbances, and reproductive effects. In animals, causes leukemia and tumors of the pituitary gland and liver. Carcinogen.	
Aroclor-1254	0.3 ug/L (surface water), 220 ug/kg (debris)	0.5 mg/m^3	5 mg/m^3	DERMAL - chloracne, simple erythematous eruptions with pruritus, acute eczematous contact dermatitis, burning sensation and edema of the face and hands, excessive eye discharge, swelling of eyelids. NEUROLOGIC - Headache, dizziness, nervousness, muscle and joint pain. GASTROINTESTINAL - Severe abdominal pain, nausea, vomiting, and diarrhea.	PCBs have low acute toxicity, the potential for chronic or delayed toxicity is significant.
Dieldrin	27 ug/kg (soil),	0.25 mg/m^3	50 mg/m^3	Colorless, crystalline solid (liquid >90°F) with a disagreeable, camphor-like odor. Irritates eyes, skin, nose, and throat. Causes incoordination, headaches, sneezing, coughing, and skin blisters. In animals, causes kidney and lung damage.	
Heptaclor	0.0028 ug/L (surface water), 1.6 ug/kg (ditchsoil)	0.5 mg/m^3	35 mg/m^3	White to light-tan, crystalline insecticide with a camphor-like odor. In animals, causes convulsions, tremors, liver damage, and liver cancer. Mutagen and carcinogen.	
Heptaclor epoxide	2 ug/kg (soil), 0.0056 ug/L (surface water), 2.2 ug/kg (debris)	NA	NA	Metabolically formed from heptachlor in the environment. Mutagen and suspected carcinogen.	

TABLE A-5, Continued

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Hexachlorobenzene	0.012 ug/L (surface water)	NA	NA	White powder or needles. Irritates eyes, nose, throat, lungs, skin, and mucous membranes. Cause irritability, CNS excitation, seizures, muscle weakness, tremors, pins and needles feeling on skin, skin thickening and pigment changes, anorexia, and weight loss. May damage liver, kidneys, thyroid, immune system, and the developing fetus. Carcinogen.	
Metals					
Antimony	6.5 mg/kg (soil), 44.7 ug/L (groundwater), 3.8 ug/L (surface water), 2.2 mg/kg (ditchsoil), 7.2 mg/kg (debris)	0.5 mg/m^3	50 mg/m^3	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly.	Noncombustible Solid in bulk form, but a moderate explosion hazard in the form of dust when exposed to flame.
Arsenic	9.6 mg/kg (soil), 4.1 ug/L (groundwater), 7.1 ug/L (surface water), 17.8 mg/kg (ditchsoil), 50.6 ug/kg (debris)	0.010 mg/m^3	5 mg/m^3	Ulceration of nasal septum, dermal, GI disturbances, respirator irritation, hyperpigmentation of skin.	None
Beryllium	1.5 mg/kg (soil), 0.63 ug/L (groundwater), 0.77 ug/L (surface water), 1.8 mg/kg (ditchsoil), 0.96 ug/kg (debris)	0.002 mg/m^3	4 mg/m^3	Hard, brittle, gray-white, metallic solid. Irritates lungs, skin, eyes, and mucous membranes. Causes berylliosis, anorexia, low-weight, weakness, chest pain, coughing, blue skin, clubbed fingers, pulmonary insufficiency, dermatitis, and lung cancer. Mutagen and carcinogen.	

TABLE A-5, Continued

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Cadmium	6 mg/kg (soil), 3.1 ug/L (groundwater), 8.1 ug/L (surface water), 28.6 mg/kg (ditchsoil), 21 mg/kg (debris)	0.005 mg/m^3	9 mg/m^3	Pulmonary edema, dyspnea, cough, chest tight, headache, chills, muscle aches, nausea, vomit, diarrhea.	Burns in powder form.
Chromium	34.5 mg/kg (soil), 14.5 ug/L (groundwater), 3.5 ug/L (surface water), 27 mg/kg (ditchsoil), 94.3 mg/kg (debris)	0.5 mg/m^3	250 mg/m^3	Irritant to eyes, skin, lungs.	None.
Cobalt	19.2 mg/kg (soil), 14.8 ug/L (groundwater), 11.1 ug/L (surface water), 29.7 mg/kg (ditchsoil), 12.9 mg/kg (debris)	0.05 mg/m^3	20 mg/m^3	Odorless, silver-gray to black, magnetic, somewhat malleable, hard, solid metal. Causes coughing, shortness of breath, wheezing, decreased pulmonary function, dermatitis, low-weight, fibrosis, asthma, and respiratory hypersensitivity. Fumes cause metal fume fever. Suspected carcinogen.	
Copper	2,930 mg/kg (soil), 19.5 ug/L (groundwater), 33 ug/L (surface water), 44.4 mg/kg (ditchsoil), 141 mg/kg (debris)	1 mg/m^3	100 mg/m^3	**Eye:** Fine powders are mild irritants. **Skin:** Repeated contact has been reported to cause hardening of the hands. Causes dermatitis. **Ingestion:** May cause G.I. disturbances; vomiting usually occurs promptly.	None.

TABLE A-5, Continued

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m³	IDLH ppm or mg/m³	Symptoms and Effects of Acute Exposure	Additional information
Lead	1,860 mg/kg (soil), 2.2 ug/L (groundwater), 30.3 ug/L (surface water), 35 mg/kg (ditchsoil), 1,070 mg/kg (debris)	0.100 mg/m³	100 mg/m³	Weak, facial pallor, low-weight, malnutrition, constipation, abdominal pain, anemia, kidney disease, irritant in eyes, hypotension.	Noncombustible solid in bulk form.
Mercury	0.14 mg/kg (soil), 0.14 ug/L (surface water), 0.15 mg/kg (ditchsoil), 0.13 mg/kg (debris)	0.05 mg/m³	10 mg/m³	Inhalation of high levels of mercury vapor can lead to severer respiratory irritation, chest pains and breathing difficulties which may be fatal if the respiratory irritation is severe.	Metallic mercury.
Nickel	54.1 mg/kg (soil), 18.8 ug/L (groundwater), 20.8 ug/L (surface water), 41.8 mg/kg (ditchsoil), 46.9 mg/kg (debris)	1 mg/m³	10 mg/m³	Sensitization dermatitis, allergic asthma, pneumonitis, eye irritation.	None.
Selenium	2.7 mg/kg (soil), 2.4 ug/L (groundwater), 3.6 ug/L (surface water), 1.9 mg/kg (ditchsoil), 2.6 mg/kg (debris)	0.2 mg/m³	1 mg/m³	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns.	PEL applies to all selenium compounds (as Se) except Selenium hexafluoride.

TABLE A-5, Continued

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Silver	1.7 mg/kg (soil), 3.1 ug/L (groundwater), 2.3 ug/L (surface water), 0.63 mg/kg (ditchsoil), 0.61 mg/kg (debris)	0.01 mg/m^3	10 mg/m^3	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	None.
Thallium	6.7 mg/kg (soil), 6.7 ug/L (groundwater), 4.3 ug/L (surface water), 4.4 mg/kg (ditchsoil), 10.2 mg/kg (debris)	1.3 mg/m^3	20 mg/m^3	Irritant to eyes and skin	None.
Vanadium	104 mg/kg (soil), 9.2 ug/L (groundwater), 26.1 ug/L (surface water), 37.4 mg/kg (ditchsoil), 20 mg/kg (debris)	0.5 mg V_2O_5/m^3	35 mg/m^3	Irritation eyes, skin, throat; green tongue, metallic taste, eczema; cough; fine rales, wheezing, bronchitis, dyspnea (breathing difficulty).	None.

TABLE A-5, Continued

Known Contaminants and Chemicals	Highest Observed Concentration (media)	PEL/TLV ppm or mg/m^3	IDLH ppm or mg/m^3	Symptoms and Effects of Acute Exposure	Additional information
Zinc	1,250 mg/kg (soil), 85.1 ug/L (groundwater), 125 ug/L (surface water), 487 mg/kg (ditchsoil), 1,210 mg/kg (debris)	15 mg/m^3	ND	Irritation of the eyes, skin, and lungs; burning; sneezing; coughing.	None.

Notes:

1. This table is a representative list of contaminants of potential concern at SEAD-46, and is not comprehensive. Please consult Material Safety Data Sheets (MSDSs) for other chemicals of interest. Please consult Material Safety Data Sheets (MSDSs) for other chemicals of interest.

ND – Not Determined

TABLE A-6
Suggested Frequency of Physiological Monitoring For Fit and Acclimated Workers[a]

Adjusted Temperature[b]	Normal Work Ensemble[c]	Impermeable Ensemble
90°F or above (32.2°C) or above	After each 45 min. of work	After each 15 min. of work
87.5°F (30.8°-32.2°C)	After each 60 min. of work	After each 30 min. of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 min. of work	After each 60 min. of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 min. of work	After each 90 min. of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 min. of work	After each 120 min. of work

a For work levels of 250 kilocalories/hour.

b Calculate the adjusted air temperature (ta adj) by using this equation: ta adj ^{o}F = ta ^{o}F + (13 x % sunshine). Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

c A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

TABLE A-7 - HEAT INDEX

ENVIRONMENTAL TEMPERATURE (Fahrenheit)

RELATIVE HUMIDITY	70	75	80	85	90	95	100	105	110	115	120
	APPARENT TEMPERATURE*										
0%	64	69	73	78	83	87	91	95	99	103	107
10%	65	70	75	80	85	90	95	100	105	111	116
20%	66	72	77	82	87	93	99	105	112	120	**130**
30%	67	73	78	84	90	96	104	113	123	**135**	**148**
40%	68	74	79	86	93	101	110	123	**137**	**151**	
50%	69	75	81	88	96	107	120	**135**	**150**		
60%	70	76	82	90	100	114	**132**	**149**			
70%	70	77	85	93	106	124	**144**				
80%	71	78	86	97	113	**136**					
90%	71	79	88	102	122						
100%	72	80	91	108							

*Combined Index of Heat and Humidity...what it "feels like" to the body
Source: National Oceanic and Atmospheric Administration

How to use Heat Index:
1. Across top locate Environmental Temperature
2. Down left side locate Relative Humidity
3. Follow across and down to find Apparent Temperature
4. Determine Heat Stress Risk on chart at right

Note: Exposure to full sunshine can increase Heat Index values by up to 15 degrees F.

Apparent Temperature	Heat Stress Risk with Physical Activity and/or Prolonged Exposure
90-105	Heat Cramps or Heat Exhaustion Possible
105-130	Heat Cramps or Heat Exhaustion Likely, Heat Stroke Possible
>130	Heatstroke Highly Likely

TABLE A-8
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

TABLE A-9
Emergency Telephone Numbers

CONTACT	NAME	PHONE
State Police, Fire, Ambulance		911
Program Health and Safety Officer	Tim Mustard	1-303-764-8810
Parsons' AFCEE Program Manager	John Lynch	1-678-969-2492
Seneca Program Manager	Todd Heino	1-617-449-1405 (office) 1-339-206-7413 (cell)
Site Health & Safety Coordinator	Ben McAllister	1-607-869-1309 (Seneca office) 1-207-409-6151 (cell)
Parsons Site Manager	Tom Andrews	1-716-998-7473 (cell) 1-716-633-7074 (Buffalo office)
Primary Client Contact	Steve Absolom	1-607-869-1309
Senior UXO Supervisior	Sal Molle	1-202-885-8516 (PA field) 1-610-392-1071 (cell)
UXO Safety Officer (UXOSO)	Ken Cargel	1-202-237-1300 (PA office) 1-416-725-2979 (cell)
Alternate Client Contact	Randy Battaglia	1-607-869-1523
State Spill Number		1-585-226-2466
Fire Department	Romulus	1-607-869-9611
Police Department	Interlaken	1-607-532-4466
National Response Center		1-800-424-8802
Poison Control Center		1-800-962-1253
Occupational Physician	Dr. Walker	1-800-874-4676
Regional USEPA Emergency Response		1-732-548-8730
Parsons 24-Hour Emergency #		1-800-883-7300
Parsons Boston H&S Representative	Jessica Smith	1-617-449-1574
PWEB Incident Reporting System	https://pwebtools.parsons.com/safety/	

TABLE A-10

Responsibilities of On-Site Personnel

Title	General Description	Responsibility
Program Manager / Project Manager	Reports to upper-level management. Has authority to direct response operations. Assumes total control over site activities.	• Prepares and organizes the background review of the situation, the Work Plan, the HASP, and the field team. • Coordinates activities with appropriate officials. • Ensures that the Work Plan is completed and on schedule. • Briefs field team on their specific assignments. • Uses the SHSO to ensure that safety and health requirements are met. • Prepares the final report and support files on the response activities.
Program Health and Safety Officer (PHSO)	Advises the Project Manager and SHSO on all aspects of health and safety.	• Approves final HASP. • Conducts field safety and health audits to ensure HASP conformance and Parsons policy compliance.
Site Health and Safety Officer (SHSO)	Reports to the PHSO on all aspects of Safety and Health on site. Performs day-to-day H&S tasks. Stops work if any operation threatens worker or public health and/or safety.	• Establishes work zones and controls access to these zones. • Controls entry and exit at the Access Control Points. • Confirms each Parsons team member's suitability for work based on physician's recommendation. • Confirms all contractor and field personnel’s suitability for work, based upon OSHA and site specific medical and training requirements. • Conducts site-specific safety training prior to initiation of field activities. • Certifies that all workers have proper training as per 29 CFR §1910.120(e). Ensures that Parsons’ and all subcontractors’ protective clothing and equipment are properly stored and maintained.

TABLE A-10 (continued)
Responsibilities of On-Site Personnel

Title	General Description	Responsibility
SHSO (continued)		• Conducts daily safety meetings. • Investigates accidents/incidents and “near misses”. • Enforces the “buddy” system. Maintains and calibrates safety monitoring equipment, and document calibration data in the monitoring or safety log. • Restricts site personnel from site activities if they exhibit symptoms of alcohol or drug use or illness. • Ensures personnel are monitored for signs of stress, such as cold exposure, heat stress, fatigue, and chemical exposure. • Implements the HASP. • Knows emergency procedures, evacuation routes, and telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department. • Coordinates decontamination procedures/provisions for medical care with PHSO. • Ensures that all required equipment is available. • Advises medical personnel of potential exposures and consequences. • Notifies emergency response personnel by telephone or radio in the event of an emergency. • Maintains logbook for site workers and visitors. • Acts as spokesperson if OSHA inspector arrives on site. • Conducts on-site training concerning pertinent H&S issues and new concerns. • Reports all accidents or H&S incidents to the PHSO.

TABLE A-10 (continued)
Responsibilities of On-Site Personnel

Title	General Description	Responsibility
Site Health and Safety Officer (SHSO) [continued]		• Maintains the site safety and monitoring logs. • Acts as the On-Scene-Incident-Commander in the event of an emergency, notifies and coordinates off-site emergency and medical response agencies. • Coordinates with the local fire department and emergency medical services.
Senior UXO Supervisor		•
UXOSO	Advises the Project Manager on all aspects of health and safety on site. Stops work if any operation threatens work or public health or safety.	• Implements and enforces the UXO/OE components of the SSHP. • Has STOP WORK authority for safety and health reasons. • Establishes work zones and controls access to these zones with SHSO and RSO.
Site Manager	Responsible for field team operations and safety	• Manages field operations. • Executes the Work Plan and schedule. • Has STOP WORK authority for safety and health reasons. • Coordinates with the PHSO in determining PPE level. • Enforces site control. • Serves as liaison with public officials. • Inspects personal protective equipment prior to, during and after each use.

TABLE A-10 (continued)

Responsibilities of On-Site Personnel

Title	General Description	Responsibility
Work Team	The work party must consist of at least two people	• Safely completes the onsite tasks required to fulfill the Work Plan. • Complies with the HASP. • Notifies SHSO or Site Manager of suspected unsafe conditions. • Inspects PPE prior to, during, and after each use.
UXO Technicians		•

TABLE A-11
First Aid Kit Requirements

Unit First Aid Item	Minimum Size or Volume	Item Quantity per Unit Package	Unit Package Size
Absorbent Compress	24 in^2	1	1
Adhesive Bandage	1 x 3 in	16	1
Adhesive Tape	5 yd (total)	1 or 2	1 or 2
Antiseptic Swab	0.14 fl. oz.	10	1
Antiseptic Wipe	1 x 1 in	10	1
Antiseptic Towelette	24 in^2	10	1
Bandage Compress (2 in)	2 x 36 in	4	1
Bandage Compress (3 in)	3 x 60 in	2	1
Bandage Compress (4 in)	4 x 72 in	1	1
Burn Treatment	0.14 fl. oz.	6	1
Eye Covering, with means of attachment		1	1
Eye Wash	1 fl. oz. total	1	2
Eye Wash, with covering and means of attachment		1	2
Gloves		2 pair	1
Roller Bandage (4 in)	4 in x 6 yd	1	1
Roller Bandage (2 in)	2 in x 6 yd	2	1
Sterile Pad	3 x 3 in	4	1
Triangular Bandage	40 x 40 x 56 in	1	1
Pocket mouth piece or CPR barrier		1	1

Notes:
Required contents per Table 3-1 EM 385-1-1, Section 03.B.
First aid kits will be easily accessible by all workers, protected from the weather, all contents will be maintained sterile, and will be inspected prior to use and at least weekly while work is in progress.

TABLE A-12
Minimum Illumination Intensity

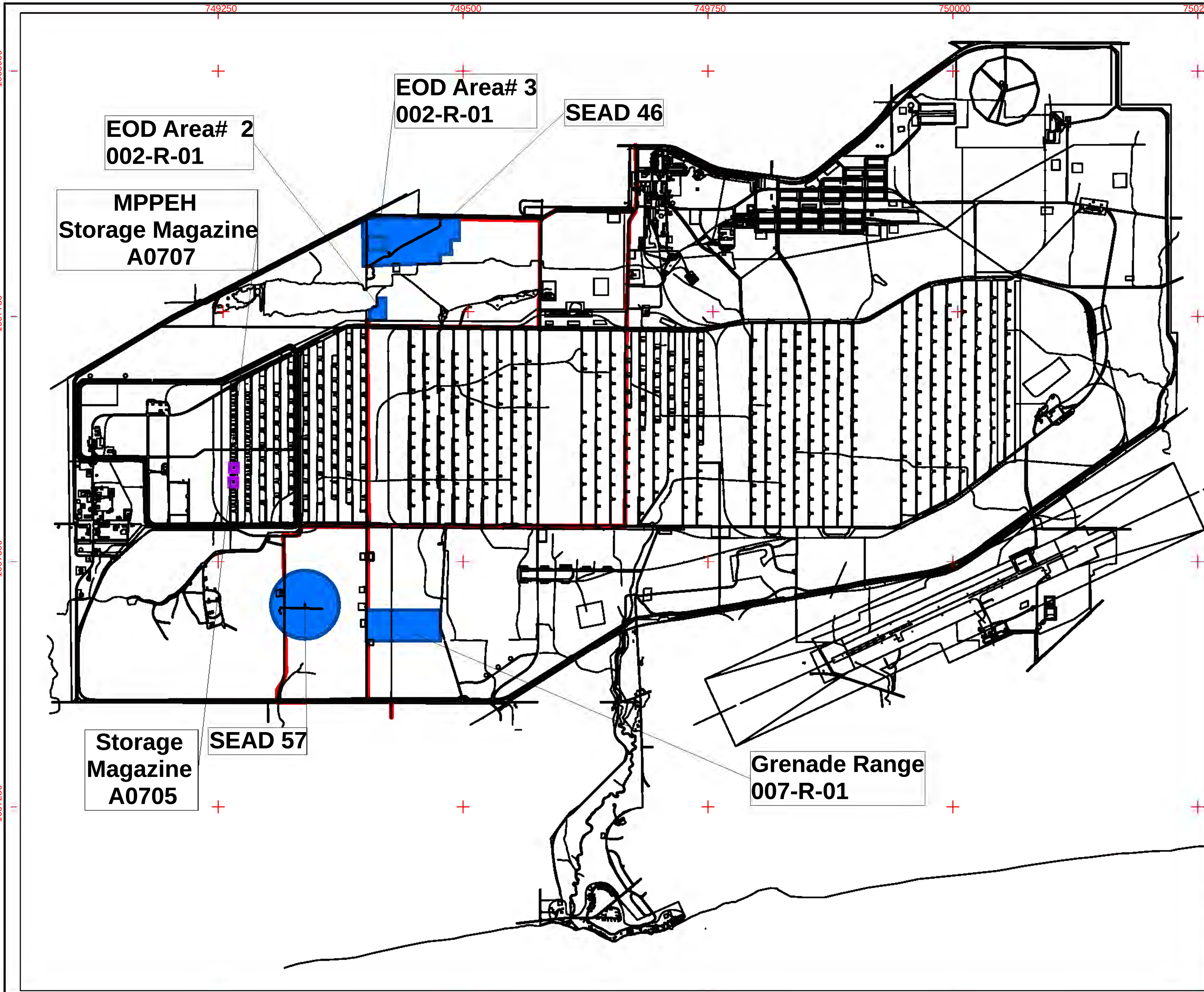
Foot-candles	Area of Operation
5	General construction area lighting
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas
5	Indoors: warehouses, corridors, hallways, and exit-ways
5	Tunnels, shafts, and general underground work areas (exception: a minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling; Bureau of Mines approved cap lights are acceptable for use in the tunnel heading)
10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, barracks or living quarters, locker or dressing rooms, mess halls, and indoor toilets and workrooms)
30	First-aid stations, infirmaries, and offices

Note(s):
1. Taken from Table 13.3 (pg 13-14), Parsons Corporate Health and Safety Manual, Revision 8, June 1999.
2. If comparing foot-candle units in this table to lux units in the Table 7-1 (EM-385-1-1), 1 foot candle = 10.76 lux

TABLE A-13
ON-SITE EMERGENCY COMMUNICATIONS

AIR HORN SIGNAL	ACTION
ONE LONG BLAST	RETURN TO NEAREST SUPPORT ZONE
TWO SHORT HORN/SIREN BLASTS	CONDITION UNDER CONTROL, RETURN TO SITE
THREE SHORT BLASTS	SHUT DOWN EQUIPMENT, STAND BY RADIO
CONTINUOUS LONG BLASTS	EVACUATE SITE BY BEST, FASTEST ROUTE

HAND SIGNALS	MEANING
HAND GRIPPING THROAT	OUT OF AIR, CAN'T BREATHE
GRIP PARTNER'S WRIST	LEAVE AREA IMMEDIATELY; NO DEBATE
HANDS ON TOP OF HEAD	NEED ASSISTANCE
THUMBS UP	OK; I'M ALL RIGHT; I UNDERSTAND
THUMBS DOWN	NO; NEGATIVE
POINTING TO EAR(S)	CAN'T HEAR, DON'T UNDERSTAND
POINTING TO EYES THEN POINTING TO A PERSON/OBJECT	WATCH PERSON/OBJECT CLOSELY



Removal Action Area

Approved Roads

Explosives Storage Magazines

997750 748750 Grid Coordinates (New York State Plane, Central)

3,200 1,600 0 3,200 Feet

PARSONS

Site Location
Seneca Army Depot

DESIGNED BY: BJM	DATE PRINTED: March 31, 2006	PROJECT NUMBER: 744537-01100	
DRAWN BY: BJM	Basemap: Base.shp	FN: Figure A-1	
CHECKED BY:	FILE: EOD3.mdx	SCALE: 1:35,081	
SUBMITTED BY: BJM			

Proposed Area of Clearance

SEAD 46 Limit of Work

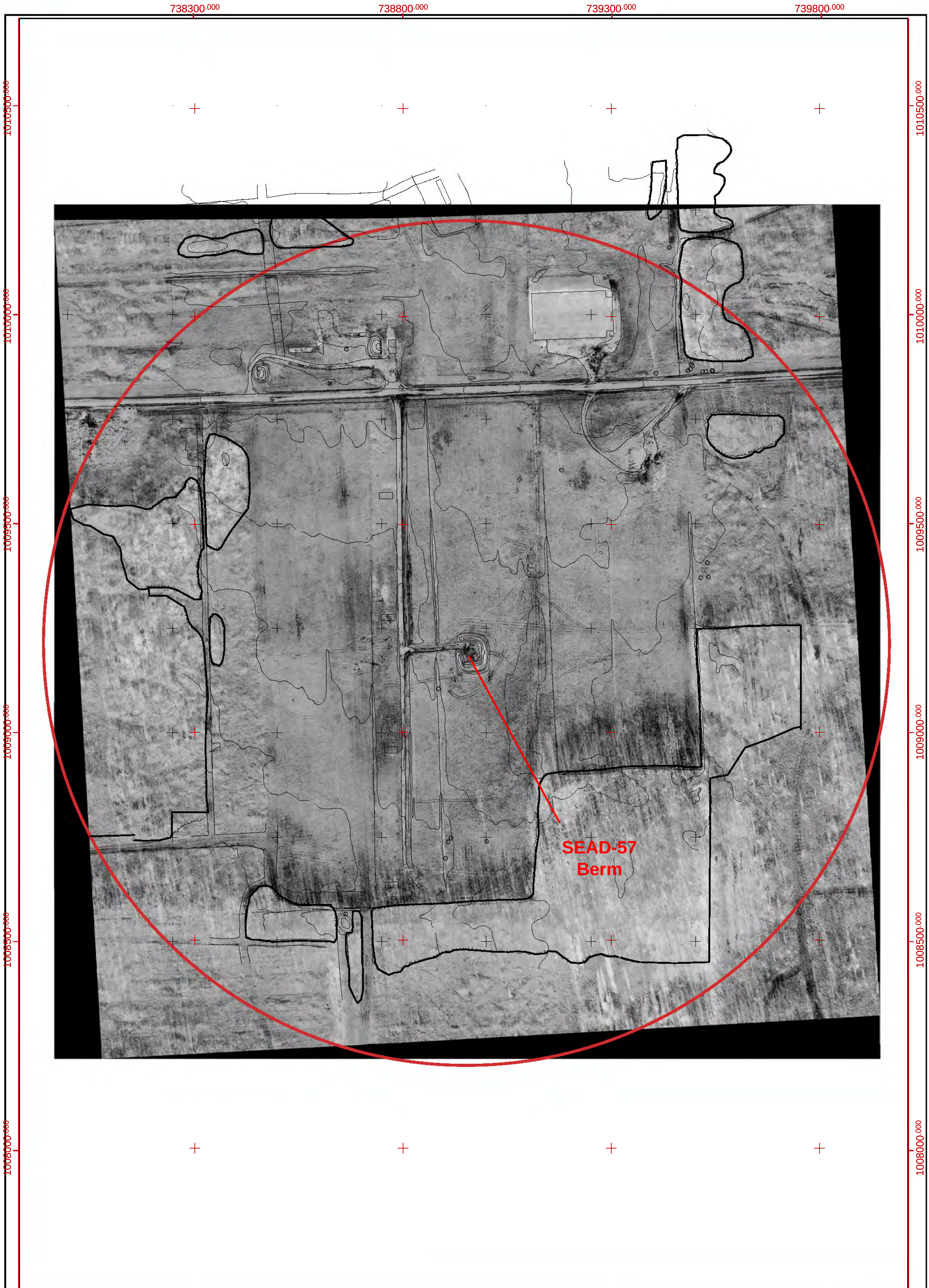
997750
748750
Grid Coordinates
(New York State Plane, Central)

N
W E
S

100 50 0 100 200 300 Feet

PARSONS

DESIGNED BY: BJM	SEAD 46 Site Map
DRAWN BY: BJM	
CHECKED BY:	DATE: March 31, 2006 / PROJECT NUMBER: 745054-03300
	AERIAL PHOTOGRAPH: 1989 2ft. Resolution / FN: Figure A-2
SUBMITTED BY: BJM	FILE SEAD_46.APR / SCALE: 1:2,743.17



Proposed Area of Clearance

SEAD 57 Limit of Work

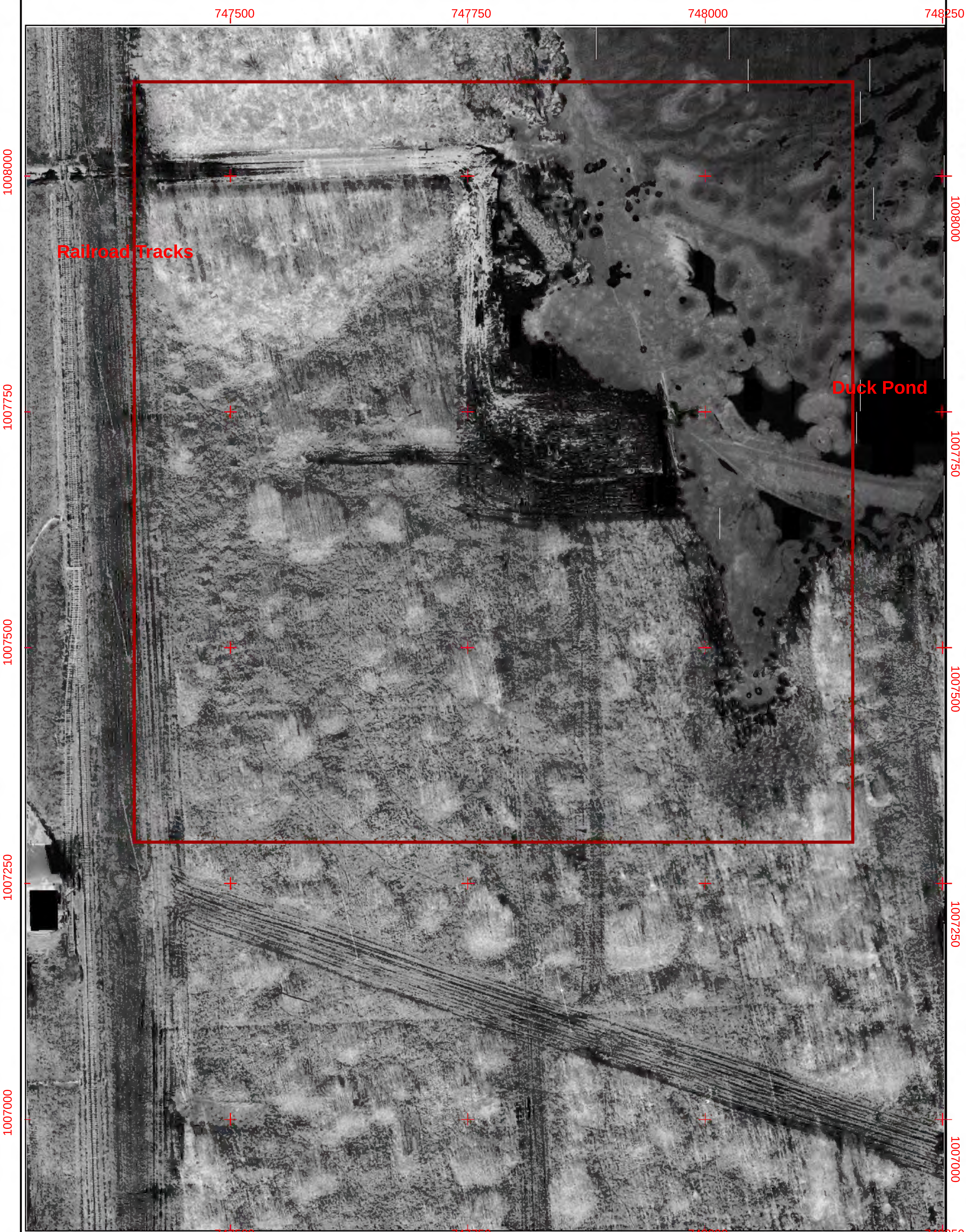
997750
748750
Grid Coordinates
(New York State Plane, Central)

N
W E
S

130 65 0 130 260 Feet

PARSONS

DESIGNED BY: BJM	SEAD 57 Site Map	
DRAWN BY: BJM		
CHECKED BY:	Print Date: March 31 2006	PROJECT NUMBER: 744538-03300
	Aerial photograph: 1989, 2-ft. Resolution	FN: Figure A-3
SUBMITTED BY: BJM	FILE: O:Seneca/MR/Parsons/S57	SCALE: 1:2,643



EOD2 Area Limit of Work

997750
748750
Grid Coordinates
(New York State Plane, Central)

N
W E
S

90 45 0 90 Feet

PARSONS

DESIGNED BY: BJM	EOD# 2 SEAD 002-R-01 Site Map	
DRAWN BY: BJM		
CHECKED BY:	DATE PRINTED: March 31, 2006	PROJECT NUMBER: 736703-01000
	AREIAL PHOTOGRAPH: 1989 2 ft Resolution	FN: Figure A-4
SUBMITTED BY: BJM	FILE: EOD2.APR	SCALE: 1:1,003.622

EOD 3 Area

Limit of Work

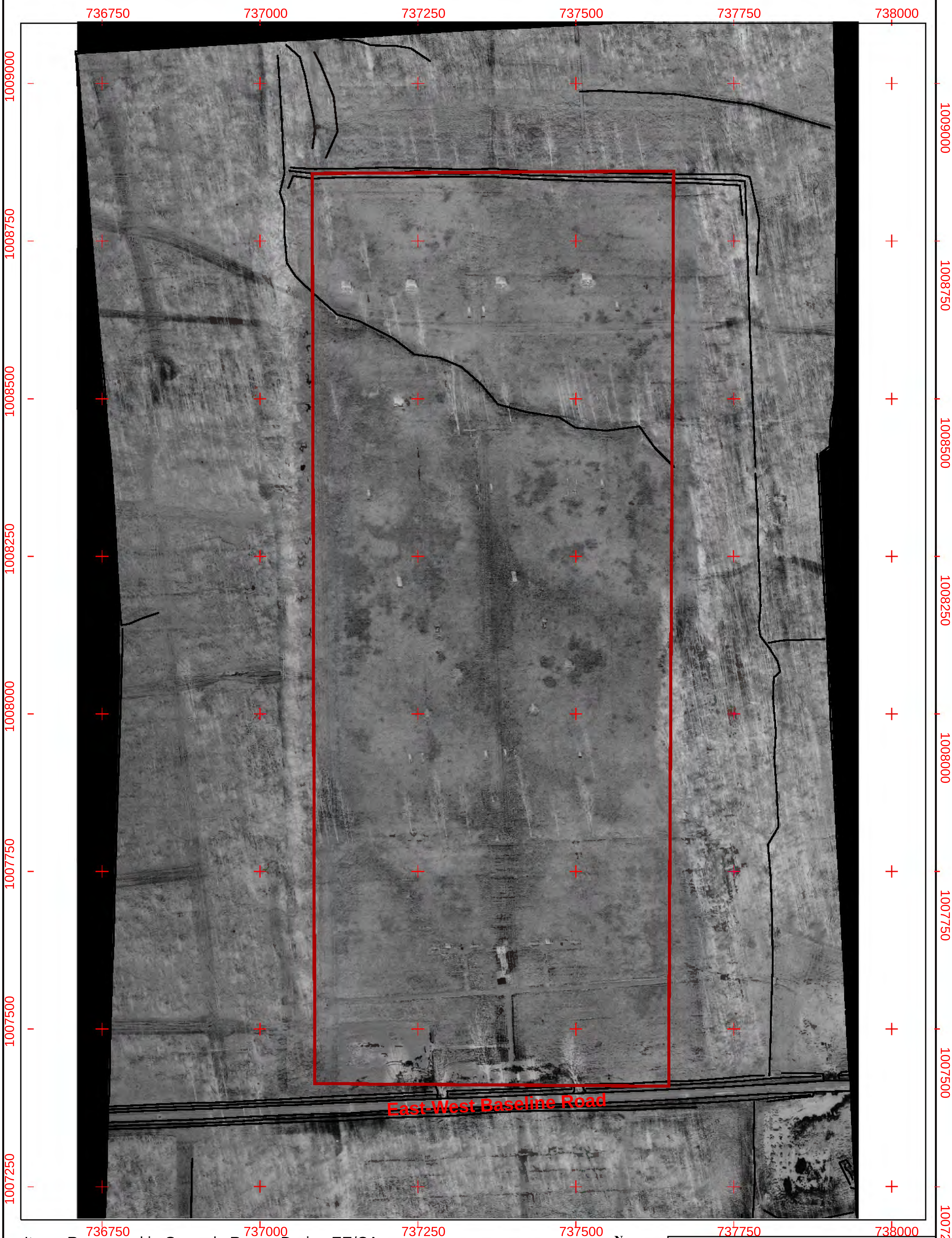
997750 748750 Grid Coordinates (New York State Plane, Central)

N W E S

80 40 0 80 Feet

PARSONS

DESIGNED BY: BJM	EOD #3 SEAD 002-R-01 Site Map	
DRAWN BY: BJM		
CHECKED BY:	DATE PRINTED: March 31, 2006	PROJECT NUMBER: 745054-03300
	AERIAL PHOTOGRAPH: 1989 2 ft Resolution	FN: Figure A-5
SUBMITTED BY: BJM	FILE: EOD3.mdx	SCALE: 1:891.9946



Items Recovered in Grenade Range During EE/CA

Grenade Range Grids Limit of Work

997750 748750 Grid Coordinates (New York State Plane, Central)

N W E S

110 55 0 110 220 Feet

PARSONS

DESIGNED BY: BJM	Grenade Range SEAD 007-R-01 Site Map
DRAWN BY: BJM	
CHECKED BY:	DATE: March 31, 2006 — PROJECT NUMBER: 744538-01100
	AERIAL PHOTOGRAPH: 1989 2 ft. Resolution — FN: Figure A-6
SUBMITTED BY: BJM	FILE: GR_RNG.APR — SCALE: 1:2,100

Figure A-7

Decision Diagram for Stings from Insects

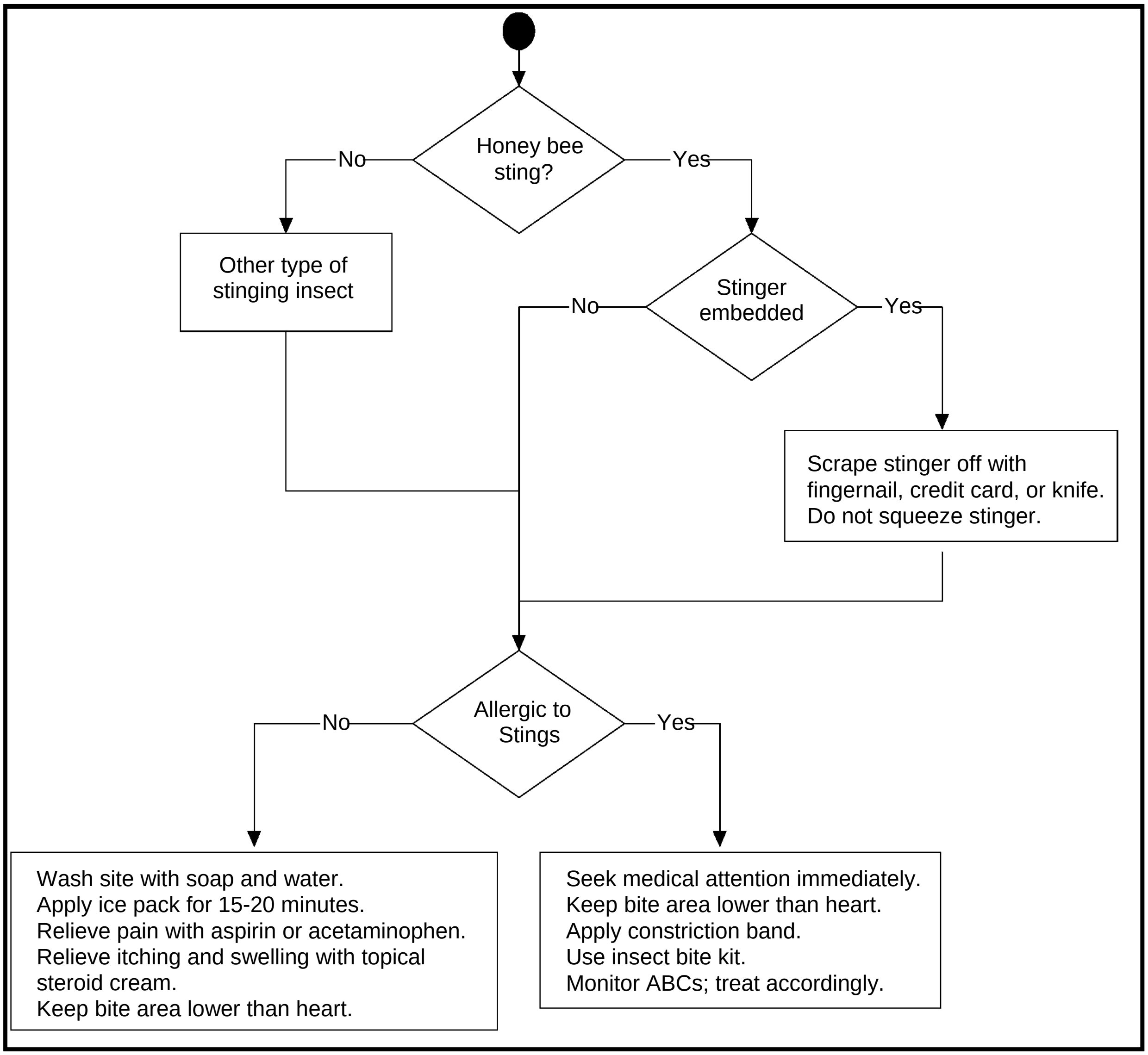


FIGURE A-8 ***CORPORATE POLICY***

Cellular Phone Usage

POLICY: CELLULAR PHONE/WIRELESS DEVICE USAGE

BACKGROUND:

In line with Parsons' *Zero Accident* goals, the Company has reviewed the available evidence and statistical data regarding the use of cellular telephones, PDA's or other wireless devices (collectively referred to as "wireless devices") while operating motor vehicles. The over-whelming conclusion is that using wireless devices while driving a car significantly increases the risk of a crash.

STATEMENT OF POLICY:

Therefore, it is Company policy that all wireless device use, whether "hand-held" or "hands free***" is prohibited*** while driving a vehicle on public roads as follows:

a. For business use *at any time*; or
b. For *personal use* during business hours; and
c. As defined by law

RESPONSIBILITIES OF EMPLOYEES:

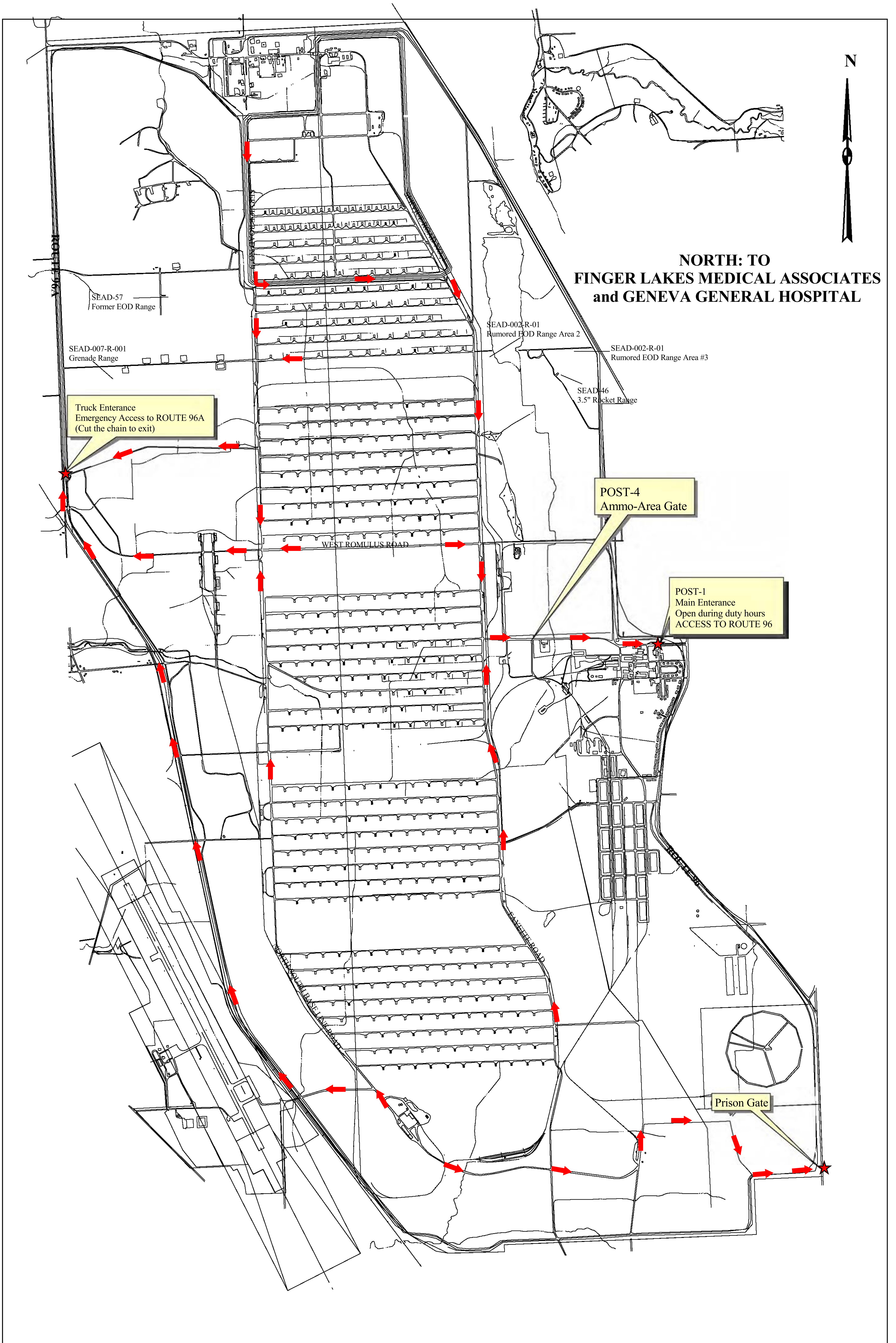
- Refrain from using wireless devices as described above.
- If wireless communications are required, drive to a safe parking area and use the device from that location.
- This policy applies only to drivers, not to passengers in the vehicle.

References:

This policy is maintained on the PWeb for ease of access.

Approved: ***DATE: 7/6/04***

The Company may change, rescind or add to any policies, benefits or practices described on the PWEB, other than employment-at-will policies, from time to time in its sole and absolute discretion with or without prior notice. The Company will advise employees of material changes within a reasonable time.



LEGEND

Recommended Path for Emergency Exit from Depot

NOTE:
UNLESS IT IS AN EMERGENCY, EXIT FROM POST-1.
IF EMERGENCY- EXIT FROM THE CLOSEST GATE.
USE WIRE CUTTERS IF NECESSARY.

2500 0 2500
(feet)

PARSONS

MUNITIONS RESPONSE AND CERCLA CLOSURE
SENECA ARMY DEPOT ACTIVITY
HEALTH AND SAFETY PLAN
FA8903-04-D-8675

FIGURE A-9
LOCATION OF EMERGENCY
EXIT GATES

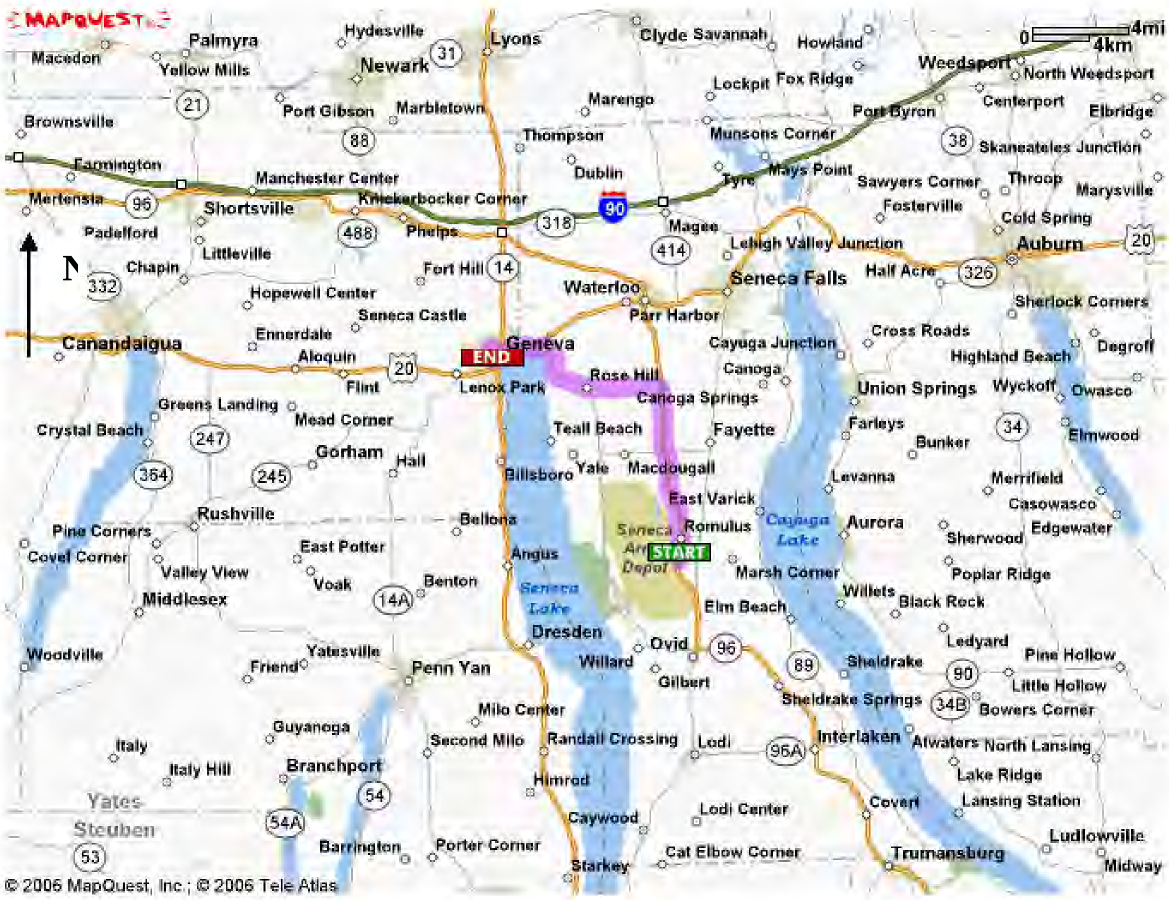
SCALE	DATE	REV
1:2500	MARCH 2006	SHEET 1 OF 1

O:\Seneca\h&splan\workplan.apr

FIGURE A-10
Route to Finger Lakes Medical Associates

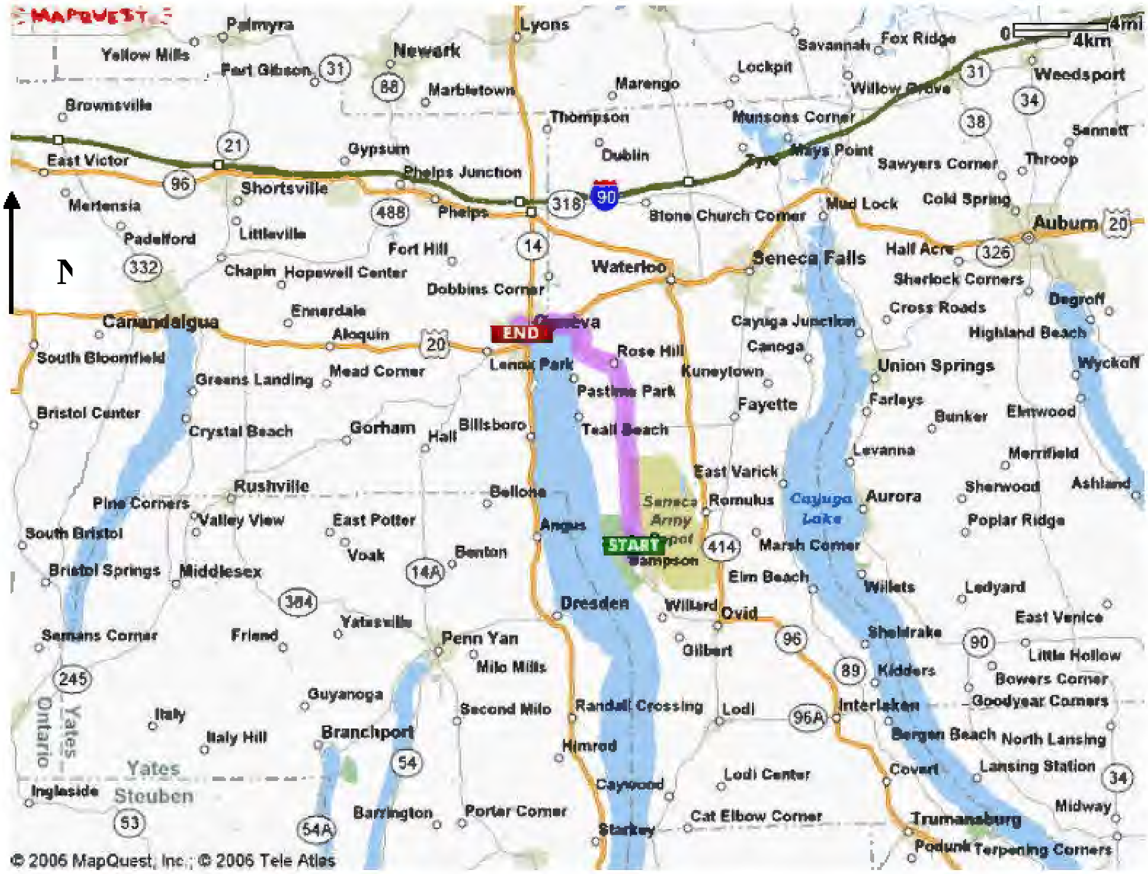
Clinic Address:	200 North Street, Geneva, NY 14456
Telephone Number:	315-787-5222
Contact:	Terry Bennett
Hours:	Mon – Fri, 9 am – 5 pm
Distance to Clinic:	approximately 17 miles

Exit Main Gate and turn left onto **NY State Route 96 North** and proceed about 8 miles. Turn left onto **Yellow Tavern Rd/County Route 121**, and continue on Yellow Tavern Rd about 3 miles. Turn slight right onto **NY State Route 96A North** and proceed about 3 miles. Turn left onto **US Route 20 West/NY State Route 5 West** and proceed about 2 miles. Turn right onto **East Castle St** and proceed about 0.2 miles. Turn right onto **North Main St** and proceed about 0.5 miles. Turn right onto **North St./County Route 110** and proceed about 0.1 miles.



Directions to Finger Lakes Medical Associates from the west side of the Depot

Exit Depot and turn right onto **NY State Route 96A North** heading toward **Smith Vineyard Rd** (approximately 11.5 – 12 miles). Turn left onto **US Route 20/NY Route 5 West** and proceed about 2 miles. Turn right onto **East Castle St** and proceed about 0.2 miles. Turn right onto **North Main St** and proceed about 0.5 miles. Turn right onto **North St./CR-110** and proceed less than 0.1 miles.



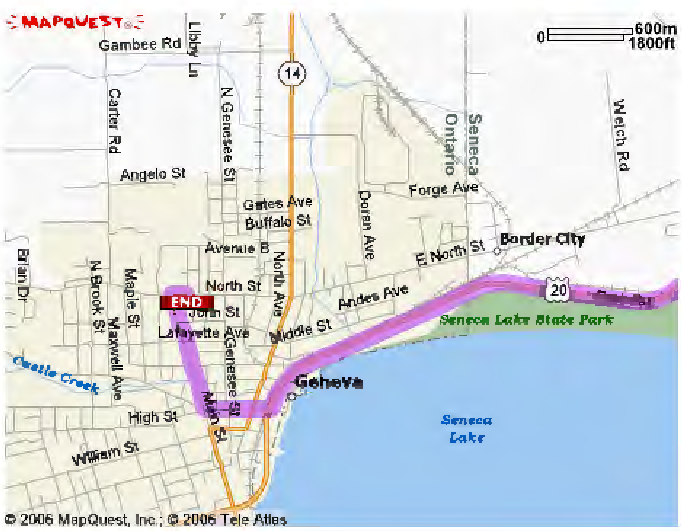


FIGURE A-11
Route to Geneva General Hospital

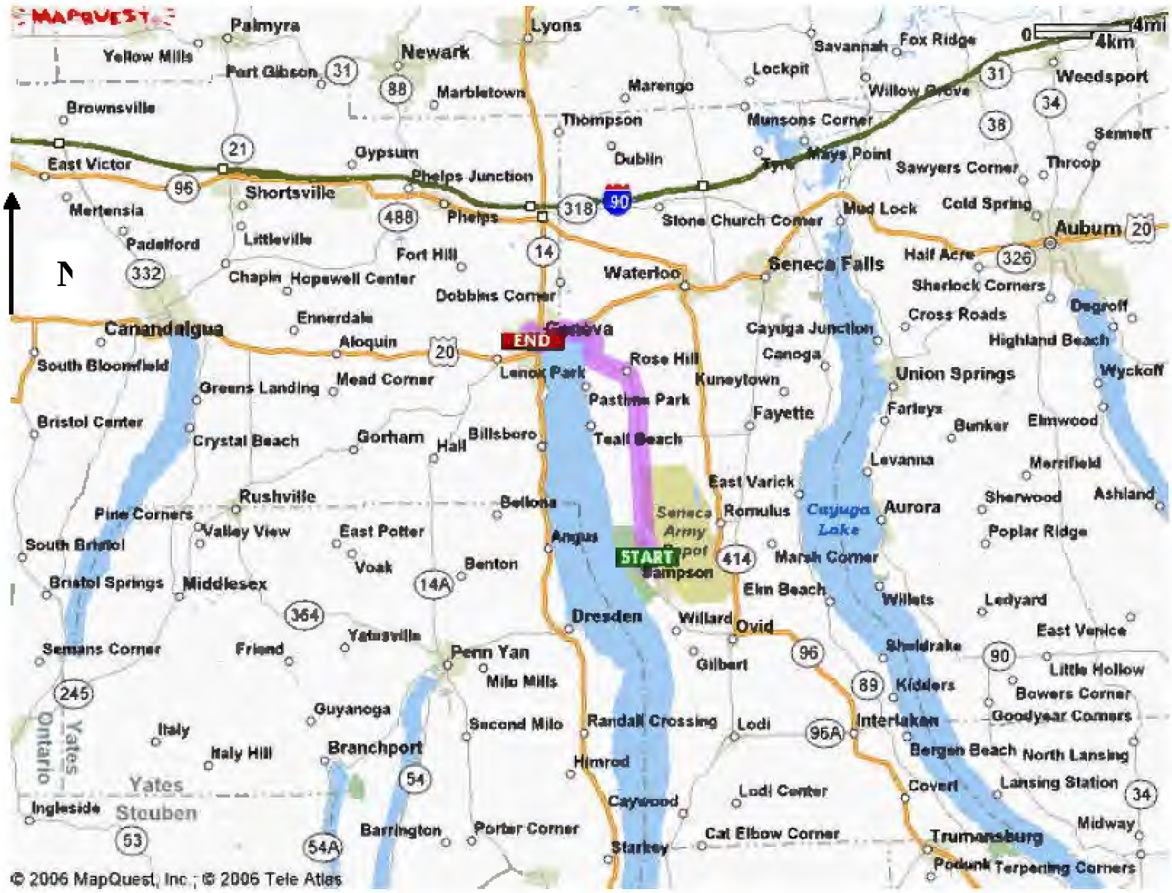
Hospital Address:	196 North Street, Geneva, NY 14456
Telephone Number:	1-315-787-4000
Distance to Hospital:	Approximately 17 miles

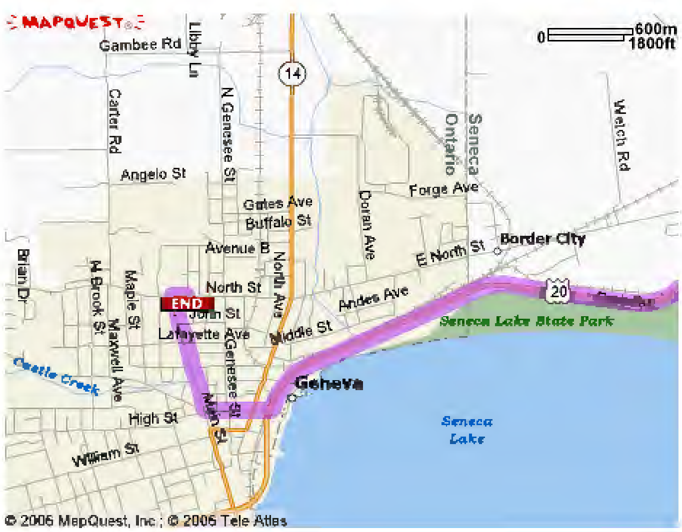
Directions to Geneva General Hospital from the east side of the Depot (See Attached Map)

Exit Main Gate and turn left onto **NY State Route 96 North** and proceed about 8 miles. Turn left onto **Yellow Tavern Rd/County Route 121**, and continue on Yellow Tavern Rd about 3 miles. Turn slight right onto **NY State Route 96A North** and proceed about 3 miles. Turn left onto **US Route 20/NY State Route 5 West** and proceed about 2 miles. Turn right onto **East Castle St** and proceed about 0.2 miles. Turn right onto **North Main St** and proceed about 0.5 miles. Turn right onto **North St./CR-110** and proceed less than 0.1 miles.

Directions to Geneva General Hospital from the west side of the Depot

Exit Depot and turn right onto **NY State Route 96A North** heading toward **Smith Vineyard Rd** (approximately 11.5 – 12 miles). Turn left onto **US Route 20/NY Route 5 West** and proceed about 2 miles. Turn right onto **East Castle St** and proceed about 0.2 miles. Turn right onto **North Main St** and proceed about 0.5 miles. Turn right onto **North St./CR-110** and proceed less than 0.1 miles.





Attachment A-1

Activity Hazard Analyses (AHA)

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Driving to and on the installation**
Summary: **Activities that involve operation of a motor vehicle**

Principal Steps:	Potential Hazards:	Controls:
Driving	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, and will obey posted speed limits. Personnel will practice defensive driving techniques.
Driving within restricted areas (i.e., "Q" and Ammo Area) at Seneca	Access	Personnel will obtain the gate keys or gate control (garage door type opener) from SEDA personnel in Building 123, keys will be signed out, and must be returned upon to project completion.
	Struck By	Personnel will be aware of wildlife hazards within the Q that may include but are not limited to: deer, turkeys. Personnel will drive slowly, and will stop if necessary to allow for wildlife passage.
	Imobilized Vehicle	Personnel will drive only on paved or cleared dirt roads, and will park their vehicles only on paved or dirt roads. Vehicles will be parked facing the exit, and keys will be left in or on the vehicle.
	Communication	Prior to commencement of daily activities, the method of communication will be discussed. Personnel that will be working within the Ammo Area will have either two-way radios or cellular phones with which to communicate with each other and with the field office.

Equipment/Materials to be Used: Motor Vehicle.

Inspection Requirements: Motor vehicle will be in good working order.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment. All Parsons personnel will have completed the defensive driving training course.

Name: Timothy S Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Site Walk / Visit**
Summary: **Activities where visitors to the site would enter the Exclusion Zone (active work area)**

Principal Steps:	Potential Hazards:	Controls:
Site Walk / Visit	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 cell phones while operating any motor vehicles (Parsons only). Visitors will be aware of road conditions and hazards, which include wildlife at the Depot. Visitors will practice defensive driving techniques.
	Site Hazardous Material Exposure	Visitors will be aware of potential exposure to contaminants at the site. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots).
	Tripping Hazards	Visitor awareness of potential slippery surfaces and tripping hazards. Inform field coordinator or SHSO of any slip, trip, or fall hazards.
	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.
	Noise	Hearing protection will be worn in hazardous noise areas.
	Vehicle and heavy equipment traffic in work area	Visitors will be alert when walking around heavy equipment.

Equipment/Materials to be Used: None.

Inspection Requirements: None.

Training Requirements: All visitors must make arrangements with both the resident Army client and Parsons well in advance of the planned visit. Any visitors that wish to enter the Exclusion Zone (EZ) will provide written documentation of the following: appropriate, up-to-date hazardous waste operations training, current participation in a medical surveillance program per requirements of 29 CFR 1910.120, and evidence of the ability to use a respirator in accordance with 29 CFR 1910.134. If the EZ is a radiological site as described in EM 385-1-1 Section 06.E (c), approved visitors must be willing to participate in appropriate dosimetry use that is coordinated with the RSO.

Once approved, visitors will be briefed by a qualified person on the hazards expected at the site and the health controls required. They will be escorted by the site manager or his/her designee, and will follow all advice and instructions provided by the Parsons' Site Manager and SHSO.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Project Mobilization / Demobilization
Summary: Activities involved with project mobilization and demobilization

Principal Steps:	Potential Hazards:	Controls:
Mobilization / Set up Work Area	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement cold/heat stress control program.
	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.
	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, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
	Imobilized Vehicle	Personnel will drive only on paved or cleared dirt roads, and will park their vehicles only on paved or dirt roads. Vehicles will be parked facing the exit, and keys will be left in or on the vehicle.
	Communication	Prior to commencement of daily activities, the method of communication will be discussed. Personnel that will be working within the Ammo Area will have either two-way radios or cellular phones with which to communicate with each other and with the field office.
	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.
	Back injury	Personnel will utilize proper lifting techniques.
Demobilization / Restore site.	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement cold/heat stress control program.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Project Mobilization / Demobilization**
Summary: **Activities involved with project mobilization and demobilization**

Principal Steps:	Potential Hazards:	Controls:
	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	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
	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.
	Back injury	Proper lifting techniques.

Equipment/Materials to be Used: Common hand tools, vehicles, and forklift/crane.

Inspection Requirements: All equipment will be inspected daily by workers prior to use. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/ replacement. 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.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Decontamination Area Set-up
Summary: Activities involved with decontamination area set-up

Principal Steps:	Potential Hazards:	Controls:
General Site Activities	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 cell phones while operating any motor vehicles. Personnel will be aware of road conditions and hazards, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Cold and Heat Stress Injuries	SHSO to implement heat stress/cold injury control program in accordance with the work plan.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform Site Manager or SHSO of any slip, trip, or fall hazards. Practice good housekeeping, keep work areas neat.
	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.
	Motorized/Pedestrian Traffic	Personnel exercise caution while working in the vicinity of a street and near vehicular traffic. Barriers, warning signs, designated walkways, or other safeguards must be provided where pedestrians are exposed to the risk of collision.
	Injury from Material Lifting	Personnel awareness of potential hazards from day-to-day material lifting.
	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. Requirements outlined in EM385-1-1 Section 13 will be observed.
Decontamination area set-up.	Slips trip and falls	Be aware of tripping hazards. A seat will be used in the Decon area to properly decontaminate footwear.
	Back injury	Personnel will utilize proper lifting techniques. See Drum AHA if moving drums is involved.
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HASP. 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 must be provided where pedestrians are exposed to the risk of collision.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Decontamination Area Set-up
Summary: Activities involved with decontamination area set-up

Principal Steps:	Potential Hazards:	Controls:
	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.
	Electrocution	Inspect for buried and overhead utilities in the vicinity of the work area. A clearance permit shall be obtained from base personnel or utility companies prior to initiating intrusive operations.
	Injury from Power Tool Operation	All tools will be in good working order. No damaged equipment will be used until repaired or replaced. When power operated tools are designed to accommodate guards, the guard must be in place on the tool. Fuel powered tools may be refueled, serviced, or maintained only while the tools are stopped and not operating.
	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. Requirements outlined in EM385-1-1 Section 13 will be observed.

Equipment to be used: Drums, lumber, sheet plastic, hand tools, power tools, decon buckets, brush, nominal 5% bleach solution, detergent, and water.

Inspection Requirements: Equipment will be inspected by workers daily 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. 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. The SHSO will ensure prior to daily operations that the PDSs are ready for operations.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Personnel Decontamination
Summary: Activities involving personnel decontamination

Principal Steps:	Potential Hazards:	Controls:
Decontaminate personnel exiting from the EZ.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Radiological Hazard Exposure	Training and safety awareness of radiological hazards during site-specific training. All survey personnel will wear personal radiation dosimeters during the work. All personnel and equipment shall be frisked using the Geiger-Mueller pancake-type detector prior to leaving the work area and prior to eating, smoking, or drinking. Detailed radiation decontamination procedures are included in Attachment A-2 and will be reviewed will personnel prior to commencement of project work.
	Eye injury	PPE (safety glasses, face shield) will be worn as required in the HASP.
	Slips trip and falls	Be aware of tripping hazards. Personal shall use a provided seat in the decon area for the proper decontamination of footwear.
	Cold Stress/Heat Injuries	Implement cold injury/heat stress control program.
	General	Decontamination procedures may vary for each work area. Personnel will follow decontamination procedures outlined in the site-specific HSP. PPE and decon water will be collected and disposed of according to the HSP.
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 (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). Personnel will follow decontamination procedures outlined in the site-specific HSP.
	Bloodborne Pathogens	Personnel will be trained in risks associated with bloodborne pathogens, in accordance with the HASP.
	Cold/heat injuries	Implement cold injury/heat stress control program.
	Back injury	Personnel will utilize proper lifting techniques.
	Slips trip and falls	Be aware of tripping hazards.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Personnel Decontamination**
Summary: **Activities involving personnel decontamination**

Principal Steps:	Potential Hazards:	Controls:

Equipment/Materials to be Used: Decon buckets, brush, nominal 5% bleach solution, detergent, and water, Geiger-Mueller pancake-type detector, other radiation detection equipment, as necessary.

Inspection Requirements: All PPE will be inspected daily by workers prior to use.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment. Personnel will be trained in the site-specific decontamination procedures prior to commencement of Exclusion Zone work. Site-specific decontamination procedures will be outlined in the HSP.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Tool / Equipment Decontamination
Summary: Activities involving personnel decontamination

Principal Steps:	Potential Hazards:	Controls:
Process items through decontamination in accordance with HASP.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). Personnel will follow decontamination procedures outlined in the site-specific HSP.
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement heat stress control program.
	Eye injury	PPE (safety glasses, face shield) will be worn as required in the HSP.
	General	Decontamination procedures may vary for each work area. Personnel will follow decontamination procedures outlined in the site-specific HSP. PPE and decon water will be collected and disposed of according to the HSP.
Remove gross contamination with brush.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots).
	Eye Injury	PPE (safety glasses, face shield) will be worn as required in the HSP.
Place in decontamination bucket or rinse with decontamination solution.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots).
	Eye Injury	PPE (safety glasses, face shield) will be worn as required in the HSP.
	Cold and heat stress injuries	Implement heat stress control program.
Clean with soap solution.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site and decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots).
	Eye Injury	PPE (safety glasses, face shield) will be worn as required in the HSP.
Rinse with water.	Cold and heat stress injuries	Implement heat stress control program.
	Hand Injury	Tools and instruments will be used in a correct and safe manner. PPE will be worn as described in the HSP. Employees will be trained how to properly use new or unfamiliar equipment.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Tool / Equipment Decontamination**
Summary: **Activities involving personnel decontamination**

Principal Steps:	Potential Hazards:	Controls:

Equipment/Materials to be Used: Decon buckets, brush, nominal 5% bleach solution, detergent, and water, Geiger-Mueller pancake-type detector, other radiation detection equipment, as necessary.

Inspection Requirements: All PPE will be inspected daily by workers prior to use.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment. Personnel will be trained in the site-specific decontamination procedures prior to commencement of Exclusion Zone work. Site-specific decontamination procedures will be outlined in the HSP.

Timothy Stuart, CIH

Name: (person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Soil Sampling - with Drill Rig
Summary: Activity that involves transporting the drill rig to and from the site, safely operating the drill rig and collecting soil samples/borings.

Principal Steps:	Potential Hazards:	Controls:
Transport drilling rig to site	Operation of Motor Vehicle	Drivers will have a valid driver's license and wear a seat belt at all times. Drivers are prohibited from using cell phones while operating any motor vehicles. Personnel will be aware of road conditions and hazards, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
Mobilize at site	Struck by passing vehicle	Erect signs stating "Danger Construction Zone" on orange background with black letters, post them at least 100 yards from both sides of traffic. Lights or reflectors shall be used on signs for night work.
Perform drilling activity	Struck by passing vehicle	Post flagperson(s) at both sides of traffic to control movement of traffic and personnel. Flag signaling will be done with 18 inch square red flags or paddles. Barriers, warning signs, designated walkways, or other safeguards must be provided where pedestrians are exposed to the risk of collision.
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HASP. 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 must be provided where pedestrians are exposed to the risk of collision.
Mobilization / Site Set Up	Struck By	All equipment, augers, rods and tools will be properly secured during transport. **All vehicles and equipment will comply with DOT requirements.**
	Tip Over	Never move the drilling rig with the mast upright. Set hydraulic leveling jacks before raising the mast. Ensure the drilling site foundation is stable and as level as possible.
	Backing	Use a ground guide along with a functioning back-up alarm during equipment backing.
	Electrocution / Explosion	Inspect for buried and overhead utilities in the vicinity of the drilling location. A drilling clearance permit shall be obtained from base personnel or utility companies prior to initiating intrusive operations.
	Slips, Trips, Falls	Clear trees, roots, weeds, limbs and other ground hazards from the drilling location. Practice good housekeeping to keep the ground around the drilling site clear of obstructions, equipment and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.
Mobilization / Site Set Up	Heat Stress / Cold Stress Injuries	SHSO to implement heat and cold stress control program in accordance with the work plan.
	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.
Drill Rod / Auger / Tool Handling	Struck By	Drill rods and augers stored and transported in racks shall be blocked to prevent shifting. Unload drill rods and augers layer by layer. Be prepared for sudden shifting when tailing rod sections. Keep a wide base and secure footing.
	Back Strain	Use proper lifting techniques when manually handling rods, augers and tools. Use mechanical equipment during lifting whenever possible. Use the buddy system when lifting tools and supplies.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Soil Sampling - with Drill Rig**
Summary: **Activity that involves transporting the drill rig to and from the site, safely operating the drill rig and collecting soil samples/borings.**

Principal Steps:	Potential Hazards:	Controls:
Hoisting Operations	Struck By	Never engage the rotary clutch until all personnel and equipment are clear. Never leave the brake unattended when engaged. Drill rods and auger sections should not be picked up or dropped suddenly. Do not lift more than 10 feet of augers or one joint of pipe between tool breaks. Test the brakes daily. Use caution when drilling in wet or damp conditions. Suspend drilling activities if moisture comprises the performance of the braking mechanism.
Catline Operations	Struck By	Do not use more wraps than necessary to lift the load. More than one layer of wraps on the cathead is not allowed. Personnel should not stand near, step over or go under the cathead rope under tension. The cathead must be kept clear of obstructions and entanglements. Never leave the cathead unattended when engaged. Do not stand under the object being lifted with the cathead.
	Noise	Hearing protection will be worn in hazardous noise areas.
Derrick Operations	Fall	The mast should be lowered, if possible, to make repairs or to free up entangled wire rope or obstructions. If the mast must be ascended while upright, a proper ladder safety climbing device or safety block system must be used in conjunction with a full body harness.
Derrick Operations	Weather	The drill rig operator must be aware of weather conditions and terminate operations in the event of unsafe conditions.
Auger Operations	Struck By	Use a long handled flat head shovel when removing auger cuttings. Stay away from the augers when rotating. Prevent shovel from lodging into the augers and kicking out. Do not wear loose clothing when working with augers.
Maintenance	Equipment	The drilling rig and associated 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. All equipment must be inspected daily prior to use. Equipment must be operated and maintained in accordance with EM 385-1-1 and manufacturers guidelines. 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 rig after maintenance has been performed.
	Fire Hazards	All motors must be shut off during refueling. Smoking in the vicinity of the drilling rig is not permitted. An A-B-C fire extinguisher must be maintained on the drilling rig and associated motorized equipment. 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.
Pumping / Grouting	Blow Out	The pump must not exceed maximum pressure of grout and mud lines. High-pressure lines must be secured to the rig. Lines and hoses must be inspected daily and replaced if worn or damaged. Engage pump in low gear then shift to subsequent higher gears.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Soil Sampling - with Drill Rig**
Summary: **Activity that involves transporting the drill rig to and from the site, safely operating the drill rig and collecting soil samples/borings.**

Principal Steps:	Potential Hazards:	Controls:
Hazardous Drilling Locations	Explosion	Special procedures will be implemented when drilling in known natural gas locations, such as special mud procedures and blow out preventers.

Equipment/Materials to be Used: Split spoons, drill rig, hand tools, low-flow sampling pumps, Geiger-Mueller pancake-type detector, other radiation detection equipment, as necessary.

Inspection Requirements: Drill rig to be fully inspected by drillers prior to commencement of project work. Drill rig safety inspections will be performed and documented daily, or as required in the HSP. A daily inspection of PPE by workers will be conducted. Equipment will be inspected by workers daily 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. 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/replaced. The SSHO will inspect or survey excavation at least daily or right after changes in conditions (i.e., heavy rain, large amounts of soil removed). The SSHO will look for fissures and cracks in the walls and will ensure that engineering controls are still appropriate. During site set-up, equipment generating noise will be monitored by the SSHO to determine whether or not hearing protection is required.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, etc.) will be provided as applicable. Operators will be trained in the safe use of required equipment and in the required personal protective equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Soil Sampling - with Hand Tools**
Summary: **Activity that includes mobilizing to the site, equipment set up, use of hand tools, collection of soil samples.**

Principal Steps:	Potential Hazards:	Controls:
Setup / Preparation for excavation	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, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Hand tools	All tools will be in good working order. No damaged equipment will be used until repaired or replaced.
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards. Keep work area neat, remove any unused tools or equipment.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.
	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.
	Radiological Hazard Exposure	Training and safety awareness of radiological hazards during site-specific training. All personnel will be required to complete the Radiation Safety Training prior to being allowed to work onsite. The training class will be refreshed annually. All survey personnel will wear personal radiation dosimeters during the work. All personnel and equipment shall be frisked using the Geiger-Mueller pancake-type detector prior to leaving the work area and prior to eating, smoking, or drinking.
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Soil Sampling - with Hand Tools**
Summary: **Activity that includes mobilizing to the site, equipment set up, use of hand tools, collection of soil samples.**

Principal Steps:	Potential Hazards:	Controls:
Hand digging	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards. Keep work area neat, remove any unused tools or equipment.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.
	Hand tools	All tools will be in good working order. No damaged equipment will be used until repaired or replaced.
	Underground Utilities	The local utility locating hotline will be contacted to identify the locations of buried utilities before subsurface activities are allowed to commence. Potential subsurface activity locations will be cleared with SEDA personnel prior to commencement of work.
	Confined space	Install shoring or implement benching/sloping when excavation exceeds 4 feet if worker entrance is required. Implement confined space entry program (as required). Periodic trench inspections.
Load contaminated soil in drums	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Unplanned Detonation	UXO awareness training provided by SSHO. Personnel within the EZ will observe EP-3851-95a, Basic Safety Concepts and Consideration for OE, dtd June 01. Only UXO technicians will handle OE/UXO/Demolition material. Personnel, in the immediate vicinity of the operations, will be kept to the minimum necessary for safe operations. Dig team or SSHO will stop all operation when non-essential personnel are in the EZ.
Load contaminated soil in drums	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.

Workplace: **Seneca Army Depot Activity**

Activity being evaluated: **Soil Sampling - with Hand Tools**

Summary: **Activity that includes mobilizing to the site, equipment set up, use of hand tools, collection of soil samples.**

Principal Steps:	Potential Hazards:	Controls:
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.

Equipment/Materials to be Used: Hand digging tools (e.g., shovel), Geiger-Mueller pancake-type detector, other radiation detection equipment, as necessary.

Inspection Requirements: A daily inspection of PPE by workers will be conducted. Equipment will be inspected by workers daily 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. 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/replaced. The SSHO will inspect or survey excavation at least daily or right after changes in conditions (i.e., heavy rain, large amounts of soil removed). The SSHO will look for fissures and cracks in the walls and will ensure that engineering controls are still appropriate. During site set-up, equipment generating noise will be monitored by the SSHO to determine whether or not hearing protection is required.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Operators will be trained in the safe use of required equipment and in the required personal protective equipment. UXO Personnel must be certified as EOD-trained and must be approved for the project by the USAESCH Safety Officer and Contracting Officer. Before entering a confined space, all personnel will show proof of confined space training to the SSHO.

Name: Timothy S. Mustard, CIH

(person certifying that the evaluation has been performed)

Date: 8/1/2005

(date of evaluation)

Note(s):

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Workplace: Seneca Army Depot Activity
Activity being evaluated: Surveying / GPS
Summary: Activities that involve surveying or GPS work

Principal Steps:	Potential Hazards:	Controls:
Gather geophysical data on subsurface anomalies by carrying instruments across the site.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.
	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	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
	Back injury	Personnel will utilize proper lifting techniques.

Equipment to be used: Geophysical instruments.

Inspection Requirements: A daily inspection of PPE by workers will be conducted. Equipment will be inspected daily by workers 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. 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/replaced. The SSHO will inspect loading locations at least daily.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SSHO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
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Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **IDWs / Drum Moving / Filling / Emptying**
Summary: **Activities that involve drum moving, filling and emptying**

Principal Steps:	Potential Hazards:	Controls:
Transfer drums or MRC to / from transport vehicle	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement cold and heat stress control program.
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
	Noise	Hearing protection will be worn in hazardous noise areas.
	Back injury	Personnel will utilize proper lifting techniques, and team-lift techniques where needed.
Filling Drums	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. Requirements outlined in EM385-1-1 Section 13 will be observed.
	Noise	Hearing protection will be worn in hazardous noise areas.
	Back injury	Personnel will use caution when shoveling dirt into a drum to avoid spraying rocks or dirt. If possible, only one worker will fill a drum at a time.
	Hand injury	Thick gloves will be worn while filling drums. Personnel will follow established procedures for opening or closing drums.
Emptying Drums	Injury from sliding/falling drum	Personnel will determine who will be in charge of the task, this person will direct all subsequent actions (Tip, Roll, Dump, etc.).
	Noise	Hearing protection will be worn in hazardous noise areas.
	Back injury	Personnel will utilize team-lift techniques for emptying all drums.
	Hand injury	Thick gloves will be worn while filling drums. Personnel will follow established procedures for opening or closing drums.
Drum / MRC Transport	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.

Workplace: Seneca Army Depot Activity
Activity being evaluated: IDWs / Drum Moving / Filling / Emptying
Summary: Activities that involve drum moving, filling and emptying

Principal Steps:	Potential Hazards:	Controls:
	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
	Injury from sliding/falling drum	Drums will be carefully loaded and secured prior to transport. Heavy gloves will be worn while moving or adjusting drums.
	Noise	Hearing protection will be worn in hazardous noise areas.

Equipment/Materials to be Used: Drum dolly, forklift, drum wrench, shovels.

Inspection Requirements: Personnel will conduct a daily inspection of PPE and equipment. Equipment will be inspected prior to use in accordance with the manufacturer's instructions. If during inspection or during use, equipment fails to function properly, it is to be turned in for repair/replacement.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
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Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Surface Water Sampling**
Summary: **Surface water sampling will include mobilization of personnel and equipment to the sampling location, and collection of samples.**

Principal Steps:	Potential Hazards:	Controls:
General Site Activities	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, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Radiological Hazard Exposure	Training and safety awareness of radiological hazards during site-specific training. All personnel will be required to complete the Radiation Safety Training prior to being allowed to work onsite. The training class will be refreshed annually. All survey personnel will wear personal radiation dosimeters during the work. All personnel and equipment shall be frisked using the Geiger-Mueller pancake-type detector prior to leaving the work area and prior to eating, smoking, or drinking.
	Heat Stress / Cold Stress Injuries	SHSO to implement heat and cold stress control program in accordance with the work plan.
	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.
	Motorized/Pedestrian Traffic	Personnel exercise caution while working in the vicinity of a street and near vehicular traffic. Barriers, warning signs, designated walkways, or other safeguards must be provided where pedestrians are exposed to the risk of collision.
	Injury from Material Lifting	Personnel awareness of potential hazards from day-to-day material lifting. Use proper ergonomic lifting techniques.
	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. Requirements outlined in EM385-1-1 Section 13 will be observed.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform SHSO or project manager of any slip, trip, or fall hazards.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Surface Water Sampling**
Summary: **Surface water sampling will include mobilization of personnel and equipment to the sampling location, and collection of samples.**

Principal Steps:	Potential Hazards:	Controls:
Surface Water Sample Collection	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.
	Radiological Hazard Exposure	In addition to those listed under general site activities, all surface water samples will be monitored and recorded.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform SHSO or project manager of any slip, trip, or fall hazards.
	Surface Water Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Use face shield as appropriate.

Equipment/Materials to be Used: Clean sample container, Geiger-Mueller pancake-type detector, other radiation detection equipment, as necessary.

Inspection Requirements: Personnel will conduct a daily inspection of PPE and equipment. Equipment will be inspected prior to use in accordance with the manufacturer's instructions. If during inspection or during use, equipment fails to function properly, it is to be turned in for repair/replacement. 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/replaced.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, UXO awareness and recognition, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Building Soil Piles
Summary: Activities that involve building soil piles

Principal Steps:	Potential Hazards:	Controls:
General Site Activities	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 cell phones while operating any motor vehicles. Personnel will be aware of road conditions and hazards, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTraining and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Cold and Heat Stress Injuries	SHSO to implement heat stress/cold injury control program in accordance with the work plan.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform field coordinator or SHSO of any slip, trip, or fall hazards.
	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.
	Motorized/Pedestrian Traffic	Personnel exercise caution while working in the vicinity of a street and near vehicular traffic. Working area shall be blocked off from vehicles and pedestrians.
	Injury from Material Lifting	Personnel awareness of potential hazards from day-to-day material lifting.
	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. Requirements outlined in EM385-1-1 Section 13 will be observed.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Building Soil Piles**
Summary: **Activities that involve building soil piles**

Principal Steps:	Potential Hazards:	Controls:
Building Soil Piles	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. Requirements outlined in EM385-1-1 Section 13 will be observed.
	Injury from Material Lifting	Personnel awareness of potential hazards from day-to-day material lifting.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HASP. 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 must be provided where pedestrians are exposed to the risk of collision.
	Contamination Management	All soil piles will be built on top of tarps or plastic. Piles will be covered tightly with the same, and either weighted-down or staked down upon project completion.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform field coordinator or SHSO of any slip, trip, or fall hazards.

Equipment/Materials to be Used: Hand tools, Heavy Equipment, Geiger-Mueller pancake-type detector, other radiation detection equipment, as necessary.

Inspection Requirements: None.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Building Soil Piles
Summary: Activities that involve building soil piles

Principal Steps:	Potential Hazards:	Controls:

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Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Soil Excavation
Summary: Activities involving soil excavation

Principal Steps:	Potential Hazards:	Controls:
Setup / Preparation for excavation	Hand tools	All tools will be in good working order. No damaged equipment will be used until repaired or replaced.
	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.
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
	Noise	Hearing protection will be worn in hazardous noise areas.
Hand digging	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.
	Hand tools	All tools will be in good working order. No damaged equipment will be used until repaired or replaced.
	Underground Utilities	The local utility locating hotline will be contacted to identify the locations of buried utilities before subsurface activities are allowed to commence. Potential subsurface activity locations will be cleared with SEDA personnel prior to commencement of work.
	Confined space	Install shoring or implement benching/sloping when excavation exceeds 4 feet if worker entrance is required. Implement confined space entry program (as required). Periodic trench inspections.
Mechanical Excavation	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Soil Excavation
Summary: Activities involving soil excavation

Principal Steps:	Potential Hazards:	Controls:
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
	Noise	Hearing protection will be worn in hazardous noise areas.
	Electrical/Other Underground Utillities	The local utility locating hotline will be contacted to identify the locations of buried utilities before subsurface activities are allowed to commence. Potential subsurface activity locations will be cleared with SEDA personnel prior to commencement of work. When excavations occur within 2 ft, vertically or horizontally, of a direct buried electrical or communication cable, exploratory hand trenching must be done to authenticate the actual location of the cable. Excavation areas will be swept with a metal detector, and probing will be conducted as required in the HSP. If pipe or other obstacles are encountered, shoring and hand excavation are required until the obstacles are identified and cleared. Should any underground obstructions be encountered, the Parsons designated person must immediately notify the designated client representative, who in turn notifies the proper personnel to assist in identification of the obstruction and its possible removal or re-routing.
	Excavation and trenching	Install shoring or implement benching/sloping when excavation exceeds 4 feet if worker entrance is required. Implement confined space entry program (as required). Periodic trench inspections by the SSHO.
Collect HTW / RCWM samples	Cold and heat stress injuries	Implement heat stress/cold injury control program.
	Hand tools	All tools will be in good working order. No damaged equipment will be used until repaired or replaced.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). CWM, HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
Segregate scrap and suspect CWM items for assessment	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Soil Excavation
Summary: Activities involving soil excavation

Principal Steps:	Potential Hazards:	Controls:
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
Backfill excavation.	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement cold/heat stress control program.
	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	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
	Noise	Hearing protection will be worn in hazardous noise areas.
Compacting soil.	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement cold/heat stress control program.
	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.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Soil Excavation
Summary: Activities involving soil excavation

Principal Steps:	Potential Hazards:	Controls:
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
	Noise	Hearing protection will be worn in hazardous noise areas.
Seeding.	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement cold/heat stress control program.
	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.

Equipment to be used: Excavator, loader, compactor, shoring, and hand tools, Geiger-Mueller pancake-type detector, other radiation detection equipment, as necessary.

Inspection Requirements: All excavator, compactor equipment will be inspected prior to use. If during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/ replacement. 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.

A daily inspection of PPE by workers will be conducted. The SSHO will inspect or survey excavation at least daily or right after changes in conditions (i.e., heavy rain, large amounts of soil removed). The SSHO will look for fissures and cracks in the walls and will ensure that engineering controls are still appropriate.

During site set-up, equipment generating noise will be monitored by the SSHO to determine whether or not hearing protection is required.

A competent person will inspect the excavation at least daily or after any significant weather event - if personnel will be working (collecting samples, etc.) in the excavation (not required if personnel will not enter).

Workplace: Seneca Army Depot Activity
Activity being evaluated: Soil Excavation
Summary: Activities involving soil excavation

Principal Steps:	Potential Hazards:	Controls:

CONTINUED FROM PREVIOUS PAGE:

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Operators will be trained in the safe use of required equipment and in the required personal protective equipment. UXO Personnel must be certified as EOD-trained and must be approved for the project by the USAESCH Safety Officer and Contracting Officer. Before entering a confined space, all personnel will show proof of confined space training to the SSHO. All personnel operating heavy equipment will provide proof of competency with the equipment to the SSHO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
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Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Power and Hand Tool Operation**
Summary: **Activities that involve power or hand tool operation**

Principal Steps:	Potential Hazards:	Controls:
Power Tool Operation	Hand Injury	Tools will be operated per the manufacturer's instructions. PPE will be worn as described in the HASP. In general, thick work gloves will be worn while operating power tools. Employees will be trained how to properly use new or unfamiliar equipment.
	Back Injury	Personnel will use proper lifting techniques, and will take breaks as needed to strech or change position.
	Eye Injury	Safety glasses and/or face shields will be worn while power tools are being used.
	Electrocution	Inspect for buried and overhead utilities in the vicinity of the work area. A clearance permit shall be obtained from base personnel or utility companies prior to initiating intrusive operations.
	General Use	All tools will be in good working order. No damaged equipment will be used until repaired or replaced. When power operated tools are designed to accommodate guards, the guard must be in place on the tool. Fuel powered tools may be refueled, serviced, or maintained only while the tools are stopped and not operating. Electrical power tools must be plugged into Ground Fault Circuit Interrupters (GFCI).
	Tripping	Work areas will be kept neat, unused tools will be put away. Power cords will be secured to the ground.
	Noise	Hearing protection will be worn in hazardous noise areas.
Hand Tool Operation	Hand Injury	Tools will be used in a correct and safe manner. PPE will be worn as described in the HSP. In general, thick work gloves will be worn while operating power tools. Employees will be trained how to properly use new or unfamiliar equipment.
	Back Injury	Personnel will use proper lifting techniques, and will take breaks as needed to strech or change position.
	Eye Injury	Safety glasses and/or face shields will be worn while hand tools are being used.
	General Use	All tools will be in good working order. No damaged equipment will be used until repaired or replaced.
	Tripping	Work areas will be kept neat, unused tools will be put away.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Power and Hand Tool Operation**
Summary: **Activities that involve power or hand tool operation**

Principal Steps:	Potential Hazards:	Controls:

Equipment/Materials to be Used: Any power or hand tools, ground fault circuit interrupters

Inspection Requirements: All tools will be inspected prior to use.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

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Workplace: Seneca Army Depot Activity
Activity being evaluated: Heavy and Motorized Equipment Operation
Summary: Activity involving use of heavy or motorized equipment

Principal Steps:	Potential Hazards:	Controls:
Transport to the site	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, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Struck by passing vehicle	Erect signs stating "Danger Construction Zone" on orange background with black letters, post them at least 100 yards from both sides of traffic. Lights or reflectors shall be used on signs for night work.
	Struck By	All equipment and tools will be properly secured during transport. **All vehicles and equipment will comply with DOT and OSHA requirements.**
	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.
	Backing	Use a ground guide along with a functioning back-up alarm (that is audible above the site noise) during equipment backing.
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.
	General use	All equipment must be inspected daily prior to use. Equipment must be operated and maintained in accordance with EM 385-1-1 and manufacturers guidelines. Vehicle cab must be kept free of all nonessential items, and all loose items must be secured. Safety glass must be used in windshields, windows, and doors. Cracked or broken glass must be replaced prior to use. Large construction motor vehicles and heavy equipment must be provided with necessary safety equipment (seat belts, rollover protection, emergency shutoff in case of rollover, and backup warning lights and audible alarms). Any equipment that is unattended must be immobilized and secured against accidental movement.
	Fire Hazards	All motors must be shut off during refueling. Smoking in the vicinity of the drilling rig is not permitted. An A-B-C fire extinguisher must be maintained on the drilling rig and associated motorized equipment. 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.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Heavy and Motorized Equipment Operation**
Summary: **Activity involving use of heavy or motorized equipment**

Principal Steps:	Potential Hazards:	Controls:
	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, which include wildlife at the Depot. Personnel will practice defensive driving techniques. Operators of heavy equipment will be trained in the operation of such, and will provide documentation to the SHSO prior to operation.
	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 HSP. 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.
	Struck By	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.
	Vehicle and heavy equipment traffic in work area	Operation of heavy equipment in accordance with the HSP. 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 must be provided where pedestrians are exposed to the risk of collision.
	Electrocution	Inspect for buried and overhead utilities in the vicinity of the work area. A clearance permit shall be obtained from base personnel or utility companies prior to initiating intrusive operations.
	Noise	Hearing protection will be worn in hazardous noise areas.

Equipment/Materials to be Used: Any heavy equipment (excavator, backhoe, forklift, etc.)

Inspection Requirements: Equipment will be inspected daily prior to use. Vehicle operators must check brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician’s certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed

Date: 8/1/2005
(date of evaluation)

Note(s):
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Workplace: Seneca Army Depot Activity
Activity being evaluated: Trenching
Summary: Activities that involve trench digging

Principal Steps:	Potential Hazards:	Controls:
General Site Activities	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, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Cold and Heat Stress Injuries	SHSO to implement heat stress/cold injury control program in accordance with the work plan.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform field coordinator or SHSO of any slip, trip, or fall hazards.
	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.
	Radiological Hazard Exposure	Training and safety awareness of radiological hazards during site-specific training. All personnel will be required to complete the Radiation Safety Training prior to being allowed to work onsite. The training class will be refreshed annually. All survey personnel will wear personal radiation dosimeters during the work. All personnel and equipment shall be frisked using the Geiger-Mueller pancake-type detector prior to leaving the work area and prior to eating, smoking, or drinking.
	Injury from Material Lifting	Personnel awareness of potential hazards from day-to-day material lifting.
	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. Requirements outlined in EM385-1-1 Section 13 will be observed.
Trenching	Vehicle and Heavy Equipment Traffic in Work Area	Operation of heavy equipment in accordance with the HSP. 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. During excavations with a backhoe, there must be an observer at all times to watch the backhoe bucket. The observer will visually identify and alert the operator to any obstructions while the bucket is excavating. Barriers, warning signs, designated walkways, or other safeguards must be provided where pedestrians are exposed to the risk of collision.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform field coordinator or SHSO of any slip, trip, or fall hazards.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Trenching
Summary: Activities that involve trench digging

Principal Steps:	Potential Hazards:	Controls:
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Radiological Hazard Exposure	In addition to those discussed above, radiation monitoring of soils raised to the ground surface during boring/installation will be performed and recorded periodically. Each split spoon sample will be monitored and recorded. Groundwater purge water will be monitored and recorded during pumping. All soil and groundwater samples will be monitored.
	Hand tools	All tools will be in good working order. No damaged equipment will be used until repaired or replaced.
	Confined space	Install shoring or implement benching/sloping when excavation exceeds 4 feet if worker entrance is required. Implement confined space entry program (as required). Periodic trench inspections.
	Unplanned Detonation	UXO awareness training provided by SSHO. Personnel within the EZ will observe EP-3851-95a, Basic Safety Concepts and Consideration for OE, dtd June 01. Only UXO technicians will handle OE/UXO/Demolition material. Personnel, in the immediate vicinity of the operations, will be kept to the minimum necessary for safe operations. Dig team or SSHO will stop all operation when non-essential personnel are in the EZ.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Trenching
Summary: Activities that involve trench digging

Principal Steps:	Potential Hazards:	Controls:
	Electrical/Other Underground Utillities	The local utility locating hotline will be contacted to identify the locations of buried utilities before subsurface activities are allowed to commence. Potential subsurface activity locations will be cleared with SEDA personnel prior to commencement of work. When excavations occur within 2 ft, vertically or horizontally, of a direct buried electrical or communication cable, exploratory hand trenching must be done to authenticate the actual location of the cable. Excavation areas will be swept with a metal detector, and probing will be conducted as required in the HSP. If pipe or other obstacles are encountered, shoring and hand excavation are required until the obstacles are identified and cleared. Should any underground obstructions be encountered, the Parsons designated person must immediately notify the designated client representative, who in turn notifies the proper personnel to assist in identification of the obstruction and its possible removal or re-routing.
	Trench Collapse	During hand excavations, if a person's head is below the top of the excavation or if the trench is greater than 4 ft deep, shoring is required.

Equipment/Materials to be Used: Hand tools, backhoe, Geiger-Mueller pancake-type detector, other radiation detection equipment, as necessary.

Inspection Requirements: A daily inspection of PPE by workers will be conducted. Equipment will be inspected daily by workers 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. 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/replaced. A competent person will inspect trenching locations at least daily or after any significant weather event - if personnel will be working in trench (not required if no personnel will need to enter).

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
1. This analysis serves as certification of hazard assessment and is in compliance with EM 385-1-1 Section 06.A.02 for Hazard Evaluation.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Test Pits
Summary: Activity that involves site reconnaissance, staking test pit locations, test pit excavation.

Principal Steps:	Potential Hazards:	Controls:
Project Setup: Site reconnaissance, staking test pit locations.	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, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Cold and Heat Stress Injuries	SHSO to implement heat stress/cold injury control program in accordance with the site-specific HSP
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform field coordinator or SHSO of any slip, trip, or fall hazards.
	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.
	Motorized/Pedestrian Traffic	Personnel exercise caution while working in the vicinity of a street and near vehicular traffic. Working area shall be blocked off from vehicles and pedestrians. Traffic control operations will comply with DOT requirements.
	Injury from Material Lifting	Personnel awareness of potential hazards from day-to-day material lifting. Utilize team-lift techniques as necessary.
	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. Requirements outlined in EM385-1-1 Section 13 will be observed.
Test Pit Excavation	Injury from Heavy Equipment or Equipment Roll Over	Operation of heavy equipment in accordance with the Generic Site-Wide Health and Safety Plan. Spotter and equipment operator will maintain close communication. Spotter will ensure that his actions are clear to the operator at all times. Provide warning systems such as mobile equipment, barricades, hand or mechanical signals, or stop logs, to alert operators of the edge of an excavation. Use hardhat (as required). Personnel will generally remain 3 to 5 feet away from the test pit excavation except when samples are being collected.
	Test Pit Collapse	Workers will not enter excavations at any time. Soil samples will be collected from soil in the bucket collected from the specified depth interval.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Test Pits
Summary: Activity that involves site reconnaissance, staking test pit locations, test pit excavation.

Principal Steps:	Potential Hazards:	Controls:
	Encountering Utilities During Excavation	Utility clearance will be performed and documented prior to commencement of test pit excavation. Excavation locations will be cleared with SEDA personnel prior to commencement of excavation.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Radiological Hazard Exposure	Training and safety awareness of radiological hazards during site-specific training. All personnel will be required to complete the Radiation Safety Training prior to being allowed to work onsite. The training class will be refreshed annually. All survey personnel will wear personal radiation dosimeters during the work. All personnel and equipment shall be frisked using the Geiger-Mueller pancake-type detector prior to leaving the work area and prior to eating, smoking, or drinking.
	Injury from Power Tool Operation	Personnel awareness of potential hazards from power tool operation. Power tools will be inspected prior to use and will be maintained and adjusted by qualified personnel. Personnel to inform SHSO if tools require repair or replacement. Operations will be conducted by authorized and trained personnel. Other personnel shall stay away from the operation area. Requirements outlined in EM385-1-1 Section 13 will be observed.
	Fire Hazards	All motors must be shut off during refueling. Smoking in the vicinity of the drilling rig is not permitted. An A-B-C fire extinguisher must be maintained on the drilling rig and associated motorized equipment. 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.
	Motorized/Pedestrian Traffic	Personnel exercise caution while working in the vicinity of a street and near vehicular traffic. Test pits will be blocked off from general traffic to prevent hazards.

Workplace: **Seneca Army Depot Activity**

Activity being evaluated: **Test Pits**

Summary: **Activity that involves site reconnaissance, staking test pit locations, test pit excavation.**

Principal Steps:	Potential Hazards:	Controls:
	Noise	Hearing protection (i.e. ear plugs or muffs) will be worn by the equipment operator and equipment spotter when equipment is running.

Equipment/Materials to be Used: Backhoe, various hand and power tools, photoionization detector, sample bottle preservation materials, bowls, and spoons and dust monitor.

Inspection Requirements: Personnel will conduct a daily inspection of PPE and equipment. Equipment will be inspected prior to use in accordance with the manufacturer's instructions. If during inspection or during use, equipment fails to function properly, it is to be turned in for repair/replacement. 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/replaced. During site set-up, equipment-generating noise will be monitored by the SHSO to determine whether or not hearing protection is required.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

Name: Timothy S. Mustard, CIH
(person certifying that the evaluation has been performed)

Date: 8/1/2005
(date of evaluation)

Note(s):
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Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Materials Loading and Hauling**
Summary: **Activity involves loading vehicles such as stake trucks, dump trucks, etc. in advance of material transport to another location.**

Principal Steps:	Potential Hazards:	Controls:
General Site Activities	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, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Bodily Injury	No one will be permitted in the truck during loading operations except for the driver, and then only if the truck has a cab protector. No one will be allowed to stand next to the truck during loading activities. No one shall be allowed to stand near or in the path of the device used to load the vehicle.
	Dust or Flying Particles in eyes	All persons exposed to operations which subject eyes and face to dusts or flying particles shall use eye or face protection as required. During transport, loaded materials likely to become airborne (e.g., soil, sand, gravel, debris, etc.) due to increased air movement over top of load will be covered with a tarp or similar device.
	Uneven load or shifting load	The load on every truck shall be distributed, tied down, or secured.
Hauling equipment or material on trailers or trucks a. Transporting to or from areas b. Oversize loads c. Loading and unloading equipment d. Backing of equipment	Road and traffic hazards	Check vehicle (cab, trailer, tires, lights, etc) for safe operating conditions.
	Load width, length, and weight-load movement	Check for projection of equipment or materials on ends and sides. Distribute the weight, secure the locad with load and cables. Arrange for vehicle escort services.
	Routes to travel	Check on road, side of road, and overhead road clearance conditions. Arranged for necessary vehicle escort services.

Equipment/Materials to be Used: Back hoe, Crane, Dump Truck, Stake Truck, Flat-bed Truck

Inspection Requirements:

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

Name: Timothy S Mustard, CIH
(person certifying that the evaluation has been performed

Date: 8/1/2005
(date of evaluation)

Note(s):

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2. Source of information: ______

Workplace: Seneca Army Depot Activity
Activity being evaluated: UXO Avoidance
Summary: Activity that involves locating anomalies and sample points, marking them, and clearing work areas as needed.

Principal Steps:	Potential Hazards:	Controls:
Locate anomalies and sample points selected for intrusive investigation.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.
	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.
Uses stakes or flags to mark the locations and extent of areas to be investigated.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.
	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.
Clear lines of sight using hand tools where needed.	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). HTW, radiation, and UXO training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **UXO Avoidance**
Summary: **Activity that involves locating anomalies and sample points, marking them, and clearing work areas as needed.**

Principal Steps:	Potential Hazards:	Controls:
	Tripping hazards	Worker awareness of potential slippery surfaces and tripping hazards.
	Cold and heat stress injuries	Implement heat stress/cold injury control program.
	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.
	Hand tools	All tools will be in good working order. No damaged equipment will be used until repaired or replaced.
	Back injury	Employees will use proper lifting techniques.

Equipment to be used: GPS, various hand tools (shovel, mallet)

Inspection Requirements: A daily inspection of PPE by workers will be conducted. Equipment will be inspected daily by workers 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. 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/replaced. The SSHO will inspect loading locations at least daily.

Training Requirements: Operators will be trained in the safe use of required equipment and in the required personal protective equipment. All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. UXO Personnel must be certified as EOD-trained and must be approved for the project by the USAESCH Safety Officer and Contracting Officer. All personnel operating heavy equipment will provide proof of competency with the equipment to the SSHO prior to operating the equipment.

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Date: 8/1/2005
(date of evaluation)

Note(s):
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Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Hazardous Waste Characterization**
Summary: **Activities involved in the characterization of unexpectedly discovered of drums or containers with unknown potential chemicals or waste**

Principal Steps:	Potential Hazards:	Controls:
General Site Activities	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 cell phones while operating any motor vehicles. Personnel will be aware of road conditions and hazards, which include wildlife at the Depot. Personnel will practice defensive driving techniques.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Cold and Heat Stress Injuries	SHSO to implement heat stress/cold injury control program in accordance with the work plan.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform Site Manager or SHSO of any slip, trip, or fall hazards. Practice good housekeeping, keep work areas neat.
	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.
	Motorized/Pedestrian Traffic	Personnel exercise caution while working in the vicinity of a street and near vehicular traffic. Barriers, warning signs, designated walkways, or other safeguards must be provided where pedestrians are exposed to the risk of collision.
	Injury from Material Lifting	Personnel awareness of potential hazards from day-to-day material lifting.
	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. Requirements outlined in EM385-1-1 Section 13 will be observed.
Drum or Container Removal from Excavation Area	Motorized/Pedestrian Traffic	Personnel exercise caution while working in the vicinity of a street and near vehicular traffic. Working area shall be blocked off from vehicles and pedestrians. Personnel shall wear high visibility reflective vests.
	Mechanical Movement/Energy	SHSO will ensure area can support equipment weight/movements, be area of overhead structures/lines, and use spotters. Personnel shall wear high visibility reflective vests.
	Ground Support/Stability	Personnel shall wear high visibility reflective vests. Personnel shall direct traffic as needed. Never use boom or lift on uneven or sloped surfaces.
	Overhead Hazards	Personnel awareness of potential hazards from overhead equipment and structures/lines. Personnel shall wear appropriate PPE. Use of spotters.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Hazardous Waste Characterization**
Summary: **Activities involved in the characterization of unexpectedly discovered of drums or containers with unknown potential chemicals or waste**

Principal Steps:	Potential Hazards:	Controls:
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Appropriate PPE (tyvek coverall - optional, safety glasses, gloves, and steel-toe boots). Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform Site Manager or SHSO of any slip, trip, or fall hazards. Practice good housekeeping, keep work areas neat.
	Leaking drums exposing crew to chemical contents	Establish exclusion zone with ground cover and spill berm. Avoid puddles of liquids and stained soil. Wear Level B PPE, including SCBA; chemically protective suit, gloves, boots. Conduct decontamination upon leaving exclusion zone.
	Injury from Heavy Equipment or Equipment Roll Over	Operation of heavy equipment in accordance with the Generic Site-Wide Health and Safety Plan. Spotter and equipment operator will maintain close communication. Spotter will ensure that his actions are clear to the operator at all times. Provide warning systems such as mobile equipment, barricades, hand or mechanical signals, or stop logs, to alert operators of the edge of an excavation. Use hardhat (as required). Personnel will generally remain 3 to 5 feet away from the excavated area except when samples are being collected.
	Excavated Area Collapse	Workers will not enter excavations at any time.
Survey of Drum or Container	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Personnel shall wear appropriate Level B PPE . Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform Site Manager or SHSO of any slip, trip, or fall hazards. Practice good housekeeping, keep work areas neat.
	Cold and Heat Stress Injuries	SHSO to implement heat stress/cold injury control program in accordance with the work plan.
	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.
	Leaking drums exposing crew to chemical contents	Avoid puddles of liquids and stained soil. Wear Level B PPE, including SCBA; chemically protective suit, gloves, boots. Conduct decontamination upon leaving exclusion zone.

Workplace: Seneca Army Depot Activity
Activity being evaluated: Hazardous Waste Characterization
Summary: Activities involved in the characterization of unexpectedly discovered of drums or containers with unknown potential chemicals or waste

Principal Steps:	Potential Hazards:	Controls:
	Fire hazard from unknown drum contents	Keep fire extinguisher in a readily available location. Be alert for the potential of fire and explosion and prepared to exit area quickly
	Injury from Heavy Equipment or Equipment Roll Over	Operation of heavy equipment in accordance with the Generic Site-Wide Health and Safety Plan. Spotter and equipment operator will maintain close communication. Spotter will ensure that his actions are clear to the operator at all times. Provide warning systems such as mobile equipment, barricades, hand or mechanical signals, or stop logs, to alert operators of the edge of an excavation. Use hardhat (as required). Personnel will generally remain 3 to 5 feet away from the excavated areas.
	Excavated Area Collapse	Workers will not enter excavations at any time.
Open and Sample Drum or Container	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform Site Manager or SHSO of any slip, trip, or fall hazards. Practice good housekeeping, keep work areas neat.
	Back injury	Personnel will utilize proper lifting techniques. See Drum AHA if moving drums is involved.
	Leaking drums exposing crew to chemical contents	Avoid puddles of liquids and stained soil. Wear Level B PPE, including SCBA; chemically protective suit, gloves, boots. Conduct decontamination upon leaving exclusion zone.
	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.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Personnel shall wear appropriate Level B PPE . Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Cold and Heat Stress Injuries	SHSO to implement heat stress/cold injury control program in accordance with the work plan.
	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. Requirements outlined in EM385-1-1 Section 13 will be observed.
Overpacking leaking drums	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform Site Manager or SHSO of any slip, trip, or fall hazards. Practice good housekeeping, keep work areas neat.
	Back injury	Personnel will utilize proper lifting techniques. See Drum AHA if moving drums is involved.
	Leaking drums exposing crew to chemical contents	Avoid puddles of liquids and stained soil. Wear Level B PPE, including SCBA; chemically protective suit, gloves, boots. Conduct decontamination upon leaving exclusion zone.

Workplace: **Seneca Army Depot Activity**
Activity being evaluated: **Hazardous Waste Characterization**
Summary: **Activities involved in the characterization of unexpectedly discovered of drums or containers with unknown potential chemicals or waste**

Principal Steps:	Potential Hazards:	Controls:
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Personnel shall wear appropriate Level B PPE . Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Cold and Heat Stress Injuries	SHSO to implement heat stress/cold injury control program in accordance with the work plan.
	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. Requirements outlined in EM385-1-1 Section 13 will be observed.
	Injury from Power Tools Operation	See Power and Hand Tool Operation AHA. Personnel awareness of potential hazards from power tool operation. Power tools will be inspected prior to use and will be maintained and adjusted by qualified personnel. Personnel to inform SHSO if tools require repair or replacement. Operations will be conducted by authorized and trained personnel. Other personnel shall stay away from the operation area.
Packing and shipping samples	Tripping Hazards	Personnel awareness of potential slippery surfaces and tripping hazards. Inform Site Manager or SHSO of any slip, trip, or fall hazards. Practice good housekeeping, keep work areas neat.
	Back injury	Personnel will utilize proper lifting techniques. See Drum AHA if moving drums is involved.
	Leaking drums exposing crew to chemical contents	Avoid puddles of liquids and stained soil. Wear Level B PPE, including SCBA; chemically protective suit, gloves, boots. Conduct decontamination upon leaving exclusion zone.
	Site Hazardous Material Exposure	Training and safety awareness of potential exposure to contaminants at the site. Training of personal decontamination procedure. Personnel shall wear appropriate Level B PPE . Training and safety awareness during site specific training and refreshed during morning tailgate briefing. Air monitoring for chemical agents and dust while digging. Use face shield as appropriate.
	Cold and Heat Stress Injuries	SHSO to implement heat stress/cold injury control program in accordance with the work plan.

Workplace: **Seneca Army Depot Activity**

Activity being evaluated: **Hazardous Waste Characterization**

Summary: **Activities involved in the characterization of unexpectedly discovered of drums or containers with unknown potential chemicals or waste**

Principal Steps:	Potential Hazards:	Controls:

CONTINUED FROM PREVIOUS PAGE:

Inspection Requirements: Personnel will conduct a daily inspection of PPE and equipment. Prior to working in a new space (building, igloo, rooftop) all workers will participate in a site inspection/walk through to identify potential hazards.

Equipment will be inspected prior to use in accordance with the manufacturer's instructions. If during inspection or during use, equipment fails to function properly, it is to be turned in for repair/replacement. 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/replaced.

Training Requirements: All on-site personnel will be current in OSHA training in accordance with 29 CFR 1910.120 (HAZWOPER), and be enrolled in a medical monitoring program with a current occupational physical with physician's certificate in accordance with 29 CFR 1910.120(f). Additional training (such as first aid/CPR, bloodborne pathogens, respiratory protection, confined space entry, etc.) will be provided as applicable. Personnel will be trained in the safe use of required equipment and in the required PPE. All personnel operating heavy equipment will provide proof of competency with the equipment to the SHSO prior to operating the equipment.

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Note(s):
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Certification of Task Hazard Assessment

TASK NAME: VEGETATION/BRUSH REMOVAL OPERATIONS (MANUAL MEANS)

1.0 PRINCIPAL TASK STEPS

Principal Steps:	**Potential Site Hazards** (See 1.1 list):	**Recommended Controls** (See 1.2 list):
1. Cut Vegetation	A1-2, B1-2, C1, D1-2, E, F, I1-6, J1, K1-3	A through M
2. Remove/Dispose of vegetation	A1-2, B1-2, C1, D1-2, E, F, I1-6, J1, K1-3	A through M

1.1 Potential Hazards: Items checked are known or anticipated site hazards, or may occur as a result of site operations

(Check Appropriate Box)

A (✓) Thermal Stress A1(✓) Heat Stress A2(✓) Cold Stress B(✓) Biological Hazards B1(✓) Toxic/Hazardous plants B2(✓) Hazardous animals/insects B3( ) Hanta Virus C(✓) Vehicle traffic in work area(s) D(✓) Fire Hazards D1(✓) Vegetation (high grass areas) D2(✓) Flammable Liquids E(✓) Manual Lifting hazards	F(✓) Slip, trip or fall G( ) Chemical Hazards G1( ) Respiratory G2( ) Skin H( ) Electrical Hazards H1( ) Extension Cords H2( ) Temporary Wiring I(✓) Hand/Power Tool use I1(✓) Chain Saw(s) I2(✓) Brush Clearing equipment I3(✓) Axes/Machetes I4(✓) Common Hand Tools I5(✓) Cut/Puncture Hazards	I6(✓) High Noise (>85dBA) J(✓) Radiation J1(✓) UV J2( ) Ionizing K(✓) UXO Hazards K1(✓) Potential MEC items K2(✓) Unplanned Detonation K3(✓) Near Surface K4( ) Setting monuments/stakes

1.2 Recommended Controls:

A. Observe all MEC safety precautions and use safe work practices, IAW EP 385-1-95a, Basic Safety Concepts for O&E Operations, Jun01 and EM 385-1-1, Safety and Health Requirements Manual.
B. UXO-qualified personnel must escort non-UXO qualified personnel who are essential for the task.
C. Be alert. Mark, avoid, and report any suspect MEC items.
D. Use recognized hand and arm signals to communicate between the operator and safety observer. Cease any operation, when this fails.
E. Brush cutting activities will not proceed lower that 6-inches above the ground surface at all times.
F. Establish UXO Minimum Separation Distance (MSD) and Team Separation Distance (TSD).
G. Use and enforce the buddy system.
H. Wear the appropriate PPE for the task being performed to include steel-toed boots and Kevlar chaps depending on equipment used.
I. Only operate in areas visually cleared of surface MEC and marked with surveyor tape, by a UXO-qualified person.
J. Cut vegetation to lengths easily handled by one person when possible.
K. Place cut vegetation or chips in authorized locations only.
L. Do not handle wildlife. Review characteristics of potential toxic/poisonous plant life known in the area.
M. Use and enforce the buddy system.

2.0 DEGREE OF OVERALL TASK HAZARD: Anticipated degree of hazard, based on the hazards associated with this task.

Chemical Hazard:	**Physical Hazard:**	**Biological Hazard:**
(✓) Low ( ) Serious ( ) Moderate ( ) Unknown	(✓) Low ( ) Serious ( ) Moderate ( ) Unknown	(✓) Low ( ) Serious ( ) Moderate ( ) Unknown

3.0 PROTECTIVE MEASURES: Items checked will be used to control or mitigate the above mentioned hazards

(✓) Tailgate Safety Briefing (✓) Specialized Training (✓) Proper operations of equipment (✓) Equipment Safety hazards (✓) Personal protective equipment ( ) Engineering Controls ( ) Lockout/Tag Out Other: ____________________	(✓) Site Control Zones (✓) Communications (✓) Establishing Safe Work Areas (✓) Designate Smoking/Break Area (✓) Proper use of vehicles (✓) Proper use of seat belts Other: ____________________	(✓) Administrative Controls (✓) Rotate Workers (✓) Limit Exposure Time (✓) Decontamination (✓) **Wash Hands at break regardless of activity** Other: ____________________

4.0 Applicable SOPs/Programs: Site Specific Safety/ Health Plan (SSHP)

NAME: VEGETATION/BRUSH REMOVAL OPERATIONS (MANUAL MEANS)

5.0 PPE: PPE has been assigned based on the potential for exposure as identified by this hazard assessment

Level of Protection	( ) A ( ) B	( ) C (✓) D	( ) Modified
Respiratory Protection	( ) SCBA ( ) Airline Respirator	( ) Full face APR ( ) ½ face APR	( ) Cartridge Type ______ (✓) No respirator needed
Protective Clothing	( ) Fully encapsulated ( ) Tyvek F, with hood	( ) Saranex ( ) Coveralls, Cotton	(✓) Work Clothes ( ) Other:
Gloves (specify inner/outer)	( ) Nitrile ( ) Butyl	( ) Neopene ( ) Latex	(✓) Leather ( ) Cotton
Head/Face/Eye/Ear Protection	(✓) Safety Glasses–ANSIZ87.1 (✓) Ear plugs or muffs	( ) Safety goggles (✓) Face Shield	( ) Hard Hat ( ) Other:
Foot/Leg Protection	( ) Work Boots (✓) Steel-toed boots	(✓) Steel Toe covers ( ) Snake Leggings	( ) Chemical over boots (✓) Kevlar Leg Chaps
Other Protection	( ) Cooling Vests	(✓) Hi-Visibility Vests	

5.1 PPE Modifications Required: Safety glasses required if an eye hazard exists. "Kevlar Leg Chaps" and hearing protection will be worn during vegetation removal operations, when using all gas-operated equipment. Hard hat(s) required if overhead hazard exists or when working around heavy equipment. Elevated PPE posture when dealing with suspected "Hanta Virus" locations.

6.0 Training Requirements

6.1- UXO personnel are **EOD** trained and approved by CEHNC-Huntsville
6.2- All Site personnel are OSHA qualified, IAW 29 CFR 1910.120
6.3- All Site personnel operating a vehicle maintain a current state driver's license.
6.4- UXO identification and safety precautions training for all Site Personnel. (Performed by UXOSO)
6.5- All Site personnel, operating gas-operated vegetation removal equipment, will receive "On-Hands" training prior to use of equipment (Performed by UXOSO/or local vendor).
6.6- Daily Safety and Operations Briefing. (Performed by UXOSO)
6.7- All Site personnel will attend "Site Specific Training" for safe work practices and hazard protection, IAW SSHP. (Performed by UXOSO).
6.8- Site personnel will be briefed on Material Safety Data Sheets (MSDS) for fuels and oils. (Performed by UXOSO)
6.9- Knowledge of emergency response and notifications IAW SSHP.
6.10- Maintain equipment IAW manufacturer's specifications and operate IAW owner's manual.

7.0 Equipment to be used and Inspection Requirements

Type	**Inspection Frequency** (Daily/Weekly/Monthly)		
Site Vehicle(s)	Daily by Team	Weekly by Team	Weekly by UXOSO
First Aid Kits	Daily by Team	Weekly by UXOSO for missing items	Monthly by UXOSO for expired items
Communications Equipment	Daily by Team Leader	Weekly by Team Leader	Monthly, as needed
• Communication Checks w/radios (Cellular phones as back-up)	Twice daily with all site elements. All "operations" will cease until communications have been re-established with at least another site element to relay information		
Common Hand Tools (shovels, picks)	Daily by Team	Weekly by UXOSO	Monthly by Team
Magnetometer	Daily by Team	Weekly by UXOQC	Monthly by Team/UXOQC
Fire Extinguishers	Daily by Team	Weekly by UXOSO	Monthly by UXOSO
Gas Operated Equipment (Saws, etc)	Daily by Team	Weekly by Team/SUXOS	Monthly by Team/SUXOS
Specialized Equipment	Daily by Operator	Weekly as needed	Monthly as needed

8.0 Certification: The control methods, PPE and other procedures used in the conduct of this task have been selected as a result of a hazard assessment conducted by the individual identified below:

Timothy S Mustard, CIH

Printed Name: **Timothy Mustard, C.I.H., Project Safety and Health Officer** **Date: 05/18/05**

Certification of Task Hazard Assessment

TASK NAME: VEGETATION/BRUSH REMOVAL OPERATIONS (MECHANIZED MEANS)

1.0 PRINCIPAL TASK STEPS

Principal Steps:	**Potential Site Hazards** (See 1.1 list):	**Recommended Controls** (See 1.2 list):
1. Cut Vegetation (mechanical)	A1-2, B1-2, C, D1-2, E, F, J1, K1-3, L1-4	A through N
2. Remove/Dispose of vegetation	A1-2, B1-2, C, D1-2, E, F, J1, K1-3, L4	A through N

1.1 Potential Hazards: Items checked are known or anticipated site hazards, or may occur as a result of site operations

(Check Appropriate Box)

A (✓) Thermal Stress A1(✓) Heat Stress A2(✓) Cold Stress B(✓) Biological Hazards B1(✓) Toxic/Hazardous plants B2(✓) Hazardous animals/insects B3(✓) Hanta Virus C(✓) Vehicle traffic in work area(s) D(✓) Fire Hazards D1(✓) Vegetation (high grass areas) D2(✓) Flammable Liquids E(✓) Manual Lifting hazards	F(✓) Slip, trip or fall G( ) Chemical Hazards G1( ) Respiratory G2( ) Skin H( ) Electrical Hazards H1( ) Extension Cords H2( ) Temporary Wiring I( ) Hand/Power Tool use I1( ) Chain Saw(s) I2( ) Brush Clearing equipment I3( ) Axes/Machetes I4( ) Common Hand Tools I5( ) Cut/Puncture Hazards	J(✓) Radiation J1(✓) UV J2( ) Ionizing K(✓) UXO Hazards K1(✓) Potential MEC items K2(✓) Unplanned Detonation K3(✓) Near Surface K4( ) Setting monuments/stakes L(✓) Heavy equipment use L1(✓) Brush Hog L2(✓) Tractor L3(✓) High Noise (>85dBA) L4(✓) Cut/Puncture Hazards

1.2 Recommended Controls:

A. Observe all MEC safety precautions and use safe work practices, IAW EP 385-1-95a, Basic Safety Concepts for O&E Operations, Jun01 and EM 385-1-1, Safety and Health Requirements Manual.
B. UXO-qualified personnel must escort non-UXO qualified personnel who are essential for the task.
C. Be alert. Mark, avoid, and report any suspect MEC items.
D. Use of "ground guides" will be used, when vehicle(s) are not equipped with an audible warning device and/or has an obstructed view. When transporting Heavy Equipment by trailers, the trailer will be "chocked" with approved devices when unhooked from the transporting vehicle. When attempting to hook onto the trailer, "ground guides" will not place any part of between the trailer and vehicle. All Site personnel will use passenger restraints (seat belts) when the vehicle is in motion.
E. Use recognized hand and arm signals to communicate between the operator and safety observer. Cease any operation, when this fails.
F. Establish UXO Minimum Separation Distance (MSD) and Team Separation Distance (TSD).
G. Use and enforce the buddy system.
H. Wear the appropriate PPE for the task being performed.
I. Only operate in areas visually cleared of surface MEC and marked with surveyor tape, by a UXO-qualified person.
J. Establish 300 foot minimum safety buffer from open front and side of operating blades on brush hog or tractor.
K. Cut vegetation to lengths easily handled by one person when possible.
L. Place cut vegetation or chips in authorized locations only.
M. Do not handle wildlife. Review characteristics of potential toxic/poisonous plant life known in the area.
N. Blades of the brush hog or tractor must be 6-inches above the ground surface at all times.

2.0 DEGREE OF OVERALL TASK HAZARD: Anticipated degree of hazard, based on the hazards associated with this task.

Chemical Hazard:	**Physical Hazard:**	**Biological Hazard:**
(✓) Low ( ) Serious ( ) Moderate ( ) Unknown	(✓) Low ( ) Serious ( ) Moderate ( ) Unknown	(✓) Low ( ) Serious ( ) Moderate ( ) Unknown

3.0 PROTECTIVE MEASURES: Items checked will be used to control or mitigate the above mentioned hazards

(✓) Tailgate Safety Briefing (✓) Specialized Training (✓) Proper operations of equipment (✓) Equipment Safety hazards (✓) Personal protective equipment Other: ______________________	(✓) Engineering Controls (✓) Lockout/Tag Out ( )Safety Arc/Observer (✓) Site Control Zones (✓) Communications (✓) Establishing Safe Work Areas (✓) Designate Smoking/Break Area (✓) Proper use of vehicles (✓) Proper use of seat belts Other: ______________________	(✓) Administrative Controls (✓) Rotate Workers (✓) Limit Exposure Time (✓) Decontamination (✓) **Wash Hands at break regardless of activity** Other: ______________________

4.0 Applicable SOPs/Programs: Site Specific Safety/ Health Plan (SSHP)

NAME: VEGETATION/BRUSH REMOVAL OPERATIONS (MECHANIZED MEANS)

5.0 PPE: PPE has been assigned based on the potential for exposure as identified by this hazard assessment			
Level of Protection	( ) A ( ) B	( ) C ( ) D	(✓) Modified
Respiratory Protection	( ) SCBA ( ) Airline Respirator	( ) Full face APR ( ) ½ face APR	( ) Cartridge Type _______ (✓) No respirator needed
Protective Clothing	( ) Fully encapsulated ( ) Tyvek F, with hood	( ) Saranex ( ) Coveralls, Cotton	(✓) Work Clothes ( ) Other:
Gloves (specify inner/outer)	( ) Nitrile ( ) Butyl	( ) Neopene ( ) Latex	(✓) Leather ( ) Cotton
Head/Face/Eye/Ear Protection	(✓) Safety Glasses–ANSIZ87.1 (✓) Ear plugs or muffs	( ) Safety goggles ( ) Wire or Nylon Face Shield	(✓) Hard Hat ( ) Other:
Foot/Leg Protection	( ) Work Boots (✓) Steel-toed boots	( ) Steel Toe covers ( ) Snake Leggings	( ) Chemical over boots (✓) Kevlar Leg Chaps
Other Protection	( ) Cooling Vests	(✓) Hi-Visibility Vests	

5.1 PPE Modifications Required: Safety glasses required if an eye hazard exists. "Kevlar Leg Chaps" and hearing protection will be worn during vegetation removal operations, when using all gas-operated equipment. Hard hat(s) required if overhead hazard exists or when working around heavy equipment. Elevated PPE posture when dealing with suspected "Hanta Virus" locations.

6.0 Training Requirements

6.1- UXO personnel are **EOD** trained and approved by CEHNC-Huntsville
6.2- All Site personnel are OSHA qualified, IAW 29 CFR 1910.120
6.3- All Site personnel operating a vehicle maintain a current state driver's license.
6.4- UXO identification and safety precautions training for all Site Personnel. (Performed by UXOSO)
6.5- All Site personnel, operating gas-operated vegetation removal equipment, will receive "On-Hands" training prior to use of equipment (Performed by UXOSO/or local vendor).
6.6- Daily Safety and Operations Briefing. (Performed by UXOSO)
6.7- All Site personnel will attend "Site Specific Training" for safe work practices and hazard protection, IAW SSHP. (Performed by UXOSO).
6.8-Site personnel will be briefed on Material Safety Data Sheets (MSDS) for fuels and oils. (Performed by UXOSO)
6.9- Knowledge of emergency response and notifications IAW SSHP.
6.10- Maintain equipment IAW manufacturer's specifications and operate IAW owner's manual.

7.0 Equipment to be used and Inspection Requirements

Type	**Inspection Frequency** (Daily/Weekly/Monthly)		
Site Vehicle(s)	Daily by Team	Weekly by Team	Weekly by UXOSO
First Aid Kits	Daily by Team	Weekly by UXOSO for missing items	Monthly by UXOSO for expired items
Communications Equipment	Daily by Team Leader	Weekly by Team Leader	Monthly, as needed
• Communication Checks w/radios (Cellular phones as back-up)	Twice daily with all site elements. All "operations" will cease until communications have been re-established with at least another site element to relay information		
Common Hand Tools (shovels, picks)	Daily by Team	Weekly by UXOSO	Monthly by Team
Magnetometer	Daily by Team	Weekly by UXOQC	Monthly by Team/UXOQC
Fire Extinguishers	Daily by Team	Weekly by UXOSO	Monthly by UXOSO
Gas Operated Equipment (Saws, etc)	Daily by Team	Weekly by Team/SUXOS	Monthly by Team/SUXOS
Specialized Equipment	Daily by Operator	Weekly as needed	Monthly as needed

8.0 Certification: The control methods, PPE and other procedures used in the conduct of this task have been selected as a result of a hazard assessment conducted by the individual identified below:

Timothy S Mustard, CIH

Printed Name: **Timothy Mustard, C.I.H., Project Safety and Health Officer** **Date: 05/18/05**

Certification of Task Hazard Assessment

TASK NAME: MUNITIONS AND EXPLOSIVES OF CONCERN (MEC)/UXO DISPOSAL OPERATION

1.0 PRINCIPAL TASK STEPS

Principal Steps:	Potential Site Hazards (See 1.1 list):	Recommended Controls (See 1.2 list):
1. Explosives Transportation	A1-2, C, E, F, J1, K1, K5	A, J, K, M
2. Preparing, Placing, and Detonating of Explosives	A1-2, B1-2, C,D, E, F, I4, J1, K2-K7	A through L, N

1.1 Potential Hazards: Items checked are known or anticipated site hazards, or may occur as a result of site operations **(Check Appropriate Box)**

A (✓) Thermal Stress
- A1(✓) Heat Stress
- A2(✓) Cold Stress

B(✓) Biological Hazards
- B1(✓) Toxic/Hazardous plants
- B2(✓) Hazardous animals/insects
- B3( ) Hanta Virus

C(✓) Vehicle traffic in work area(s)

D(✓) Fire Hazards
- D1(✓) Vegetation (high grass areas)
- D2( ) Flammable Liquids

E(✓) Manual Lifting hazards (sandbags)

F(✓) Slip, trip or fall

G( ) Chemical Hazards
- G1( ) Respiratory
- G2( ) Skin

H( ) Electrical Hazards
- H1( ) Extension Cords
- H2( ) Temporary Wiring

I(✓) Hand/Power Tool use
- I1( ) Chain Saw(s)
- I2( ) Brush Clearing equipment
- I3( ) Axes/Machetes
- I4(✓) Common Hand Tools
- I5( ) Cut/Puncture Hazards

J(✓) Radiation
- J1(✓) UV
- J2( ) Ionizing

K(✓) Explosives Hazards
- K1(✓) Transport of explosives
- K2(✓) Unplanned Detonation
- K3(✓) Preparing charge
- K4(✓) BIP Detonation
- K5(✓) Vehicle Accident
- K6(✓) Fire
- K7(✓) Venting MEC Scrap

L( ) Heavy equipment use
- L1( ) Brush Hog
- L2( ) Tractor

1.2 Recommended Controls:

A. Observe all MEC safety precautions and use safe work practices, IAW EP 385-1-95a, Basic Safety Concepts for O&E Operations, Jun01 and EM 385-1-1, Safety and Health Requirements Manual.
B. Establish UXO Minimum Separation Distance (MSD) for intentional detonation.
C. Keep personnel to a minimum during operations. Essential personnel only.
D. Use and enforce the buddy system.
E. Wear the appropriate PPE for the task being performed.
F. Maintain team separation distances as required.
G. Do not handle wildlife. Review characteristics of potential toxic/poisonous plant life known in the area.
H. Stop all UXO operations when **non-essential** personnel are in MSD
I. Only UXO technicians will excavate or handle UXO. All other non-essential personnel will observe the “Cardinal Principle”, IAW DA Pam 385-64, para 2-4.
J. Observe EP 385-1-95a, Basic Safety Concepts and Consideration for O&E Operations, Jun 01.
K All Site personnel will use passenger restraints (seat belts) when the vehicle is in motion. Use of “ground guides” will be conducted, when vehicle(s) is backing up and is not equipped with an audible warning device and/or has an obstructed view. All trailers will be “chocked” with approved devices, when unhooked from the vehicles. When attempting to hook onto a trailer, “Ground Guides” will not place any part of their body between the vehicle and the trailer.
L. Site personnel that encounter potential “Hanta Virus” locations will adhere to procedures described in SSHP and SOPs.
M. The transporting vehicle will be operated IAW Chapter 7, DA Pam 385-64, and Parsons SOPs.
N. Use demolition procedures IAW WP and SSHP and EODB/TM/TO 60A1-1-31.

2.0 DEGREE OF OVERALL TASK HAZARD: Anticipated degree of hazard, based on the hazards associated with this task.

Chemical Hazard:		Physical Hazard:		Biological Hazard:	
(✓) Low	( ) Serious	(✓) Low	( ) Serious	(✓) Low	( ) Serious
( ) Moderate	( ) Unknown	( ) Moderate	( ) Unknown	( ) Moderate	( ) Unknown

NAME: MEC/UXO DISPOSAL OPERATIONS

3.0 PROTECTIVE MEASURES: Items checked will be used to control or mitigate the above mentioned hazards		
(✓) Demolition Tailgate Safety Briefing (✓) Specialized Training (✓) Proper operations of equipment (✓) Equipment Safety hazards Other: ___________________	(✓) Engineering Controls (✓) Blast/Frag protection (✓) Noise Reduction (tamping) (✓) Site Control Zones (✓) Communications (✓) Establishing MSD (✓) Designate Smoking/Break Area (✓) Post Road Guards (✓) Proper use of seat belts Other: ___________________________	(✓) Personal protective equipment ( ) Administrative Controls ( ) Rotate Workers ( ) Limit Exposure Time (✓) Decontamination (✓) **Wash Hands at break regardless of activity** Other: ___________________________

4.0 Applicable SOPs/Programs: Site Specific Safety/ Health Plan (SSHP)			
5.0 PPE: PPE has been assigned based on the potential for exposure as identified by this hazard assessment			
Level of Protection	( ) A ( ) B	( ) C (✓) D	( ) Modified
Respiratory Protection	( ) SCBA ( ) Airline Respirator	( ) Full face APR ( ) ½ face APR	( ) Cartridge Type ______ (✓) No respirator needed
Protective Clothing	( ) Fully encapsulated ( ) Tyvek F, with hood	( ) Saranex ( ) Coveralls, Cotton	(✓) Work Clothes ( ) Other:
Gloves (specify inner/outer)	( ) Nitrile ( ) Butyl	( ) Neopene ( ) Latex	(✓) Work Gloves ( ) Cotton
Head/Face/Eye/Ear Protection	(✓) Safety Glasses–ANSIZ87.1 ( ) Ear plugs or muffs	( ) Safety goggles ( ) Wire or Nylon Face Shield	( ) Hard Hat ( ) Other:
Foot/Leg Protection	(✓) Work Boots ( ) Steel-toed boots	( ) Steel Toe covers ( ) Snake Leggings	( ) Chemical over boots ( ) Kevlar Leg Chaps
Other Protection	( ) Cooling Vests	( ) Hi-Visibility Vests	

5.1 PPE Modifications Required: Safety glasses required if an eye hazard exists. Hard hat(s) required if overhead hazard exists or when working around heavy equipment.

6.0 Training Requirements

6.1- UXO personnel are **EOD** trained and approved by CEHNC-Huntsville
6.2- UXO personnel are OSHA qualified, both 40-hr and current 8-hr Refresher, IAW 29 CFR 1910.120
6.3-UXO personnel operating a vehicle maintain a current state driver's license.
6.4- UXO Tech III, serving as Demolition Supervisor (UXODS) will conduct a specific Safety Brief on –
(✓) OE/UXO identification and safety precautions of all items being destroyed**;** (✓) Demolition Procedures; (✓) Wait times; (✓) Safe areas; (✓) Road Guard responsibilities; (✓) Evacuation; (✓) Notifications procedures.
6.5-Knowledge of emergency response and notifications IAW SSHP.

7.0 Equipment to be used and Inspection Requirements

Type	**Inspection Frequency** (Daily/Weekly/Monthly)		
Site Vehicle(s)	Daily by Team	Weekly by Team	Weekly by UXOSO
First Aid Kits	Daily by Team	Weekly by UXOSO for missing items	Monthly by UXOSO for expired items
Communications Equipment	Daily by Team Leader	Weekly by Team Leader	Monthly as needed
• Communication Checks w/radios (Cellular phones as back-up)	Twice daily with all site elements. All "operations" will cease until communications has been re-established with at least another site element to relay information		
Blasting Machine/Spare	Prior to Use by UXODS	Prior to Use by SUXOS	Monthly by Team/UXOQC
Firing Wire (if applicable)	Prior to Use by UXODS	Prior to Use by SUXOS	Monthly by Team/UXOQC
Galvanometer/Spare	Prior to Use by UXODS	Prior to Use by SUXOS	Monthly by Team/UXOQC
Fire Extinguishers	Daily by Team	Weekly by UXOSO	Monthly by UXOSO

8.0 Certification: The control methods, PPE and other procedures used in the conduct of this task have been selected as a result of a hazard assessment conducted by the individual identified below:

Timothy S Mustard, CIH

Printed Name: **Timothy Mustard, C.I.H., Project Safety and Health Officer** **Date: 05/18/05**

Certification of Task Hazard Assessment

TASK NAME: MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD (MPPEH) INSPECTION AND TURN-IN

1.0 PRINCIPAL TASK STEPS

Principal Steps:	**Potential Site Hazards** (See 1.1 list):	**Recommended Controls** (See 1.2 list):
1. Collection of MPPEH onsite	A1-2, B, C1, D, E, F1-3, H1-2, J1-2, K1	A through K
2. Storage of MPPEH	A1-2, B, D, E, F1-3, J2, K1	A through E
3. Inspection of MPPEH	A1-2, B, D, E, F1-3, J2, K1	A through E, H - J
4. Shipment of MPPEH	A1-2, B, D, E, F1-3, J1-2	A through E, G - J

1.1 Potential Hazards: Items checked are known or anticipated site hazards, or may occur as a result of site operations
(Check Appropriate Box)

A(✓) Thermal Stress A1(✓) Heat Stress A2(✓) Cold Stress B(✓) Vehicle traffic in work area(s) C(✓) Fire Hazards C1(✓) Vegetation (high grass areas) C2( ) Flammable Liquids D(✓) Manual Lifting hazards E(✓) Slip, trip or fall F(✓) UXO Hazards F1(✓) Potential MEC items	F2(✓) Unplanned Detonation F3(✓) Near Surface F4( ) Setting stakes G( ) Ergonomic hazards G1( ) Improper worn equipment G2( ) Repetitive motion G3( ) Obstruction of view/overhead H(✓) Biological Hazards H1(✓) Toxic/Hazards plants H2(✓) Hazardous animals/insects H3( ) Hanta Virus	I( ) Chemical exposure I1( ) Respiratory I2( ) Skin J(✓) Transportation of MPPEH J1(✓) Vehicle Accident J2(✓)Cut/Puncture hazards K(✓) Radiation K1(✓) UV K2( ) Ionizing

1.2 Recommended Controls:

A. Observe all MEC safety precautions and use safe work practices, IAW EP 385-1-95a, Basic Safety Concepts for O&E Operations, Jun01 and EM 385-1-1, Safety and Health Requirements Manual.
B. Establish UXO Minimum Separation Distance (MSD) and Team Separation Distance (TSD).
C. Keep personnel to a minimum during operations. Adhere to the "Cardinal Principle", IAW DA Pam 385-64, para 2-4.
D. Stop all UXO operations when **non-essential** personnel are in MSD.
E. Wear the appropriate PPE for the task being performed.
F. Do not handle wildlife. Review characteristics of potential toxic/poisonous plant life known in the area.
G. Use of "ground guides" will be used, when vehicle(s) are not equipped with an audible warning device and/or has an obstructed view. When transporting Heavy Equipment by trailers, the trailer will be "chocked" with approved devices when unhooked from the transporting vehicle. When attempting to hook onto the trailer, "ground guides" will not place any part of between the trailer and vehicle. All Site personnel will use passenger restraints (seat belts) when the vehicle is in motion.
H. In the event that a suspect MEC item is located, all other operations will cease until the item is destroyed.
I. Use demolition procedures IAW WP and SSHP and EODB/TM/TO 60A1-1-31.
J. Only UXO technicians will handle Demolition material.
K. Site personnel that encounter potential "Hanta Virus" locations will adhere to procedures described in SSHP and SOPs.

2.0 DEGREE OF OVERALL TASK HAZARD: Anticipated degree of hazard, based on the hazards associated with this task.

Chemical Hazard:	**Physical Hazard:**	**Biological Hazard:**
(✓) Low ( ) Serious ( ) Moderate ( ) Unknown	(✓) Low ( ) Serious ( ) Moderate ( ) Unknown	(✓) Low ( ) Serious ( ) Moderate ( ) Unknown

3.0 PROTECTIVE MEASURES: Items checked will be used to control or mitigate the above mentioned hazards

(✓) Site Specific Training (✓) Tailgate Safety Briefing (✓) Specialized Training (✓) Proper use of equipment ( ) Proper wearing of equipment Other: ______________________	( ) Administrative Controls ( ) Rotation of personnel ( ) Limit exposure time (✓) Site Control (✓) Designate Smoking/Break Area (✓) Establish/maintain MSD Other: ______________________	(✓) Personal protective equipment (✓) Decontamination (✓) **Wash Hands at break regardless of activity** Other: ______________________

4.0 Applicable SOPs/Programs: Site Specific Safety/ Health Plan (SSHP)

NAME: MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD (MPPEH) INSPECTION AND TURN-IN

5.0 PPE: PPE has been assigned based on the potential for exposure as identified by this hazard assessment

Level of Protection	( ) A ( ) B	( ) C (✓) D	( ) Modified
Respiratory Protection	( ) SCBA ( ) Airline Respirator	( ) Full face APR ( ) ½ face APR	( ) Cartridge Type ______ (✓) No respirator needed
Protective Clothing	( ) Fully encapsulated ( ) Tyvek F, with hood	( ) Saranex ( ) Coveralls, Cotton	(✓) Work Clothes ( ) Other:
Gloves (specify inner/outer)	( ) Nitrile – mixing binary explosives ( ) Butyl	( ) Neopene (✓) Latex – handling raw bulk explosives	(✓) Leather ( ) Cotton
Head/Face/Eye/Ear Protection	(✓) Safety Glasses–ANSIZ87.1 ( ) Ear plugs or muffs	( ) Safety goggles ( ) Wire or Nylon Face Shield	( ) Hard Hat ( ) Other:
Foot/Leg Protection	(✓) Work Boots ( ) Steel-toed boots	( ) Steel Toe covers ( ) Snake Leggings	( ) Chemical over boots ( ) Kevlar Leg Chaps
Other Protection	( ) Cooling Vests	( ) Hi-Visibility Vests	

5.1 PPE Modifications Required: Safety glasses required if an eye hazard exists. Hard hat(s) required if overhead hazard exists or when working around heavy equipment.

6.0 Training Requirements

6.1-UXO personnel are **EOD** trained and approved by CEHNC-Huntsville
6.2-All Site personnel are OSHA qualified, both 40-hr and current 8-hr Refresher, IAW 29 CFR 1910.120
6.3- All Site personnel operating a vehicle maintain a current state driver's license.
6.4- UXO identification and safety precautions training for all Site Personnel. (Performed by UXOSO)
6.5-Heavy Equipment operators will provide a copy of their qualifications and competency to the UXOSO, prior to any equipment operation.
6.6-Daily Safety and Operations Briefing. (Performed by UXOSO)
6.7-All Site personnel will attend "Site Specific Training" for safe work practices and hazard protection, IAW SSHP. (Performed by PHSO or UXOSO)
6.8-Knowledge of emergency response and notifications IAW SSHP.

7.0 Equipment to be used and Inspection Requirements

Type	**Inspection Frequency** (Daily/Weekly/Monthly)		
Site Vehicle(s)	Daily by Team	Weekly by Team	Weekly by UXOSO
First Aid Kits	Daily by Team	Weekly by UXOSO for missing items	Monthly by UXOSO for expired items
Communications Equipment	Daily by Team Leader	Weekly by Team Leader	Monthly as needed
• Communication Checks w/radios (Cellular phones as back-up)	Twice daily with all site elements. All "operations" will cease until communications has been re-established with at least another site element to relay information		
Fire Extinguishers	Daily by Team	Weekly by UXOSO	Monthly by UXOSO
Common Hand Tools (shovels, picks)	Daily by Team	Weekly by UXOSO	Monthly by Team

8.0 Certification: The control methods, PPE and other procedures used in the conduct of this task have been selected as a result of a hazard assessment conducted by the individual identified below:

Timothy S Mustard, CIH

Printed Name: **Timothy Mustard, C.I.H., Project Safety and Health Officer** **Date: 05/18/05**

Attachment A-2

Forms and Checklists

1. Plan Acceptance Form
2. Safety Meeting Attendance Log
3. Parsons Accident Report Forms and Instructions
4. Army Accident Report Forms and Instructions
5. Accident Report Follow-up Form
6. Respiratory Qualitative Fit-Test Form
7. Pre-drilling/Subsurface Checklist for Intrusive Fieldwork
8. Site-Specific Training
9. Site-Specific Training Form
10. Worker's Compensation Information

Attachment A-2
Forms and Checklists

Plan Acceptance Form

Project Health and Safety Plan

Plan Acceptance Form

Instructions: This form is to be completed by each person to work on the subject project work site and returned to the Site Health and Safety Officer (SHSO).

SITE NAME:

LOCATION: Romulus, NY

PROJECT NUMBER:

I understand, and agree to comply with, the provisions of the HASP for the above-referenced site. I agree to report any injuries, illnesses or exposure incidents to the Site Health and Safety Officer (SHSO).

PRINTED NAME	SIGNATURE	DATE

Attachment A-2
Forms and Checklists

Safety Meeting Attendance Log

Safety Meeting Attendance Log

Date:	**Time:**	**Contract Number:**
Delivery Order Number:	**Location: Seneca Army Depot, Romulus, NY**	
Weather Conditions: **(Low / High Temp, Wind / Speed / Dir)** **(Severe Weather)**		
Safety Meeting Topic **(Briefly describe)**		

Attendees:

Name	Signature	Company

Page 1 of 2

Attendees:		
Name	**Signature**	**Company**

Page 2 of 2

____

Site Health and Safety Officer

Attachment A-2
Forms and Checklists

Parsons Accident Report Forms and Instructions

Parsons Project Incident/Accident Report Form

PLEASE PRINT

Attach all supplemental documentation, including photos, diagrams, witness statements and field reports

PROJECT Information	Project Title		Location	
	Subcontractor			
	Address			
	City, State, Zip			
	Contact Name		Phone Number	

INCIDENT Type	☐ **Worker's Compensation** ☐ Emergency Response Notified (Police, Fire, Medic, etc.) ☐ First-Aid Only ☐ Recordable Injury	☐ **General Liability** ☐ Bodily Injury/Illness ☐ Real Property Damage ☐ Personal Property Damage ☐ Utility Property Damage	☐ **Builder's Risk** ☐ Equipment ☐ Supplies ☐ Machinery ☐ Work

Incident Location	Date of Loss		Time of Loss	
	Place (exact location)			

Incident Description	Detailed Description of Accident

Worker's Comp Or Personal Injury (circle one)	Injured Name			
	Address			
	City, State, Zip			
	Home Phone		Date of Birth	
	Nature of Injury			
	Medical Facility		Work Status	
	Treatment Received			

Property Damage Or Builder's Risk (circle one)	Owner's Name			
	Address			
	City, State, Zip			
	Home Phone		Work Phone	
	Damage Type		Estimated Cost	
	Utility Type		Marked or Unmarked	
	Description of Damage			

WITNESS Information	Name			
	Address			
	City, State, Zip			
	Home Phone		Work Phone	
	Where to contact		Time to contact	

Contractor Subcontractor Action	Describe actions taken

Signature ______________________ Employer ______________________

Print Name ______________________ Date ______________________

Phone No. ______________________ Fax Number ______________________

On-Line Safety Reporting System

Policy Requirements

- Initial incident reports for all incidents, including near misses, shall be reported within 4 hours.
- Detail incident reports are required within 24 hours.
- Reporting is done via on-line (PWeb) incident report form.
- Injuries with Days Away from Work - immediate supervisor and PM must teleconference with GBU President within 4 hours.
- Projects enter hours via on-line form by FIRST Friday of new period.

Reporting Incidents

Corporate policy requires that all employees report safety incidents to their supervisor immediately. Supervisors must report all incidents to the appropriate Project Manager (Department Manager if the incident is not related to a project), who must officially report the incident to the GBU within four hours. This official reporting is done via the PWeb, unless PWeb is unavailable, in which case the incident can be reported by email, fax or telephone.

"Incidents" include work related injuries, work related illness, accidents with property damage only and near misses. "Near misses" are any unplanned event that had the potential to (but did not) result in injury or property damage.

Incident reports should reflect the best available information at the time. Where exact information is not known (recordability, days away from work, etc.) the PM's best judgment should be used when completing the initial incident report. This information can be subsequently revised when the detail incident report is submitted.

When in doubt, submit an initial report or contact the GBU Safety Manager.

On-line Reporting System

The on-line reporting system can be found on the PI&T Safety Page on PWeb. To locate the system, follow these steps:

1. From the Corporate PWeb Homepage, select PI&T from the Org Units menu
2. Locate and select "Safety" from the list of pages in the right hand column
3. Select the "Incident Reporting Form" link

To create and submit a new incident report, select the orange "Add" button from the main page of the reporting system. To update and existing incident report or complete the Detail Incident page, locate and select the appropriate incident from the list.

Creating or Updating Incidents

The Initial Incident page of the report must be completed within four hours of the incident occurring. This page includes basic information needed for the first notification to our insurance carriers. If possible, all of the fields should be completed in the initial report. A list is provided at the end of this document describing all fields contained on the initial incident page.

Incident Detail Reports

Within 24 hours of the incident occurring, the Incident Detail page of the on-line report must be completed. This page includes detailed information about the injured party, the nature and extent of injuries, medical treatment provided, corrective actions taken, and witness statements. In the event of property damage, this page also includes descriptive information on the property owner. Finally, the page includes a section to include electronic attachments. These might include photographs, signed witness statements, etc.

Monthly Reporting of Hours

Hours must be entered into the on-line reporting system no later than the first Friday of the new period. If an accurate accounting of hours is not available, estimated hours are submitted into the system. The estimated hours can be revised later in the month, or the following month, when accurate data is available.

From the "Hours" page, select the GBU and the period (month and year) that is being reported. The system only allows hours to be entered for the period selected. MTD and PTD figures are calculated totals based on the sum of all monthly entries. To enter or correct a prior period entry, simply select that month from the drop-down box and correct the figures for that month.

Be sure to select the correct month and year when entering hours.

Hours must be entered for each (as applicable) of six different labor categories. The categories are as follows:

- Contractor (Field/Craft)
- Contractor (Office/Admin)
- JV Partner (Field/Craft)
- JV Partner (Office/Admin)
- Parsons Employee (Field/Craft)
- Parsons Employee (Office/Admin)

Monthly Statistics Summary Reports

The on-line reporting system automatically calculates incident rates based on incidents and hours entered into the system. To view the statistics, select the "Reports" page from the on-line system. Select "Parsons Safety Statistics Summary", the appropriate GBU, and the appropriate period. (NOTE: The system does not yet provide reports at the Division and Sector level. That enhancement is pending.) Use the checkboxes to select the labor categories desired.

Contact Rick McAlpin or Jim Owen for Assistance

Initial Incident Report Fields

1. GBU – Select the GBU from the drop down box. Incidents are reported primarily by project, and the GBU should reflect the unit responsible for the project. This may be different from the GBU that employees the person injured.
2. Field Project Name, Office Location or Other – If the applicable project is listed in the "Field Project" list, select from that box. If not, and if the incident occurred in a Parsons corporate office, select the office from the drop box. Otherwise, type in the name of the responsible organizational unit in the "Other" field. The GBU must be selected BEFORE attempting to select a Project/Office. Do NOT select both a field project AND an Office Location (or Other). If the appropriate Project or Office name can not be found, manually enter it into the "Other" field.
3. Job and WBS Numbers – These fields should reflect the charge number responsible for the incident. In general, that will be the number that the employee was charging at the time of the incident. Projects are responsible for visitors, regardless of what charge number they use while visiting the job. For example, if the Division Manager is injured while visiting Project X, the project number is entered, not the division overhead account.
4. Near Miss – Check this box if the report is for a near miss only (no injury or property damage occurred).
5. Emergency Response Notified – Check this box if fire, police or ambulance was called as a result of the incident.
6. Three or More Employees Hospitalized – Check this box if three or more employees were injured as the result of a single incident. In this case, the GBU or Corporate Safety Manager must also be immediately notified by telephone.
7. Extent of Injury – Select the appropriate radio button. First aid cases are as defined by OSHA 1904 criteria. All other injuries are considered recordable.
8. Restricted Duty (# of days) – If the injured person was limited (by a physician) to less than normal work duration or duties, enter the number of days. Estimate the days if unknown, and correct the number later. NOTE: this is the number of CALENDAR days (not scheduled work days), and it does NOT include the day of the injury.
9. Days Away From Work (# of days) – If the injured person was ordered by a physician not to return to work, enter the number of days missed. Estimate the days if unknown, and correct the number later. NOTE: this is the number of CALENDAR days (not scheduled work days), and it does NOT include the day of the injury. Injuries with Days Away From Work require a phone call to the GBU President within 4 hours.
10. Fatality (Date of Death) – In the event of a work related fatality, enter the date of death here. NOTE: Fatalities require immediate phone notification of the Division Manager, GBU President, GBU Safety Manager, and Corporate Safety Manager.
11. Property Damage – Check the appropriate boxes if applicable.
12. Place – Describe the exact location that incident occurred. For example, "in the north stairwell of building 21, between the second and third floor."
13. Date – This field reflects the date the incident occurred, not necessarily the date it was reported. If the exact date is not known, an estimate should be used.
14. Time – This field reflects the time of day that the incident occurred. If the exact time is not known, an estimate should be used.
15. Incident Description – Provide a detailed description of the incident. This is a memo field and text will scroll down the window as it is entered. Use as much space as needed to accurately describe the incident and the resulting injuries.

16. Reported by – This field defaults to the employee login ID that was used to access PWeb. However, the field can be over-written if needed.
17. Name – First and last name of the injured party.
18. Status – Select the most appropriate category from the drop box (Employee - Field, Subcontractor - Field, Partner - Field, Employee - Office, Subcontractor - Office, Partner - Office or 3rd Party).
19. Trade/Function – Select the most appropriate category from the drop box.

Attachment A-2
Forms and Checklists

Army Accident Report Forms and Instructions

(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	DIVING
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	e. GRADE

f. JOB SERIES/TITLE	g. DUTY STATUS AT TIME OF ACCIDENT	h. EMPLOYMENT STATUS AT TIME OF ACCIDENT
	☐ ON DUTY ☐ TDY ☐ OFF DUTY	☐ 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)*	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME
	hrs		(1) PRIME:

e. CONTRACT NUMBER	f. TYPE OF CONTRACT	g. HAZARDOUS/TOXIC WASTE ACTIVITY	
______ ☐ CIVIL WORKS ☐ MILITARY ☐ OTHER *(Specify)* ______	☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER *(Specify)* ______	☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER *(Specify)* ______	(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	(CODE)	g. TYPE AND SOURCE OF INJURY/ILLNESS	(CODE)
PRIMARY ______	#	TYPE ______	#
SECONDARY ______	#	SOURCE ______	#
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	USED	NOT USED	NOT AVAILABLE
☐ PICKUP/VAN ☐ AUTOMOBILE	☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END	(1) FRONT SEAT			
☐ TRUCK ☐ OTHER *(Specify)* ______	☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER *(Specify)* ______	(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)*

See attached page.

11. **CAUSAL FACTOR(S)** *(Read Instruction Before Completing)*

a. (Explain YES answers in item 13)

	YES	NO
DESIGN: Was design of facility, workplace or equipment a factor?	☐	☐
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?	☐	☐
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?	☐	☐
OPERATING PROCEDURES: Were operating procedures a factor?	☐	☐
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	☐	☐
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?	☐	☐
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?	☐	☐

a. *(CONTINUED)*

	YES	NO
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?	☐	☐
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?	☐	☐
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?	☐	☐
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?	☐	☐
DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident	☐	☐

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?	b. TYPE OF TRAINING.	c. DATE OF MOST RECENT FORMAL TRAINING.
☐ YES ☐ NO	☐ CLASSROOM ☐ ON JOB	(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

See attached page.

b. INDIRECT CAUSE(S)

See attached page.

14. **ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).**

DESCRIBE FULLY:

See attached page.

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)*	f. OFFICE SYMBOL
CORPS ______ CONTRACTOR ______			

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

*U.S. GOVERNMENT PRINTING OFFICE: 1993-0-791-757

10. **ACCIDENT DESCRIPTION** *(Continuation)*

13a. **DIRECT CAUSE** *(Continuation)*

13b.	INDIRECT CAUSES *(Continuation)*

14.	ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) *(Continuation)*

GENERAL. Complete a separate report for each person who was *injured, caused,* or *contributed* to the accident (excluding uninjured personnel and witnesses). Use of this form for reporting USACE employee first-aid type injuries not submitted to the Office of Workers' Compensation Programs (OWCP) shall be at the descretion of the FOA commander. Please type or print legibly. Appropriate items shall be marked with an "X" in box(es). If additional space is needed, provide the information on a separate sheet and attach to the completed form. Ensure that these instructions are forwarded with the completed report to the designated management reviewers indicated in sections 16 and 17.

INSTRUCTIONS FOR SECTION 1 — ACCIDENT CLASSIFICATION. *(Mark All Boxes That Are Applicable.)*

a. GOVERNMENT. Mark "CIVILIAN" box if accident involved government civilian employee; mark "MILITARY" box if accident involved U.S. military personnel.

(1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in any government civilian employee injury, illness, or fatality that requires the submission of OWCP Forms CA-1 (injury), CA-2 (illness), or CA-6 (fatality) to OWCP; mark if accident resulted in military personnel lost-time or fatal injury or illness.

(2) PROPERTY DAMAGE — Mark the appropriate box if accident resulted in any damage of $1000 or more to government property (including motor vehicles).

(3) VEHICLE INVOLVED — Mark if accident involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY — Mark if the accident involved an in-house USACE diving activity.

b. CONTRACTOR

(1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in any contractor lost-time injury/illness or fatality.

(2) PROPERTY DAMAGE — Mark the appropriate box if accident resulted in any damage of $1000 or more to contractor property (including motor vehicles).

(3) VEHICLE INVOLVED — Mark if accident involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY — Mark if the accident involved a USACE Contractor diving activity.

c. PUBLIC.

(1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in public fatality or permanent total disability. (The "OTHER" box will be marked when requested by the FOA to report an unusual non-fatal public accident that could result in claims against the government or as otherwise directed by the FOA Commander).

(2) VOID SPACE — Make no entry.

(3) VEHICLE INVOLVED — Mark if accident resulted in a fatality to a member of the public and involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" is marked.

(4) VOID SPACE — Make no entry.

INSTRUCTIONS FOR SECTION 2 — PERSONAL DATA

a. NAME — (MANDATORY FOR GOVERNMENT ACCIDENTS. OPTIONAL AT THE DISCRETION OF THE FOA COMMANDER FOR CONTRACTOR AND PUBLIC ACCIDENTS). Enter last name, first name, middle initial of person involved.

b. AGE — Enter age.

c. SEX — Mark appropriate box.

d. SOCIAL SECURITY NUMBER — (FOR GOVERNMENT PERSONNEL ONLY) Enter the social security number (or other personal identification number if no social security number issued).

e. GRADE — (FOR GOVERNMENT PERSONNEL ONLY) Enter pay grade. Example: O-6; E-7; WG-8; WS-12; GS-11; etc.

f. JOB SERIES/TITLE — For *government civilian employees* enter the pay plan, full series number, and job title, e.g. GS-0810/Civil Engineer. For *military personnel* enter the primary military occupational specialty (PMOS), e.g., 15A30 or 11G50. For *contractor employees* enter the job title assigned to the injured person, e.g. carpenter, laborer, surveyor, etc.,

g. DUTY STATUS — Mark the appropriate box.

(1) ON DUTY — Person was at duty station during duty hours or person was away from duty station during duty hours but on official business at time of the accident.

(2) TDY - Person was on official business, away from the duty station and with travel orders at time of accident. Line-of-duty investigation required.

(3) OFF DUTY - Person was not on official business at time of accident

h. EMPLOYMENT STATUS — (FOR GOVERNMENT PERSONNEL ONLY) Mark the most appropriate box. If "OTHER" is marked, specify the employment status of the person.

INSTRUCTION FOR SECTION 3 — GENERAL INFORMATION

a. DATE OF ACCIDENT — Enter the month, day, and year of accident.

b. TIME OF ACCIDENT — Enter the local time of accident in military time. Example: 1430 hrs (not 2:30 p.m.).

c. EXACT LOCATION OF ACCIDENT — Enter facts needed to locate the accident scene. (installation/project name, building number, street, direction and distance from closest landmark, etc.,).

d. CONTRACTOR NAME

(1) PRIME — Enter the exact name (title of firm) of the prime contractor.

(2) SUBCONTRACTOR — Enter the name of any subcontractor involved in the accident.

e. CONTRACT NUMBER — Mark the appropriate box to identify if contract is civil works, military, or other: if "OTHER" is marked, specify contract appropriation on line provided. Enter complete contract number of prime contract, e.g., DACW 09-85-C-0100.

f. TYPE OF CONTRACT — Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.

g. HAZARDOUS/TOXIC WASTE ACTIVITY (HTW) — Mark the box to identify the HTW activity being performed at the time of the accident. For Superfund, DERP, and Installation Restoration Program (IRP) HTW activities include accidents that occurred during inventory, predesign, design, and construction. For the purpose of accident reporting, DERP Formerly Used DoD Site (FUDS) activities and IRP activities will be treated separately. For Civil Works O&M HTW activities mark the "OTHER" box.

INSTRUCTIONS FOR SECTION 4 — CONSTRUCTION ACTIVITIES

a. CONSTRUCTION ACTIVITY — Select the *most appropriate* construction activity being performed at time of accident from the list below. Enter the activity name and place the corresponding code number identified in the box.

CONSTRUCTION ACTIVITY LIST

1. MOBILIZATION	14. ELECTRICAL
2. SITE PREPARATION	15. SCAFFOLDING/ACCESS
3. EXCAVATION/TRENCHING	16. MECHANICAL
4. GRADING (EARTHWORK)	17. PAINTING
5. PIPING/UTILITIES	18. EQUIPMENT/MAINTENANCE
6. FOUNDATION	19. TUNNELING
7. FORMING	20. WAREHOUSING/STORAGE
8. CONCRETE PLACEMENT	21. PAVING
9. STEEL ERECTION	22. FENCING
10. ROOFING	23. SIGNING
11. FRAMING	24. LANDSCAPING/IRRIGATION
12. MASONRY	25. INSULATION
13. CARPENTRY	26. DEMOLITION

b. TYPE OF CONSTRUCTION EQUIPMENT – Select the equipment involved in the accident from the list below. Enter the name and place the corresponding code number identified in the box. If equipment is not included below, use code 24, "OTHER", and write in specific type of equipment.

CONSTRUCTION EQUIPMENT

1. GRADER
2. DRAGLINE
3. CRANE (ON VESSEL/BARGE)
4. CRANE (TRACKED)
5. CRANE (RUBBER TIRE)
6. CRANE (VEHICLE MOUNTED)
7. CRANE (TOWER)
8. SHOVEL
9. SCRAPER
10. PUMP TRUCK (CONCRETE)
11. TRUCK (CONCRETE/TRANSIT MIXER)
12. DUMP TRUCK (HIGHWAY)
13. DUMP TRUCK (OFF HIGHWAY)
14. TRUCK (OTHER)
15. FORKLIFT
16. BACKHOE
17. FRONT-END LOADER
18. PILE DRIVER
19. TRACTOR (UTILITY)
20. MANLIFT
21. DOZER
22. DRILL RIG
23. COMPACTOR/VIBRATORY ROLLER
24. OTHER

INSTRUCTIONS FOR SECTION 5 – INJURY/ILLNESS INFORMATION

a. SEVERITY OF INJURY / ILLNESS - Reference para 2-10 of USACE Suppl 1 to AR 385-40 and enter code and description from list below.

NOI NO INJURY
FAT FATALITY
PTL PERMANENT TOTAL DISABILITY
PPR PERMANENT PARTIAL DISABILITY
LWD LOST WORKDAY CASE INVOLVING DAYS AWAY FROM WORK
NLW RECORDABLE CASE WITHOUT LOST WORKDAYS
RFA RECORDABLE FIRST AID CASE
NRI NON-RECORDABLE INJURY

b. ESTIMATED DAYS LOST – Enter the estimated number of workdays the person will lose from work.

c. ESTIMATED DAYS HOSPITALIZED – Enter the estimated number of workdays the person will be hospitalized.

d. ESTIMATED DAYS RESTRICTED DUTY – Enter the estimated number of workdays the person, as a result of the accident, will not be able to perform all of their regular duties.

e. BODY PART AFFECTED – Select the most appropriate primary and when applicable, secondary body part affected from the list below. Enter body part name on line and place the corresponding code letters identifying that body part in the box.

GENERAL BODY AREA	CODE	BODY PART NAME
ARM/WRIST	AB	ARM AND WRIST
	AS	ARM OR WRIST
TRUNK, EXTERNAL MUSCULATURE	B1	SINGLE BREAST
	B2	BOTH BREASTS
	B3	SINGLE TESTICLE
	B4	BOTH TESTICLES
	BA	ABDOMEN
	BC	CHEST
	BL	LOWER BACK
	BP	PENIS
	BS	SIDE
	BU	UPPER BACK
	BW	WAIST
	BZ	TRUNK OTHER
HEAD, INTERNAL	C1	SINGLE EAR INTERNAL
	C2	BOTH EARS INTERNAL
	C3	SINGLE EYE INTERNAL
	C4	BOTH EYES INTERNAL
	CB	BRAIN
	CC	CRANIAL BONES
	CD	TEETH
	CJ	JAW
	CL	THROAT, LARYNX
	CM	MOUTH
	CN	NOSE
	CR	THROAT, OTHER
	CT	TONGUE
	CZ	HEAD OTHER INTERNAL
ELBOW	EB	BOTH ELBOWS
	ES	SINGLE ELBOW
FINGER	F1	FIRST FINGER
	F2	BOTH FIRST FINGERS
	F3	SECOND FINGER
	F4	BOTH SECOND FINGERS
	F5	THIRD FINGER
	F6	BOTH THIRD FINGERS
	F7	FOURTH FINGER
	F8	BOTH FOURTH FINGERS
TOE	G1	GREAT TOE
	G2	BOTH GREAT TOES
	G3	TOE OTHER
	G4	TOES OTHER
HEAD, EXTERNAL	H1	EYE EXTERNAL
	H2	BOTH EYES EXTERNAL
	H3	EAR EXTERNAL
	H4	BOTH EARS EXTERNAL
	HC	CHIN
	HF	FACE
	HK	NECK/THROAT
	HM	MOUTH/LIPS
	HN	NOSE
	HS	SCALP
KNEE	KB	BOTH KNEES
	KS	KNEE
LEG, HIP, ANKLE, BUTTOCK	LB	BOTH LEGS/HIPS/ ANKLES/BUTTOCKS
	LS	SINGLE LEG/HIP ANKLE/BUTTOCK
HAND	MB	BOTH HANDS
	MS	SINGLE HAND
FOOT	PB	BOTH FEET
	PS	SINGLE FOOT
TRUNK, BONES	R1	SINGLE COLLAR BONE
	R2	BOTH COLLAR BONES
	R3	SHOULDER BLADE
	R4	BOTH SHOULDER BLADES
	RB	RIB
	RS	STERNUM (BREAST BONE)
	RV	VERTEBRAE (SPINE; DISC)
	RZ	TRUNK BONES OTHER
SHOULDER	SB	BOTH SHOULDERS
	SS	SINGLE SHOULDER
THUMB	TB	BOTH THUMBS
	TS	SINGLE THUMB
TRUNK, INTERNAL ORGANS	V1	LUNG, SINGLE
	V2	LUNGS, BOTH
	V3	KIDNEY, SINGLE
	V4	KIDNEYS, BOTH
	VH	HEART
	VL	LIVER
	VR	REPRODUCTIVE ORGANS
	VS	STOMACH
	VV	INTESTINES
	VZ	TRUNK, INTERNAL; OTHER

f. NATURE OF INJURY/ILLNESS - Select the most appropriate nature of injury / illness from the list below. This nature of injury / illness shall correspond to the primary body part selected in 5e, above. Enter the nature of injury / illness name on the line and place the corresponding CODE letters in the box provided.

* The injury or condition selected below must be caused by a specific incident or event which occurred during a single work day or shift.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
*TRAUMATIC INJURY OR DISABILITY	TA	AMPUTATION
	TB	BACK STRAIN.
	TC	CONTUSION; BRUISE; ABRASION
	TD	DISLOCATION
	TF	FRACTURE
	TH	HERNIA
	TK	CONCUSSION
	TL	LACERATION, CUT
	TP	PUNCTURE
	TS	STRAIN, MULTIPLE
	TU	BURN, SCALD, SUNBURN
	TI	TRAUMATIC SKIN DISEASES/ CONDITIONS INCLUDING DERMATITIS
	TR	TRAUMATIC RESPIRATORY DISEASE
	TQ	TRAUMATIC FOOD POISONING
	TW	TRAUMATIC TUBERCULOSIS
	TX	TRAUMATIC VIROLOGICAL/ INFECTIVE/PARASITIC DISEASE
	T1	TRAUMATIC CEREBRAL VASCULAR CONDITION/STROKE
	T2	TRAUMATIC HEARING LOSS
	T3	TRAUMATIC HEART CONDITION
	T4	TRAUMATIC MENTAL DISORDER; STRESS; NERVOUS CONDITION
	T8	TRAUMATIC INJURY — OTHER (EXCEPT DISEASE, ILLNESS)

**A nontraumatic physiological harm or loss of capacity produced by systemic infection; continued or repeated stress or strain; exposure to toxins, poisons, fumes, etc.; or other continued and repeated exposures to conditions of the work environment over a long period of time. For practical purposes, an occupational illness/disease or disability is any reported condition which doses not meet the definition of traumatic injury or disability as described above.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
**NON-TRAUMATIC ILLNESS/DISEASE OR DISABILITY		
RESPIRATORY DISEASE	RA	ASBESTOSIS
	RB	BRONCHITIS
	RE	EMPHYSEMA
	RP	PNEUMOCONIOSIS
	RS	SILICOSIS
	R9	RESPIRATORY DISEASE, OTHER
VIROLOGICAL, INFECTIVE & PARASITIC DISEASES	VB	BRUCELLOSIS
	VC	COCCIDIOMYCOSIS
	VF	FOOD POISONING
	VH	HEPATITIS
	VM	MALARIA
	VS	STAPHYLOCOCCUS
	VT	TUBERCULOSIS
	V9	VIROLOGICAL/INFECTIVE/ PARASITIC—OTHER
DISABILITY, OCCUPATIONAL	DA	ARTHRITIS, BURSITIS
	DB	BACK STRAIN, BACK SPRAIN
	DC	CEREBRAL VASCULAR CONDITION; STROKE
	DD	ENDEMIC DISEASE (OTHER THAN CODE TYPES R&S)
	DE	EFFECT OF ENVIRONMENTAL CONDITION
	DH	HEARING LOSS
	DK	HEART CONDITION
	DM	MENTAL DISORDER, EMOTIONAL STRESS NERVOUS CONDITION
	DR	RADIATION
	DS	STRAIN, MULTIPLE
	DU	ULCER
	DV	OTHER VASCULAR CONDITIONS
	D9	DISABILITY, OTHER

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
SKIN DISEASE OR CONDITION	SB	BIOLOGICAL
	SC	CHEMICAL
	S9	DERMATITIS, UNCLASSIFIED

g. TYPE AND SOURCE OF INJURY/ILLNESS (CAUSE) - Type and Source Codes are used to describe what caused the incident. The Type Code stands for an ACTION and the Source Code for an OBJECT or SUBSTANCE. Together, they form a brief description of how the incident occurred. Where there are two different sources, code the initiating source of the incident (see example 1, below). Examples:

(1) An employee tripped on carpet and struck his head on a desk.
TYPE: 210 (fell on same level) SOURCE: 0110 (walking/working surface)

NOTE: This example would NOT be coded 120 (struck against) and 0140 (furniture).

(2) A Park Ranger contracted dermatitis from contact with poison ivy/ oak.
TYPE: 510 (contact) SOURCE: 0920 (plant)

(3) A lock and dam mechanic punctured his finger with a metal sliver while grinding a turbine blade.
TYPE: 410 (punctured by) SOURCE: 0830 (metal)

(4) An employee was driving a government vehicle when it was struck by another vehicle..
TYPE: 800 (traveling in) SOURCE: 0421 (government-owned vehicle, as driver)

NOTE: The Type Code 800, "Traveling In" is different from the other type codes in that its function is not to identify factors contributing to the injury or fatality, but rather to collect data on the type of vehicle the employee was operating or traveling in at the time of the incident.

Select the most appropriate TYPE and SOURCE identifier from the list below and enter the name on the line and the corresponding code in the appropriate box.

CODE	TYPE OF INJURY NAME
	STRUCK
0110	STRUCK BY
0111	STRUCK BY FALLING OBJECT
0120	STRUCK AGAINST
	FELL, SLIPPED, TRIPPED
0210	FELL ON SAME LEVEL
0220	FELL ON DIFFERENT LEVEL
0230	SLIPPED, TRIPPED (NO FALL)
	CAUGHT
0310	CAUGHT ON
0320	CAUGHT IN
0330	CAUGHT BETWEEN
	PUNCTURED, LACERATED
0410	PUNCTURED BY
0420	CUT BY
0430	STUNG BY
0440	BITTEN BY
	CONTACTED
0510	CONTACTED WITH (INJURED PERSON MOVING)
0520	CONTACTED BY (OBJECT WAS MOVING)
	EXERTED
0610	LIFTED, STRAINED BY (SINGLE ACTION)
0620	STRESSED BY (REPEATED ACTION)
	EXPOSED
0710	INHALED
0720	INGESTED
0730	ABSORBED
0740	EXPOSED TO
0800	TRAVELING IN

CODE	SOURCE OF INJURY NAME
0100	BUILDING OR WORKING AREA
0110	WALKING/WORKING SURFACE (FLOOR, STREET, SIDEWALKS, ETC)
0120	STAIRS, STEPS
0130	LADDER
0140	FURNITURE, FURNISHINGS, OFFICE EQUIPMENT
0150	BOILER, PRESSURE VESSEL
0160	EQUIPMENT LAYOUT (ERGONOMIC)
0170	WINDOWS, DOORS
0180	ELECTRICITY

CODE	SOURCE OF INJURY NAME
0200	ENVIRONMENTAL CONDITION
0210	TEMPERATURE EXTREME (INDOOR)
0220	WEATHER (ICE, RAIN, HEAT, ETC.)
0230	FIRE, FLAME, SMOKE (NOT TOBACCO)
0240	NOISE
0250	RADIATION
0260	LIGHT
0270	VENTILATION
0271	TOBACCO SMOKE
0280	STRESS (EMOTIONAL)
0290	CONFINED SPACE
0300	MACHINE OR TOOL
0310	HAND TOOL (POWERED: SAW, GRINDER, ETC.)
0320	HAND TOOL (NONPOWERED)
0330	MECHANICAL POWER TRANSMISSION APPARATUS
0340	GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK)
0350	VIDEO DISPLAY TERMINAL
0360	PUMP, COMPRESSOR, AIR PRESSURE TOOL
0370	HEATING EQUIPMENT
0380	WELDING EQUIPMENT
0400	VEHICLE
0411	AS DRIVER OF PRIVATELY OWNED/RENTAL VEHICLE
0412	AS PASSENGER OF PRIVATELY OWNED/RENTAL VEHICLE
0421	DRIVER OF GOVERNMENT VEHICLE
0422	PASSENGER OF GOVERNMENT VEHICLE
0430	COMMON CARRIER (AIRLINE, BUS, ETC.)
0440	AIRCRAFT (NOT COMMERCIAL)
0450	BOAT, SHIP, BARGE
0500	MATERIAL HANDLING EQUIPMENT
0510	EARTHMOVER (TRACTOR, BACKHOE, ETC.)
0520	CONVEYOR (FOR MATERIAL AND EQUIPMENT)
0530	ELEVATOR, ESCALATOR, PERSONNEL HOIST
0540	HOIST, SLING CHAIN, JACK
0550	CRANE
0551	FORKLIFT
0560	HANDTRUCK, DOLLY
0600	DUST, VAPOR, ETC.
0610	DUST (SILICA, COAL, ETC.)
0620	FIBERS
0621	ASBESTOS
0630	GASES
0631	CARBON MONOXIDE
0640	MIST, STEAM, VAPOR, FUME
0641	WELDING FUMES
0650	PARTICLES (UNIDENTIFIED)
0700	CHEMICAL, PLASTIC, ETC.
0711	DRY CHEMICAL—CORROSIVE
0712	DRY CHEMICAL—TOXIC
0713	DRY CHEMICAL—EXPLOSIVE
0714	DRY CHEMICAL—FLAMMABLE
0721	LIQUID CHEMICAL—CORROSIVE
0722	LIQUID CHEMICAL—TOXIC
0723	LIQUID CHEMICAL—EXPLOSIVE
0724	LIQUID CHEMICAL—FLAMMABLE
0730	PLASTIC
0740	WATER
0750	MEDICINE
0800	INANIMATE OBJECT
0810	BOX, BARREL, ETC.
0820	PAPER
0830	METAL ITEM, MINERAL
0831	NEEDLE
0840	GLASS
0850	SCRAP, TRASH
0860	WOOD
0870	FOOD
0880	CLOTHING, APPAREL, SHOES
0900	ANIMATE OBJECT
0911	DOG
0912	OTHER ANIMAL
0920	PLANT
0930	INSECT
0940	HUMAN (VIOLENCE)
0950	HUMAN (COMMUNICABLE DISEASE)
0960	BACTERIA, VIRUS (NOT HUMAN CONTACT)

CODE	SOURCE OF INJURY NAME
1000	PERSONAL PROTECTIVE EQUIPMENT
1010	PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES
1020	RESPIRATOR, MASK
1021	DIVING EQUIPMENT
1030	SAFETY BELT, HARNESS
1040	PARACHUTE

INSTRUCTIONS FOR SECTION 6 — PUBLIC FATALITY

a. ACTIVITY AT TIME OF ACCIDENT—Select the activity being performed at the time of the accident from the list below. Enter the activity name on the line and the corresponding number in the box. If the activity performed is not identified on the list, select from the *most* appropriate primary activity area (water related, non-water related or other activity), the code number for "Other", and write in the activity being performed at the time of the accident.

WATER RELATED RECREATION

1. Sailing
2. Boating—powered
3. Boating—unpowered
4. Water skiing
5. Fishing from boat
6. Fishing from bank dock or pier
7. Fishing while wading
8. Swimming/supervised area
9. Swimming/designated area
10. Swimming/other area
11. Underwater activities (skin diving, scuba, etc.)
12. Wading
13. Attempted rescue
14. Hunting from boat
15. Other

NON-WATER RELATED RECREATION

16. Hiking and walking
17. Climbing (general)
18. Camping/picnicking authorized area
19. Camping/picnicking unauthorized area
20. Guided tours
21. Hunting
22. Playground equipment
23. Sports/summer (baseball, football, etc.)
24. Sports/winter (skiing, sledding, snowmobiling etc.)
25. Cycling (bicycle, motorcycle, scooter)
26. Gliding
27. Parachuting
28. Other non-water related

OTHER ACTIVITIES

29. Unlawful acts (fights, riots, vandalism, etc.)
30. Food preparation/serving
31. Food consumption
32. Housekeeping
33. Sleeping
34. Pedestrian struck by vehicle
35. Pedestrian other acts
36. Suicide
37. "Other" activities

b. PERSONAL FLOTATION DEVICE USED—If fatality was water-related was the victim wearing a person flotation device? Mark the appropriate box.

INSTRUCTIONS FOR SECTION 7—MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE—Mark appropriate box for each vehicle involved. If more than one vehicle of the same type is involved, mark both halves of the appropriate box. USACE vehicle(s) involved shall be marked in left half of appropriate box.

b. TYPE OF COLLISION—Mark appropriate box.

c. SEAT BELT—Mark appropriate box.

INSTRUCTIONS FOR SECTION 8—PROPERTY/ MATERIAL INVOLVED

a. NAME OF ITEM—Describe all property involved in accident. Property/material involved means material which is damaged or whose use or misuse contributed to the accident. Include the name, type, model; also include the National Stock Number (NSN) whenever applicable.

b. OWNERSHIP—Enter ownership for each item listed. (Enter one of the following: *USACE; OTHER GOVERNMENT; CONTRACTOR; PRIVATE)*

c. $ AMOUNT OF DAMAGE—Enter the total estimated dollar amount of damage (parts and labor), if any.

INSTRUCTIONS FOR SECTION 9—VESSEL/ FLOATING PLANT ACCIDENT

a. TYPE OF VESSEL/FLOATING PLANT—Select the most appropriate vessel/floating plant from list below. Enter name and place corresponding number in box. If item is not listed below, enter item number for "OTHER" and write in specific type of vessel/ floating plant.

VESSEL/FLOATING PLANTS

1. ROW BOAT	7. DREDGE/DIPPER
2. SAIL BOAT	8. DREDGE/CLAMSHELL, BUCKET
3. MOTOR BOAT	9. DREDGE/PIPE LINE
4. BARGE	10. DREDGE/DUST PAN
5. DREDGE/HOPPER	11. TUG BOAT
6. DREDGE/SIDE CASTING	12. OTHER

b. COLLISION/MISHAP—Select from the list below the object(s) that contributed to the accident or were damaged in the accident.

COLLISION/MISHAP

1. COLLISION W/OTHER VESSEL	7. HAULAGE UNIT
2. UPPER GUIDE WALL	8. BREAKING TOW
3. UPPER LOCK GATES	9. TOW BREAKING UP
4. LOCK WALL	10. SWEPT DOWN ON DAM
5. LOWER LOCK GATES	11. BUOY/DOLPHIN/CELL
6. LOWER GUIDE WALL	12. WHARF OR DOCK
	13. OTHER

INSTRUCTIONS FOR SECTION 10—ACCIDENT DESCRIPTION

DESCRIBE ACCIDENT—Fully describe the accident. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and equipment are clearly specified. Continue on blank sheets if necessary and attach to this report.

INSTRUCTIONS FOR SECTION 11—CAUSAL FACTORS

a. Review thoroughly. Answer each question by marking the appropriate block. If any answer is yes, explain in item 13 below. Consider, as a minimum, the following:

(1) DESIGN—Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?

(2) INSPECTION/MAINTENANCE—Did inadequately or improperly maintained equipment, tools, workplace, etc. create or worsen any hazards that contributed to the accident? Would better equipment, facility, work site or work activity inspections have helped avoid the accident?

(3) PERSON'S PHYSICAL CONDITION—Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was over exertion a factor?

(4) OPERATING PROCEDURES—Did a lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?

(5) JOB PRACTICES—Were any of the provisions of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?

(6) HUMAN FACTORS—Was the person under undue stress (either internal or external to the job)? Did the task tend toward overloading the capabilities of the person; i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach, strength, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?

(7) ENVIRONMENTAL FACTORS—Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, heat, sun, temperature changes, wind, tides, floods, currents, dust, mud, glare, pressure changes, lightning, etc., play a part in the accident?

(8) CHEMICAL AND PHYSICAL AGENT FACTORS—Did exposure to chemical agents (either single shift exposure or long-term exposure) such as dusts, fibers (asbestos, etc.), silica, gases (carbon monoxide, chlorine, etc.), mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by-products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation (UV radiation created during welding, etc.) contribute to the accident/incident?

(9) OFFICE FACTORS—Did the fact that the accident occurred in an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?

(10) SUPPORT FACTORS—Was the person using an improper tool for the job? Was inadequate time available or utilized to safely accomplish the task? Were less than adequate personnel resources (in terms of employee skills, number of workers, and adequate supervision) available to get the job done properly? Was funding available, utilized, and adequate to provide proper tools, equipment, personnel, site preparation, etc?

(11) PERSONAL PROTECTIVE EQUIPMENT—Did the person fail to use appropriate personal protective equipment (gloves, eye protection, hard-toed shoes, respirator, etc.) for the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard(s)? Did lack of or inadequate maintenance of protective gear contribute to the accident?

(12) DRUGS/ALCOHOL—Is there any reason to believe the person's mental or physical capabilities, judgement, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".

b. WRITTEN JOB/ACTIVITY HAZARD ANALYSIS—Was a written Job/Activity Hazard Analysis completed for the task being performed at the time of the accident? Mark the appropriate box. *If one was performed, attach a copy of the analysis to the report.*

INSTRUCTIONS FOR SECTION 12—TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?—For the purpose of this section "trained" means the person has been provided the necessary information (either formal and/or on-the-job (OJT) training) to competently perform the activity/task in a safe and healthful manner.

b. TYPE OF TRAINING—Mark the appropriate box that best indicates the type of training; (classroom or on-the-job) that the injured person received before the accident happened.

c. DATE OF MOST RECENT TRAINING—Enter the month, day, and year of the last *formal* training completed that covered the activity-task being performed at the time of the accident.

INSTRUCTIONS FOR SECTION 13—CAUSES

a. DIRECT CAUSES—The direct cause is that single factor which most directly lead to the accident. See examples below.

b. INDIRECT CAUSES—Indirect causes are those factors which contributed to but did not directly initiate the occurrence of the accident.

Examples for section 13:

a. Employee was dismantling scaffold and fell 12 feet from unguarded opening.
Direct cause: failure to provide fall protection at elevation.
Indirect causes: failure to enforce USACE safety requirements; improper training/motivation of employee (possibility that employee was not knowledgeable of USACE fall protection requirements or was lax in his attitude towards safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

b. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by USACE vehicle. (note USACE vehicle was in proper/safe working condition).
Direct cause: failure of USACE driver to maintain control of and stop USACE vehicle within safe distance.
Indirect cause: Failure of employee to pay attention to driving (defensive driving).

INSTRUCTIONS FOR SECTION 14—ACTION TO ELIMINATE CAUSE(S)

DESCRIPTION—Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/illnesses. Continue on blank sheets of paper if necessary to fully explain and attach to the completed report form.

INSTRUCTIONS FOR SECTION 15—DATES FOR ACTION

a. BEGIN DATE—Enter the date when the corrective action(s) identified in Section 14 will begin.

b. COMPLETE DATE—Enter the date when the corrective action(s) identified in Section 14 will be completed.

c. TITLE AND SIGNATURE—Enter the title and signature of supervisor completing the accident report. For a GOVERNMENT employee accident/illness the immediate supervisor will complete and sign the report. For PUBLIC accidents the USACE Project Manager/Area Engineer responsible for the USACE property where the accident happened shall complete and sign the report. For CONTRACTOR accidents the Contractor's project manager shall complete and sign the report and provide to the USACE supervisor responsible for oversight of that contractor activity. This USACE Supervisor shall also sign the report. Upon entering the information required in 15.d, 15.e and 15.f below, the responsible USACE supervisor shall forward the report for management review as indicated in Section 16.

d. DATE SIGNED—Enter the month, day, and year that the report was signed by the responsible supervisor.

e. ORGANIZATION NAME—For GOVERNMENT employee accidents enter the USACE organization name (Division, Branch, Section, etc.) of the injured employee. For PUBLIC accidents enter the USACE organization name for the person identified in block 15.c. For CONTRACTOR accidents enter the USACE organization name for the USACE office responsible for providing contract administration oversight.

f. OFFICE SYMBOL—Enter the latest complete USACE Office Symbol for the USACE organization identified in block 15.e.

INSTRUCTIONS FOR SECTION 16—MANAGEMENT REVIEW (1st)

1ST REVIEW—Each USACE FOA shall determine who will provide 1st management review. The responsible USACE supervisor in section 15.c shall forward the completed report to the USACE office designated as the 1st Reviewer by the FOA. Upon receipt, the Chief of the Office shall review the completed report, mark the appropriate box, provide substantive comments, sign, date, and forward to the FOA Staff Chief (2nd review) for review and comment.

INSTRUCTIONS FOR SECTION 17—MANAGEMENT REVIEW (2nd)

2ND REVIEW—The FOA Staff Chief (i.e., FOA Chief of Construction, Operations, Engineering, Planning, etc.) shall mark the appropriate box, review the completed report, provide substantive comments, sign, date, and return to the FOA Safety and Occupational Health Office.

INSTRUCTIONS FOR SECTION 18—SAFETY AND OCCUPATIONAL HEALTH REVIEW

3RD REVIEW—The FOA Safety and Occupational Health Office shall review the completed report, mark the appropriate box, ensure that any inadequacies, discrepancies, etc, are rectified by the responsible supervisor and management reviewers, provide substantive comments, sign, date and forward to the FOA Commander for review, comment, and signature.

INSTRUCTION FOR SECTION 19—COMMAND APPROVAL

4TH REVIEW—The FOA Commander shall (to include the person designated Acting Commander in his absence) review the completed report, comment if required, sign, date, and forward the report to the FOA Safety and Occupational Health Office. Signature authority shall not be delegated.

CEHNC-SO (385-10f) 5 April 2004

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Accident Reporting Requirements

1. References:

a. AR 385-40, Accident Reporting, 1 November 1994

b. U.S. Army Corps of Engineer (USACE) Draft Supplement 1 to AR 385-40, 5 October 2000

c. USASC Message, CSSC-Z, 081810Z Jun 01, subject: Clarification of Army Accident Classes

d. CEHNCR 385-1-1, Safety and Occupational Health Program Management, 19 June 1997

e. EM 385-1-1, U.S. Army Corps of Engineers Safety Manual, 03 November 2003

2. Accident Definitions:

a. Class A - Fatality or permanent total disability (Government Civilian, Military Personnel, and/or Contractor), or > $1,000,000 property damage*.

b. Class B - Permanent partial disability or inpatient hospitalization of 3 or more persons (Government Civilian, Military Personnel, and/or Contractor), $200,000 ≤ $1,000,000 property damage*.

c. Class C - Lost Workday (Contractor) or Lost Time (Government Civilian and Military Personnel), $20,000 ≤ $200,000 property damage*.

d. Class D - $2000 ≤ $20,000 property damage*.

*Property damage examples - rental cars, leased items/equipment, GSA property, Huntsville Center (HNC) property, installation property, land owner property.

3. All accidents meeting the definitions above, both contactor and government civilian, are to be reported immediately. Government civilian accidents are to be reported to the first line supervisor; for contractor accidents, either the project manager (PM), contracting officer (KO), contracting officer representative (COR) and/or resident engineer (RE) herein referred to as the "Government Designated Authority (GDA)", who by position is responsible for overseeing, managing, directing, and/or administering the project/activity, operation, material

or person(s) involved at the time of an accident. The supervisor or GDA upon learning of an accident must promptly contact the CEHNC Safety Office and provide a brief summary of the events surrounding the accident. The Safety Office will notify the Command Group.

4. In addition to the accidents described in paragraph 2, the following conditions must also be reported per the guidance outlined in paragraph 3.

a. Army civilian or contractor personnel injured while on duty or on TDY status. Exception: Contractor employee injuries, occupational illnesses, and property damage accidents that occur away from, and involve activities unrelated to, a Corps project/activity for which the contractor is working, are not required to be reported.

b. Accidents or mishaps incident to a Corps project/activity that could cause embarrassment to USACE.

c. Serious near misses.

d. Injuries to CEHNC military personnel, on or off-duty.

e. Medical expenses incurred by government civilians regardless of whether or not the injury meets one of the accident definitions above.

5. For government civilian accidents the supervisor is responsible for investigating the accident. For contractor accidents occurring incident to a CEHNC project/activity, the contractor is responsible for performing the accident investigation in accordance with the contractor's accepted Accident Prevention Plan (APP). The investigation is the supervisor's or contractor's documented internal review, analysis and account of the accident, based on factual information gathered by a thorough and conscientious examination of all causal factors. Its purpose is PREVENTION. Therefore, it is essential for the supervisor or contractor to take positive measures and any necessary corrective actions to prevent future occurrences. At the conclusion of the investigation, the supervisor or contractor must submit a completed original ENG Form 3394, with its instructions to the CEHNC Safety Office for review and processing within 5 working days following the accident. A copy of the ENG Form 3394 can be found at:

http://www.hnd.usace.army.mil/engrdir/organization/systems-eng/Safety/safety2.htm

This form must be routed through the appropriate Director's office for review and signature prior to submitting to the Safety Office.

6. On the original ENG Form 3394, if block 11b is checked "Yes," the job/activity hazard analysis for the task/activity being performed at the time of the accident must be submitted as an attachment. If the block is checked "No," and the accident is on a project/activity for which EM 385-1-1, Corps Safety Manual is applicable, an activity hazard analysis must be developed and submitted to the CEHNC Safety Office for review and acceptance prior to resuming the specific work activity being performed at the time of the accident. The CEHNC Safety Office

will assess the adequacy of the investigation as described in the ENG Form 3394 along with all submitted analyses to determine whether the information provided is acceptable. If the investigation report is found acceptable, the Safety Office will notify the supervisor or GDA that the specific work activity may resume.

7. For government civilian claims, all Class A through C accidents require the submission of a Department of Labor (DOL) Form CA-1 (injury), CA-2 (illness/disease/stress) or CA-6 (fatality) in addition to the ENG Form 3394. Please note that a CA-1 or CA-2 is a mandatory submission if medical expenses are incurred. The employee is responsible for completing and submitting the appropriate form to their immediate supervisor for processing. The supervisor is responsible for reviewing, signing and delivering the form to the CEHNC Safety Office for processing. The CA-1 and CA-2 forms are time sensitive and must be submitted within 15 working days from the date of the accident. A timely submission will ensure the forms reach the Office of Workers' Compensation Program (OWCP) administrator as required and expedites the judicious payment of expenses incurred. In the unlikely event a fatality should occur, please call the Safety Office immediately.

8. If assistance is needed in reporting or investigating accidents, please contact the undersigned at 256-895-1583 or Greg Bayuga, 256-895-1596. Completed sample forms are available in the Safety Office.

/s/
CHARLES R. (RAY) WAITS, JR.
Chief, Safety and Occupational
Health Office

DISTRIBUTION:

A & B (Branch Level)
CEHNC-SO (Williams, Bayuga, Plyler, Taylor, Griffin, Sawyers)

Attachment A-2
Forms and Checklists

Accident Report Follow-Up Form

ACCIDENT REPORT FOLLOW-UP FORM

To be used to supplement the online Parsons Accident Reporting Tool. Maintain a copy of this record in the project files in the Parsons field office.

Employee: ____________________ Date of Injury or Illness: ___________________

ANALYSIS – What caused the accident. Why did it happen:
Primary Cause:

Contributing Factors:

PREVENTIVE/CORRECTIVE ACTION – State what will be done to prevent reoccurrence:
Immediate Action:

Who is responsible: ___________________________ Completion Date(s): ________________________

Long-Term Action:

Who is responsible: ___________________________ Completion Date(s): ________________________

Closed by: ____

Facility Health and Safety Representative *Date*

Attachment A-2
Forms and Checklists

Respiratory Qualitative Fit-Test Form

RESPIRATOR FIT TEST LOG

Maintain a copy of this record in the project files in the Parsons field office.

Employee: ________________________ Date of Test: ___________________________

Fit Test
Administrator: ____________________ Date of Last Physical: ___________________

RESPIRATOR

Manufacturer: ____________________ Model: ________________________________

Size: ____________________________ I.D. Number: ___________________________

TEST RESULTS

Test Protocol

Pressure fit check:

__________ positive

__________ negative

Test atmosphere:
__________ isoamyl acetate

__________ stannic oxychloride

Comfort

comfortable ___________________________

intolerable ____________________________

needs prescription inserts: ______________

____

__________ fit ____________ no fit

Date of next fit test: ___________________

Remarks:

Attachment A-2
Forms and Checklists

Pre-drilling/Subsurface Checklist for Intrusive Fieldwork

PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

Site Name: ______________________ **Job Number:** ____________
Site Phone Number: ______________________
Site Address: ______________________ **County:** ____________
Client Proj. Mgr.: ______________________ **Phone:** ____________
Site Manager Contacted Date: ______________ **By:** ____________
Site Drawings (yes / no / NA) ________ (please attach) **Historical Drawings (yes / no / NA)** ________
Third Party Construction/Redevelopment Plans (Yes/No/NA)

*****ATTACH SITE FIGURE WITH PROPOSED BORING LOCATIONS**

Subcontractor's (drillers, concrete, etc…) **Company** ______________________
Subcontractor's Contact Person ______________________ **Phone** ____________
Meeting / Start Date ______________________ **Time** ____________

1) **Health and Safety Signoff Form Completed? (Yes/No)** **Date** ____________

2) **Utility Protection Services (Minimum 48 Hrs. Advance Notice, State Specific Notification Period Supercedes)**
Called: Date __________ **Time** ______________ **Initials** __________
Reference # ______________________
Proposed Drilling Locations Premarked for Locating Service. **Y / N**

3) **Private or In-House Utility Locating Service Performed?** **Y / N** __________
Called: Date __________ **Time** ______________ **Initials** __________
Name of Locating Service: ______________________
Telephone #/ contact: ______________________
Name of Supplier Locating Technician: ______________________
Type of sensing equipment used: ______________________
Proposed Drilling Locations Premarked **Y / N**

4) **Other Potential Underground Structures**
Name of City Engineer/Utility Representative: ______________________
Telephone #: ______________________
Date Notified ______________________ **Maps:** **Y / N**
Cleared: **Y / N**

5) **COMPLETED SITE WALKOVER W/ SITE MANAGER/DESIGNEE OR OWNER/TENANT REP.** **Y / N**
Name of Site Manager: ______________________
Name of Property Owner/Tenant Representative:______________________
Cleared: **Yes / No**
Building Utility Service Line Connections Identified: **Y / N**
(Hand sketch on site map w/proposed boring locations and most likely utility trench locations)

6) **Utility Inventory:** **Y / N**

Utility	Name	Depth (ft) (If Available)	Phone	Notified - Date		Marked
Above Ground Services						
Electric		NA		Y / N		Y / N
Telephone		NA		Y / N		Y / N
Cable		NA		Y / N		Y / N
Overhead Supports		NA		Y / N		Y / N
Traffic light cables		NA		Y / N		Y / N

PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

6) Utility Inventory Continued:

Below Ground Services:

Electric				Y / N		Y / N
Telephone				Y / N		Y / N
Cable				Y / N		Y / N
Gas				Y / N		Y / N
Water				Y / N		Y / N
UST System				Y / N		Y / N
Storm				Y / N		Y / N
Sanitary				Y / N		Y / N
Steam				Y / N		Y / N
Pipeline Companies				Y / N		Y / N

Other:

				Y / N		Y / N
				Y / N		Y / N
				Y / N		Y / N

7) **Site-Specific Emergency Contingency Plan Incorporated in Health & Safety Plan** Y / N

8) **Drilling Locations Approved by Client Project Manager Named Above?** Y / N

9) **Signature of Parsons' Project Mgr. (required to begin fieldwork):**

Name of Project Manager **Signature of Project Manager**

Name of Parsons Field Personnel **Signature of Field Personnel**

(This document to be included with the site H&S Plan and should be available upon request.)

ADDITIONAL COMMENTS / NOTES:

Attachment A-2
Forms and Checklists

Site-Specific Training

Site-Specific Training
Non-Intrusive/Mobilization
Seneca Army Depot Activity
Romulus, New York

Topics Covered:	**Completed / Initials**
Personnel responsible for health and safety • – Site Safety&Health Officer • – CEHNC On Site Safety • – Project Manager • – Site Manager	____________
Heat Injuries • Heat Stress • Exhaustion • Stroke	____________
Slips, trips, falls • Animal Burrows • Steep Inclines • Partially buried fencing/barbed wire • Muddy/Wet Surfaces	____________
Health and safety procedures	____________
Safe work practices • Equipment Spotters • Recognized hand signals	____________
Engineering controls	____________
Emergency procedures/Rally Point • Emergency Signal (3-5sec blasts) • Rally Point (Site Compound)	____________
Biological Hazards • Poison Ivy/Oak/Sumac • Ticks and Mosquitoes • Snakes (Rattlers) • Bees/Wasps • Bloodborne Pathogens	____________
Radios/GPS • Channel Frequency (USA Environmental) • GPS (loaded with proper Sectors) • Communications Checks (Twice all site elements)	____________
Vehicle/Heavy Equip traffic • Use of Seat Belts • Sound Horn prior to backing vehicles without warning device • Vehicle speeds on the roads	____________
MSDS Logs/Records • Located at Operations	____________

Topics Covered: **Completed / Initials**

Personnel Protective Equipment ______________

- Safety Glasses
- Leather Work Gloves
- First Aid Kit (per vehicle)
- Fire Extinguisher (per vehicle)
- Maps and Grid Sheets
- Remote Operations/First Aid Handout

Hospital/Routes

- **All Site Related Injuries**

Team will transport to closest Medical Facility

- List those facilities/phone numbers/provide maps
  - **After Hours – Site personnel will go to XXXX**

Today's operations (-Site Manager's) ___________

____

SHSO's Signature/Date

Attachment A-2
Forms and Checklists

Site-Specific Training Form

Site Specific Training Form

Instructions: This form is to be completed by each person to work on the subject project work site and returned to the safety manager.

I have attended and been briefed on the Site Specific Training for the following project:

Site Location: Seneca Army Depot, Romulus, New York

Contract Number:

Print Name: ______________________________

Company: ______________________________

Signature: ______________________________

Date: ____________________

Return to:

On Site Health and Safety Officer

Attachment A-2
Forms and Checklists

Worker's Compensation Information

When You Are Injured At Work

This fact sheet provides an overview of the workers' compensation system. It includes general information about workers' compensation benefits if you are injured on the job.

If you need additional information, your Workers' Compensation Analysis is available to answer your specific questions and concerns.

Your Workers' Compensation Analyst is Donna Miller and may be reached at (626) 440-2950 or Donna.Miller@parsons.com

Once Parsons reports your injury to the insurance claim administrator, AIG, a claim representative will also be available to help answer your questions.

WHAT IS WORKERS COMPENSATION?

Workers' compensation is a system that provides benefits to cover specific economic loss as a result of an injury while you are performing your job, regardless of who may be at fault. These benefits are dictated by the laws of your State. Benefits may include medical benefits, income benefits, rehabilitation benefits, and death benefits. The system is designed to provide prompt benefits with assistance from people qualified to answer questions and concerns about your injury and injury benefits.

WHAT'S COVERED?

The workers' compensation (WC) laws in your state dictate the benefits you may receive. In general, the benefits may include:

- Medical Benefits. WC pays all reasonable and necessary medical costs if you have a job-related injury or illness. Medical costs are paid directly to the treating medical provider by Parsons through our company's claim administrator, AIG. Some of the medical providers who treat your injury may specialize in occupational medicine. These medical specialists are experienced specifically in work-related injuries. In addition to providing medical care, they are qualified to evaluate the extent of your disability and your abilities in terms of the kind of work that they believe is medically suitable for your return to work.

- Income benefits. In your State, there may be a waiting period of day(s) or week(s) before income benefits are payable under the WC system.

There are four classifications of income benefits, depending on the nature of your injury. These include temporary total, permanent total, temporary partial, and permanent partial. Most cases involve temporary total disability (TTD). In these cases, an employee is totally disabled for a period of time but is expected to recover and return to work; the disability is temporary in nature. Some injuries are referred to as "scheduled" and have specific benefits. In your State, income benefits for a TTD injury may be based on:

X % of wages (subject to your State specific statutes)
Minimum weekly amount (subject to your State specific statutes)
Maximum weekly amount (subject to your State specific statutes)

Once the classification of your injury is determined, your claim representative can answer more specific questions about your income benefits under your State's WC system. Your Workers' Compensation Analyst is also available to help your questions answered, either directly, or through your State WC Commission.

- Rehabilitation Benefits. WC may also provide benefits for the rehabilitation of injured employees. Your claim representative can tell you what is provided and any special provisions regarding these benefits.

- Death Benefits. In the event of death, states specify qualifications and restrictions regarding survivor benefits. Your claim representative or Workers' Compensation Analyst can tell you more about those benefits.

WHAT ARE MY RESPONSIBILITIES?

If you are injured on the job, make sure your supervisor knows this immediately so you can get the attention you need and the benefits process can begin, where applicable.

You also have a responsibility to help in your own recovery. The following are some things you can do to help your recovery:

- Keep in touch with your supervisor. In addition, your Workers' Compensation Analyst is available to answer your questions.
- Keep all appointments made for you.
- Follow your doctor's treatment plan.
- Avoid activities that may slow or stop your recovery.
- Cooperate with people helping you return to work.
- Remember a lot of people care about you and your recovery.

It is a criminal offense to knowingly make false statement or to materially misrepresent your injury for the purpose of receiving workers' compensation benefits. Those convicted of fraud may have to repay benefits. Be honest. Your injury affects everyone, including your co-workers.

DO I NEED TO HIRE A LAWYER TO COLLECT BENEFITS?

While it is your decision whether or not to seek a lawyer, you do not need one to file a claim or to collect benefits. Your workers' compensation law describes and defines the benefits to which you may be entitled. Your Workers' Compensation Analyst and claim representative can help answer any questions about the process and your benefits. Feel free to ask them any questions you have about your benefits. Additionally, in some cases, a nursing professional may be assigned to help ensure that you get the medical care and treatment needed.

WHAT IF I HAVE A PROBLEM?

Misunderstandings and mistakes can happen. If you think there is a problem, you can contact your Workers' Compensation Analyst at work or your claim representative. If you are still not satisfied with their responses, you can contact your State's Workers' Compensation Commission. The Commission includes a staff qualified to advise you about your rights and benefits under the law. In addition, some States have Ombudsmen Programs. Ombudsmen representatives are specially trained to work with you and your employer on specific concerns and problems. Your Workers' Compensation Analyst can tell you if your State has an Ombudsmen Program and provide you with the program's telephone number.

Attachment A-3

Pictures of Poison Ivy, Snakes, Spiders, and Ticks

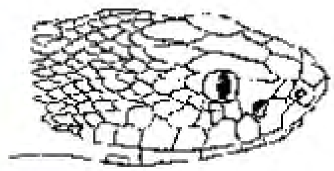
POISON IVY/POISON OAK/POISON SUMAC

Poison Ivy	Poison Oak	Poison Sumac
		

SNAKES

Copperhead

Closeup of head

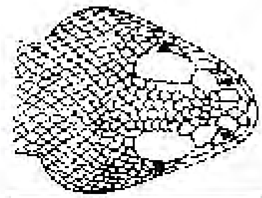


24-36", up to 53"

The copperhead is a venomous snake with a broad triangular head, vertically elliptical pupils and a heat sensitive pit between each eye and nostril. The body is pinkish to grayish brown with brown or reddish-brown crossbands that are narrow on the back and widest on the sides. Small dark spots commonly occur between crossbands on the back. The unpatterned head is dull orange, copper or rusty-red. Body scales are keeled and the belly is pink or light brown with dark blotches along the sides. When young, a copperhead has a yellow-tipped tail.

SNAKES

Timber Rattlesnake



Closeup of head

36-60", up to 74"

Head and body of a timber rattlesnake are pinkish-gray to yellow-ish-brown with a pattern of dark bands on the back and a grayish-white belly. The tail is black with a rattle.

SNAKES

Eastern Diamondback Rattlesnake

33-72", up to 96"

The eastern diamondback rattlesnake has a large head and a bulky body. It has a row of large dark diamonds with brown centers and cream borders down its back. The ground color of the body ranges from olive, to brown, to almost black. The tail is usually a different shade, brownish or gray, and banded with dark rings. At the end of the tail is a well-developed rattle. The head has a light bordered dark stripe running diagonally through the eye. The pupil is vertical (catlike). There is a large pit between the nostril and eye. The young are similar to the adults in color pattern. The tip of the tail of a newborn diamondback ends in a button, which is the first segment of the future rattle. Male and female rattlesnakes look alike.

SPIDERS

Brown Recluse
0.25-1.0"

Black Widow
0.12-0.75"

TICKS

Larvae

Female Deer Tick with Dime for Size Comparison

Deer Tick Nymph with Dime for Size Comparison

Attachment A-4

Confined Space Work

SECTION A-4
CONFINED SPACE WORK

TABLE OF CONTENTS

TABLE OF CONTENTS (Contd)

TABLES

EXHIBITS

Confined Space/Hazardous Area Entry Permit

Permit Acknowledgment

Confined Space Monitor Log

Confined Space Sign In/Out Form

Special Precaution Permit for Hot Work or Entry

A4 CONFINED SPACE WORK

This section establishes the procedures that must be followed before personnel may enter a confined space.

A4.1 SCOPE

Before any person enters a confined space, a job task analysis (JTA) and an entry permit must be issued in accordance with this procedure. All other applicable permits, such as hot work permits, must also be obtained. Entry permits authorize specific work in specific locations.

All these permits and other authorities must certify that existing and potential hazards have been evaluated, and that all necessary protective measures have been taken to ensure the safety of each worker.

The JTA, entry permit, and all other applicable permits must be approved by the Construction Manager or authorized designate and issued by the relevant craft supervisor.

In addition, before any confined space entry can be permitted, a permit space rescue plan must be written for that space. Refer to subsection A4.6 for instructions on completing a confined space rescue plan. The confined space rescue plan should be generated as a self-contained document so it can be readily accessible to affected employees and be posted near the confined space it is designed for.

A4.2 DEFINITIONS

A **permit-required confined space** is any enclosed space that:

1. Is large enough and configured so that an employee can enter bodily and perform assigned work
2. Provides limited or restricted means for entry or exit (tanks, vessels, silos, storage bins, hoppers, vaults, pits, and diked areas)
3. Is not designed for continuous occupancy
4. Has one or more of the following characteristics:
    a. Contains or has a known potential to contain a hazardous atmosphere
    b. Contains a material that could engulf an employee
    c. Is internally configured in a way that could trap or asphyxiate an entrant because of its inwardly converging walls, or because its floor slopes downward and tapers to a smaller cross-section
    d. Contains any other recognized serious safety or health hazard

A **hazardous atmosphere** is any atmosphere that exposes employees to the risk of death, injury, or acute illness from one or more causes such as:

1. Flammable gases, vapor, or mist in excess of 10% (1/10) of the lower explosive limit (LEL)
2. A concentration of airborne combustible dust that meets or exceeds the LEL or that obscures vision at a distance of 5 ft or less

3. An oxygen concentration less than 19.5% or greater than 23.5%
4. A concentration of any substance above the threshold limit value (TLV)
5. Any other atmospheric condition considered immediately dangerous to life and health (IDLH)

A4.3 PREPARATION AND PRECAUTIONS

All preparatory work must be completed before an entry permit can be issued. Preparatory work includes but is not limited to the following steps.

A4.3.1 BLINDING

Blind confined spaces properly to prevent the release of hazardous materials into the space or eliminate the potential for employees becoming engulfed by any liquid or solid material.

A4.3.2 LOCKOUT AND TAGOUT

Lockout and tagout any electrical connection, pipe, line, or duct into the confined space in accordance with the lockout/tagout procedure contained in section 10.

A4.3.3 MECHANICAL HAZARDS

In accordance with the lockout/tagout procedure, secure all mechanical hazards such as agitators, fans, and other power-driven moving parts in vessels and confined spaces. Entry is not permitted until such parts have been rendered motionless.

A4.3.4 PURGING AND CLEANING

Purge, steam, and wash a vessel or confined space as needed to free the area of all possible contaminants. Give special attention to removing liquid product, sludge, and residue; to controlling escaping gases and vapors in the surrounding area; to preventing access to the area by unauthorized personnel; and to controlling all ignition sources in the area.

A4.3.5 FRESH AIR

Establish a flow of positive fresh air ventilation (eductor or blower) in the vessel or confined space. Natural ventilation is not sufficient.

A4.3.6 HAZARD NOTICE

Ensure that all personnel are familiar with all job hazards, that all equipment is in good condition and compatible with the work involved, and that notice is given in the form of signage, during task training, and on permits to indicate specific hazards of the confined space.

A4.3.7 BARRICADES

Provide pedestrian, vehicle, or other necessary barriers to protect workers entering a confined space work area from external hazards.

A4.3.8 ATTENDANTS

Provide a trained attendant outside each vessel or confined space equipped with a suitable respirator as required. The attendant must be able immediately to perform all planned rescue duties. At no time may an attendant enter a confined space. Attendant duties include:

- Maintaining surveillance of personnel working in the confined space
- Maintaining the conditions and requirements stated on the confined space permit
- Evacuating personnel from a confined space if hazardous conditions are observed
- Maintaining communications with personnel working in a confined space through visual, voice, telephone, or two-way radio
- Obtaining additional assistance if necessary

A4.3.9 SAFETY HARNESSES

Safety harnesses with lifelines are required if toxic or flammable atmospheres could exist, if an oxygen deficiency exists or could develop, if there is potential for engulfment, or if the work is to be performed at heights. Refer to the tie-off policy in subsection 1.A4 of this manual for specific tie-off requirements.

A4.3.10 RESCUE EQUIPMENT

The person responsible for the work must implement procedures and provide the equipment necessary to rescue personnel working in confined spaces. Such equipment should include tripods, lifelines, hoists, and harnesses.

A4.3.11 TEMPORARY LIGHTING/GROUND FAULT CIRCUIT INTERRUPTER (GFCI)

Ensure that all temporary lighting in confined spaces is no more than 12 volts, that lights are protected against damage, that cords are heavy duty, and that lights and light cords are kept clear of workspaces and walkways. However, 120-volt lights may be used if protected by a ground fault circuit interrupter. All electrical circuits, lighting, portable tools, and other equipment must be approved for the area classification in which they are used. Ground fault circuit interrupters must be placed outside a confined space.

A4.4 CONFINED SPACE TRAINING

The following paragraphs cover training requirements for confined space work for authorized entrants, attendants, persons authorizing or supervising confined space work, and rescue team members. All employees expected to engage in any aspect of confined space activities must meet the training requirements of these paragraphs before they may participate in the work.

A4.4.1 AUTHORIZED ENTRANTS

Personnel qualifying as authorized entrants must be trained in the following areas.

1. **Hazard Recognition.** During training, entrants will:
   a. Be informed of all hazards that might be encountered during entry or occupancy of a confined space
   b. Be trained to recognize the symptoms of exposure to chemical hazards and oxygen deficiency. Oxygen deficient atmospheres contain less than 19.5% oxygen
   c. Understand the results of exposure to confined space hazards
2. **Communication.** Entrants will:
   a. Understand need for maintaining contact with the attendant (hole watch) and the methods used for communication with an attendant

b. Understand the requirement to notify the attendant when the entrants initiate evacuation

3. Protective Equipment. Entrants will:

   a. Be aware of all personal protective equipment requirements and the use of such equipment

   b. Be aware of the barriers needed to protect workers from external hazards

4. **Self-Rescue.** Entrants will be aware that they must evacuate a confined space when directed by the attendant, when an alarm is sounded, or when an entrant perceives danger.

5. **Rescue Plan.** Entrants will be aware of the provisions of the rescue plan for the task.

A4.4.2 ATTENDANTS

Personnel qualifying as attendants must be trained in the following areas.

1. **Hole Watch.** Attendants will understand the requirement to remain outside a confined space at all times while authorized entrants are working in the space.

2. **Personnel Count.** Attendants will understand the need to maintain an accurate count of all persons in a confined space at all times.

3. **Hazard Recognition.** Attendants will be able to recognize the hazards associated with working in a confined space.

4. **Monitoring.** Attendants will be able to use and interpret any monitoring equipment and understand that monitoring is performed in accordance with specifications contained in the confined space entry permit.

5. **Communication.** Attendants will understand that they must maintain continuous contact with entrants, and understand the methods of communication.

6. **Evacuation.** Attendants will understand the circumstances requiring entrant evacuation. Those circumstances include:

   a. Observing a condition that is not allowed for on a permit

   b. Observing behavioral changes in entrants as a result of exposure to hazards

   c. Detecting an external condition that could endanger entrants

   d. Detecting an uncontrolled hazard in the permit space

   e. Attendant leaving his or her station

   f. Unauthorized personnel ignoring requests by the attendant to leave the permit area

7. **Emergency Notification.** Attendants will understand that they must notify emergency personnel as soon as they have determined the need to evacuate authorized entrants, either because of hazards in the confined space or because the entrants need assistance in the confined space.

8. **Unauthorized Entrants.** Attendants will understand that they are required to warn unauthorized persons away from a confined space, requesting that such persons leave the area, and advising authorized entrants that unauthorized persons have entered the space.

9. **Rescue Procedures.** Attendants will:

   a. Understand that they are not authorized to enter a permit space to attempt to rescue anyone inside the confined space

   b. Know how to use external rescue and protective equipment, and know their rescue responsibilities

   c. Understand the permit rescue plan outlined in the rescue plan document

A4.4.3 ENTRY AUTHORITIES

Individuals in charge of or authorizing entry are responsible for:

1. Determining whether the permit for entry is complete
2. Determining whether all necessary precautions, procedures, and equipment are in effect before authorizing entry into a confined space
3. Terminating any entry authorization for which the permit requirements are being violated
4. Concluding entry and terminating a permit upon work completion, including:
   a. Removing all tools and equipment from the confined space
   b. Verifying that all personnel and equipment have been removed from the confined space
   c. Removing all entry caution signs
   d. Closing and securing all entry points
5. Becoming familiar with the permit space rescue plan outlined in the confined space permit

Persons in charge of or authorizing entry may also serve as authorized entrants or attendants upon completing the appropriate training.

A4.4.4 ONSITE RESCUE TEAMS

The person responsible for the work must decide whether to use an onsite rescue team or an outside rescue team.

Onsite rescue teams must receive training about the site rescue plan, the hazards of working in a confined space, and the personal protective and rescue equipment required.

At least one team member must have current certification in first-aid procedures and cardio-pulmonary resuscitation (CPR) and training about bloodborne pathogens.

Onsite rescue personnel must receive the same training as authorized entrants.

A4.4.5 OUTSIDE RESCUE TEAMS

Outside rescue team members must be made aware of the hazards they may encounter during a rescue so that they can equip themselves properly.

A4.5 UNAUTHORIZED ENTRANTS

Unauthorized entrants are not allowed in permit areas. If they enter a permit area, the confined space attendant or person authorizing entry must take the following actions.

1. **Request and Notify**. Request the unauthorized person or persons to leave, then notify the entrants that unauthorized personnel are in the permit area.
2. **Stop Operations and Evacuate**. If the unauthorized personnel fail to respond, stop operations and order evacuation of the permit area.

3. **Discipline**. Begin disciplinary procedures, including termination, for any unauthorized entrants who fail to leave a permit space upon request from the area authority.

A4.6 PERMIT SPACE RESCUE PLAN

Before entry into any confined space can be authorized, a task-specific rescue plan must be written specifically for that space. All employees involved in confined space work must be familiar with the rescue plan. All rescue plans must include at least the following:

1. Who is to perform the rescue; an onsite team (list names) or an outside team
2. How the rescue team is notified
3. Rescue equipment available
4. Special hazards of the permit space that could be encountered during a rescue

At no time may any authorized rescue person enter a confined space for rescue purposes unless wearing a self-contained breathing apparatus (SCBA) or an airline respirator with an escape pack, or unless atmospheric measurements have confirmed that the LEL and the levels of O_2 and any hazardous gases are in the proper range to permit entry into the confined space without the aid of such equipment.

A4.7 CONFINED SPACE ENTRY

The following general requirements must be completed before a confined space entry permit can be issued.

- A job task analysis (JTA) is prepared in accordance with subsection 1.11 of this manual
- All associated hazards are identified and controlled
- All employees engaged in confined space work are thoroughly trained
- A rescue plan is prepared in accordance with subsection A4.6
- All other applicable permits are obtained, including hot work permits or other task-specific work permits
- The confined space is prepared in accordance with subsection A4.3

In addition, the Construction Manager or other designated authority issues the entry permit only after the following specific requirements have been met.

A4.7.1 VENTILATION

The job supervisor or person in charge of entry must determine that proper ventilation is maintained at all times employees are operating in confined spaces.

- **Before Start of Work**. Ensure that proper venting and exhausting systems are in place.
- **Venting/Exhausting.** Ensure that air, not oxygen, is vented or exhausted before and during confined space work to avoid concentrations of toxic or hazardous gases or dusts that could exceed permissible limits or result in an oxygen-deficient atmosphere.
- **Explosive Atmospheres.** Ensure that fresh air is supplied to any space that may contain explosive vapors, rather than having the vapors be exhausted through the fan only.

- **Ventilation Ducting.** Ensure that ventilation ducting is arranged to avoid restricting personnel evacuation from the confined space and to prevent risk of exposure to hazardous conditions to persons working nearby.
- **Respiratory Protection.** Ensure that, where adequate venting or exhausting cannot meet standards, personnel are wearing appropriate respiratory protection.

A4.7.2 TOXIC MATERIALS

Table A4-1 provides definitions of the respiratory protections required for entering atmospheres containing various levels of toxic materials. Permissible levels for all these materials are defined in Material Safety Data Sheets supplied by the manufacturers of the materials.

A4.7.3 FLAMMABLE GASES, VAPORS, OR MISTS

Table A4-2 provides definitions of requirements in regards to explosive levels of flammable gases, vapors, and mists. If there is potential for an explosive atmosphere, refer to the guidelines in paragraph A4.7.1, Ventilation. Also note that continuous monitoring of the atmosphere must be maintained.

Table A4-1 – Respiratory Protection Against Toxic Atmospheres

Atmosphere	Definition
Below Threshold Limit Value	Atmospheres containing toxic materials below the TLV may be entered without respiratory protection only after oxygen and flammable gases are determined to be at permissible levels.
Below IDLH/Above TLV	Atmospheres containing toxic materials below levels immediately dangerous to life or health (IDLH), but above the TLV, may be entered when respiratory equipment, as defined in the respiratory protection program, is worn and when flammable gases and oxygen are at permissible levels.
At IDLH (generally forbidden)	Atmospheres containing toxic materials IDLH may be entered only by employees protected by equipment approved for such exposure, when flammable gases are at permissible levels, and only after receiving written approval to enter the IDLH atmosphere from the Parsons construction manager and the designated client representative as well as any other project authority required. Emergency rescues may also be required in IDLH atmospheres.
Corrosive/Absorption Hazards	Atmospheres that contain or could contain corrosive materials or materials that are toxic through skin absorption require personal protective equipment to prevent skin and/or eye contact.
Unknown Toxins	Entry is prohibited in confined space atmospheres where the toxicity is unknown.

A4.7.4 OXYGEN LEVELS

Table A4-3 provides definitions of entry requirements in regard to oxygen levels.

Table A4-2 – Explosive Levels of Gases, Vapors, and Mists

Level	Definition
Less than 10% LEL	Atmospheres containing flammable gases, vapors, or mists less than 10% (1/10) of the lower explosive limit (LEL) may be entered without respiratory equipment only after oxygen and toxic materials are determined to be at permissible levels.
At or Above 10% LEL	Atmospheres containing flammable gases, vapors, and mists above 10% (1/10) of the LEL may not be entered until the atmosphere is properly cleaned and purged and flammable gases, oxygen, and toxic materials are determined to be at permissible levels.

Table A4-3 – Permissible Oxygen Levels

Oxygen Level	Definition
19.5% to 23.5%	Atmospheres with an oxygen content of 19.5% to 23.5% at sea level may be entered without respiratory equipment if flammable and toxic materials are determined to be at permissible levels.
Deficient	Atmospheres with an oxygen content of less than 19.5% at sea level may be entered only by workers wearing respiratory equipment in accordance with the respiratory protection program, and after the introduction of a constant flow of fresh air. Respiratory equipment must be chosen for its ability to handle any toxins that may be present. Flammable materials must be at permissible levels. Pure oxygen must not be used to raise the level of oxygen in an atmosphere. Instead, air must be vented or exhausted before and during confined space work. Refer to paragraph A4.7.1.
Enriched	Atmospheres with an oxygen content greater than 23.5% at sea level may not be entered until it has been determined that no fire hazard exists, that flammable and toxic materials are at permissible levels, and until fresh air has been introduced to bring the oxygen level to within 19.5% to 23.5%.

A4.7.5 Hot Work

When hot work is required in a confined space, it must be in accordance with the hot work entry permit procedure in subsection 13.2. Hot work also requires a separate permit.

If hot work involves the generation of toxic gases, vapors, or fumes, ventilation or respiratory protection is required. The type of contaminant generated determines the type of respiratory equipment used.

In addition, the following precautions must be taken before any hot work is started.

- **Fire Extinguishers.** Fire extinguishers of the proper type are used.
- **Fuel Gas.** Oxygen, acetylene, or other fuel gas may not be taken into confined spaces.
- **Fuel Gas Shutoff.** The gas supply to a torch must be positively shut off at the cylinder whenever the torch is not in use or is left unattended. At change of shift and overnight, all torches and hoses must be removed from a confined space.

- **Flammable Gas Equipment.** Flammable gas equipment, gauges, and hoses must be inspected and found free of defects by the user before each use.

A4.8 TOXIC OR FLAMMABLE MATERIALS IN CONFINED SPACES

Frequently, work in confined spaces requires the use of toxic or flammable materials, including coatings, linings, paints, cements, and solvents. The following guidelines apply when using these materials.

A4.8.1 Quantities

Any toxic or flammable materials brought into or used in a confined space are limited to the smallest amount consistent with efficient use during each shift. Only approved containers and dispensers may be used. Toxic or flammable materials may not be stored in confined spaces.

A4.8.2 Containers and Dispensers

Containers must be designed to minimize evaporation and spillage. Safety cans or small squeeze bottles are preferable when appropriate.

A4.8.3 Ventilation

Continuous ventilation must be provided in sufficient quantity and design to control fire and health hazards.

A4.8.4 Testing

Atmospheres must be tested or evaluated for the existence of hazards. In no instance may flammable vapor concentrations exceed 10% (1/10) of the LEL. Confined space atmospheres must be evaluated at regular intervals to ensure that no hazardous materials build up.

A4.8.5 Spray Operations

Spraying toxic or flammable substances such as paint is not recommended.

A4.8.6 Ignition Sources

All ignition sources must be removed from a confined space when flammable liquids are being used.

A4.8.7 Respiratory Protection

Respiratory protective equipment must be used as defined in the respiratory protection program or as required by this procedure.

A4.9 MONITORING

Levels of oxygen, flammable gases, and toxic materials in a confined space must be monitored and logged. The frequency of monitoring must be specified on the confined space entry permit. Monitoring frequency can be continuous or intermittent.

- **Continuous Monitoring.** If there is a risk of an IDLH (immediately dangerous to life and health) atmosphere, monitoring should be conducted on a continuous, real-time basis.
- **Intermittent Monitoring.** Whether intermittent monitoring can be used depends on the degree of risk anticipated. Intermittent monitoring can range from four times each hour (every quarter hour) to once every four hours depending on the nature of the hazards.

A4.10 IMMEDIATELY DANGEROUS TO LIFE AND HEALTH CONDITIONS

Work in IDLH atmospheres is forbidden except in emergencies or when it is impossible to bring IDLH to acceptable levels. Work in IDLH atmospheres, other than emergency rescue, requires the written approval of the Parsons Construction Manager, the designated client representative, and any other necessary approvals. Atmospheres must be ventilated to lower the toxicity of IDLH atmospheres. The following precautions must be taken in IDLH conditions.

- **Respiratory Protection.** Only self-contained breathing apparatuses (SCBAs) or airline respirators with escape bottles may be used in IDLH atmospheres.

  All rescue personnel must be trained in the use of a self-contained breathing apparatus or airline respirators with escape bottles.

- **Airline Respirators.** In confined spaces where workers use only airline respirators, a breathing air attendant from or assigned by the department responsible for the work must be in constant attendance to monitor the breathing air stations or low pressure alarms near the workers.

- **Safety Harnesses.** Workers entering confined spaces with IDLH atmospheres must wear approved safety harnesses, wristlets, or vests with lifelines. Each employee/lifeline must be manned by an employee outside the enclosure.

- **Explosive Atmospheres.** No work may be done in environments containing explosive gas atmospheres greater than 10% (1/10) of the LEL indicated by a combustible gas indicator. Appropriate dilution ventilation must be provided.

A4.11 SIGNS

Signs must be posted near permit spaces notifying employees of the hazards present and that only authorized entrants may enter the permit area.

A4.12 SIGN IN/OUT SHEET

Authorized entrants must sign in and out when entering or leaving a confined space area.

A4.13 FORMS

The forms in Exhibit A4-1 may be used in whole or in part as guidelines to develop site-specific confined space procedures. All site-specific forms must comply with OSHA and client regulations.

Attachment A-5

Power and Hand Tool Operation

SECTION A-5
HAND AND POWER OPERATED TOOLS

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A5 HAND AND POWER OPERATED TOOLS

All tools must be maintained in a safe condition.

When power operated tools are designed to accommodate guards, the guard must be in place on the tool.

The point of operation (the area on the machine where the work is being performed) must be guarded to prevent the operator from having any part of his or her body in the danger zone when there is exposure that could cause injury to the operator.

Belts, sprockets, gears, chains, spindles, drums, flywheels, or any moving or rotating part of equipment must be guarded if the parts could injure employees or otherwise create a hazard.

The periphery of blades must be guarded. The guards may not have openings larger than 1/2 in.

Employees must use the specific personal protective equipment necessary to protect against hazards such as dusts, fumes, mists, vapors, gases, falling objects, or flying, abrasive, and splashing objects.

Circular saws, chain saws, and percussion tools without positive accessory holding means, must be equipped with a switch that will shut the power off when it is released.

Machines designed for fixed locations must be anchored to prevent moving or walking.

A5.1 HAND TOOLS

The use of unsafe hand tools is prohibited.

Wrenches such as adjustable, pipe, end, and socket wrenches may not be used when the jaws are sprung and slippage could occur.

Impact tools such as drift pins, wedges, and chisels must be kept free of mushroomed heads.

Wooden-handled tools must be replaced if the handles become splintered or cracked. Wooden handles must be tight.

A5.2 ELECTRIC POWER TOOLS

Electric power hand tools must be of the approved double insulated type or must be in conformance with the assured grounding program requirements defined in section 11 of this manual.

Electric cords must not be used for hoisting, lowering, or any purpose other than their intended use.

Electric power tools that are damaged in any way must be taken out of service immediately.

A5.3 PNEUMATIC POWER TOOLS

Pneumatic power tools must be secured to their hoses or whips by a positive means to prevent the tools from being disconnected accidentally.

Pneumatic impact tools must have safety clips or retainers securely installed to prevent attachments from accidentally disconnecting.

All pneumatic nailers (or other similar equipment with automatic fastener feeds that operate at 100 psi) must have a device that will allow only fasteners to eject when the muzzle is in contact with the work surface and when a triggering device that is separate from the muzzle is activated simultaneously.

Compressed air used for cleaning purposes must be less than 30 psi. Effective chip guarding and personal protective equipment such as safety glasses or face shields must be used during cleaning.

Compressed air may not be used to clean the pneumatic tool operator or other persons.

The manufacturer's guidelines for hose types, pipe valves, filters and other fittings must be followed at all times.

Hoses must not be used for hoisting and lowering objects.

All hoses having an inside diameter of more than 1/2 in. must have a safety device at the source of supply or branch line to reduce pressure in case of hose failure (refer to Appendix J).

Airless spray guns that atomize paint or other fluids at high pressures (1,000 psi or more) must have a manual or automatic device that prevents the trigger from being pulled until the safety device is manually released.

In lieu of the above requirement, a diffuser nut may be used that prevents high-pressure, high-velocity release and a nozzle tip guard that prevents the tip from coming into contact with the operator.

Abrasive blast cleaning nozzles must have a valve that must be manually held open.

A5.4 FUEL POWERED TOOLS

Fuel powered tools may be refueled, serviced, or maintained only while the tools are stopped and not operating.

Fuels must be transported, handled, and stored in accordance with *29 CFR 1926, subpart F*.

When fuel powered tools are used indoors, extreme caution must be taken to prevent the buildup of carbon monoxide or other hazardous gases to concentrations that exceed established safe levels. Air movers, ventilation, and exhaust ducts are some controls required to reduce unsafe levels of hazardous gases. Personal protective equipment such as respirators must be used only after it has been determined that engineering controls will not reduce hazardous gas concentrations to safe levels.

A5.5 ABRASIVE WHEELS AND TOOLS

Floor-stand and bench-mounted abrasive wheels must be provided with substantial guards. The maximum angular exposure must not be more than 90 degrees. When the work requires contact with the wheel below the horizontal plane of the spindle, the angular exposure must not exceed 125 degrees. Exposure must not begin at more than 65 degrees above the horizontal plane of the spindle.

Floor- and bench-mounted grinders must be provided with work rests adjusted to no more than 1/8 in. from the surface of the wheel.

Portable grinders must be guarded. The maximum angular exposure of the grinding wheel must not exceed 180 degrees. Exceptions are:

- When the work location makes the use of such guards impossible. In such circumstances, a wheel equipped with safety flanges must be used for wheels designed to fit the flanges.

- When wheels of 2 in. or less in diameter securely mounted on the steel mandrel are used. In such circumstances, a wheel equipped with safety flanges must be used for wheels designed to fit the flanges.
- When the wheel is entirely within the work being ground. In such circumstances, a wheel equipped with safety flanges must be used for wheels designed to fit the flanges.

Abrasive wheels must be inspected and ring-tested before mounting to ensure that the wheels are free of cracks or defects.

Do not force abrasive wheels onto spindles or overtighten the wheels onto the spindles.

The operating speeds indicated on the abrasive wheel must not be exceeded.

Safety glasses and face shields must be worn when grinding with abrasive wheels.

A5.6 WOODWORKING TOOLS

All fixed woodworking tools must be equipped with a disconnect that can be locked in the *OPEN* position only.

The operating speeds indicated on the saw blades must not be exceeded.

All portable power saws must be equipped with guards above and below the baseplate shoe. When the tool is withdrawn from the work, the lower guard must automatically and instantly return to the covering position.

A5.7 POWDER ACTUATED TOOLS

A number of tools using explosive charges to drive fastenings and perform similar functions are in wide use throughout the industry. The manufacturers of these devices provide detailed instructions regarding their use. Those instructions should be followed at all times.

The two types of powder actuated tools are direct acting and indirect acting.

- **Direct Acting Tool.** A tool in which the expanding gas of the power load acts directly on the fastener to be driven.
- **Indirect Acting Tool.** A tool in which the expanding gas of the power load acts on a captive piston, which in turn drives the fastener.

The three classes of tools are low velocity, medium velocity, and high velocity.

- **Low Velocity Tool.** A tool whose test velocity has been measured 10 times while using the highest velocity combination of:
    - The lightest commercially available fastener designed for that specific tool
    - The strongest commercially available power load that will properly chamber in the tool
    - The piston designed for that tool and appropriate for that fastener that will produce an average test velocity from the 10 tests not in excess of 10 meters per second (m/s) or 328 feet per second (ft/s) with no single test showing a velocity of more than 108 m/s (354 ft/s).

- **Medium Velocity Tool.** A tool whose test velocity has been measured 10 times while using the highest velocity combination of:
  - The lightest commercially available fastener designed for the tool
  - The strongest commercially available power load that will properly chamber in the tool
  - The piston designed for that tool and appropriate for that fastener that will produce an average test velocity from 10 tests in excess of 100 m/s (328 ft/s) but not in excess of 150 m/s (492 ft/s), with no single test having a velocity of 160 m/s (525 ft/s).
- **High Velocity Tool.** A tool whose test velocity has been measured 10 times while using a combination of:
  - The lightest commercially available fastener designed for the tool
  - The strongest commercially available power load that will properly chamber in the tool that will produce an average velocity from the 10 tests in excess of 150 m/s (492 ft/s)

A5.7.1 TOOL SELECTION

Many applications requiring powder actuated tools can be successfully accomplished using the low velocity piston tool (trigger or hammer actuated). The low velocity piston tools should be used whenever possible because they impose the least potential risk to operator safety.

Only tools approved by a state or other governing agency should be used.

A5.7.2 OPERATING RECOMMENDATIONS

The assistance and services of the tool manufacturer or authorized distributor should be called on whenever doubt exists concerning proper use or service, or if operator training is required.

1. Powder actuated tools must only be used by properly trained and qualified operators. Users must possess qualified operator’s cards which are issued by a particular manufacturer’s authorized dealer or distributor or other competent source only after thorough training. Instructors must be authorized by the manufacturer. Safety goggles must be worn by operators and assistants at all times while operating powder actuated tools. If a potential hazard could cause injury to an operator’s face, transparent face shields must be used in addition to safety goggles.
2. Hearing protection must be used when operating the tools.
3. A loaded tool must never be carried away from a worksite. Tools must always be left unloaded until ready for use. Loaded tools must never be left unattended. Tools not in use must be kept in a locked case labeled *POWDER ACTUATED TOOL*.
4. Tools must never be pointed at anyone, whether loaded or unloaded, and hands must be kept clear of the open muzzle end at all times.
5. Powder actuated tools must never be stored or used in explosive atmospheres, in the vicinity of highly flammable materials, or where nonsparking tools are required.
6. Tools must be held firmly against and perpendicular to the surface being driven into, except for specific applications recommended by the tool manufacturer.

7. In the event of jamming or obstruction in the bore, the manufacturer's instructions must be carefully followed.

8. Tools must be inspected in accordance with manufacturers' recommendations before each use to ensure that:

   a. Safety devices are in proper working condition
   b. Tools are clean
   c. All moving parts operate freely
   d. Barrels are free from obstruction

   Any tool not in working order or that develops a defect during use must be removed immediately from service and not used until proper repairs have been made by competent personnel. Before testing, check to make sure the tool is not loaded. Any tools found to be defective must be removed from service and from power loads and tagged *DEFECTIVE*, *DO NOT USE*.

9. Tools must be inspected and maintained on a regular basis and inspection documentation must be maintained at the site.

10. As required, use the appropriate safety guards supplied by manufacturers. Also follow the safety guard requirements in *ANSI A10.3-1985*.

11. Always use the proper type and powder level load. The preferred power loads are recommended by the manufacturer of each tool being used. To decrease power, use a lower number; to increase power, use a higher number.

12. In areas where powder actuated tools are being used extensively, warning signs (available from manufacturers) and barriers, if necessary, identifying the hazard area are recommended.

13. An operator's instruction manual must be kept in the carrying case for the specific tool being used for reference, when necessary, concerning proper operation, service, etc.

14. Only fasteners that are specially designed and manufactured for use in powder actuated tools may be used.

A5.7.3 OPERATING LIMITATIONS

Manufacturer's recommendations must be referred to if doubt exists about a fastening application. Do not drive into hard or brittle materials such as cast iron, glazed tile, surface-hardened steel, glass brick, live rock-face brick, and hollow tile.

To prevent flying hazards, no stud or attachment should be driven without first making sure that it will not pass completely through the material into which it is being driven.

Only fasteners specially designed and manufactured for use in powder actuated tools may be used.

Fasteners driven by standard velocity tools must not be driven directly into masonry materials closer than 3 in. from an unsupported edge or corner, or into steel closer than 1/2 in. from an edge or corner. Specific applications recommended by tool manufacturers are the only exceptions.

Fasteners may not be driven through existing holes unless the holes are used solely as guides, as recommended by tool manufacturers, and to ensure positive alignment.

Fasteners must not be driven into concrete unless material thickens and is at least three times the penetration depth of the fastener shank.

In the event of a misfire, tools must not be removed from the working surface for a minimum of 30 seconds. Then, the explicit instructions in the manufacturer's manual for the specific tool must be carefully followed.

A5.8 CAPTIVE STUD TOOLS

These tools are designed to stop a stud or pin in its tracks should it be fired mistakenly into soft or insubstantial materials. The stud is prevented from free flight by a piston and buffer in the guard assembly. A partial turn of the tool frees it from a stud properly set in the work surface. Captive stud tools have been replaced by low velocity powder actuated tools and are no longer available. However, some may still be in use in the field.

A5.9 IDENTIFICATION OF CASED LOADS

The standard means of identifying power levels of loads used in tools uses the uniform colors and printed descriptions shown in Table A5-1. The color codes are strikingly printed on the load containers to provide a visual indication of the power level of the load.

A5.10 TOOL DESIGN REQUIREMENTS

Among other requirements, the following design criteria must be complied with.

1. The tool must be designed to prevent inadvertent actuation.
2. The tool must be designed to prevent actuation that could propel a fastener or any part thereof into the air when dropped from a height of 3 meters (10 ft) onto a smooth, hard surface such as concrete or steel.
3. Actuation of any tool must depend on at least two separate and distinct operations by the operator, with at least one operation being other than the operation of holding the tool against the work surface.
4. The tool must be designed not to be operable other than against a work surface with a force on the work surface equal to 22 newtons (N) 5 lb greater than the weight of the tool, or a minimum impact energy of 4 joules (3 ft-lb).
5. All tools must be designed so that compatible protective shields or fixtures designed, built, and supplied by the tool manufacturer can be used.
6. Tools must be designed so that a determinable means of varying the power levels is available for selecting a power level adequate to perform the desired work.
7. Tools must be designed so that all principal functional parts can be checked for any foreign matter that may affect operation.
8. Tools must be designed so that all parts are of adequate strength to resist maximum stresses on actuation when the tool is used in accordance with the manufacturer's instruction and is powered by any commercially available power load that will properly chamber in the tool.

Table A5-1 – Recommended Power Loads

Power Level	Color Identification		Nominal Velocity (ft/sec)
	Case Color	Load Color	
1	Brass	Gray	300
2	Brass	Brown	390
3	Brass	Green	480
4	Brass	Yellow	570
5	Brass	Red	660
6	Brass	Purple	750
7	Nickel	Gray	840
8	Nickel	Brown	930
9	Nickel	Green	1,020
10	Nickel	Yellow	1,110
11	Nickel	Red	1,200
12	Nickel	Purple	1,290
The nominal velocity applies to 3/8-in. diameter, 350 grain ballistic slug fired in a test device. It has no reference to the actual fastener velocity developed in any specific size or type of tool.			

Attachment A-6

Motor Vehicle and Heavy Equipment Safety

A6.0 CONSTRUCTION SAFETY

Construction work is one of the most dangerous occupations. More than 1,300 U.S. workers die each year from construction-related accidents. Parsons I&T personnel perform construction management and oversight throughout the world. Employees performing construction operations must comply with the procedures and policies outlined in this section and the ***Parsons Construction Health and Safety Manual***. If there are conflicts between procedures, the more conservative approach will be used.

A6.11 MOTOR VEHICLES AND HEAVY EQUIPMENT SAFETY

Working with large motor vehicles and heavy equipment can be a major hazard at construction sites. Injuries can result from equipment hitting or running over personnel or from the overturning vehicles. Vehicle and heavy equipment design and operation must be in accordance with 29 CFR 1926.600 through 1926.602. In particular, the following precautions must be used to help prevent injuries:

- Vehicle operators must check brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices at the beginning of each shift.
- Large, construction motor vehicles will not be backed up unless:
- The vehicle has a reverse signal alarm audible above the surrounding noise level.
- The vehicle is backed up under the direction of a signalman.
- Heavy equipment or motor vehicle cabs must be kept free of all nonessential items, and all loose items must be secured.
- Safety glass must be used in windshields, windows, and doors. Cracked or broken glass must be replaced.
- Large construction motor vehicles and heavy equipment must be provided with necessary safety equipment (seat belts, rollover protection, emergency shutoff in case of rollover, and backup warning lights and audible alarms).
- Blades and buckets must be lowered to the ground and parking brakes set before shutting off a heavy equipment or vehicle.
- Any person operating a motor vehicle must hold a permit valid for the equipment being operated.

A6.11.1 Earthmoving and Excavation Equipment

The first operation performed at most construction sites is to change the landscape. Land is cleared and reshaped by excavating and moving earth. Equipment used to move earth must conform to OSHA requirements in 29 CFR 1926.602 and 1926.1001. Excavators, bulldozers, graders, compactors, road rollers, and other mobile equipment require rollover protective systems (ROPS). ROPS must comply with the performance criteria set forth in Society of Automotive Engineers Standard J1040 (adopted by OSHA in 29 CFR 1926.1001). Additionally, seat belts must be provided for vehicles equipped with ROPS. Large excavators working next to water should have an alternate escape route from the cab so the operator has a way out if the vehicle overturns in the water.

A6.11.2 Dump Trucks

Dump trucks brought onto a construction site must comply with the requirements specified below before being place into service.

- All dump trucks must be equipped with a holding device to prevent accidental lowering of the body while maintenance or inspection is being performed.
- All hoist levels must be secured to prevent accidental slipping or tripping of the mechanism.
- All off-highway end-dump trucks must be equipped with a means (plainly visible from the operator's position when looking ahead) to determine whether the dump box is lowered.

- Trip handles for tailgates on all dump trucks must be positioned to keep the operator in the clear when the gate is opened.

- Brakes, tires, horn, steering mechanism, seat belts, operating controls, safety devices, and accessories must be operating correctly.

A6.11.3 Powered Industrial Trucks

Powered industrial truck accidents cause approximately 100 fatalities and 36,000 serious injuries each year. Forklifts must be selected based on fire hazard designation, carrying capacity, reach capability, terrain over which loads will be carried, atmospheric conditions in the workplace, and design of the workplace. For example, gasoline- or diesel-operated lift trucks are not recommended for use in locations where explosive concentrations of flammable gases or vapors may be present.

Forklifts that can elevate a load above the operator's head or forklifts used in locations where objects may fall on the operator must be equipped with an overhead falling object protective system (FOPS). FOPSs must comply with the design criteria specified in American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1. Additionally, the Construction Safety Manager or a designee ensures that forklifts are equipped with the following safety features:

- Warning devices (backup alarm) and lights appropriate for the work environment.
- Seat belt or other restraining device.
- A load chart showing the maximum rated load and the variation of the rated safe load capacity with the reach of the equipment must be present in the operator's cab.

Violations of regulatory requirements for work practices and traffic management are frequently cited as contributing factors in a number forklift fatalities. Thus, as a minimum, the following requirements must be met:

- No part of a load may pass over any worker.
- A lift truck left unattended must be immobilized and secured against accidental movement.
- Forks, buckets, or other attachments must be in the lowered position.
- The maximum rated load for the lift truck may not be exceeded. Loads must be handled in accordance with the height and weight restrictions on the load chart.
- When a load is in the raised position, an operator must attend the controls.
- If an operator does not have a clear view of the path, a signalman must be used.
- Loads must be carried as close to the ground or floor as the situation permits.
- Loads that might tip or fall and endanger workers must be secured.
- A lift truck must not be used to support, raise, or lower a worker.

- Barriers, warning signs, designated walkways, or other safeguards must be provided where pedestrians are exposed to the risk of collision.

An estimated 25 percent of powered industrial truck-related injuries result from inadequate operator training. In 1998, OSHA promulgated training requirements for forklift operators.

Powered industrial truck operators must receive initial training in the topics listed below that are applicable to their work.

Truck related topics

- Operating instructions, warnings, and precautions for type of truck being used
- Similarities to and differences from automobiles
- Control and instrumentation location and use
- Engine or motor operation
- Steering and maneuvering
- Visibility
- Fork and attachment limitations and use
- Vehicle capacity
- Vehicle stability
- Vehicle inspection, maintenance, and refueling
- Operating limitations
- Other operating instructions, warnings, or precautions listed in the operation manual

Workplace related topics

- Surface conditions where truck is used
- Load composition and stability
- Load stacking, unstacking, and transport
- Pedestrian traffic
- Narrow aisle and restricted area operation
- Operation in hazardous locations
- Ramp and sloped surface operation
- Unique or potentially hazardous conditions
- Operating the vehicle in closed environments

The employer must evaluate the performance of each powered industrial truck operator every three years. If the operator receives a deficient evaluation, then the operator must receive refresher training. Retraining must also be conducted when:

- There is reason to believe that an unsafe act has been committed.
- An accident or near-miss occurs.
- The operator is assigned to a different type of truck.
- A workplace condition changes that could effect truck operation.

Employers must provide certification that each operator has been trained and evaluated in accordance with OSHA requirements. The Construction Safety Manager must obtain copies of operator training certificates before forklift operation is permitted.

Attachment A-7

Lock Out / Tag Out

SECTION A7
LOCKOUT/TAGOUT ENERGY CONTROL

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A7 LOCKOUT/TAGOUT ENERGY CONTROL

To perform work on industrial equipment safely, all employees must understand the importance of energy control and the requirements of the *OSHA Lockout and Tagout Standard*. They must also know how to apply energy isolation and lockout/tagout procedures.

The following procedures must be followed on all Parsons sites, except in those cases where client procedures supersede the Parsons requirements.

All lockout/tagout materials are supplied by Parsons unless client procedures or requirements supersede Parsons requirements.

A7.1 DEFINITIONS

- **Energy Source.** Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other source of energy.
- **Lockout.** A lockout is a method of keeping equipment from being set in motion and endangering workers.
- **Tagout.** The energy isolation device is placed in the safe position and a written warning is attached to it.

A7.2 LOCKOUT STEPS

The following steps must be used to ensure that lockout is performed safely and effectively.

1. Ensure that a disconnect switch, circuit breaker, valve, or other energy isolating mechanism is in the *SAFE* or *OFF* position.
2. Ensure that any protective device placed over the energy isolating mechanism is in the *OFF* position.
3. Attach a lock to ensure that the equipment cannot be energized or actuated.

A7.3 TAGOUT TAG PROPERTIES

Tagout tags must have the following characteristics to ensure compliance with applicable OSHA and Parsons standards.

- Durable, to withstand wear
- Substantial, so it cannot easily come off
- Contains identifying information about the person who applies it

Tagout/lockout should be used when an employee is performing service or maintenance around any machine which, if suddenly set in operation or motion, could cause injury. For example, unexpected startup of equipment or release of stored energy could cause injury to any person in close proximity to that machinery.

A7.4 LOCKOUT/TAGOUT SITUATIONS

Situations that are most likely to need lockout/tagout include:

- When a guard or other safety device must be removed or bypassed
- When someone working in close proximity to moving machinery risks catching a body part in that machinery
- During repair of electrical circuits
- When cleaning or oiling machinery having moving parts
- When clearing jammed mechanisms

A7.5 PARSONS LOCKOUT/TAGOUT

Parsons uses lockout/tagout in combination on all equipment. The single use of a tag without a lock, or a lock without a tag, is not permitted. In addition, locks and tags by themselves do not de-energize equipment. They must be attached only after a machine has been isolated from its sources.

Parsons uses two methods to determine that its lockout/tagout procedures are properly understood.

- **Documentation:** a written statement of Parsons' energy control program.
- **Employee training:** to help employees understand how to use the energy control program.

A7.6 ENERGY

For purposes of this manual, energy is defined as movement or the possibility of movement. Whether a power switch is *ON* or *OFF*, energy of some sort is always present in any powered equipment. The two most common types of energy are:

- **Kinetic energy**: the force caused by the motion of an object.
- **Potential energy**: the force in an object that is not moving.

A7.7 PROTECTIVE ENGINEERING

Examples of protective engineering include:

- Machine guards
- Electrical disconnects
- Mechanical stops such as pins and valves
- Point-of-operation guards, which provide automatic protection against human error

Engineering guards and engineering safety features can be defeated. Engineering guards are designed specifically to provide automatic protection against human error. Never bypass a point-of-operation guard or let a coworker do so, and never rely solely on engineering safety features.

A7.8 APPLYING AND ENFORCING ENERGY CONTROL

Procedures for applying an energy control program include:

- Ensuring that energy isolation and lockout/tagout are applied only by trained employees authorized to perform service or maintenance

- Notifying all employees who work in an affected area before lockout/tagout is applied

Procedures for enforcing compliance with an energy control program include:

- Inspections at least once each month to determine that energy control procedures are being carried out

- Fair and uniform enforcement of safety rules

- Penalties for failure to follow written procedures

The OSHA regulation requires that control of hazardous energy be done according to a 6-step procedure. Components of the 6-step procedure and guidelines for successfully completing each step are shown in Table A7-1.

A7.9 BASIC WORK RULES

Basic common sense should govern work around potentially hazardous power operated equipment. Fundamentals include:

- Look ahead, and avoid doing anything that could re-activate the equipment
- Do not bypass the lockout when installing new pipe or wiring

A7.10 LOCKOUT/TAGOUT REMOVAL

This procedure must be followed when removing lockout/tagout.

- Determine that the equipment is safe to operate by removing all tools from the work area and verifying that the system is fully assembled.

- Safeguard all employees by conducting a headcount to make sure everyone is clear of the equipment; also, notify everyone in the area that lockout/tagout is being removed.

- Remove the lockout/tagout devices. Except in emergencies *each device must be removed by the person who attached it.*

- In some workplaces, the last person to remove a lock may have extra duties, such as removing the hasp and lockout device, and removing tags, signing them, and turning them in. In addition, the Parsons supervisor in charge of the work generally the last one to remove his or her tag and lock. The exception to this is the case where the client's designated personnel remove their locks and tags last.

- Develop and follow a checklist of required steps to re-energize the system.

A7.11 SERVICE, MAINTENANCE, AND TEMPORARY REACTIVATION

In certain cases where service or maintenance must be performed by others during lockout/tagout, the outside contractor and the onsite employer must exchange lockout/tagout information. Employees onsite must understand the rules used in other companies' energy control programs. Field personnel should be alert for new types and styles of lockout/tagout devices.

Table A7-1 – Lockout/Tagout Steps

OSHA Lockout/Tagout Procedure	Precautions
1. Preparation for Shutdown	Know the types and amounts of energy that power the equipment being shut down Know the hazards of that energy Know how the energy can be controlled
2. Equipment Shutdown	Shut the system down using its operating controls Follow the correct procedure for the equipment to avoid endangering anyone during shutdown
3. Equipment Isolation	Operate all energy isolating devices so that the equipment is isolated from its energy source Be sure to isolate all energy sources; secondary power supplies as well as the main one Never pull an electrical switch while it is under load Never remove a fuse instead of disconnecting it
4. Applying Lockout/Tagout Devices	Ensure that all energy isolating devices are locked and tagged Use only standard devices supplied by Parsons (or, in some cases, by the client) for lockout/tagout. Do not use such devices for any other purpose Use a lockout device if a lock cannot be placed directly on the energy control When using lockout, each employee working on a system must attach his or her personal lock to that system More than one employee can lock out a single energy isolating device by using a multiple-lock hasp Attach tags at the same point as the lock Tags must be filled out completely and correctly

Table A7-1 – Lockout/Tagout Steps (Contd)

OSHA Lockout/Tagout Procedure	Precautions
5. Control of Stored Energy	Inspect each system to ensure all parts have stopped moving Install ground wires Relieve trapped pressure Release the tension on springs or block the movement of spring-driven parts Block or brace parts that could fall Block parts in hydraulic and pneumatic systems that could move from loss of pressure. Bleed lines and leave vent valves open. Drain process piping systems and close valves to prevent hazardous material flow If a line must be blocked where there is no valve, use a blank flange Purge reactor tanks and process lines Allow dissipation of extreme cold or heat. If time does not allow full dissipation, wear protective clothing to perform this step If stored energy can reaccumulate, monitor it to make sure it stays below hazardous levels
6. Verifying Isolation	Ensure that all dangerous areas are clear of personnel of equipment Verify that the main disconnect switch or circuit breaker cannot be moved to the *ON* position Use a voltmeter or other equipment to check that the switch is not hot Press all start buttons and other activating controls on the equipment to ensure that equipment has been isolated from its energy sources Shut down all machine controls when the testing is finished

If equipment must be temporarily re-activated, remove unnecessary tools from the work area and make sure everyone is clear of the equipment. Then remove all lockout/tagout devices and re-energize the system. As soon as the energy is no longer needed, isolate the equipment and re-apply lockout/tagout, using the OSHA 6-step procedure in Table A7-1.

If servicing equipment requires more than one work shift, lockout/tagout protection must not be interrupted. Employees leaving work must not remove their locks until the next shift arrives and is ready to lock out.

A7.12 SPECIAL LOCKOUT PRECAUTIONS

When the person who installed a lock is not available to remove it:

- The lock can be removed only in an emergency, and only under the direction of the Parsons supervisor in charge of the work.
- The lock may not be removed until the person removing it makes sure it is absolutely safe.

These procedures give onsite employees the tools needed to work safely around hazardous energy sources. It is essential that these rules be followed to guard lives and health.

Attachment A-8

Respiratory Protection Program

APPENDIX A8
GENERIC RESPIRATORY PROTECTION PROGRAM

A8.1 OBJECTIVE

The objective of this Respiratory Protection Program is to provide employees with sufficient information and guidance to adequately protect themselves from potential inhalation hazards during field operations. The use of respirators to protect personnel from inhalation hazards is permitted by OSHA under 29 CFR 1910.134 when other more positive methods of protection, such as engineering controls (e.g., ventilation) or work practices (e.g., substitution) are not feasible.

A8.2 NEED FOR RESPIRATORY PROTECTION

OSHA and ACGIH have established occupational exposure limits for various airborne contaminants. If there is the potential for workers to be exposed to airborne contaminants above occupational exposure limits, than feasible engineering controls and administrative measures should be instituted. If engineering controls are not feasible, employers are required to provide respirators for employee protection. Traditional industrial hygiene engineering controls are often not feasible for site work, hence, respirators must be relied upon as the primary means for respiratory protection during field investigations. All respiratory protection practices shall comply with this program.

A8.3 MINIMUM REQUIREMENTS OF AN ACCEPTABLE RESPIRATOR PROGRAM

The requirements for an acceptable respiratory protection program are outlined in 29 CFR 1910.134. An OSHA acceptable program includes the following elements:

- Procedures for selecting respirators for use in the workplace.
- Training of employees on the proper selection, use, and limitations of respirators.
- Procedures for proper maintenance, cleaning, storage, inspection and repair of respirators.
- Fit testing procedures for tight-fitting respirators.
- Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators.
- Medical screening of employees to determine if they are physically able to perform their assigned work using respiratory protective equipment.
- Procedures for regularly evaluating the effectiveness of the program.

A8.4 ESTABLISHMENT OF THE RESPIRATOR PROGRAM

Personnel with specific responsibilities for the implementation of the program include the following:

A8.4.1 Facility Health and Safety Representative

The Facility Health and Safety Representative is responsible for:

- Administering the respiratory protection program.
- Setting up and conducting training.
- Ensuring the office has the necessary respiratory protective equipment for the work performed by that office.
- Scheduling and conducting respirator fit testing.
- Maintaining fit test and medical records.
- Ensuring that respirators are properly stored and maintained in the office.
- Maintaining respirator repair records.
- Distributing respirators to field team members.
- Evaluating and updating the office respiratory protection program.

A8.4.2 Project Health and Safety Officer (PHSO)

All hazardous waste and industrial field investigations should have assigned to it a PHSO. The PHSO is responsible for:

- Ensuring that field team members assigned to wear respirators are trained in proper respirator selection and use.
- Performing site specific respiratory protection training.
- Evaluating the respirator requirements for each field task.
- Verifying that all field team members assigned to wear respirators have received appropriate fit-testing and are medically certified to wear the class of respirator assigned to them.
- Developing a project health and safety plan that specifies respiratory protection requirements for each anticipated site task.
- Ensuring that respirators are maintained and stored properly at the work site.

- Maintaining an adequate supply of cartridges when air purifying respirators are used and ensuring that Grade D or better breathing air is used to supply self-contained breathing apparatuses and airline respirators.

A8.4.3 Project Staff

All project team members must read and conform to the Project Health and Safety Plan. In the field, employees are responsible for performing daily inspections and cleaning of their assigned respirator and for storing them in a clean and sanitary location. Workers must report any problems with respiratory equipment to their PHSO immediately.

A8.5 FACTORS TO CONSIDER WHEN SELECTING A RESPIRATOR

Proper respirator selection is a complex process that takes into consideration a variety of factors. The workplace must be thoroughly evaluated prior to selecting a respirator. This evaluation must include a reasonable estimate of employee exposure to respiratory hazards and an identification of the contaminant's chemical state and physical form. Additionally, work factors such as exposure time, temperature, relative humidity, and expected physical work effort must be evaluated when selecting a respirator.

A8.5.1 Hazard Determination

Identifying and evaluating potential respiratory hazards is key to proper respirator selection. In the project health and safety plan the respiratory hazards for each anticipated operation should be determined. Once the nature of the respiratory hazard or hazards present have been identified, the PHSO must evaluate the magnitude of the hazard to determine the potential exposure of each employee and the extent to which respirators of various types can reduce the harm caused by exposure. The steps for hazard determination are as follows:

1. Determine what contaminants may be present at the site (review site history or past environmental sampling data; know contaminants that are released from operation [welding fumes]).

2. Determine whether there are occupation exposure limits (OSHA permissible exposure limits or ACGIH threshold limit values) for the identified contaminants.

3. Determine if there is a comprehensive health standard (e.g., asbestos, lead) for the contaminant(s). If so, there may be specific respirators required that will influence the selection process.

4. Determine the IDLH levels for the contaminants (refer to section A8.5.2).

5. Evaluate if the operation involves entry into a potentially oxygen deficient environment.

6. Estimate the concentration of contaminants (use historical exposure sampling data or calculate exposure estimates using environmental sampling data).

7. Determine the physical state of the contaminants (are contaminants fumes, mists, vapors, or gases). If the contaminants are aerosols, estimate particle size based on whether the contaminants are fumes, mists, or dusts. If contaminants are vapors or gases, evaluate cartridge or canister efficiency in removing the contaminants.

8. Determine whether the contaminants are eye irritants.

Clearly, personal exposure monitoring data is the most reliable approach for assessing how much and what type of respiratory protection is required in a given circumstance. Parsons I&T has extensive personal monitoring data for UST removals, asbestos abatement, and lead paint removal operations that can be used by PHSOs to evaluate respiratory protection needs for employees assigned to similar operations. For hazardous waste and industrial field investigations, site specific exposure monitoring data may not be available, however results from previous environmental sampling investigations conducted at the site may be accessible. If available, review results of the sampling data to assess volatile contaminant(s) that may be encountered during anticipated operations. From this information calculate the potential for exposure above occupational exposure limits based on substance(s) concentration, vapor pressure, and solubility.

Models for calculating airborne exposure levels of contaminants based on the concentrations of the contaminants in soil and water may be found in Attachment A8-1 at the end of this Appendix. Many substances are not volatile (metals, PAH, PCBs, etc.), thus knowledge of the anticipated operation becomes critical in determining the need for respiratory protection. For example, high concentrations of lead in soil by itself is not justification for wearing a respirator. The anticipated operation must create a dust hazard (such as the excavation of soil) for inhalation to occur. As mentioned above, knowledge of the particle size is important for determining proper respirator selection. If the contaminant is an aerosol with a particle size greater than 2 *u*m mass median aerodynamic diameter (MMAD), an air purifying respirator with any filter type (95, 99, or 100) may be used (refer to section A8.6.1.2). If the contaminant is an aerosol with an unknown particle size or a particle size less than 2 ∝m MMAD, than only a series 100 filter may be used.

The identification and evaluation of contaminants and operations provides the basis for the initial selection of a respirator. Once a level of respiratory protection has been selected the PHSO can change the respirator selection based on real-time air monitoring and professional judgment (refer to section A8.7 of this Appendix).

A8.5.2 Immediately Dangerous to Life or Health (IDLH)

The definition of IDLH provided in 29 CFR 1910.134(b) is as follows:
Immediately Dangerous to Life or Health means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

The purpose of establishing an IDLH exposure concentration is to ensure that the worker can escape without injury or irreversible health effects in the event of failure of the respiratory protective equipment. Only the following respirators may be permitted in an IDLH atmosphere:

- A full face-piece pressure demand SCBA certified by NIOSH for a minimum service
- life of thirty minutes; or

- A combination full face-piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

All oxygen-deficient atmospheres shall be considered IDLH environments. IDLH values for specific chemicals can be obtained from the *NIOSH Pocket Guide to Chemical Hazards*. Note OSHA states in 29 CFR 1910.134(c) that in "instances where the employer cannot identify or reasonably estimate the employee exposure, the employer shall consider the atmosphere to be IDLH." Thus, the sampling of an unknown drummed waste must be considered an IDLH operation.

A8.5.3 Assigned Protection Factor and Maximum Use Concentration

The assigned protection factor (APF) is the minimum anticipated protection provided by a properly functioning respirator or class of respirators to a given percentage of properly fitted and trained users. An APF of 10 for a respirator means that a user could expect to inhale no more than one tenth of the airborne contaminant present. It should be noted that APFs are based solely on laboratory fit testing and should be viewed and applied with particular caution. APFs are not based on measurements of actual field (workplace) performance. The protection factors listed in Table A8-1 are from the OSHA cadmium standard.

Protection factors are used to calculate the maximum use concentration (MUC) of a respirator for a particular substance. The APF of a given respirator for a specific user multiplied by the PEL or TLV for a given substance is the maximum use concentration of that substance for which the respirator may be used. For example, if the APF for a half face air purifying respirator is 10 and substance X has a PEL (or TLV) of 10 ppm, the half-face mask respirator will provide protection up to 100 ppm.

On a given site, individual exposures may vary widely between workers, during a workshift, and between days. The range of potential exposures should be appropriately determined for all workers and for all circumstances that can be reasonably anticipated. The highest anticipated exposure for each respirator wearer should be used to compute the protection factor required for each wearer.

Table A8-1
Assigned Respirator Protection Factors

Type of Respirator	OSHA Cadmium Standard
Air Purifying	
Filtering face-piece	10
Half-mask	10
Full-face	50
Powered Air Purifying	
Half-mask	50
Full face-piece	250
Loose fitting face-piece	25
Hood or helmet	25

Type of Respirator	OSHA Cadmium Standard
Air Line	
Half-mask (demand)	10
Half-mask (continuous)	50
Half-mask (pressure demand)	1000
Full face-piece (demand)	50
Full face-piece (continuous flow)	250
Full face-piece (pressure demand)	1000
Self Contained Breathing Apparatus	
Demand	50
Pressure Demand	>1000

A8.5.4 Eye Irritation

The decision of whether to use a full-face, half-face or quarter-face respirator is often made by considering the chemical's potential for producing eye irritation or damage. The following guidelines should be used for selecting the proper mask. Any eye irritation is considered unacceptable for routine work activities. Therefore, only full face-piece respirators are permissible in contaminant concentrations that produce eye irritation. Some eye irritation is permissible when using an escape respirator if it is determined that such irritation would not inhibit escape and such irritation is reversible.

In instances where quantitative eye irritation data cannot be found in literature references and theoretical considerations indicate that the substance should not be an eye irritant, half face piece respirators are allowed. In cases where a review of the literature indicates a substance causes eye irritation but no eye irritation threshold is specified, full face-piece respirators should be used.

A8.5.5 Service Life Information

Because human senses are not foolproof in detecting gases and vapors and because many gases and vapors found in the workplace do not have adequate warning properties (low odor thresholds), OSHA only permits the use of air purifying respirators for protection against vapors and gases when:

- The respirator is equipped with an end-of-service life indicator (ESLI) certified by NIOSH or

- The employer establishes a change out schedule for cartridges or canisters that will ensure that the cartridges or canisters are changed out before breakthrough.

To date, only five contaminant-specific ESLIs have been granted by NIOSH. Thus for most projects the PHSO will have to establish a cartridge or canister change out schedule to prevent contaminant breakthrough. Change out schedules may be established through a review of breakthrough test data or from recommendations provided by the respirator cartridge or canister manufacturer or supplier.

OSHA emphasizes that a conservative approach is recommended when evaluating service life testing data. Temperature, humidity, air flow through the sorbent, the work rate, and the presence of other potential interfering chemicals in the workplace all can have a serious effect on the service life of an air-purifying cartridge or canister. In establishing a schedule for cartridge replacement, it is important that the PHSO base the schedule on worst-case conditions. Assuming worst-case conditions will provide the greatest margin for safety in using air-purifying respirators for protection against gases and vapors.

Table A8-2 provides breakthrough times for 42 chemicals at various concentrations. These breakthrough times were derived from the Gerry O. Wood math model (Wood, G.O., Estimating Service Lives of Organic Vapor Cartridges, American Industrial Hygiene Association Journal, 55:11-15, 1994). Note the table uses the following standard conditions to calculate breakthrough times:

- Flow rate is 53.3 liters per minute
- Sorbent mass per cartridge is 26 grams
- Relative humidity is <50%
- Temperature is 72°F

If site conditions are significantly different from the standard conditions, the PHSO will need to make appropriate corrections to the times presented in Table A8-2.

A8.6 RESPIRATOR TYPES

The basic purpose of any respirator is, simply, to protect the respiratory system from inhalation of hazardous atmospheres. Respirators provide protection either by removing contaminants from the air before it is inhaled or by supplying an independent source of respirable air. The principal classifications of respirator types are based on these categories.

Table A8-2
Estimate of Breakthrough Times

Chemical	Concentration 50 ppm	Concentration 100 ppm	Concentration 500 ppm
Aromatics			
Benzene	Work Shift	Limited to 50 ppm for negative pressure APR	Limited to 50 ppm for negative pressure APR
Toluene	1018	562	135
Ethylbenzene	1133	604	135
m-Xylene	1143	608	136
Cumene	1122	586	126

Chemical	Concentration 50 ppm	Concentration 100 ppm	Concentration 500 ppm
Alcohols			
Methanol	Compound is not applicable to this calculation	Compound is not applicable to this calculation	Compound is not applicable to this calculation
Ethanol	123	105	60
Isopropanol	425	286	101
Propanol	551	364	123
Butanol	1073	615	156
2-Pentanol	1091	601	143
Monochlorides			
Vinyl chloride	Refer to vinyl chloride standard 1910.1017	Refer to vinyl chloride standard 1910.1017	Refer to vinyl chloride standard 1910.1017
Ethyl chloride	Not applicable, boiling point below ambient	Not applicable, boiling point below ambient	Not applicable, boiling point below ambient
2-Chloropropane	224	150	54
Chlorobenzene	1327	709	160
1-Chlorohexane	993	530	119
1-Chloroheptane	930	492	56
Dichlorides			
Dichloromethane	Refer to Methylene chloride standard 1910.1052	Refer to Methylene chloride standard 1910.1052	Refer to Methylene chloride standard 1910.1052
1,1-Dichloroethane	234	157	57
Cis 1,2-Dichloroethylene	356	236	82
1,2-Dichoroethane	482	310	101
1,2-Dichloropropane	776	452	121
Trichlorides			
Chloroform	409	263	87
Methyl chloroform	618	366	102
Trichloroethylene	749	441	122
1,1,2-Trichloroethane	976	558	143
Tetrachlorides			
Carbon tetrachloride	677	398	109
Perchloroethylene	1106	609	145
Ketones			
Acetone	118	92	44
2-Butanone	423	271	88
2-Pentanone	729	424	113
4-Methly-2-Pentanone	884	448	117
Cyclopentanone	1020	589	153
3-Heptanone	1061	561	123
Cyclohexanone	1257	683	157
Alkanes			
Pentane	332	581	136
Hexane	585	334	87
Heptane	769	420	99
Nonane	907	470	100
Decane	902	461	95

Chemical	Concentration 50 ppm	Concentration 100 ppm	Concentration 500 ppm
Amines			
Ethylamine	Not applicable, boiling point below ambient temperature	Not applicable, boiling point below ambient temperature	Not applicable, boiling point below ambient temperature
Proplamine	226	117	46

A respirator that removes contaminants from the ambient air is called an air-purifying respirator. A respirator that provides air from a source other than the surrounding atmosphere is an atmosphere-supplying respirator. Both types of respirators are described below.

A8.6.1 Air Purifying Respirators (APRs)

The air purifying device cleanses the contaminated atmosphere. Ambient air passes through a cartridge or canister that removes specific gases or vapors, aerosols, or a combination of these contaminants. An APR is limited to use in environments where there is sufficient oxygen to support life (>19.5% by volume), where contaminant levels are below IDLH levels, and the MUC for the specific respirator is not exceeded.

A8.6.1.1 APR Configurations

APRs are made of flexible molded rubber, silicone, neoprene, or other materials. Present designs incorporate rubber or woven elastic headstraps that are attached at two to six points. Face-pieces are available in three basic configurations. The first, called a "quarter mask," covers the mouth and nose, and the lower sealing surface rests between chin and mouth. Good protection may be obtained with a quarter mask, but it is more easily dislodged than other types.

Quarter mask APRs may only be used at Parsons I&T sites for protection against nuisance dusts. A second type, the "half mask," fits over the nose and under the chin. Half masks are designed to seal more reliably than quarter masks, so they are preferred for use against more toxic materials. Half mask APRs may be used for protection against low levels of vapors, gases, and aerosols, provided that these substances are not eye irritants.

A third type, the "full face-piece," covers from roughly the hairline to below the chin. On the average they provide the greatest protection, usually seal most reliably, and provide eye protection as well. Full face-piece respirators are designed for use in higher concentrations of toxic materials than are quarter or half mask respirators. Because of their additional protection, most Parsons I&T operations requiring APRs are performed using full face-piece respirators.

A8.6.1.2 Aerosol Removing Respirators

Aerosol removing respirators offer protection against airborne particulate matter, including dusts, mists, and fumes. All aerosol filtering APRs use fibrous material (a filter) to remove the contaminant. As a particle is drawn onto or into the filter, it is trapped by the fibers. Currently, there are nine classes of filters (three levels of filter efficiency, with three categories of resistance to filter efficiency degradation). The three levels of filter efficiency are 95%, 99%, and 99.97% (series 95, 99, 100). The three categories of resistance to filter efficiency degradation are labeled N (Not resistant to oil), R (Resistant to oil), and P (oil Proof). These certification categories apply only to non-powered, air-purifying, particulate-filter respirators. Powered air-purifying respirators (PAPRs) for particulates are approved only with high-efficiency filters.

The selection process for using aerosol removing APRs is outlined below:

- The selection of N-, R-, and P-series filters depends on the presence or absence of oil particles, as follows:

- If no oil particles are present in the work environment, use a filter of any series (i.e., N-, R-, or P-series).

- If oil particles (e.g., lubricants, cutting fluids, glycerine, etc.) are present, use only R- or P-series filters.

- If oil particles are present and the filter is to be used for more than one work shift, use only a P-series filter.

- Selection of filter efficiency (i.e., 95%, 99%, or 99.97%) depends on how much filter leakage can be accepted. Higher filter efficiency means lower filter leakage. As stated earlier, if the contaminant is an aerosol with an unknown particle size or one with a MMAD less than 2 *u*m, the highest efficiency filter must be used (N-, R-, or P-100 series filters). Always use a 100 series filter for protection against radioactive dust, metal fumes, asbestos, or when the substance specific standard specifies the use of HEPA or series 100 filters.

- The choice of face-piece depends on the level of protection needed-that is, the assigned protection factor (APF) required.

A8.6.1.3 Gas and Vapor Removing Respirators

These air purifying respirators protect against certain gases and vapors by using various chemical filters to purify the inhaled air. They differ from aerosol filters in that they use cartridge or canisters containing sorbents to remove harmful gases and vapors. The cartridges may be replaceable or the entire respirator may be disposable. Sorbents are granular, porous materials that interact with the gas or the vapor molecule to clean the air. In contrast to aerosol filters, which are effective to some degree no matter what the particle, sorbent cartridges are designed for protection against specific contaminants (mercury vapor or ammonia gas) or classes of contaminants (such as organic vapors or acid gases).

The basic difference between cartridges and canisters is the volume of sorbent. Cartridges are vapor and gas removing elements that may be used singly or in pairs on quarter and half masks and on full face-pieces. The sorbent volume of a cartridge is small, about 50–200 cm_3 so its useful lifetime is usually short, particularly in high gas or vapor concentrations. Canisters have a larger sorbent volume (1000–2000 cm_3) and can be used in higher vapor and gas concentrations (up to the IDLH level) than cartridges. Limitations to the use of sorbent cartridge or canister respirators include:

- A canister or cartridge respirator shall not be used when there is reason to suspect that the sorbent does not provide adequate efficiency against the removal of a specific contaminant(s) that may be encountered at the site.

- Where there is reason to suspect that a sorbent has a high heat of reaction with a substance present at the site.

- Where there is reason to suspect that a substance sorbed onto the surface of a cartridge or canister is shock sensitive.

A8.6.2 Atmosphere Supplying Respirators (ASRs)

Atmosphere supplying devices are the class of respirators that provide a respirable atmosphere to the wearer independent of the ambient air. The breathing atmosphere is supplied from an uncontaminated source. The air source for an ASR must as a minimum conform to grade D requirement as specified in the Compressed Gas Association Standard *G-7.1*. ASRs may be classified into two groups: air-line respirators and self-contained breathing apparatus.

A8.6.2.1 Air-Line Respirator

Air-line respirators deliver breathing air through a supply hose connected to a face-piece or head enclosure (welding helmet). Either a compressor or compressed air cylinders supply the breathing air. When air is supplied by a compressor it must be equipped with specific safety devices in accordance with OSHA requirements. For example, all compressors must have an alarm to indicate overheating and compressor failure. If the compressor is oil lubricated, a carbon monoxide alarm must be installed. All air-line respirators must comply with the following requirements:

- The maximum permissible inlet pressure is 125 psi.

- The hose length must be between 25 and 300 feet (review certification for specific respirator).

- Flow rates can not be less than 115 liters per minute (lpm) or greater than 425 lpm (tight fitting face-piece)

Air-line respirators are available in demand, pressure-demand, and continuous-flow configurations.

Demand. Demand air-line respirators are equipped with either half or full face-pieces. They deliver airflow only upon inhalation. Due to their design, a negative pressure is created in the face-piece upon inhalation. These respirators shall not use by Parsons I&T employees.

Pressure demand. Pressure demand respirators are similar to demand respirators except that because of their design the pressure inside the face-piece is generally positive with respect to the outside air pressure during both inhalation and exhalation. The positive pressure means that when a leak develops in the face seal the leakage of air would be outward. Thus, these respirators provide a higher degree of protection to the user than air-line respirators that operate in the demand mode. Most Parsons I&T hazardous waste operations that require atmosphere supplying respirators use pressure demand air-line respirators because of their high degree of protection and long use time. When a pressure demand air-line respirator is equipped with an auxiliary SCBA, it may be used in IDLH environments. The auxiliary air supply can be engaged in the event that the primary air supply fails, allowing the worker to escape from the IDLH atmosphere.

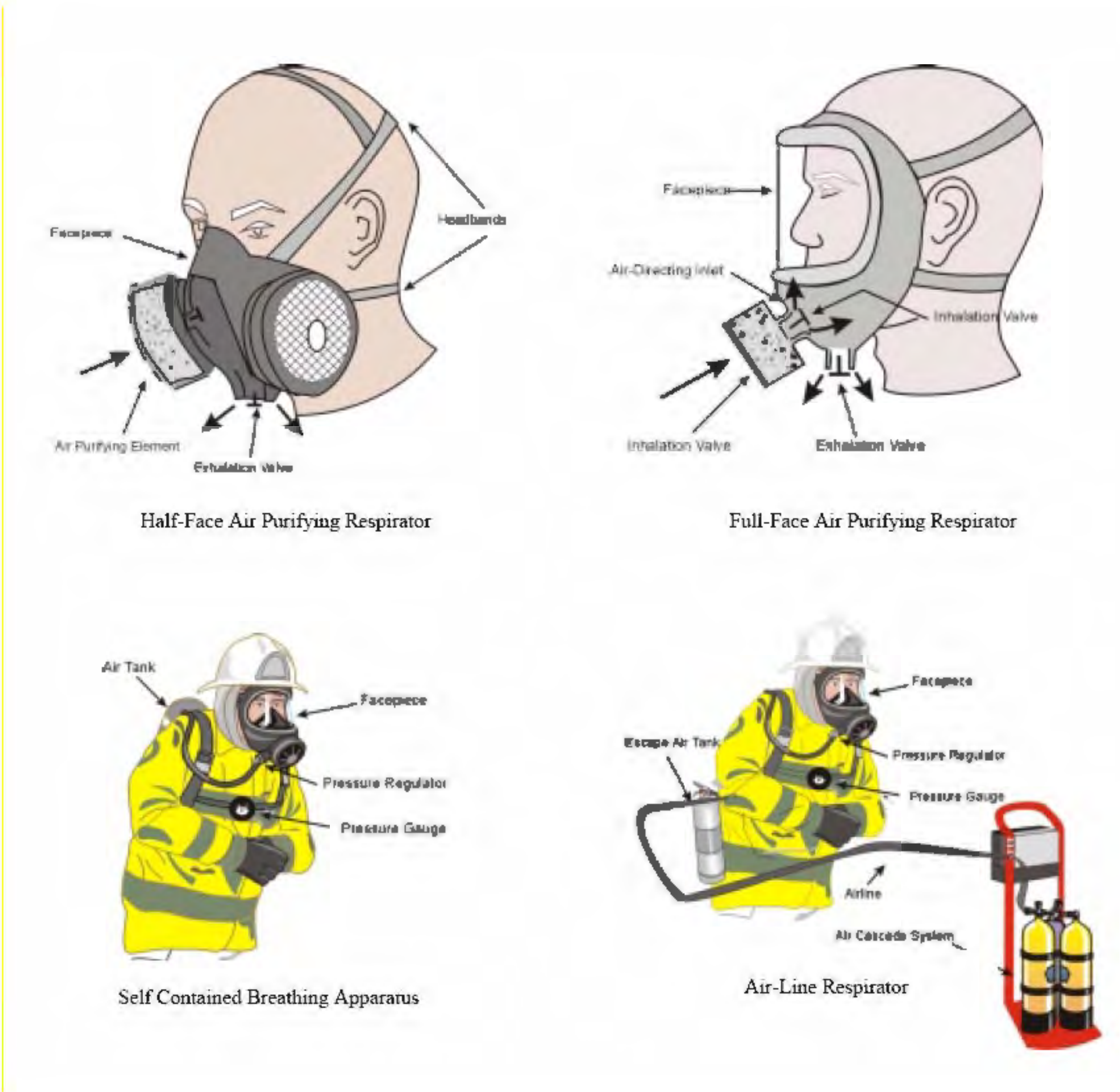
Continuous flow. A continuous flow respirator has a regulated amount of air delivered to the face-piece or head enclosure and is normally used where there is an ample air supply such as that provided by an air compressor. These respirators may be equipped with either tight fitting or loose fitting head enclosures. For tight fitting face-pieces, the air flow must be at least 115 lpm. For loose fitting hoods or helmets, the minimum flow is 170 lpm. Parsons I&T operations that involve the use of continuous flow air-line respirators include welding and abrasive blasting.

A8.6.2.2 Self-Contained Breathing Apparatus (SCBA)

The SCBA provides respiratory protection against gases, vapors, particulates and oxygen deficient environments. The wearer is independent of the surrounding environment because the breathing air is carried by the wearer. Pressure demand SCBAs may be used in IDLH and oxygen deficient environments either as escape only devices or for short-term entry. A full face piece is most commonly used with SCBAs. There are two major types of SCBAs: closed circuit and open circuit. Parsons I&T only uses open circuit pressure demand SCBAs.

In an open circuit SCBA the exhaled air is exhausted to the environment rather that being recirculated (a closed circuit SCBA). A cylinder of high pressure (2000–4500 psi) compressed air supplies air to a regulator that reduces the pressure for delivery to the face-piece. Most opencircuit SCBAs have a service life of 30 minutes to 60 minutes based on NIOSH breathing machine tests. However, a service life of 30 or 60 minutes is rarely obtained during field operations. The PHSO should plan for operations to be completed with no less than 20% of the air remaining in the tank.

Figure A8-1
Types of Respirators



A8.7. Selection of Respirators Using Real-Time Measurements

The identification and evaluation of contaminants at a site provide the basis for the initial selection of a respirator. Once a level of respiratory protection has been selected it can be modified based on real-time air monitoring, supplemented with background information and professional judgment.

Below are the allowed modifications. Please note the qualifiers.

- **ASR (Level B) to No respirator (Level D):** This modification may be made by the PHSO when there is a sustained absence of volatiles or aerosols as measured on realtime equipment. A level D ensemble cannot be used in an oxygen deficient environment.

- **APR (Level C) to No Respirator (Level D):** Same as Level B to Level D

- **Level D to Level B:** May be made at the direction of the PHSO based on the magnitude of the measurements and action level requirements specified in the project health and safety plan.

- **Level C to Level B:** Permissible at the direction of the PHSO in instances where volatiles or aerosol measurements exceed the preset level B action level specified in the project health and safety plan. Level B (or engineering controls) shall be used when an oxygen deficient environment exists.

- **Level D to Level C:** Permissible at the direction of the PHSO when volatiles or aerosols exceed the preset action level specified in the project health and safety plan. (Contaminants must be known in order to wear an air purifying respirator).

- **Level B to Level C:** May be made at the direction of the PHSO only when the contaminants and their concentrations are known. This modification should not be made without knowledge of the chemicals on-site, their expected concentrations, and ability of the cartridges to absorb or filter out the chemicals.

A8.7 TRAINING

A8.7.1 Worker Training

Selecting the respirator appropriate for a given hazard is important, but equally important is using the selected device properly. Parsons I&T provides initial respiratory protection training for workers that are assigned to activities requiring respirator use.

A8.7.1.1 Initial Training

Employees must receive training in proper respirator selection and use prior to assignment to operations requiring respiratory protection. Initial respirator training may be provided by the Corporate H&S Staff (as part of the 40-hour HAZWOPER training class), the Facility H&S Representative, or the PHSO (as part of a site-specific training). In each case the following topics must be presented:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.

- The limitations and capabilities of the respirator.

- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.

- The proper donning and doffing of the respirator.

- Procedures for inspecting and checking the respirator before donning.

- Procedures for the proper maintenance, cleaning, and storage of the respirator.

- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

- A general review of the OSHA Respiratory Protection Standard.

Training must involve classroom lecture and "hands-on" practice with the respirator. Training must be documented.

A8.7.1.2 Re-Training

Retraining shall be administered annually, and when the following situations occur:

- Changes in the workplace render previous training obsolete.

- Changes in the types of respirators used render previous training obsolete.

- Inadequacies in an affected employee's knowledge or use of an assigned respirator indicates that the employee has not retained the requisite understanding or skill.

Annual training shall be provided by the Facility H&S Representative or designee.

A8.7.2 PHSO Training

PHSOs that oversee site operations involving respirator use should have a comprehensive knowledge respiratory protection practices. Their training should include, but not necessarily be limited to, knowledge of the following:

- Initial worker training and instruction (see section A8.7.1.1);

- Basic respiratory protection practices;

- Selection and use of respirators to protect workers from the respiratory hazards to which they may be exposed;

- Factors that must be considered in establishing respiratory protection action levels for the project health and safety plan.

- Proper use of air monitoring equipment;

- The nature and extent of the respiratory hazards to which workers may be exposed; and

- The structure and operation of the entire respiratory protection program.

A8.8 Respirator Fit Testing

All respirators that rely on a mask-to-face seal need to be checked with either qualitative or quantitative methods to determine whether the mask provides an acceptable fit to a wearer. The qualitative fit test procedures rely on a subjective sensation (taste, irritation, smell) of the respirator wearer to a particular test agent while the quantitative test uses instruments to measure face seal leakage. The relative workplace exposure level determines what constitutes an acceptable fit and which fit test procedure is required. Qualitative fit testing may be used to fit test negative pressure air-purifying respirators, if they will be used in atmospheres less than ten times the PEL (Table A8-3). If exposures are anticipated to be greater than 10 times the PEL, quantitative fit testing must be used. The reason for this is because the qualitative fit test protocols established by OSHA are only valid to achieve a fit factor of 100 (an assigned protection factor of 10). When quantitative fit testing is used, all full face-piece respirators must meet or exceed a fit factor of 500, while quarter - and half-mask respirators must meet or exceed 100. For positive pressure, atmosphere-supplying respirators, either qualitative or quantitative fit testing may be used. The fit testing of tight-fitting atmosphere supplying respirators and tightfitting powered air-purifying respirators shall be accomplished by performing the fit test in the negative pressure mode. In all instances the employee must be fit tested with the same make, model, style, and size of respirator that will be used in the field.

Fit testing must occur prior to initial respirator use, whenever a different respirator face-piece (size, style, model or make) is used, and annually thereafter. The Facility H&S or his or her designated representative is responsible for performing fit testing in accordance with OSHA accepted protocol. Accepted protocols for qualitative and quantitative fit testing are presented in attachment A8-2.

Table A8-3
Acceptable Fit Test Methods

Respirator Type	Qualitative Fit Test	Quantitative Fit Test
Half-face, negative pressure, APR (<100 fit factor)	Yes	Yes
Full-face, negative pressure, APR, (<100 fit factor) used in atmospheres up to 10 times the PEL	Yes	Yes
Full-face, negative pressure, APR (>100 fit factor)	No	Yes
Supplied-air respirators (SAR), or SCBA used in negative pressure mode (demand mode) (>100 fit factor)	No	Yes
Supplied-air respirators (SAR), or SCBA used in positive pressure mode (pressure demand mode)	Yes	Yes

A8.8.1 General Requirements

The employee shall evaluate respirator fit using the following procedures:

- The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes. (By providing several sizes and models the subject is likely to find a respirator that fits correctly and is comfortable.)

- Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator.

- The test subject shall be informed that he or she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.

- The test subject shall be instructed to hold each chosen face-piece up to the face and eliminate those that obviously do not give an acceptable fit.

- The more acceptable face-pieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to evaluate comfort.

After the subject has determined the respirator of greatest comfort, that person shall conduct a negative and positive pressure fit check (section A8.9) or other fit checks recommended by the respirator manufacturer. Another face-piece shall be selected and re-tested if the test subject fails the fit checks.

Qualitative or quantitative fit testing shall not be conducted if there is any hair growth between the skin and the face-piece sealing surface, such as stubble beard growth, mustache, or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed. If the subject exhibits difficulty in breathing, the test shall be discontinued and the medical oversight contract (MOC) physician shall be contacted.

After the successful completion of the fit checks, the respirator fit shall be tested using the applicable method from attachment A8-2. No matter which test protocol is used, the employee shall be given a description of the fit test protocol and their responsibility during the test procedure. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit (ear muffs). The following test exercises must be performed during all fit testing methods prescribed in attachment A8-2:

- Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

- Deep breathing, as during heavy exertion.

- Side-to-side and up-and-down head movements. These movements should not be exaggerated, but should approximate those that take place on the job.

- Talking. This is most easily accomplished by reading a prepared text (e.g., Rainbow Passage) loudly enough to be understood by someone standing nearby.

- Grimace. The test subject shall grimace by smiling or frowning. (this applies only to quantitative testing, it is not performed for qualitative fit testing).

- Bending over. The test subject shall bend at the waist as if to touch his or her toes.

- Normal breathing (repeat of first bullet)

Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the Facility H&S Representative or designee regarding the comfort of the respirator upon completion of the protocol. If the respirator is uncomfortable, another model respirator shall be tried. The respirator shall not be adjusted once the fit test begins. Any adjustment voids the test, and the process must be repeated. After the fit test has been successfully completed, a fit test log (see Appendix A) will be issued to the test subject. A copy of the log shall be maintained by the Facility Health and Safety Representative in accordance with section 7.6 of this manual.

A8.9 DAILY QUALITATIVE FIT CHECKS AT THE SITE

In the field, each employee is responsible for performing daily qualitative fit checks of their assigned APR respirator prior to entry into a hazardous atmosphere. The daily determination of fit will consist of a negative and positive pressure fit checks as described below.

A8.9.1 The Negative Pressure Check

In this test, the user closes off the inlet of the canister, cartridge, or filter by covering it with the palm of their hand; inhales gently so that the face-piece collapses slightly; and holds their breath for about 10 seconds. If the face-piece remains slightly collapsed and no inward leakage is detected, the respirator is probably functioning correctly.

A8.9.2 The Positive Pressure Check

This test is conducted by closing off the exhalation valve and exhaling gently into the facepiece. The fit is considered satisfactory if slight positive pressure can be built up inside the facepiece without any evidence of outward leakage.

A8.10 RESPIRATOR INSPECTION, CLEANING, MAINTENANCE, AND STORAGE

Respirator inspection is an integral part of the overall respirator program. Wearing a poorly maintained or malfunctioning respirator is, in one sense, more dangerous than not wearing a respirator at all. The employee wearing a defective device thinks they are protected when, in reality, they are not. Emergency escape devices are particularly vulnerable to poor maintenance since they are generally used infrequently and often in the most hazardous and demanding circumstances. The possible consequences of wearing a defective emergency escape and rescue device are lethal.

The OSHA standards strongly emphasize the importance of an adequate maintenance program, but permit its tailoring to the type of working conditions and hazards involved. However, all programs are required to include at least:

- Inspection for defects (including a leak check)

- Cleaning and disinfecting
- Repair, and
- Storage.

A proper maintenance program ensures that the worker's respirator remains as effective as when it was new.

A8.10.1 Inspection for Defects

The Facility H&S Representative is responsible for inspecting respirators prior to assignment to individuals and upon receipt of the respirator after completion of field operations. Results of the inspection shall be recorded on form HS07-06 (Appendix A). In the field, the employee is responsible for inspecting his or her APR respiratory every day before and after use. The PHSO is responsible for performing daily inspections of actively used ASRs (air-line or SCBA) and for the monthly inspection of emergency escape respirators.

A8.10.1.1 Inspection of Air Purifying Respirators

Routinely used air-purifying respirators should be checked as follows before and after each use:

- Examine the face-piece for:
  - Excessive dirt;
  - Cracks, tears, holes, or distortion from improper storage;
  - Inflexibility (stretch and massage to restore flexibility);
  - Cracked or badly scratched lenses;
  - Incorrectly mounted full face-piece lens or broken or missing mounting clips; and
  - Cracked or broken air-purifying element holder(s), badly worn threads, or missing gasket(s) (if required).

- Examine the head-straps or head harness for:
  - Breaks;
  - Loss of elasticity; and
  - Broken or malfunctioning buckles and attachments, and excessively worn serrations on the head harness which might permit slippage.

- Examine the exhalation valve for:
  - Foreign material, such as detergent residue, dust particles, or human hair under the valve seat;
  - Cracks, tears, or distortion in the valve material;
  - Improper insertion of the valve body in the face-piece;
  - Cracks, breaks, or chips in the valve body, particularly in the sealing surface;
  - Missing or defective valve cover; and
  - Improper installation of the valve in the valve body.

- Examine the air-purifying elements for:
  – Incorrect cartridge, canister, or filter for the hazard;
  – Incorrect installation, loose connections, missing or worn gaskets, or crossthreading in holder;
  – Expired shelf-life date on cartridge or canister;
  – Cracks or dents in outside case of filter, cartridge, or canister; and
  – Evidence of prior use of sorbent cartridge or canister, indicated by absence of sealing material, tape, foil, etc., over inlet.

A8.10.1.2 Inspection of Atmosphere Supplying Respirators

For a routinely used atmosphere-supplying device, use the following procedures.

- If the device has a tight-fitting face-piece, use the procedures outlined above for air purifying respirators, except those pertaining to the air-purifying elements. If the device is a hood, helmet, blouse, or full suit, use the following procedures:

- Examine the hood, blouse, or full suit for rips and tears, seam integrity, etc.

- Examine the protective headgear, if required, for general condition, with emphasis on the suspension inside the headgear.

- Examine the protective face-shield for cracks or breaks or impaired vision due to rebounding abrasive particles.

- Make sure that the protective screen is intact and secured correctly over the faceshield of abrasive blasting hoods and blouses.

- Examine the air supply system for:

- Integrity and good condition of air supply lines and hoses, including attachments and end fittings, and

- Correct operation and condition of all regulators and valves.

- Self-contained breathing apparatuses must be inspected by the PHSO before initiating field operations. The results of the initial inspection must be documented on form HS07-07 (Appendix A). Each worker is responsible for inspecting his or her individual face-piece assembly for defects (e.g., frayed or cut hoses or straps) prior to use each day. Infrequently used respirators, such as emergency escape packs, must be inspected monthly. Inspection must include the following:
  – Examine air supply (ensure tank is fully charged).
  – Examine hood integrity (no cracks).
  – Ensure that the respirator is clean.
  – Examine air delivery hose for cuts and cracks.
  – Examine harness integrity.

A8.10.2 Cleaning and Storage

The Facility H&S Representative or designee is responsible for inspecting and cleaning all respirators returning from the field. Cleaning is accomplished by using the procedures presented in Attachment A8-3. After cleaning, sanitizing and inspecting the respirator, the Facility H&S Representative will repackage and store the respirator in an area protected against dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals. Respirators must be packed and stored so that the exhalation valve will rest in a normal position. When a respirator is used in the field, it must be cleaned each day by the respirator user.

A8.10.3 Maintenance

Continued usage of respirators will require periodic repair or replacement of component parts. Replacement of parts and repair of air purifying respirators, in most cases, present few problems. Replacement parts for respiratory protective devices **must** be those from the manufacturer of the equipment. Substitution of parts from a different brand or type of respirator will void the respirator's NIOSH approval. An SCBA is more difficult to maintain than an APR primarily because of the SCBA's valve and regulator assembly. For this reason, SCBA repairs and adjustments must be performed by a certified technician. Respirator maintenance must be documented.

A8.11 MEDICAL ASPECTS OF RESPIRATOR USE

No employee will be permitted to wear a respirator without clearance from the MOC physician. The diagnostic protocol for a fit-to-work classification includes an assessment of the worker's ability to wear an air purifying respirator, an airline respirator, and a SCBA. The Facility Health and Safety Representative shall not assign a worker to perform a task requiring respirator use unless he or she has received the medical report from the MOC physician that states that the employee has no limitation in wearing the assigned respirator.

A8.12 EVALUATION OF THE RESPIRATOR PROGRAM

The respirator program will be periodically evaluated by the Facility Health and Safety Representative and modified as appropriate. The auditing of respirator practices will be used to assess whether respirators are being selected and worn properly. Examination of respirators in use and in storage will indicate how well the equipment is being maintained. The results of periodic audits will be used to assess the effectiveness of the program and aid the Facility Health and Safety Representative in identifying areas that need improvement.

ATTACHMENT A8-1
EXPOSURE CALCULATIONS

CALCULATING EXPOSURE ESTIMATES FROM VOLATILES IN WATER AND SOIL

Vapor concentrations can be measured through the use of a photoionization detector, flame ionization detector, infrared spectrometry, or other techniques. Exposure levels can also be estimated using the following calculations.

Calculating Saturation Vapor Pressure

Contaminants that have high vapor pressures are more likely to be present in the atmosphere as vapors. The potential exposure to volatile contaminants can be estimated if the soil or water concentration and vapor pressure of the contaminants are known. The concentration of a vapor in a workspace can not exceed its saturation concentration. If the vapor pressure (in torr or mm of Hg) multiplied by 1316 ppm/torr is less than the exposure limit of the contaminant, than the breathing air can not contain vapor concentrations above that limit.
PPM= Vapor pressure of contaminant x 1316 ppm/torr

Estimating Exposure Concentration for Volatiles in Water Pressure Over Solutions Using Raoult's Law

If the vapor from a contaminant is water soluble and the concentration of the contaminant in water is known, an estimate of the maximum air concentration for that contaminant can be obtained using Raoult's law. Raoult's law relates vapor pressure to concentration as follows:

P_A= Partial pressure of contaminant A in gas phase
Y_A= Mole fraction of contaminant A in liquid phase
P_{AVAP} = Vapor pressure of pure contaminant A
Raoult's law is more accurate for concentrated solutions (>0.5mol/liter).
Raoult's law is more accurate for soluble contaminants (>1 mol/liter).

Example:

Methyl ethly ketone (MEK) is present in surface water at 5,000mg/liter. Because MEK is soluble in water (3 moles/liter), Raoult's law can be use. The vapor pressure of pure MEK is 90.6 mm of Hg and the molecular weight is 72.1 g/mol. P_A can be calculated as follows:

$$P_A = \frac{90.6\ mm\ \ of\ \ Hg \times 5\ g/l}{72.1\ g/mol \times 55.5\ mol/l} = 0.113\ torr \times 1{,}316\ \ ppm/torr = 148\ \ ppm$$

Pressure Over Solutions Using Henry's Law

If the contaminant has a low solubility in water, an estimate of the contaminant's maximum vapor concentration can be made using Henry's Law. Henry's law relates vapor pressure to concentration as follows:

P_A= Partial pressure of contaminant A in the gas phase
H= Henry's law constant
Y_A = Mole fraction of A in the liquid phase

Henry's law constants are published in environmental sources like Howard's *Handbook of Environmental Fate and Exposure Data*. These sources often provide the constant in inconvenient units like atm–m^3/ mole. An estimate of the Henry's law constant, in more useful units, can be derived by dividing the solubility of the compound in water by its pure state vapor pressure. This estimate can be used for compounds with limited solubility (< 1 mol/ liter)

Example:
Methyl chloroform is present in water at 6 ppm. Since methyl chloroform has a low solubility use Henry's law to calculate the vapor pressure of the contaminant. To derive the vapor pressure of the methyl chloroform contaminant the Henry's law constant can be calculated by knowing the saturation vapor pressure (124 mm of Hg) and water solubility (4,400mg/l) of methyl chloroform.

$$H = \frac{124\ mm\ of\ Hg}{4{,}400\ mg/l} = \frac{0.028\ torr}{mg/l} \times \frac{1{,}316\ ppm}{torr} = 37\ \frac{ppm}{mg/l}$$

$$P_A = 6mg/l \times 37\ ppm/(mg/l) = 222\ ppm \quad (64\%\ of\ the\ OSHA\ PEL)$$

Calculating Exposure Estimates for Volatiles in Soil

The rate at which volatile chemicals from contaminated soil enter the air depends on the chemical, its concentration, moisture in the soil, and the clay or organic carbon faction (f_{oc}) of the soil. To calculate the air concentration for volatiles in soil use the following formula:

C_{air} = (1316C_{soil} x P_{sat})/ (C_{sat} x f_{oct} x K_{oc})

Where the units are as follows:

C_{air} = Concentration of contaminant in air, parts per million by volume
C_{soil} = Concentration of contaminant in soil, milligrams per kilogram (from results of previous sampling investigation)
P_{sat} = Saturation vapor pressure, torr or mm of Hg (from chemical reference handbook)
C_{sat} = Saturation water solubility, milligrams per liter (from chemical reference handbook)
f_{oc} = Organic carbon content, dimensionless ratio (from soil science reference)

K_{oc} = Organic carbon partition coefficient, dimensionless ratio (from risk assessment reference manual)

Similar to the calculation for volatiles in water, the above approach for calculating air concentrations from contaminated soil is very conservative. If the calculated contaminant concentration is less than the occupational exposure limit, than a respirator would not be required.

Calculating Exposure Limits for Mixtures

When two or more substances which act upon the same organ system are present, their combined effect shall be given primary consideration. In the absence of information to the contrary, the effects of the different hazards should be considered additive. To evaluate if the exposure limit for a mixture will be exceeded, use the following formula.

$C_1/T_1 + C_2/T_2 + \ldots C_n/T_n$
C= The calculated concentration for contaminant
T= The occupational exposure limit for contaminant

If the sum exceeds unity, then the exposure limit for the mixture is exceeded and a respirator should be donned. An exception to the rule may be made when there is good reason to believe that the chief effects of the different harmful substances are not additive but are independent. In such cases the exposure limit is exceeded when any one component of the mixture (C_1/T_1 or C_2/T_2) has a value that exceeds unity.

ATTACHMENT A8-2
FIT TEST PROTOCOLS

QUALITATIVE FIT TEST (QLFT) PROTOCOLS

General

The Facility H&S Representative administering the QLFT must be able to prepare test solutions, calibrate equipment, perform the tests properly, recognize invalid tests, and ensure that the test equipment is working properly**.** QLFT equipment must be kept clean and well maintained so it operates within the parameters for which it was designed

Isoamyl Acetate Protocol

This protocol is appropriate for the fit testing of respirators with organic vapor cartridges or canisters.

Odor Threshold Screening

Odor threshold screening is performed without the subject wearing a respirator. The screening is intended to determine if the subject can detect the odor of isoamyl acetate at low levels.

1. Three 1 liter glass jars with metal lids are required.

2. Odor-free water (e.g., distilled or spring water) at approximately 25 deg. C (77 deg. F) shall be used for the solutions.

3. The isoamyl acetate (IAA) (also known at isopentyl acetate) stock solution is prepared by adding 1 ml of pure IAA to 800 mls of odor-free water in a 1 liter jar, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.

4. The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well-ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.

5. The odor test solution is prepared in a second jar by placing 0.4 ml of the stock solution into 500 mls of odor-free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.

6. A test blank shall be prepared in a third jar by adding 500 mls of odor-free water.

7. The odor test and test blank jar lids shall be labeled (e.g., 1 and 2) for jar identification. Labels shall be placed on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.

8. The following instructions shall be typed on a card and placed on the table in front of the two test jars (i.e., 1 and 2): “The purpose of this test is to determine if you can smell

banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the covers are on tight, then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the Facility Health and Safety Representative which bottle contains banana oil."

9. The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.

10. If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.

11. If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

Isoamyl Acetate Fit Test

1. The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hook attached.

2. Each respirator used for the fit test shall be equipped with organic vapor cartridges or an organic vapor canister.

3. After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room.

4. A copy of the test exercises (section A8.8.1) and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.

5. Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA.

6. The test subject shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.

7. Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. At this time the Facility Health and Safety Representative should explain the fit test exercises.

8. If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

9. If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another

respirator, return to the test area and again begin the fit test procedure. The process continues until a respirator that fits has been found. Should the odor sensitivity test be failed, the subject shall wait at least 5 minutes before re-testing. Odor sensitivity will usually have returned by this time.

10. If the subject passes the test, the efficiency of the test procedure shall be demonstrated by having the subject break the respirator face seal and take a breath before exiting the chamber.

11. When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a self-sealing plastic bag to keep the test area from being contaminated.

Irritant Smoke (Stannic Chloride) Protocol

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator. The respirator to be tested must be equipped with a P-, R, or N- 100 series filter. An enclosure shall not be used for this test. The smoke can be irritating to the eyes, lungs, and nasal passages, thus the Facility H&S Representative shall take precautions to minimize the test subject's exposure to the irritant smoke by performing the test in a well-ventilated area.

Sensitivity Screening Check

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

1. The Facility Health and Safety Representative shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute or an aspirator squeeze bulb. The Facility Health and Safety Representative shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury to the subject from the jagged end of the smoke tube.

2. The Facility Health and Safety Representative shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his or her eyes closed while the test is performed.

3. The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he or she can detect the irritating properties of the smoke. The Facility Health and Safety Representative shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he or she can detect it.

Irritant Smoke Fit Test Procedure

1. The person being fit tested shall don the respirator without assistance, and perform the required negative and positive pressure fit check(s).

2. The test subject shall be instructed to keep his or her eyes closed.

3. The Facility Health and Safety Representative shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The Facility Health and Safety Representative shall begin at least 12 inches from the face-piece and move the smoke stream around the whole perimeter of the mask. The Facility Health and Safety Representative shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.

4. If the person being tested has not had an involuntary response to the irritant smoke, proceed with the test exercises.

5. The exercises identified in section A8.8.1 shall be performed by the test subject while the respirator seal is being continually challenged by the smoke. Smoke shall be directed around the perimeter of the respirator at a distance of six inches.

6. If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being tested must repeat the entire sensitivity check and fit test procedure.

7. Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check. This check involves squeezing a small smoke stream from the tube after the respirator has been removed. If the test subject fails to evoke a response, the fit test is voided.

8. If a response is produced during this second sensitivity check, then the fit test is passed.

QUANTITATIVE FIT TEST (QNFT) PROTOCOL

General

The Facility H&S Representative administering the QNFT must able to calibrate equipment, perform the tests properly, recognize invalid tests, and ensure that test equipment is working properly**.** QNFT equipment must be kept clean and well maintained so it operates within the parameters for which it was designed.

Ambient Aerosol Condensation Nuclei Counter (CNC) Quantitative Fit Testing Protocol.

The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Portacount TM) protocol quantitatively fit tests respirators by collecting samples from the inside of the mask. To perform the quantitative fit test a respirator with a sampling probed is used. The probed respirator has a special sampling device that allows the probe to sample air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor. The CNC instrument manufacturer, TSI Inc., also provides probe attachments (TSI sampling adapters) that permit fit testing using the employee’s own respirator. A minimum fit factor pass level of at least 100 is necessary for a negative pressure half-mask respirator and a minimum fit factor pass level of at least 500 is required for a negative pressure full face-piece respirator. The entire screening and testing procedure shall be explained to the test subject prior to conducting the screening test.

Portacount Fit Test Requirements

1. Check the respirator to make sure the sampling probe and line are properly attached to the face-piece and that the respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test per manufacturer's instruction.

2. Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable.

3. Check the following conditions for the adequacy of the respirator fit: Chin properly placed; Adequate strap tension, not overly tightened; Fit across nose bridge; Respirator of proper size to span distance from nose to chin; and Tendency of the respirator to slip.

4. Have the person wearing the respirator perform negative and positive fit checks. If leakage is detected, determine the cause. If leakage is from a poorly fitting face-piece, try another size respirator.

5. Follow the manufacturer's instructions for operating the Portacount and proceed with the test.

6. The test subject shall be instructed to perform the exercises in section A8.8.1 of this Appendix.

7. After the test exercises, the test subject shall be questioned by the Facility Health and Safety Representative regarding the comfort of the respirator upon completion of the protocol. If the respirator has become uncomfortable, another model should be used.

Portacount Test Instrument

The Portacount will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The pass or fail message will indicate whether or not the test was successful. If the test was passed, the fit test is over. Since the pass or fail criterion of the Portacount is user programmable, the Facility H&S Representative shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance (fit factor of 100 for half face mask, fit factor of 500 for full face mask). A record of the test needs to be maintained in accordance with section 7.6 of this manual. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; the fit test operator's name, and the date of testing.

ATTACHMENT A8-3

CLEANING PROTOCOL

These procedures are provided for use when cleaning respirators. They are general in nature, and should be used as an alternative to the procedures provided by the manufacturer of the respirator.

- Remove filters, cartridges, or canisters. Disassemble face-pieces by removing speaking diaphragms, demand and pressure- demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

- Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

- Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.

- When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:

  - Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,

  - Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,

  - Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

- Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized since detergents or disinfectants that dry on face-pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

  - Components should be hand-dried with a clean lint-free cloth or air-dried.

  - Reassemble face-piece, replacing filters, cartridges, and canisters where necessary.

  - Test the respirator to ensure that all components are working properly.

Attachment A-9

Fall Protection

ATTACHMENT A-9
FALL PROTECTION

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Note:

Some portions of this document were not applicable to the Ash Landfill and Fire Training Areas Remediation project and were not included in the attachment.

A-9 FALL PROTECTION

This section provides the minimum requirements necessary to prevent or reduce the risk of injury from fall hazards.

A9.1 APPLICABILITY

This section is applicable to all types of work (including maintenance, operations, construction, and research) where an employee may be exposed to a fall hazard.

This section is not applicable to employees engaged in the construction of electric transmission and distribution lines and equipment.

The requirements of this document may not apply when employees are making an inspection, investigation, or assessment of workplace conditions before the actual start of work or after all work has been completed with the construction manager's approval and Safety Representative's concurrence.

Stricter requirements may be imposed upon subcontractors by the directing client, project management, or contract terms.

A9.2 REQUIREMENTS

A9.2.1 RESPONSIBILITIES

Responsible managers (see definition) are responsible for ensuring that:

- Walking/working surfaces (see definition) on which employees are to work have the strength and structural integrity to support employees safely.
- Prompt rescue of employees is provided in the event of a fall.
- Competent persons (see definition) and qualified persons (see definition) are designated for their area of responsibility.
- Training is provided for each Parsons employee who might be exposed to fall hazards.
- Fall hazard issues are considered and resolved in the design review of new equipment and facilities.

Construction Safety representatives (competent persons) are responsible for:

- Facilitating the implementation of this section.
- Resolving any misunderstanding concerning this section.
- Developing a fall hazard prevention analysis (FHPA) for routine tasks in assigned areas.
- Assisting the qualified person in developing Fall Protection Plans (FPPs).
- Assigning appropriate protective measures for fall hazards on work central documents.

Supervisors are responsible for:

- Enforcing compliance with the requirements of this section.

- Monitoring employee safety performance.
- Notifying the Safety Representative of the need for retraining of employees when:
  - There is reason to believe an affected employee's knowledge and use of fall protection systems or equipment indicate that the employee does not possess adequate understanding or skill.
  - Changes in the workplace render previous training obsolete.
  - Changes in the types of fall protection systems or equipment to be used render previous training obsolete.

All employees are responsible for:

- Complying with the requirements of this section.

A9.2.2 GENERAL

Any employee exposed to a fall hazard greater than 6 feet must be protected by a conventional fall protection system (see definition).

EXCEPTION 1

Employees may be exposed to falls from heights greater than 6 feet with an approved FPP.

Three-point contact (see definition) must be maintained at all times when an employee works above 6 feet.

Employees are allowed to work on only those surfaces that have adequate strength and structural integrity.

A9.2.3 CONDITIONS

Working at heights outdoors is not permitted during bad weather (see definition).

Note: If there is any question concerning safe weather conditions, the area Safety Representative should be consulted

Employees working less than 6 feet above dangerous equipment (see definition) must be protected from falling into or onto the dangerous equipment by a guardrail system (see definition) or by equipment guards.

Employees working more than 6 feet above dangerous equipment must be protected by conventional fall protection.

A9.2.4 FACILITY FALL HAZARD PREVENTION ANALYSIS (FHPA)

Note: A job hazard analysis (JHA) or other work control documents that meet the requirements of this section may be used as the FHPA.

FHPAs are attached to and retained with (standard work control records retention) other applicable work control documents associated with the task.

Each facility must conduct an FHPA for routine tasks.

The FHPA must identify, as a minimum:

- Each fall hazard associated with a routine task.
- The conventional fall protection system that will be used to mitigate the consequences of a fall.
- Anchor points.
- The fall protection equipment for each individual fall hazard.

The FHPA must be approved by the job supervisor, responsible manager, and a Safety Representative (competent person).

Employees working under the FHPA must sign and date the FHPA to indicate that they have read and will comply with the instructions of the FHPA.

A9.2.5 CONTROLLED ACCESS ZONES (CAZ)

Where CAZ lines are used, they must comply with the following:

- When used to control access to areas where leading edge and other operations are taking place, the CAZ must be defined by a control line or by any other means that restricts access.
- When control lines are used, they must be erected not less than 6 feet nor more than 25 feet from the unprotected edge (see definition) or leading edge, except when erecting precast concrete members.
- When erecting precast concrete members, the control line must be erected not less than 6 feet nor more than 60 feet or half the length of the member being erected, whichever is less, from the leading edge.

The control line must extend along the entire length of, and approximately parallel to, the unprotected or leading edge.

The control line must be connected on each side to a guardrail system or wall.

A9.2.6 HOLES, OPENINGS, AND COVERS

Holes (see definition) and openings (see definition) must be barricaded or covered whenever work is not being actively performed in the hole or opening.

Covers in floors, roofs, and other walking/working surfaces (including roadways and vehicular aisles) must be capable of supporting at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.

All covers must be secured when installed so as to prevent accidental displacement.

All temporary covers must be color coded or marked with the word “HOLE” or “COVER” to warn of the hazard.

EXCEPTION

This requirement does not apply to cast iron manhole covers or steel grates used on streets or roadways, nor to confined space accesses or equipment access hatchways.

A9.2.7 FALL PROTECTION PLAN

Note: Other forms of work control may be used as an FPP provided they conform to the criteria in this section.

FPPs must be attached to and retained with (standard work control records retention) other applicable work control documents associated with the task.

Only those employees engaged in leading edge work, precast concrete erection work or who can demonstrate that it is unfeasible (see definition) or it creates a greater hazard to conventional fall protection system are allowed to work under an FPP.

Note: There is a presumption that the use of conventional fall protection system is feasible and will not create a greater hazard to implement. Accordingly, Parsons has the burden of establishing that it is appropriate to implement an FPP for a particular workplace situation.

The FPP must include a written discussion of other measures that will be taken to reduce or eliminate the identified fall hazard.

The FPP must identify each location where conventional fall protection systems cannot be used.

These locations must be classified CAZs.

Where no other alternative measure has been implemented, the employer must implement safety monitoring.

Each employee working under an FPP must be identified by name.

Only designated employees are allowed to enter CAZs.

The FPP must be developed specifically for the site where the work is being performed.

The FPP must be kept up to date.

Any changes to the FPP must be approved by a qualified person.

A copy of the FPP with all approved changes must be maintained at the jobsite.

The implementation of the FPP must be under the supervision of a Safety Representative (competent person).

In the event an employee falls or some other related, serious incident occurs (such as a near miss), the employer must investigate the circumstances of the fall or other incident to determine if the FPP needs to be revised.

The employer must implement identified changes to prevent similar types of falls or incidents.

A9.3 DEFINITIONS

Bad weather	For the purposes of this section, any weather condition that may increase the hazard of falling for personnel working from heights including snow, rain, icing or wind gusts of 35 miles per hour or sustained winds of 25 miles per hour.

Compatible — For the purposes of this document, system subcomponents are used and arranged in the system based on their design intent and that subcomponent connectors are arranged so that no combination of twisting and pressure between snaphooks, carabiners, etc., can cause rollout.

Competent person — An individual capable of identifying hazardous or dangerous conditions in a PFAS or any component thereof, capable of identifying hazardous or dangerous conditions in the application and use of the PFAS or any component thereof with related equipment, and knowledgeable in the requirements of *29 CFR 1926, subpart M.*

Controlled access zone — An area in which certain work (for example, overhand bricklaying) may take place without the use of guardrail systems, PFASs, or safety net systems and access to the zone is controlled.

Dangerous equipment — Equipment (such as pickling or galvanizing tanks, degreasing units, machinery, and open electrical equipment) which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.

Equivalent — Alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in this section or *29 CFR 1926, subpart M.*

Free fall — The act of falling before a PFAS begins to apply force to arrest the fall.

Free fall distance — The vertical displacement of the fall arrest attachment point on an employee’s body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline or lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline or lanyard extension before they operate and fall arrest forces occur.

Guardrail system — A physical barrier erected to prevent employees from falling to lower levels.

Holes — Gaps or voids in a floor, roof, or other walking/working surface.

Infeasible — For the purposes of this section, a term used to indicate that it is impossible to perform work using a conventional fall protection system (for example, a guardrail system or PFAS) or that it is technologically impossible to use any one of these systems to provide fall protection.

Impact loading — A component or components of a PFAS or a PFAS that has received the forces generated by someone falling while connected to the system.

Leading edge	The edge of a floor, roof, or form work for a floor or other walking/working surface (such as a deck) which changes location as additional floor, roof, decking, or form work sections are placed, formed, or constructed. A leading edge is considered to be an “unprotected side and edge” during periods when it is not actively and continuously under construction.
Low-slope roofs	Roofs having a slope less than or equal to 4 in 12 (vertical to horizontal).
Mechanical equipment	For the purposes of this section, all motor or human propelled, wheeled equipment used for roofing work except wheelbarrows and mop carts.
Opening	A gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.
Qualified persons	Individuals with a recognized degree or professional certificate and extensive knowledge and experience in the subject field and who are capable of design, analysis, evaluation and specifications in the subject work, project, or product.
Responsible manager	Any person directing activities of personnel exposed to fall hazards. This includes construction management, facility managers and project managers.
Safety monitors	Competent persons assigned to observe other employees and who are responsible for recognizing and warning employees of fall hazards.
Three-point contact	The process of maintaining at least three points of contact with a ladder; for example, two feet and one hand in contact with the ladder.
Toeboards	Low protective barriers that will prevent the fall of materials and equipment to lower levels and provide some protection from falls for personnel and stepping into small floor holes
Unprotected side	For the purposes of this section, any side or edge (except at entrances to points of access) of a walking/working surface, (such as a floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches high.
Walking/working surface	A term used to describe any surfaces, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, form work and concrete reinforcing steel. This type of surface does not include ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

A9.4 REFERENCES

- 29 CFR 1926, Subpart M, Fall Protection
- 29 CFR 1910.66 Attachment C, Powered Platforms, Manlifts, and Vehicle Mounted Work Platforms

Attachment A-10

Haul Roads

08.D HAUL ROADS

08.D.01 Access/haul roads shall be designed in accordance with current engineering criteria. Prior to construction, the Contractor shall provide the GDA with a copy of the plan for review and acceptance. Work on the haul road shall not commence until the GDA has accepted the plan. The plan shall address the following items:

a. Equipment usage, traffic density, and hours of operation;

b. Road layout and widths, horizontal and vertical curve data, and sight distances;

c. Sign and signalperson requirements, road markings, and traffic control devices;

d. Drainage controls;

e. Points of contact between vehicles and the public, and safety controls at these points of contact;

f. Maintenance requirements, including roadway hardness and smoothness and dust control; and

g. Hazards adjacent to the road such as bodies of water, steep embankments, etc.

08.D.02 No employer shall move, or cause to be moved, any equipment or vehicle upon an access or haul road unless the roadway is constructed and maintained to safely accommodate the movement of the equipment or vehicle involved.

08.D.03 When road levels are above working levels, berms, barricades, or curbs shall be constructed to prevent vehicles overrunning the edge or end of embankment. Berms/curbs shall be constructed to one-half the diameter of the tires of the largest piece of equipment using the roadway.

08.D.04 Roadways shall have a crown and ditches for drainage. Water shall be intercepted before reaching a switch back or large fill and be led off.

08.D.05 Haul roads shall be constructed to widths suitable for safe operation of the equipment at the travel speeds proposed by the Contractor and accepted by the GDA.

08.D.06 All roads, including haul roads, shall be posted with maximum speed limits.

08.D.07 An adequate number of turn-outs shall be provided on single lane roads haul roads with tow-way traffic. When turn-outs are not practical, the Contractor shall provide a traffic control system to prevent accidents.

08.D.08 Whenever possible, use a right-hand traffic pattern on two-way haul roads.

08.D.09 Curves

a. All curves shall have open sight line and as great a radius as practical.

b. Vehicle speed shall be limited on curves so that vehicles can be stopped within one-half the visible distance of the roadway.

c. The design of horizontal curves shall consider vehicle speed, roadway width and surfacing, and super elevation.

08.D.10 Grades

a. When necessary, based on grade and machine and load weight, machines shall be equipped with retarders to assist in controlling downgrade descent.

b. Truck haul roads should be kept to less than a 10% grade. There should be no more than 400 ft (121.9 m) of grade exceeding 10%.

c. The maximum allowable grade shall not exceed 12%.

08.D.11 Lighting shall be provided as necessary.

08.D.12 Traffic control lights, barricades, road markings, signs, and signalpersons for the safe movement of traffic shall be provided in accordance with the DOT Federal Highway Administration's *"Manual on Uniform Traffic Control Devices"* and this Section.

08.D.13 Roadway hardness, smoothness, and dust control shall be used to maintain the safety of the roadway.

08.D.14 All roads shall be maintained in a safe condition and eliminate or control dust, ice, and similar hazards.

08.D.15 The deposition of mud and or other debris on public roads shall be minimized to the extent possible and in accordance with local requirements.

Attachment A-11

Excavation & Trenching

SECTION A-11
EXCAVATION AND TRENCHING

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A-11 EXCAVATION AND TRENCHING

A11.1 EXCAVATIONS

All excavations and trenching performed on Parsons construction sites must conform to applicable federal and state regulations, and to the safety policies and procedures in this manual.

A11.1.1 INSPECTIONS

Daily inspections of excavations and trenches must be made by a designated competent person. Refer to Appendix O for sample letter designating a competent person. If evidence of potential cave-ins, slides, or water accumulation is found, all work in the excavation or trench must cease until the necessary precautions have been taken to safeguard employees.

All excavations and trenches must be inspected by a designated competent person after every rainstorm or other hazard-increasing occurrence, and safeguards against slides and cave-ins must be increased, if warranted.

Refer to the tables in the relevant OSHA regulations as a reference guide to angle of repose and shoring techniques used in excavations and trenches. These tables show the minimum requirements. Added measures must be taken if conditions warrant. Refer to Appendixes A through E of *OSHA Excavation Standard 1926.652* and Appendix L of this manual for those tables and for other pertinent information such as soil classifications.

A11.1.2 GENERAL REQUIREMENTS

Excavations 4 ft or more deep must be shored or sloped in an approved manner unless they are made entirely in stable rock.

Sides of trenches above the 4-ft level may be sloped in lieu of shoring, but the slope may not be steeper than 1-1/2 H:1 V.

Each trench where employees are working 3 ft deep or more must have ladders to provide safe exits. There must be no more than 25 ft of lateral travel distance to the nearest ladder.

Excavated or other material must not be stored nearer than 4 ft, if possible, and no closer than 2 ft from the edge of any excavation. Surface encumbrances that create a hazard must be moved or supported, as necessary.

The locations of any underground installations such as sewer lines, electric lines, etc. are determined before excavation. Utility companies must be notified of the proposed work to establish the locations of utility installations before the start of an excavation. All such installations must be appropriately identified for the safety of persons working nearby.

Employees exposed to vehicular traffic must be provided with, and be instructed to wear, warning vests marked with or made of reflecting or high-visibility material.

No employee is permitted under loads handled by lifting or digging equipment.

When mobile equipment operates adjacent to or approaches the edge of an excavation, a warning system such as barricades, hand or mechanical signals, or stop logs must be used.

The use of water control and removal equipment must be monitored by a competent person.

Sloping or benching excavations greater than 20 ft deep must be designed by a registered professional engineer.

If the excavation is considered a high hazard task as defined in subsection 1.11 of this manual, the job task analysis procedure must be followed.

A11.1.3 Hazardous Atmospheres

If the possibility exists in an excavation of an oxygen deficient atmosphere (less than 19.5% oxygen) or an atmosphere in excess of 20% of the lower flammable limit (or lower explosive limit) of a gas, atmospheric testing must be conducted before employees enter the excavation. Refer to Confined Space Work (section 9) and Respiratory Protection (subsection 4.3) for additional guidance.

Proper respiratory equipment and ventilation must be established for each excavation before employees enter the excavation.

Atmospheric monitoring must be conducted to ensure that atmospheres remain safe when controls are being used to reduce the level of contaminants. Refer to the confined space work and respiratory protection sections for additional guidance.

A11.1.4 Rescue Equipment

When hazardous atmospheres exist, or are likely to develop, breathing apparatus and a safety harness and line or basket stretcher must be readily available. This equipment must be attended when in use.

Employees entering bell-bottom pier holes or similar confined footing excavations must be equipped with safety harnesses and individual lifelines. An individual must be in attendance at all times while an employee is in an excavation of this type.

A11.1.5 Stability of Adjacent Structures

Support systems such as shoring or underpinning must be provided for adjacent structures that may be endangered by excavation operations.

Excavations below the level of the base or footing are normally not permitted unless.

- A support system is used
- The excavation is stable
- A registered engineer has determined that the structure is sufficiently removed from the excavation to avoid cave-ins
- A registered engineer has determined that no other hazard exists

A11.1.6 Personal Protective Equipment

All employees must have personal protective equipment for the head, eyes, ears, respiratory organs, feet, hands, and other parts of the body as outlined below.

- Head protection must be worn at all times.
- Appropriate eye protection must be worn when the danger exists of eye or face injury from physical, chemical, or radiant agents.
- If it is not feasible to reduce noise levels or noise exposure duration, hearing protective devices must be provided and used. Plain cotton is not an acceptable protective device.
- If engineering controls are inadequate or fail to control exposure to dust, fumes, vapors, and gases, respiratory protection must be provided and used.
- Mechanical guards or protective devices must be provided and used when hands and feet are exposed to potential injury from mechanical devices or other harmful agents.

A11.1.7 FALL PROTECTION

Walkways and bridges over excavations must be provided with standard guardrails. Adequate barriers must be provided at all excavations. All wells, pits, shafts, etc., must be barricaded or covered.

Upon completion of exploration and similar operations, all wells, pits, shafts, etc., must be backfilled.

A11.1.8 PROTECTIVE SYSTEMS

Employees working in excavations must be protected by shoring, sloping, or benching. Exceptions to this requirement are:

- Excavations made entirely in stable rock
- Excavations less than 4 ft deep and where examination of the ground by a competent person provides no indication of potential cave-in

All protective systems for excavation sites must be designed by a registered professional engineer when it is not feasible to attain required slope configurations in accordance with *1926.652(b)(1), (2) and (3)*.

Sloping or benches greater than 20 ft deep must be approved by a registered engineer. Appendix L contains the requirements for soil classifications and sloping and benching to be used by registered engineers in determining sloping and benching for a particular excavation site.

The registered professional engineer's recommended protective systems must be documented in sufficient detail to establish compliance with OSHA excavation requirements. The recommendations must be signed by the registered professional engineer, and the report must be maintained at the jobsite.

When manufactured support systems are used, the manufacturer's written specifications, recommendations, and limitations must be maintained at the jobsite.

A designated competent person must monitor the construction and maintenance of the recommended protective systems and their use in excavations.

A11.2 PROBING AND EXPLORATORY TRENCHING

This procedure supplements the procedures in subsection 8.1, Excavations, and should be read in conjunction with those procedures.

On many Parsons projects it is necessary to perform excavations. In virgin soil, a probing and exploratory trenching procedure normally is not necessary. However, many Parsons projects deal with chemical and refining construction in existing facilities. Extreme caution must be taken to ensure the safety of employees and the client's property. Underground utilities and other obstructions present a very real danger and every effort must be taken to determine that excavation operations are performed safely. Therefore, where excavations are required to be performed on Parsons construction sites, the following probing and exploratory trenching procedures must be followed.

A11.2.1 RESPONSIBILITIES

The Parsons project Construction Manager designates a representative to conduct a search for drawings of all areas requiring excavation. This search must be completed during the design phase, so all pertinent drawings are issued with the construction package.

The designated person holds a constructability meeting with the client representative and Parsons personnel as early in the design stage as possible. If required, a registered professional engineer must approve the excavation plan.

If subcontractors are used, the subcontractor supervisor and the designated Parsons person review in detail any pertinent drawings and as-built drawings that are available to determine the location of the piping or other underground obstacles.

The Parsons designated person schedules a task force meeting with the responsible subcontractor personnel, as required.

It is the duty of the Parsons designated person to see that all workers involved in the task receive all known information. This includes subcontractors, if applicable.

A11.2.2 REQUIREMENTS

All excavations are performed with extreme caution to prevent injury or damage to underground piping, electrical wiring, etc.

If there are known underground obstacles, the task force meeting defines appropriate protective measures.

When excavations occur within 2 ft, vertically or horizontally, of a direct buried electrical or communication cable, exploratory hand trenching must be done to authenticate the actual location of the cable.

Before and during excavations, these additional requirements must also be met.

The area to be excavated must be swept with a metal detector.

When excavating with mechanical equipment or other means, probing is required every 4 in. on center over the total area to be excavated.

Exploratory trenching can be used at the perimeter of an area to be excavated by probing and trenching on 4-in. centers. The depth of the trench is determined by the depth needed to accommodate the footings, supports, pipe, etc., that will be placed inside the perimeter area.

Probing may be performed by jetting or dry probing; however, the depth of probing must always exceed the depth of excavating by at least 1 ft. The selected depth of probing must be consistent; that is, if one hole is probed at 3 ft, another hole cannot be probed at 4 ft.

A11.2.3 Operations

The Parsons designated person may elect to use either dry probing or a water probing system. Water probing systems must adhere to the following procedures.

When using water jetting, the Parsons person in charge of work must require all employees to wear safety glasses and face shields. The person actually probing must wear both a face shield and goggles.

During excavations with a backhoe, there must be an observer at all times to watch the backhoe bucket. This observer should be stationed adjacent to the excavation to avoid the operations of the hoe. The observer is responsible for visually identifying any obstruction while the bucket is excavating, and alerting the operator immediately if any obstructions are observed.

If the observer leaves the excavation area, excavation efforts must be stopped immediately until an observer returns.

If pipe or other obstacles are encountered, shoring and hand excavation are required until the obstacles are identified and cleared.

Air-operated clay spades may be used during hand excavations, provided extreme care is taken.

During hand excavations, if a person's head is below the top of the excavation or if the trench is greater than 4 ft deep, shoring is required.

Should any underground obstructions be encountered, the Parsons designated person must immediately notify the designated client representative, who in turn notifies the proper personnel to assist in identification of the obstruction and its possible removal or re-routing.

Attachment A-12

Unexploded Ordance

1. Army EM-385-1-95a
2. Army EP 75-1-2

EP 385-1-95a
29 June 2001

US Army Corps
of Engineers®

SAFETY

BASIC SAFETY CONCEPTS AND CONSIDERATIONS FOR ORDNANCE AND EXPLOSIVES OPERATIONS

ENGINEER PAMPHLET

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AVAILABILITY

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DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, DC 20314-1000

CESO

Pamphlet
No. 385-1-95a

29 June 2001

Safety
BASIC SAFETY CONCEPTS AND CONSIDERATIONS FOR ORDNANCE AND EXPLOSIVES OPERATIONS

1. Purpose. This pamphlet establishes U.S. Army Corps of Engineers (USACE) operating procedures for dealing with ordnance and explosives (OE) items at Formerly Used Defense Sites (FUDS), Base Realignment and Closure, and Installation Restoration projects. There are no absolutely safe procedures for dealing with OE items, merely procedures considered to be least dangerous; therefore, it is essential that a planned and systematic approach to dealing with such items be established.

2. Applicability. This pamphlet applies to all Headquarters, U.S. Army Corps of Engineers elements and all USACE Commands having responsibility for performing OE response activities.

3. Distribution Statement. Approved for public release; distribution is unlimited.

4. References.

a. 27 CFR 55, Commerce in Explosives.

b. 29 CFR 1926, Subpart P, Excavations.

c. DOD 6055.9-STD, DOD Ammunition and Explosives Safety Standards.

d. AR 385-64, U.S. Army Explosives Safety Program.

e. DA Pam 385-64, Ammunition and Explosives Safety Standards.

f. TM 60A-1-1-31, Explosive Ordnance Disposal Procedures: General Information on EOD Disposal Procedures.

g. TB 700-2, Department of Defense Ammunition and Explosives Hazard Classification Procedures.

h. ER 5-1-11, Program and Project Management.

i. ER 1110-1-12, Quality Management.

j. EP 1110-1-17, Establishing a Temporary Open Burn and Open Detonation Site for Conventional Ordnance and Explosives Projects.

k. EP 1110-1-18, Ordnance and Explosives Response.

l. EM 385-1-1, Safety and Health Requirements Manual.

m. HNC-ED-CS-S-98-1, Methods for Predicting Primary Fragmentation Characteristics of Cased Explosives, January 1998. This document is available on the Internet at http://www.hnd.usace.army.mil/.

n. HNC-ED-CS-S-98-2, Method for Calculating Ranges to No More Than One Hazardous Fragment per 600 Square Feet, January 1998. This document is available on the Internet at http://www.hnd.usace.army.mil/.

o. Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites, U.S. Army Engineering and Support Center, Huntsville, August 1998. This document is available on the Internet at http://www.hnd.usace.army.mil/.

p. AFM 91-201, Explosives Safety Standards.

q. NAVSEA OP5, Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation, and Shipping.

r. NFPA 780, Standard for the Installation of Lightning Protection Systems.

5. Explanation of Abbreviations and Terms. Abbreviations/acronyms and special terms used in this document are explained in the glossary.

6. Policy. The policy of USACE is to produce products and services that fully meet customers' expectations of quality, timeliness, and cost effectiveness, within the bounds of legal responsibility. An acceptable level of quality does not imply perfection; however, there should be no compromise of functional, health, or safety requirements. Adherence to the principles outlined in ER 5-1-11 and ER 1110-1-12 will contribute to achieving this goal. OE response procedures must be formulated to ensure harmony with the USACE Strategic Vision and should be executed in concert with activities presented in other USACE guidance.

7. Responsibilities. USACE and contractor personnel involved with OE response projects are responsible for safely executing response actions in accordance with (IAW) the approved Site Safety and Health Plan, approved Work Plan, and all applicable laws, regulations, and policies.

8. General Safety Concerns and Procedures.

a. As a general rule, all fuzed unexploded ordnance (UXO) will be detonated in the original position found. This is the safest method to effect final disposition of munitions.

b. OE operations will not be conducted until all applicable plans for the site in question are prepared and approved. These plans will be based upon the concept of limiting exposure to the minimum number of personnel, for the minimum amount of time, to the minimum amount of OE consistent with safe and efficient operations.

c. Only UXO-qualified personnel will perform OE procedures. As an exception, a UXO Technician I may assist in the performance of OE procedures when under the supervision of a UXO Technician III or a UXO-qualified individual of higher rank than UXO Technician III. Non-UXO-qualified personnel who have been determined to be essential for the operations being performed may be utilized to perform OE-related procedures when supervised by a UXO Technician III or a UXO-qualified individual of higher rank than UXO Technician III. All personnel engaged in field operations will be thoroughly trained and capable of recognizing the specific hazards of the procedures being performed. To ensure that these procedures are performed to standards, all field personnel will be under the direct supervision of a UXO Technician III or a UXO-qualified individual of higher rank than UXO Technician III.

d. Personnel who will be handling OE items will not wear outer or inner garments having static-electricity-generating characteristics. Materials made of 100-percent polyester, nylon, silk, and wool are highly static producing. Refer to DA Pam 385-64 for more information regarding nonstatic-producing clothing.

e. Prior to any action being performed on an ordnance item, all fuzing will be definitively identified. This identification will consist of fuze type by function and condition (armed or unarmed) and the physical state/condition of the fuze, i.e., burned, broken, parts exposed/ sheared, etc.

f. OE operations will be conducted only during daylight hours.

9. OE Safety Precautions.

a. Every effort will be made to identify a suspect OE item. Under no circumstances will any fuzed UXO be moved in an attempt to make a definitive identification. The OE item will be visually examined for markings and other external features such as shape, size, and external fittings. If an unknown OE item is encountered, the onsite USACE representative will be notified immediately. If there is no onsite USACE representative, the USACE district or the U.S. Army Engineering and Support Center, Huntsville (USAESCH) OE Safety Group will be notified as soon as possible. If research of documentation is required, it will be initiated by USAESCH. Following is additional guidance for the safe handling of OE items:

(1) Projectiles containing base-detonating fuzes are to be considered armed if the round is fired.

(2) Arming wires and popout pins on unarmed fuzes should be secured prior to moving OE items.

(3) Do not depress plungers, turn vanes, or rotate spindles, levers, setting rings, or other external fittings on OE items. Such actions may arm or activate the items.

(4) Do not attempt to remove any fuze(s) from OE items. Do not dismantle or strip components from any OE items.

(5) UXO personnel are not authorized to render inert any OE items found onsite.

(6) OE items will not be taken from the site as souvenirs/training aids.

(7) Civil War ordnance will be treated in the same manner as any other OE items.

b. Prior to entering areas/ranges contaminated with Improved Conventional Munitions (ICMs) or submunitions, a Department of the Army (DA) waiver must be obtained by the affected installation or for FUDS properties, the executing Corps district. If an ICM or submunition is found at a site not previously known to contain ICMs or submunitions, work will cease. The discovered item will be identified, then properly disposed of (including guarding the item if disposition is to be delayed). Work will resume only when an ICM waiver has been obtained. For guidance on the preparation of waiver requests, contact the OE Mandatory Center of Expertise.

c. Any time suspect chemical warfare materiel is encountered during conventional OE site activities, all work will immediately cease. Project personnel will withdraw along cleared paths upwind from the discovery. A team consisting of a minimum of two personnel will secure the area to prevent unauthorized access. Personnel should position themselves as far upwind as possible while still maintaining security of the area.

(1) On FUDS properties, the UXO team will notify the local point of contact (POC) designated in the Work Plan. The local POC will facilitate explosive ordnance disposal (EOD) response, and two personnel will secure the site until the EOD unit's arrival. If the local POC

designated in the Work Plan is not the local law enforcement agency, the local POC will inform the local law enforcement agency of the discovery if necessary. The EOD unit will notify the Technical Escort Unit (TEU) and secure the area until TEU's arrival. After notifying the local law enforcement agency (when necessary), the local POC will notify the USAESCH OE Safety Group of the actions taken.

(2) On active installations, the UXO team will normally notify the Range Control Officer, the Facility Engineer, post headquarters, or the POC designated in the Work Plan.

d. Avoid inhalation of and skin contact with smoke, fumes, and vapors of explosives and related hazardous materials.

e. Consider OE items which may have been exposed to fire and detonation as extremely hazardous. Chemical and physical changes may have occurred to an item's contents, which may have rendered the item more sensitive than in its original state.

f. Do not rely on the color coding of OE items for definitive identification. Munitions having incomplete or improper color codes have been encountered.

g. Avoid approaching the forward area of an OE item until it can be determined whether or not the item contains a shaped charge. The explosive jet, which is formed during detonation, can be lethal at great distances. Assume that all shaped-charge munitions contain a piezoelectric (PZ) fuzing system until investigation proves otherwise. PZ fuzing is extremely sensitive. It can function at the slightest physical change and can remain hazardous for an indefinite period of time.

h. Approach an unfired rocket motor from the rear at a 45-degree angle. Accidental ignition can cause a missile hazard and hot exhaust.

i. Do not expose unfired rocket motors to any electromagnetic radiation (EMR) sources. See DA Pam 385-64 for safe separation distances from various sources of EMR.

j. Consider an emplaced landmine to be armed until proven otherwise. It may be intentionally boobytrapped to deceive.

(1) Many training mines contain spotting charges capable of inflicting serious injury.

(2) Exercise extreme care with wooden mines that have been buried for long periods of time. Certain soil conditions can cause the wood to deteriorate, and any inadvertent movement or pressure can initiate the fuze.

k. Assume that a practice OE item contains a live charge until investigation proves otherwise. Expended pyrotechnic and practice devices can contain red or white phosphorus (WP) residue. Due to incomplete combustion, this residue may re-ignite spontaneously if the crust is broken and exposed to air.

l. Do not approach a smoking WP munition. Burning WP may detonate the explosive burster charge at any time.

m. Foreign ordnance was shipped to the United States for exploitation and subsequent disposal. Every effort will be made to research all applicable documentation prior to commencement of a project involving foreign ordnance.

10. OE Storage. During OE projects, explosives storage falls into two categories, on Department of Defense (DOD) installations and off DOD installations.

a. On DOD installations, DOD 6055.9-STD and Service requirements (Army – AR 385-64; Navy – NAVSEA OP5; Air Force – AFM 91-201) will be met. For the remainder of this pamphlet, reference to DOD standards (i.e., DOD 6055.9-STD) also implies that Service explosives safety publications will be adhered to. Generally, the installation will have an existing explosives storage facility that meets DOD standards. If not, the contractor will establish a temporary storage facility. The compatibility of explosives defined in chapter 3, DOD 6055.9-STD, will be followed. Recovered OE items awaiting final disposition will not be stored with serviceable explosives. Commercial explosives will be assigned a DOD hazard classification (i.e., 1.1, 1.2, etc.) and storage compatibility grouping by the U.S. Army Technical Center for Explosives Safety prior to being stored on a military installation.

b. Off DOD installations, the contractor will be responsible for establishing a temporary explosives storage facility. This temporary storage facility will meet local, state, 27 CFR 55, AR 385-64, and DOD 6055.9-STD requirements to the greatest extent practicable.

(1) In cases where the facility cannot meet the intermagazine, inhabited building, and public traffic route quantity-distance requirements specified in DA Pam 385-64 and DOD 6055.9-STD, a barricading plan or other engineering controls to protect the public from accidental detonation must be submitted to and approved by the USAESCH Directorate of Engineering.

(2) Magazines must meet the requirements of 27 CFR 55, and each magazine must have a Net Explosive Weight and hazard classification established for the explosives to be stored.

(3) Each magazine must be provided lightning protection IAW DA Pam 385-64. The provisions of NFPA 780, which are consistent with Army guidance, may be used to supplement Army guidance where necessary.

(4) A physical security survey will be conducted to determine if fencing or guards are required. This survey will be coordinated through local law enforcement agencies. Generally, a fence around the magazine is not needed, IAW 27 CFR 55. However, the contractor is responsible for providing the degree of protection needed to prevent the theft of OE items.

c. A fire plan for either an on- or off-installation explosives storage facility will be prepared and coordinated with the local fire department. Placarding of magazines will be IAW local rules and regulations.

11. OE Transportation, Offsite. In the event that OE items must be transported offsite, the provisions of chapter 15, EP 1110-1-18, will be followed. In addition, USACE contractors are prohibited from transporting UXO offsite for destruction until the provisions of paragraph 1-9, TB 700-2, have been met.

12. OE Transportation, Onsite. The following safety procedures will be followed for the transportation of OE items onsite:

a. Do not transport WP munitions unless they are immersed in water, mud, or wet sand.

b. If loose pyrotechnic, tracer, flare, or similar mixtures are to be transported, they will be placed in No. 10 mineral oil or equivalent to minimize the fire and explosion hazards.

c. Incendiary-loaded munitions should be placed on a bed of sand and covered with sand to help control the burn if a fire should start.

d. If an unfired rocket motor must be transported, it will be positioned in the vehicle parallel to the rear axle. This will afford maximum protection for the personnel operating the vehicle.

e. If a base-ejection projectile must be transported to a disposal facility, the base will be oriented in the vehicle such that it is parallel to the rear axle. This will afford maximum protection for the personnel operating the vehicle.

f. OE items with exposed hazardous fillers, such as High Explosive, will be placed in appropriate containers with packing material to prevent migration of the hazardous fillers. Padding should be added to protect the exposed filler from heat, shock, and friction.

13. Exclusion Zone Operations. On OE project sites, it is the responsibility of the contractor's Unexploded Ordnance Safety Officer (UXOSO) to establish the exclusion zone for each UXO work area.

a. The purpose of the exclusion zone is to protect nonessential personnel from blast overpressure and fragmentation hazards. Calculating exclusion zones with respect to intentional and unintentional detonations is discussed below.

(1) Intentional Detonations. The minimum separation distances specified in DOD 6055.9-STD, chapter 5, paragraph C5.5.4, will be used unless lesser distances have been calculated using HNC-ED-CS-S-98-1.

(2) Unintentional Detonations. If the identity of OE items on a site is unknown, the minimum separation distance specified in DOD 6055.9-STD, chapter 5, paragraph C5.5.4, will be used to establish the exclusion zones. When the identity of OE items is known, the USAESCH Directorate of Engineering will use HNC-ED-CS-S-98-1 and HNC-ED-CS-S-98-2 to determine the criteria for establishing the exclusion zones.

b. When multiple teams are working onsite, a team separation distance (TSD) will be established. The minimum TSD will be the greater of 200 feet or the K50 (0.9 pounds per square inch) overpressure distance.

c. While OE procedures are being conducted, only personnel essential for the operation will be allowed in the exclusion zone. When nonessential personnel enter the exclusion zone, all OE operations will cease. In addition to this work stoppage, the following actions will be taken:

(1) The individual(s) must receive a safety briefing and sign the visitors log prior to entering the zone.

(2) The individual(s) will be escorted by a UXO-qualified individual.

d. All personnel working within the exclusion zone will comply with the following:

(1) There will be no smoking within the exclusion zone, except in areas designated by the UXOSO.

(2) There will be no open fires for heating or cooking (gas stoves, grills, etc.) within the exclusion zone, except where authorized by the UXOSO.

(3) During geophysical detection operations, personnel will not wear any metal that would interfere with instrument operations.

14. OE Excavation Operations.

a. Hand excavation is the most reliable method for uncovering an OE item. However, hand excavation exposes personnel to the hazard of detonation . Therefore, only UXO-qualified personnel will be used to perform this task.

b. Earth-moving machinery (EMM) may be used to excavate overburden from suspected OE items. EMM will not be used to excavate within 12 inches of a suspected OE item. Once the EMM is within 12 inches of the suspected OE item, the excavation will be completed by hand excavation methods. Personnel who are not UXO qualified may operate EMM only when supervised by a UXO Technician III or a UXO-qualified individual of higher rank than UXO Technician III.

(1) If more than one earth-moving machine is to be used onsite, the same minimum separation distances required for multiple work teams apply.

(2) EMM operations will be conducted within the guidelines of EM 385-1-1 and 29 CFR 1926, subpart P.

c. Excavation operations, whether by hand or EMM, will employ a stepdown or offset access method. Under no circumstances will any excavation be made directly over suspected OE items.

15. OE Disposal Operations. All disposal operations will be conducted IAW TM 60A-1-1-31, EP 1110-1-17, and the unnumbered USAESCH publication entitled Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites.

a. As a general rule, all disposal operations will be accomplished by electrical means to ensure maximum safety. There are exceptions to this requirement in situations where static electricity or EMR hazards are present. Unintentional detonations can occur because of these induced currents (or lightning). The following precautions from DA Pam 385-64 are to be followed:

(1) Premature detonation of electric blasting caps by induced current from radio frequency signals is possible. Refer to DA Pam 385-64 for minimum safe distance with respect to transmitter power and indication of distance beyond which it is safe to conduct electric blasting even under the most adverse conditions.

(2) Lightning is a hazard with respect to both electric and nonelectric blasting caps. A direct hit or a nearby miss is almost certain to initiate either type of cap or other sensitive explosive elements such as caps in delay detonators. Lightning strikes, even at distant locations, may cause extremely high local earth currents that may initiate electrical firing circuits. Effects

of remote lightning strikes are multiplied by their proximity to conducting elements such as those found in buildings, fences, railroads, bridges, streams, and underground cables or conduits. The only safe procedure is to suspend all blasting activities when an electrical storm approaches to within 10 miles of the site.

(3) Electric power lines also pose a hazard with respect to electric initiating systems. It is recommended that any disposal operation closer than 155 meters to electric power lines be done with a nonelectric system.

b. The only acceptable disposal method is the one stated in the appropriate TM 60 Series manual for specific ordnance types. Any commercial explosives being used will be equivalent to the military explosive required for the disposal operation.

c. If justified by the situation, protective measures to reduce shock, blast over-pressure, and fragmentation will be taken. The USAESCH Directorate of Engineering will assist in any design work and will review for approval all proposed protective measures.

d. Minimum separations distances for personnel during OE disposal will be IAW DOD 6055.9-STD, chapter 5.

e. During open detonation operations, lifting lugs, strong backs, base plates, etc., will be oriented away from personnel locations.

f. Once disposal operations are completed, a thorough search of the immediate area will be conducted with a magnetometer to ensure that a complete disposal was accomplished.

g. Inert ordnance will not be disposed of as scrap until the internal tillers/voids have been exposed and unconfined.

FOR THE COMMANDER:

ROBERT L. DAVIS
Colonel, Corps of Engineers
Chief of Staff

GLOSSARY

Section I
Abbreviations

AFM .... Air Force Manual

AR .... Army Regulation

CFR .... Code of Federal Regulations

DA .... Department of the Army

DA Pam .... Department of the Army Pamphlet

DOD .... Department of Defense

EMM .... Earth-Moving Machinery

EMR .... Electromagnetic Radiation

EOD .... Explosive Ordnance Disposal

FUDS .... Formerly Used Defense Sites

IAW .... In Accordance With

ICM .... Improved Conventional Munition

NAVSEA OP .... Naval Sea Systems Command Ordnance Pamphlet

NFPA .... National Fire Protection Association

OE .... Ordnance and Explosives

POC .... Point of Contact

PZ .... Piezoelectric

STD .... Standard

TB .... Technical Bulletin

TEU	Technical Escort Unit
TSD	Team Separation Distance
USACE	U.S. Army Corps of Engineers
USAESCH	U.S. Army Engineering and Support Center, Huntsville
UXO	Unexploded Ordnance
UXOSO	Unexploded Ordnance Safety Officer
WP	White Phosphorus

Section II
Terms

OE Procedures
Procedures which include, but are not limited to, the following actions performed by a UXO-qualified individual:

a. Gaining access to (manual excavation) and identifying subsurface anomalies and assessing the condition of buried OE.

b. Identifying and assessing the condition of surface OE.

c. Recovering and making final disposal of all OE.

OE-Related Procedures
Procedures which include, but are not limited to, the following actions which may be performed by a non-UXO-qualified individual:

a. Locating and marking subsurface anomalies.

b. Locating and marking suspected surface OE.

c. Transporting and storing recovered OE.

d. Utilizing EMM to excavate overburden from suspected OE.

Ordnance and Explosives (OE)
Consists of (1) military munitions that have been abandoned, expelled from demolition pits or burning pads, lost, discarded, or buried, (2) UXO, (3) soil presenting explosion hazards, and (4) buildings with explosives residues that present explosion hazards.

Unexploded Ordnance (UXO)
Military munitions that have been primed, fuzed, armed, or otherwise prepared for action and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material and remain unexploded either by malfunction, design, or any other cause.

UXO-Qualified Personnel
Personnel meeting the requirements for the positions of UXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist, and Senior UXO Supervisor. For qualification requirements, refer to EP 1110-1-18.

US Army Corps
of Engineers®

EP 75-1-2
01 August 2004

MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) SUPPORT DURING HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW) AND CONSTRUCTION ACTIVITIES

ENGINEER PAMPHLET

AVAILABILITY

Electronic copies of this and other U.S. Army Corps of Engineers publications are available on the Internet at http://www.hnd.usace.army.mil/techinfo/engpubs.htm. This site is the only repository for all official USACE engineer regulations, circulars, manuals, and other documents originating from HQUSACE. Publications are provided in portable document format (pdf).

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, DC 20314-1000

CEMP-CE

Pamphlet
No. 75-1-2

01 August 2004

Explosives
MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) SUPPORT DURING HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW) AND CONSTRUCTION ACTIVITIES

1. Purpose. This pamphlet provides U.S. Army Corps of Engineers (USACE) personnel with procedural guidance, technical specifications, personnel and training requirements, and health and safety criteria for Munitions and Explosives of Concern (MEC) support during HTRW and construction activities.

2. Applicability. This pamphlet applies to all Headquarters, U.S. Army Corps of Engineers (HQUSACE) elements, USACE Major Subordinate Commands (MSCs), USACE geographic districts, and field operating activities having responsibilities for civil works and/or military programs with HTRW-related and construction projects that have the potential for encountering MEC. The MEC support requirements presented in this pamphlet are applicable to anomaly avoidance activities conducted during HTRW activities, standby MEC support during construction activities, and subsurface removal of MEC during construction activities. Guidance presented in this pamphlet is consistent with policy in ER 385-1-95. Contact the Military Munitions Center of Expertise (MM CX) for additional information.

3. Distribution Statement. Approved for public release; distribution is unlimited.

4. References. Required and related references are at Appendix A.

5. Explanation of Acronyms and Terms. Acronyms and special terms used in this pamphlet are explained in the glossary.

FOR THE COMMANDER:

3 Appendices
(See Table of Contents)

JOHN R. McMAHON
Colonel, Corps of Engineers
Chief of Staff

This pamphlet supersedes EP 75-1-2, dated 20 November 2000.

	DEPARTMENT OF THE ARMY U.S. Army Corps of Engineers Washington, DC 20314-1000	EP 75-1-2
CEMP-CE		

Pamphlet
No. 75-1-2 — 01 August 2004

Explosives
MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) SUPPORT DURING HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW) AND CONSTRUCTION ACTIVITIES

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CHAPTER 1

Introduction

1-1. General. This Engineer Pamphlet (EP) presents procedures for providing Munitions and Explosives of Concern (MEC) support during Hazardous, Toxic, and Radioactive Waste (HTRW) and construction activities. MEC support activities include: anomaly avoidance activities conducted during HTRW activities; standby MEC support during construction activities; and subsurface removal of MEC during construction activities.

a. During the investigative/design phase of any project on a site known or suspected to contain MEC, provisions for MEC support will be included. MEC support refers to anomaly avoidance techniques implemented to avoid any potential surface MEC and any subsurface anomalies. The U.S. Army Corps of Engineers (USACE) primarily implements anomaly avoidance procedures on HTRW sites. Intrusive anomaly investigation is not authorized during anomaly avoidance activities. Although the examples of anomaly avoidance techniques in this EP pertain to HTRW-related activities, the procedures may be modified to address other types of activities, as appropriate. For additional information on anomaly avoidance techniques, contact the Military Munitions Center of Expertise (MM CX). See Chapter 5 for a discussion on anomaly avoidance procedures to be used during HTRW activities and Chapter 6 for MEC support during construction activities.

b. MEC support during construction activities, including the remediation phase of an HTRW project, on a site with known or suspected MEC may include only MEC standby support or may require a subsurface removal response. As described in Chapter 12 of DOD 6055.9 STD, the level of MEC support required during construction activities is dependent on the probability of encountering MEC. Contact the MM CX for guidance and assistance in determining the level of support.

(1) If the probability of encountering MEC is low (e.g., current or previous land use leads to an initial determination that MEC may be present), only MEC standby support will be required. MEC standby support is discussed in paragraph 6-6 of this document.

(2) When a determination is made that the probability of encountering MEC is moderate to high (e.g., current or previous land use leads to a determination that MEC was employed or disposed of in the area of concern), Unexploded Ordnance- (UXO-) qualified personnel must conduct a subsurface removal for the known construction footprint and remove all discovered MEC.

(3) The level of effort for construction support is site/task-specific and will be determined on a case-by-case basis by the project delivery team (PDT).

c. If MEC is encountered after initiation of an HTRW or construction project where MEC support has not been instituted, the procedures published in this EP will apply.

d. The MM CX will determine procedures for sampling and cleanup of Munitions Constituents (MC) contaminated with primary explosives on a case-by-case basis. The HTRW Design District is responsible for the design and removal or remedial action to clean up soils contaminated with secondary explosives. Refer to ER 1110-1-8153 for definitions of primary and secondary explosives. Contact the MM CX for the latest procedures to be used for MC sampling.

1-2. Responsibilities.

a. All USACE personnel involved with the Military Munitions Response Program are responsible for safely executing military munitions response projects, including MEC support during HTRW and construction activities, in accordance with applicable laws, regulations, and policies. A detailed discussion of USACE organizational responsibilities for military munitions response projects is presented in ER 1110-1-8153. Safety and health requirements, responsibilities, and procedures for MEC operations (response actions and any other MEC activity) are defined in ER 385-1-95.

b. All USACE organizations will ensure that all personnel with authorized access to the site for MEC support during HTRW and construction activities are familiar with, and have access to, copies of the accepted Work Plan and Accident Prevention Plan/Site Safety and Health Plan (APP/SSHP). In addition, each organization will ensure that such personnel receive the appropriate training, medical surveillance, and personal protective equipment (PPE) required by the safety plan, contract specifications, Occupational Safety and Health Administration Standards, USACE regulations, and applicable Department of Defense (DOD) and Department of the Army (DA) regulations.

1-3. Functional Roles. The following section provides a description of the functional roles for MEC support activities. A more comprehensive description of the functional roles for the organizations discussed below is also provided in ER 1110-1-8153.

a. Headquarters, U.S. Army Corps of Engineers (HQUSACE). If an Explosives Safety Submission (ESS) is required for MEC support activities, it will be reviewed and approved by the MM CX acting for HQUSACE.

b. Major Subordinate Command (MSC). If an ESS is required for MEC support activities, it will be monitored by an MSC in accordance with ER 1110-1-8153.

c. District. A district will:

(1) Execute MEC support activities.

(2) Assign a Project Manager (PM) to lead the PDT, coordinate all project activities, serve as a liaison with other stakeholders, and review/approve project documents as required.

(3) Conduct MEC support activities with either in-house resources or by contract.

(4) Coordinate the MEC support project with the MM CX.

(5) Prepare a project-specific Statement of Work (SOW) and Independent Government Estimates (IGE) for MEC support activities.

(6) Submit plans developed for MEC support activities to the MM CX. All MEC concerns will be addressed before initiating any on-site activities.

(7) If an ESS is required, review the ESS and provide comments and written concurrence or nonconcurrence.

(8) Supervise the fieldwork. MEC operations will be supervised by UXO-qualified personnel as defined in ER 385-1-95.

(9) Conduct appropriate quality verification activities.

(10) Coordinate requests for explosives ordnance disposal (EOD) support from the 52nd Ordnance Group (EOD) with the MM CX.

(11) Coordinate with the appropriate Military Munitions Design Center (MM DC), as necessary.

d. MM DC. If an ESS is required for planned MEC support activities at a site, the appropriate MM DC will ensure its proper planning and preparation. The MM DC provides construction support/MEC support as defined by the district.

e. MM CX. The MM CX will:

(1) Review and provide comments and written concurrence or nonconcurrence on MEC support-related products (e.g., SOW, Work Plan, and ESS) to ensure compliance with Federal, DOD, DA, and USACE MEC safety and environmental regulations.

(2) Provide MEC technical support to any USACE office conducting construction and/or HTRW operations in areas where MEC is suspected or known to exist.

(3) Develop and/or approve MEC-specific contract requirements, including military munitions response contractor personnel qualifications and work standards, for contract acquisition.

(4) Assimilate and analyze lessons learned from MEC support projects and provide them to the HTRW CX for inclusion in the USACE lessons learned database.

(5) Coordinate support with the 52nd Ordnance Group (EOD) in accordance with the Memorandum of Agreement between the U.S. Army Engineering and Support Center, Huntsville (USAESCH) and the 52nd Ordnance Group (EOD).

(6) Coordinate the review and approval of an ESS (if required) with the U.S. Army Technical Center for Explosives Safety, and the Department of Defense Explosives Safety Board (DDESB).

(7) Provide construction support/MEC avoidance to districts as requested.

f. OE Safety Specialist. If a subsurface removal response is being conducted in support of construction activities, an OE Safety Specialist will be present to provide safety oversight. Otherwise, an OE Safety Specialist is generally not required on-site. Additional information on the requirements for when an OE Safety Specialist is required on site is available in ER 385-1-95.

CHAPTER 2

Statement of Work/Independent Government Estimates

2-1. Introduction. This chapter provides guidance on preparing an SOW and IGE for MEC support during HTRW and construction activities. The district is responsible for executing the SOW and IGE for MEC support activities.

2-2. SOW.

a. General. Safety and health are overriding concerns during MEC support project design and execution. The MM CX safety personnel are points-of-contact (POCs) for MEC safety issues and have particular, specialized expertise in identifying, interpreting, and implementing applicable safety requirements for military munitions response to MEC projects. Each SOW for MEC support activities must be closely coordinated with these personnel.

b. Preparation.

(1) The PM along with the PDT is responsible for preparing the SOW required for MEC support activities in conjunction with HTRW or construction activities. The MM CX may be consulted to provide the appropriate statements or paragraphs concerning background and authority for the task order or contract award.

(2) Appendix B provides an example SOW for anomaly avoidance during HTRW activities on sites with known or suspected MEC. Appendix C provides an example SOW for MEC support during construction activities on sites with known or suspected MEC. The appropriate MEC support SOW may be used as an addendum to a larger SOW for an existing project. If the intrusive investigation of anomalies is deemed necessary, the SOW for MEC support during construction activities should be used.

(3) The examples provided in Appendices B and C should be followed to ensure that the applicable requirements (i.e., site visit, Work Plan preparation, MEC support procedures, quality control, reporting, and public affairs assistance) are included. The MM CX should assist in the drafting of SOW verbiage when MEC support is required for HTRW activities not specifically referenced in Appendix B or when construction activities other than those presented in Appendix C are proposed and MEC support is required.

(4) Neither of these examples contains provisions for a records search by the contractor to determine what types of MEC might be encountered. Districts should consider completing a records search to determine the probability for contact with MEC and the potential types and quantities before using the SOW in Appendix B or C.

c. Review Process. Following the preparation of the SOW by the PDT, the PM will submit copies to the MM CX for review. The MM CX will provide comments and written concurrence or nonconcurrence for the decision/approval authority. The MM CX will be allowed 15 calendar days from receipt of the SOW for this review. If no comments are received within this time frame, concurrence may be assumed by the executing agency.

2-3. Preparation of the IGE. Once the SOW is prepared, an IGE for anomaly avoidance during HTRW or construction activities is prepared. The structure of the cost estimate will vary depending on the contract type. The recommended USACE software programs to be used in preparing cost estimates are the Micro Computer-Aided Cost Engineering System (MCACES), Gold Version 5.3; MCACES for Windows; Lotus 123™ spreadsheets; or Excel™ spreadsheets. The cost estimator or project engineer may develop crew and productivity sheets for the various field activities or tasks in the SOW to determine the duration or number of hours for the various labor categories needed to support each task. The labor rates are burdened rates and reflect all contractor mark-ups. Materials, travel, and per diem are duration driven and are totaled separately from the labor. The materials estimated can be purchased, rented, or allocated to overhead.

CHAPTER 3

Planning Considerations for MEC Support

3-1. Introduction. This chapter discusses the requirements that must be addressed prior to initiating MEC support activities during HTRW and construction activities on sites known or suspected to contain MEC. The objective of MEC support activities is to conduct safe and efficient operations while limiting potential exposure to a minimum number of personnel for a minimum time and to the minimum amount of MEC.

3-2. Planning Documents. Site-specific planning documents that detail the methodologies that will be used during the MEC support project will be prepared. For anomaly avoidance activities, the planning document is the HTRW Work Plan. For MEC support during construction activities, the planning documents include the Work Plan and appropriate subplans and appendices (and an ESS, if required). For range construction projects (including target maintenance), the planning documents include plans and specifications (an ESS is not required). The planning documents will be prepared in accordance with the project SOW and contract requirements. The PDT will ensure that these documents are consistent with each other.

3-3. MEC Support Work Plan.

a. For anomaly avoidance and construction activities, a MEC Support Work Plan will be prepared to supplement the prime contractor's or USACE's Work Plan/Site Plan. The MEC Support Work Plan will be prepared in accordance with the project SOW and contract requirements.

b. Content. The MEC Support Work Plan does not need to be comprehensive, as it is a supplement to the overall site Work Plan. The MEC Support Work Plan will detail the management approach and operational procedures that will be used to complete the MEC support activity. The MEC Support Work Plan will indicate the specific geophysical instrument that the UXO team intends to use. The MEC Support Work Plan will include an APP/SSHP that specifically addresses MEC operations. The PDT will ensure that the MEC Support Work Plan and all appropriate subplans (e.g., APP/SSHP, ESS, etc.) are consistent.

c. The MEC Support Work Plan will be submitted by the contractor to the PM for review and comment by the PDT. The PM will then forward one copy to the MM CX. The MM CX will review and provide comments and written concurrence or nonconcurrence on the planning documents containing MEC support provisions. The MM CX will be allocated 15 calendar days from the date of receipt for this review. If no comments are received from the MM CX within this time frame, concurrence will be assumed by the executing agency.

d. The accepted MEC Support Work Plan will serve as the contractual basis for all subsequent MEC activities. Current copies of the MEC Support Work Plan will be kept for reference by the PM, the contractor's senior site representative or safety manager, the UXO team, and the OE Safety Specialist (if required onsite). The accepted MEC Support Work Plan will be maintained in the district office.

e. For those sites where subsurface removal in support of construction activities is required, the MEC Support Work Plan will contain the appropriate subplans and appendices from the following list, based on the MEC support project requirements and information already contained in the overall Work Plan:

(1) Technical Management Plan.

(2) Explosives Management Plan.

(3) Explosives Siting Plan (ESP).

(4) Geophysical Prove-out Plan and Report.

(5) Geophysical Investigation Plan.

(6) Geospatial Information and Electronic Submittals.

(7) Work, Data, and Cost Management Plan.

(8) Property Management Plan.

(9) Quality Control (QC) Plan.

(10) Environmental Protection Plan.

(11) Investigative Derived Waste (IDW) Plan.

(12) Appendix – Task Order SOW.

(13) Appendix – Site Maps.

(14) Appendix – Local POCs.

(15) Appendix – APP/SSHP.

(16) Appendix – Munitions Constituents Sampling and Analysis Plan.

(17) Appendix – Contractor Forms.

(18) Appendix – Minimum Separation Distance (MSD) Calculation Sheets.

(19) Appendix – Resumes.

f. Modifications. Changes may be required to the MEC Support Work Plan and/or APP/SSHP after approval by the Contracting Officer. A modification that affects any MEC subsurface removal operational and/or safety procedure may also require a revision to and re-approval of the ESP and/or ESS.

3-4. ESP.

a. General.

(1) An ESP, a component of the MEC Support Work Plan, is prepared only for MEC support during construction activities where MEC removal is planned. The ESP will provide explosives safety criteria for planning and siting explosive operations. The ESP discusses the proposed MSDs for unintentional detonations, intentional detonations, and siting of critical project components. The ESP will describe the basis of design, all design calculations, and proposed hazard mitigation measures to be implemented to protect the public, non-project personnel, and site workers from explosive hazards. The ESP will be reviewed by the PDT to ensure that the appropriate MSD criteria have been applied.

(2) The ESP will discuss the following explosive operations: Munitions Response Areas (MRAs), explosives storage magazines, and planned or established demolition areas. The location of these explosives operations will be sited on a map with a scale of 1 inch equals 400 feet. A larger scale may be used if available and if a map using such a scale is not too large to be included in the Work Plan. A smaller scale is acceptable if distances can be accurately shown. If an unscaled map is used, the map must have labeled distances. The MSDs calculated for the operation will be discussed in the text of the plan and Quantity-Distance (Q-D) arcs for the above-listed project elements will be drawn on the map.

(3) Q-D. Explosives safety distance tables prescribe the necessary separations and specify the maximum quantities for various classes of explosives permitted in any one location. The Q-D tables provided in DOD 6055.9-STD reflect the acceptable minimum criteria for the storage and handling of various classes and amounts of explosives. These distances will be used for siting storage locations. The project will site Open Burn/Open Detonation areas in accordance with EP 1110-1-17.

b. MRAs. During intrusive operations (i.e., operations that involve or result in the penetration of the ground surface at an area known or suspected to contain MEC. See EP 1110-1-18 for additional details), the MSD will be determined using two sets of criteria. The first set of criteria has been established for unintentional detonations (i.e., not planned in advance), and the second set of criteria has been established for intentional detonations (i.e., planned, controlled detonations). Details on calculating MSDs are published in EM 1110-1-4009.

(1) Unintentional Detonations. For an unintentional detonation, the applicable MSDs are the MSDs for unintentional detonations and the team separation distance (TSD). The MSD for unintentional detonations is the minimum distance that non-essential personnel and the public must be separated from intrusive operations. The TSD is the minimum distance that project teams must be separated during intrusive operations.

(2) Intentional Detonations. The MSD for intentional detonations is the distance that both project personnel and the public must be from the intentional detonation.

c. Explosives Storage Magazines.

(1) The ESP will provide the following information on explosives storage magazines:

(a) Type(s) of magazines used (e.g., Bureau of Alcohol, Tobacco, and Firearms (ATF) classification, portable, commercial, above ground, shed, earth covered, etc.). See DOD 6055.9-STD for further information and definitions on the types of magazines to be used for explosives storage.

(b) Net Explosive Weight (NEW) and hazard division to be stored in each magazine. Generally, recovered MEC is considered Hazard Division 1.1. See 6055.9-STD for further information and definitions on Hazard Divisions.

(c) Q-D criteria used to site the magazine.

(d) Design criteria for any proposed engineering controls to be used to mitigate exposures to the public when Q-D criteria cannot be met.

(2) Magazines must also be properly placarded, and the property must be secured. DOD magazines storing explosives must have the appropriate fire fighting symbol or locally required DOD Hazard Classification assigned. Additional details on how explosives must be stored and secured are published in EP 1110-1-18.

d. Planned or Established Demolition Areas. The MSDs for these areas will be based on the MSD criteria for intentional detonations.

e. Footprint Areas. The following footprint areas will be discussed in the ESP: blow-in-place, collection points, and in-grid consolidated shots. These areas, however, do not have to be shown on the site map. The MSDs for these footprint areas are described in the following paragraphs.

(1) Blow-in-Place. Blow-in-place is the preferred method for disposal of MEC. Blow-in-place occurs when a MEC is prepared for detonation and detonated in-place. The MSD for blow-in-place areas will be determined using the MSD criteria for intentional detonations.

(2) Collection Points. Collection points are areas where recovered MEC that is acceptable to move is temporarily accumulated within a search grid pending relocation to another area for storage or destruction. Collection points will be limited to the amount of explosives such that the K50 total of the rounds to be destroyed will not exceed the MSD. (The K value is the safety factor used in determining the MSD for unintentional detonations. See DOD 6055.9-STD for additional details on the establishment of K values.) The MSD for collection points will be determined using the MSD criteria for unintentional detonations.

(3) In-Grid Consolidated Shots. In-grid consolidated shots occur when recovered MEC that is acceptable to be relocated is collected and destroyed within a search grid. In contrast to an established demolition ground, consolidated shots occur within a search grid rather than in a separate area. The procedures for in-grid consolidated shots are presented in the USAESCH document titled "Procedures for Demolition of Multiple Rounds (Consolidated Shots) on OE Sites."

f. Exceptions. The calculated MSDs for unintentional detonations specified above are considered minimums for execution of normal operations. When site conditions exist that make it impossible or impractical to comply with these minimums, the PM may request consideration of a possible reduction. Any request for a reduction of these MSDs will be staffed through the MM CX for calculation. This information will be forwarded to the PM, who will forward it to the District Safety Office for a decision concerning the reduction of the exclusion area. For any requested reduction to the specified MSDs for unintentional detonations, a detailed hazard analysis, which explains why these reductions are necessary and acceptable, must be documented.

3-5. Conventional ESS.

a. ESS.

(1) The purpose of the ESS is to ensure that all applicable DOD and DA regulations regarding safe and secure handling of military munitions are followed.

(2) Intrusive activities cannot commence until the DDESB approves the ESS and the contractor has been directed to incorporate changes resulting from ESS approval into the MEC Support Work Plan. A copy of the approved ESS will be maintained at the project site. All operations will be executed in accordance with the approved ESS.

(3) Detailed guidance on the preparation and approval process associated with the ESS may be found in EP 385-1-95b and DDESB's "Memorandum Guidance for Clearance Plans."

b. Construction support involving removal of MEC in the construction footprint will require submittal and approval of an ESS. An ESS is not required for standby construction support or anomaly avoidance. The ESS will be tailored to meet site-specific requirements.

c. When an element of the approved ESS changes, the ESS must be changed. The contractor shall prepare the proposed change and forward it to the PM, who will forward it to the MM CX for review. The MM CX will forward the proposed changes to the appropriate agency for approval. For a change that specifies less restrictive requirements (e.g., reduction in the exclusion zone), the contractor shall comply with the accepted ESS until the change is approved. When the proposed changes would result in more restrictive requirements (e.g., increase in the exclusion zone), the contractor shall apply the more restrictive measures immediately during the ESS change approval process.

3-6. Personnel Qualifications and Work Standards. USACE has set forth personnel standards applicable to all UXO personnel working for USACE. These qualifications and standards, which detail the educational and experience requirements for UXO personnel, are available in EP 1110-1-18.

3-7. Training. USACE and contractor personnel shall be in compliance with training requirements prior to conducting MEC support activities. Training requirements are published in EP 1110-1-18. The training topics included in EP 1110-1-18 pertain to 29 CFR 1910, 29 CFR 1926, Initial Training, Refresher Training, Cardiopulmonary Resuscitation (CPR)/First Aid, Medical Surveillance, Visitor Training, and Blood Borne Pathogen training. Additional training information is contained in ER 385-1-95.

3-8. Explosives Safety. There are no "safe" methods for dealing with MEC, merely procedures and process controls that are designed to reduce potential hazards. Maximum safety in conducting any MEC operations can be achieved through adherence to applicable safety precautions, a planned approach, intensive supervision, and MEC safety oversight. UXO-qualified personnel will conduct a site safety briefing prior to commencing operational activities each workday. All activities with potential exposure to MEC will be reviewed to identify the associated risks and appropriate mitigation procedures. Operations within areas suspected of containing MEC must be conducted in a manner that exposes a minimum number of people to the smallest quantity of explosives for the shortest period of time.

a. General Safety Considerations.

(1) General safety considerations applicable to personnel, both essential and non-essential, at project sites where MEC may be encountered include:

(a) Do not carry fire or spark-producing devices.

(b) Do not conduct explosive or explosive-related operations, without approved procedures, proper supervision, and MEC standby support.

(c) Do not become careless by reason of familiarity with MEC or the reported probability level of MEC.

(d) Do not conduct explosive or potentially explosive operations during inclement weather.

(e) Avoid contact with MEC except during MEC removal conducted during construction activities.

(f) Conduct MEC-related operations during daylight hours only.

(g) Employ the "buddy system" at all times.

(2) EP 385-1-95a provides additional considerations for safety at project sites where MEC may be encountered.

b. Activity Hazard Analysis.

(1) Activity Hazard Analyses will be performed in accordance with EM 385-1-1. Activity Hazard Analyses will be conducted by personnel who are knowledgeable with respect to MEC safety standards and requirements. These personnel must understand the specific operational requirements and hazard analysis methodologies. A hazard analysis will be performed for each activity to determine the significance of any potential explosive-related hazards. For example, residual explosives from ordnance fillers may be exposed during an HTRW sampling activity. Explosive residues may be in the form of powder or various granular and powder-based pellets. These contaminants can enter the body through the skin or by ingestion if proper personal hygiene practices are not followed. Explosive fillers such as white phosphorus are dangerously reactive in air and acute exposure can result in serious injury to the skin, eyes, and mucous membranes. They are also a fire hazard.

(2) Safety requirements (or alternatives) that will either eliminate the identified hazards or control them to reduce the associated risks to an acceptable level will be developed. The adequacy of the operational and support procedures that will be implemented to eliminate, control, or abate identified hazards or risks will then be evaluated and a second risk assessment completed to verify that a satisfactory safety level has been achieved.

c. Hazards of Electromagnetic Radiation to Ordnance.

(1) Some ordnance items and other electro-explosive devices (EEDs) are particularly susceptible to electromagnetic radiation (EMR) in the radio frequency (RF) range originating from devices such as radio, radar, and television transmitters. The presence of antennas and communication and radar devices will be noted on initial site visits and/or preliminary assessments of eligibility. In addition, active and passive subsurface detection devices emit EMR/RF. Each type of equipment producing EMR/RF must be reviewed and a hazard analysis completed. The level of EMR/RF susceptibility and potential hazard is a result of the design and type of MEC or EED that may be present. Therefore, a knowledge of what MEC is normally unsafe in the presence of EMR/RF is important so that preventive steps can be taken if such MEC is encountered. The MM CX will be consulted when geophysical investigations are planned in areas potentially containing electric-fuzed ordnance.

(2) As part of the hazard analysis, the MSD between an EMR/RF emitting device and potential EEDs will be calculated. This calculation is based on the characteristics of the transmitting device and the potential EEDs. The important characteristics of the EMR/RF source device include:

(a) The transmitter frequency (f, in MHz).

(b) The peak envelope transmitting power (Pt, in W).

(c) The transmitter gain (GdB).

(3) Minimum safe distances from EMR/RF sources are listed in Tables 2-2, 2-3, and 2-4 of TM 9-1375-213-12.

3-9. PPE.

a. All UXO team members will be trained in the use of, medically qualified for, and physically able to wear the prescribed PPE. PPE for MEC support operations will be determined by site-specific and task-specific analyses, documented in the APP/SSHP, and worn as indicated in the plans. Specific requirements for PPE are described in the following paragraphs.

(1) PPE will comply with the most stringent requirements of EM 385-1-1 and the applicable portions of 29 CFR 1910 Subpart I or 29 CFR 1926 Subpart E.

(2) Footwear. In addition to the applicable requirements in the references cited above, shoes or boots with high traction soles and ankle protection will be used. During geophysical detection activities, UXO personnel will not wear safety shoes or other footwear that would cause interference with instrument operations.

(3) Clothing. Short sleeve shirts and long pants are considered the minimum clothing suitable for MEC operations and will be worn at all work sites, unless variations are described, analyzed, and documented in the accepted APP/SSHP.

(4) Head Protection. Personnel working in or visiting designated hardhat areas will be required to wear head protection meeting ANSI Z89.1 standards. Hardhat areas for MEC operations will not be designated unless the activity hazard analysis shows a possible overhead hazard.

b. UXO personnel using PPE will be knowledgeable of the limitations of the selected PPE as well as the reduced performance levels the equipment might impose on them when they are conducting assigned tasks.

3-10. Fire Prevention.

a. Fire prevention awareness is especially important in areas with known or suspected MEC. Smoking will be permitted only in controlled areas where all combustibles (e.g., vegetation, fuel cans, sampling supplies) have been removed or sufficient firebreaks have been established. Personnel may attempt to extinguish minor fires with fire extinguishers if they are trained to do so safely without endangering themselves or others within the vicinity of the fire.

b. If a fire becomes uncontrollable or extends into areas that may contain MEC, all personnel must immediately suspend any fire fighting efforts and retreat to a safe distance, which is at least the maximum fragment distance of the military munition with the greatest fragmentation distance (MGFD), (i.e., the military munition with the greatest fragmentation distance that might be recovered as a result of previous training activities based on historical information). Personnel will retreat upwind of the fire. The senior UXO-qualified person present will then lead an immediate evacuation of the area using available resources to ensure the safety of all personnel.

3-11. Emergency Procedures. MEC operations may result in accidents or incidents, regardless of the safeguards implemented. The APP/SSHP will describe site-specific emergency response procedures, including identification of all appropriate POCs. All personnel must be briefed on the emergency response procedures and protocols discussed in the APP/SSHP.

a. Contingency Plan. A contingency plan will be developed if anomaly avoidance is going to be conducted, to detail the procedures that will be used in the event that munitions with unknown fillers and/or Recovered Chemical Warfare Materiel (RCWM), unusual odors, or discolored soil are encountered. The contingency plan will be initiated if munitions with unknown fillers and/or RCWM, unusual odors, or discolored soil is encountered or site personnel exhibit symptoms attributable to a chemical exposure (i.e., respiratory irritation and/or skin irritation).

b. Emergency Response. In the event of a MEC-related emergency on-site during anomaly avoidance, the senior UXO-qualified person present will direct the course of action until the local POC designated in the Work Plan has been notified. In the event of a MEC-related emergency on-site during construction support, the Senior UXO Supervisor (SUXOS) will direct the course of action until the local POC designated in the Work Plan has been notified. It may be necessary for other on-site personnel to provide assistance. If an emergency response rescue operation is required, no one will reenter the accident area until the hazards of the situation have been assessed by the responsible individual (see above), and all required resources are on-hand to complete the rescue without jeopardizing the safety of rescue personnel.

c. Emergency Rescue. The senior UXO-qualified person or the local POC, as applicable, will direct any MEC-related emergency response rescue operation. Response considerations include the following elements:

(1) Designation of an emergency response vehicle(s) to remain on-site during rescue operations.

(2) Determination of existing hazards, as well as the potential for additional hazards.

(3) Notification of local officials.

(4) Coordination with USACE in the review of the need to alert the local community and/or subsequent coordination with installation or other customer's Public Affairs Office.

(5) Assessment of the situation and condition of any victims.

(6) Determination of the resources needed for victim stabilization and transport and additional emergency support.

(7) Enforcement of the "buddy system". No one will be permitted to enter a rescue area alone.

(8) Oversight of the removal of injured personnel from the area.

(9) Consultation with on-site safety officers to establish decontamination protocols. Decontamination of injured parties will be accomplished after stabilization of their medical conditions. Decontamination need not be accomplished if the victim's condition is poor and if the decontamination process may cause an immediate threat or additional injury to the victim. If contamination is suspected, the victim will be wrapped in material that will prevent the spread of contamination during extraction and transport. Emergency medical personnel will be advised of potential injuries, as well as potential contamination, of the patient as early

as possible. The patient will not be transported to a medical facility without prior notification of, and coordination with, the receiving facility regarding potential contamination.

d. Mishap Reporting and Investigation Requirements. The following information provides guidelines to be followed for reporting explosive mishaps on MEC support projects. Site-specific reporting and investigation procedures, including identification of appropriate POCs, will be included in the APP/SSHP.

(1) Reporting Requirements. All mishaps shall be investigated by the contractor and reported to the Contracting Officer and OE Safety Specialist or to the government authority cited in the SOW. Notification and reporting of mishaps will be in accordance with USACE Supplement 1 to AR 385-40 and EM 385-1-1. Any mishap will be reported on ENG Form 3394, Accident Investigation Report.

(a) For anomaly avoidance and standby support projects on Formerly Used Defense Sites (FUDS), the senior UXO-qualified person on-site is responsible for mishap reporting. For subsurface removal projects in support of construction activities at FUDS, the contractor's UXO Safety Officer (UXOSO) is responsible for mishap reporting. For contracts under the supervision of the district, mishaps will be reported to the district safety office. An information copy of the accident report will be forwarded to the MM CX. USACE district personnel will report through command channels to the HQUSACE Safety and Occupational Health Office.

(b) On active installations, the installation safety officer is responsible for reporting any explosive mishaps.

(c) RCWM Incidents. Chemical event reports are required to be submitted in accordance with AR 50-6. Reporting requirements are identified in EP 75-1-3. A site-specific POC will be identified and documented in accordance with the reporting requirements listed above.

(2) Investigation Requirements. In the event of a mishap, the contractor shall implement emergency procedures and secure the scene to keep unauthorized persons away for their protection and to preserve the evidence for the subsequent mishap investigation. On active installations, the U.S. Army Safety Center (USASC) maintains the prerogative to investigate Class A or Class B explosive mishaps (as defined in AR 385-40). If USASC chooses to investigate, it is the lead agency. If USASC chooses not to investigate, then the district is the lead agency.

3-12. Hazardous Waste Manifest.

a A hazardous waste manifest (EPA Form 8700-22) is required when transporting MEC over pubic roads. Information guidance on the hazardous waste manifest is provided in 49 CFR 172.205 and 40 CFR 262.20.

b Government personnel who are tasked to certify MEC on hazardous waste manifests will be trained in accordance with the requirements of DOD 4500.0-R, Defense Transportation Regulation, Part II, Cargo Movement, Chapter 204, Paragraph D.1.b. or D.1.e.

c The MM CX is available to assist with the proper identification of MEC on the hazardous waste manifest. In addition to the MM CX, the following personnel, based on their knowledge and training, may assist with proper identification; any USACE OE Safety Specialist, contractor UXO Technician, or Military EOD Technician.

CHAPTER 4

Geophysical Detection Equipment

4-1. Introduction. This chapter presents an overview of available geophysical detection systems, their capabilities and limitations. There are many techniques beyond those mentioned in this chapter that have application to the detection of surface MEC and subsurface anomalies. No single detection system can effectively detect all types of military munitions at all locations and depths.

4-2. Factors to Consider.

a. When selecting a geophysical survey instrument for the detection of subsurface anomalies, it is necessary to consider the maximum possible depth of MEC. If MEC is intentionally buried, the factors affecting burial depth may include the type of soil, mechanical versus hand excavation, depth of the water table, etc. If the military munition was fired or dropped, then the depth of penetration can be estimated by considering the soil type, military munition type and weight, and impact velocity. There are many cases where UXO can penetrate deeper than geophysical instruments can currently reliably detect. On such sites, it is possible that undetected UXO remains deeper than it can be detected from the existing ground surface.

b. Geophysical detection equipment used to locate subsurface MEC for avoidance or removal is seldom 100 percent effective. In many cases, military munitions may simply be located too deep, may be too small to be detected, or may be constructed of a material difficult to detect. Since the total number of subsurface MEC at a site is almost never known, complete detection cannot be documented. In addition, most commonly used geophysical survey systems will not detect subsurface bulk explosives. These factors must be considered when designing and implementing MEC support. If subsurface bulk explosives are anticipated based on archival data, then special avoidance techniques must be developed and increased safety precautions employed. Contact the MM CX for additional information. The limitations of detection capabilities must be conveyed to all on-site personnel so that there is a common understanding of expectations.

c. Data collection capability typically depends on the complexity and type of the geophysical instrument used. For instance, most handheld magnetometers cannot record the data produced. However, more complex systems are capable of collecting the data for downloading and processing. Requiring an instrument with the capacity to collect data is activity-dependent. Anomaly avoidance procedures generally do not require data collection. However, removal operations in support of construction activities generally require the area to be mapped and, therefore, require instruments that are capable of downloading information.

4-3. Types of Instrumentation. The most successful geophysical detection systems for MEC rely on one of two technologies, magnetometry or electromagnetics. Magnetometers are limited to detecting ferrous items. Electromagnetic detectors can detect any conductive metal.

a. Magnetometry.

(1) Magnetometers were one of the first tools used for locating buried military munitions and remain one of the best. Most bombs and gun shells contain iron that causes a disturbance in the earth's geomagnetic field. A magnetic survey measures differences from the earth's normal magnetic field that can be attributed to the presence of ferrous objects. Some magnetometers, which are called gradiometers, use two magnetic sensors configured to measure the difference over a fixed distance of the magnetic field (gradient), rather than the absolute magnetic field. Magnetometers are extremely sensitive and capable of identifying small anomalies. They respond only to ferro-magnetic metals. In addition, magnetometers are sensitive to iron-bearing minerals contained in soils and rock.

(2) Magnetometry will not detect subsurface bulk explosives. If subsurface bulk explosives are anticipated based on the site's history, increased safety precautions and special techniques will be employed. Contact the MM CX for additional information.

(3) Two types of magnetometers and gradiometers are most often used to detect buried military munitions, fluxgate magnetometers and optically pumped magnetometers.

(a) Fluxgate Magnetometers. Fluxgate magnetometers measure the magnetic field component along the axis of the core of the fluxgate. They are inexpensive, reliable, rugged, and have low energy consumption. Fluxgate magnetometers have long been a standard tool of EOD teams, used for a quick, inexpensive field reconnaissance of a site containing ferrous military munitions. However, most fluxgate magnetometers provide analog rather than digital output, which makes it difficult to apply computer enhancement techniques. Fluxgate magnetometers are the instruments typically used for downhole geophysics for anomaly avoidance.

(b) Optically Pumped Magnetometers. Optically pumped magnetometers (traditionally cesium-vapor or potassium-vapor magnetometers) measure the local absolute total magnetic field. They utilize digital technology and are more expensive to purchase than fluxgate instruments. However, their high sensitivity, speed of operation, and high quality digital signal output make them a good choice for situations where data or digital post-processing is required.

b. Electromagnetic Detectors.

(1) Electromagnetic induction geophysical instruments are also extensively used to detect buried military munitions. They differ from magnetometers in that they are not limited to detecting ferrous items; they can detect any conductive metal. In addition, electromagnetic detectors are not affected by most of the iron-bearing rocks and soil that adversely affect magnetometers.

(2) There are numerous types of conductivity meters available. However, two types are most commonly used in the search for military munitions- frequency-domain electromagnetics and time-domain electromagnetic conductivity.

(a) Frequency-Domain Electromagnetics. Frequency-domain electromagnetic (FDEM) instruments can be useful to detect large buried caches of military munitions and detecting disturbed earth associated with pits and trenches. In addition, some types of FDEM instruments are the best geophysical tools available for detecting very small, very close objects such as the metal firing pins in plastic land mines buried just beneath the ground surface. However, since the resolution ability decreases dramatically with depth, frequency-domain conductivity meters are not optimum for detecting individual, deeply buried military munitions. Most commercial coin detectors are frequency-domain conductivity meters.

(b) Time-Domain Conductivity Electromagnetics. Time-domain conductivity electromagnetic (TDEM) instruments provide an excellent compromise between detection depth and resolution. These instruments provide a capability to locate all types of metallic military munitions and will see typical intact military munitions to depths of between 1 to 2 meters depending upon site-specific conditions.

4-4. Geophysical Investigation Performance.

a. General. The performance of military munitions detection instruments varies as a result of different site characteristics such as soil type, moisture content, depth to groundwater, vegetation, and type of military munition. Environmental and military munitions factors affecting the performance of detection instruments are so numerous that a prove-out of potential detection instruments for removal operations will be performed on the site to determine which instrument performs the best.

b. Data Quality Objectives/Performance Goals. Geophysical investigation data quality objectives and performance goals will be included in the contractor's SOW. The contractor may propose and document alternative objectives and goals for the Contracting Officer's consideration.

c. Horizontal Accuracy. Horizontally, 95 percent of all reacquired anomaly locations must lie within a 1 meter radius of their original surface location as marked on the dig sheet. Horizontally, 95 percent of all excavated items must lie within a 35-centimeter radius of their mapped surface location as marked in the field after reacquisition.

d. False Positives. If there are more than 15 percent "false positives" (anomalies reacquired by the contractor that result in no detectable metallic material recovered during excavations, calculated as a running average for the sector), a re-evaluation of the data, detection methods being utilized, and overall project QC will be performed at no cost to the government. A written response explaining the reason for the excessive false positive results and a Corrective Action Plan, if appropriate, will be submitted to the Contracting Officer within 10 days of identification of the situation.

4-5. Geophysical Prove-Out (GPO). Before geophysical surveys for buried military munitions can begin on a site, the proposed survey methods and techniques must be tested and evaluated. The purpose of the GPO is to demonstrate and document the site-specific capabilities of the proposed survey platform, sensors, navigation equipment, data analysis, data management and associated equipment and personnel to operate as an integrated system capable of meeting data quality objectives necessary to achieve project performance goals. The results of the GPO will identify realistic capabilities and limitations of applying geophysics at a particular site and aid in determining proper post-processing procedures for the geophysical data. Additionally, a prove-out demonstration offers the client an opportunity to observe the contractor's methods and to evaluate the contractor's ability to meet data quality objectives and compliance with project requirements. A prove-out must be constructed so that it is representative of the project site and the specific buried military munition items known or suspected to exist. The objective of the GPO is mainly to establish and maintain high levels of QC throughout this phase of the project. EM 1110-1-4009 provides a detailed list of general objectives for a GPO. The specific project objectives will be described in the GPO Work Plan. A GPO is needed for removal actions, but is not required for anomaly avoidance. Only a daily geophysical instrument function test is required for anomaly avoidance.

4-6. Equipment Standardization and QC Tests. Geophysical instruments have a number of standardization tests that need to be performed in order to ensure that they are functioning properly. For this discussion we will focus on the EM61 and GEM-3 (trade names of specific geophysical survey instruments) to identify some specific tests to be conducted.

a. Out-of-Box Equipment Tests. Past experience has shown that, too often, non-functioning equipment arrives at the site, causing delays in surveying, producing unreliable data, and increasing false alarms or missing buried military munitions. For this reason, the following out-of-box equipment tests are mandated to ensure that all instruments are operating correctly:

(1) Inventory and inspect all components.

(2) Assemble the instrument and power up.

(3) Test the instrument's cable connectors for shorts using the cable shake test.

(4) Null instrument (Electromagnetic (EM) only). The EM instrument will be nulled prior to conducting the following tests. Standard EM61 backpacks are provided with potentiometers for the top and bottom coils, which can be adjusted to null (zero) the instrument.

(a) Static Test. Establish an area for these tests that offers convenient access, is free of metal (surface and subsurface), and is sufficiently far from roads and power lines, transmitters, etc., to avoid these sources of noise. This same point may be used throughout the duration of the project for the daily static (background) test and response tests and for nulling instruments. Collect readings for a minimum of 3 minutes after instrument warm-up. Data collected during static tests will be retained for documentation.

(b) Instrument Response Test. The Instrument Response Test quantifies the response of the instrument to a standard test item. A steel trailer ball is a preferred test item that is easily acquired and transported. Leaving the instrument in the same position as used in the Static Test, place the test item below the sensor, then collect data for a minimum 3-minute period. The test will document the amplitude of response to the test item and instrument drift. To pass the Instrument Response Test, the value of the response must vary less than 20 percent from test to test.

b. Initial Geophysical Instrument Checks. Initial geophysical instrument checks will be performed on the first day of the survey. These tests include the following:

APPENDIX B QUALIFICATIONS

EDWARD C. BISHOP, Ph.D., P.E., CIH
Vice President
Manager, Safety, Health, Quality and Risk

Experience Summary

Thirty-two years of experience as an industrial hygienist and environmental engineer. Experience includes program development, program management, technical consulting, and policy development in the areas of chemical warfare material, ordnance and explosives, environmental compliance, remedial investigations, hazardous waste minimization, wastewater treatment, industrial process evaluation, pollution prevention, industrial hygiene, risk assessment, and radiation protection. Broad education and experience provide basis to evaluate impact of actions on workers, community, and the environment and recommend cost effective mitigations.

Years of Experience:

32

Years with Parsons:

12

Education

B.S., Chemistry, June 1972, United States Air Force Academy, Colorado Springs, Colorado

M.S., Engineering, June 1974, University of California, Los Angeles, California

Ph.D., Environmental Health Sciences, December 1980, University of California, Berkeley, California

Primary Experience

August 1992 – Date. Parsons Corporation.

- Manager, Safety, Health, Quality, and Risk, Parsons Infrastructure and Technology Group. . Responsible for implementing and monitoring health and safety policies and programs, including activity hazard assessments for 4,000 employees. Responsible for implementing Client Survey and monitoring results. Reviews all internal and external audit reports. Responsible for reviewing all projects for safety, health, quality, and risk issues and ensuring corrective actions are implemented.
- Manager, Project Controls, Parsons Infrastructure and Technology Group. Responsible for policy and staffing of estimating, scheduling, and cost engineering for over 800 projects. Currently developing and implementing an enterprise-wide project controls system integrating project management with business management. Developed and implemented Company-wide reporting system that generates business data from day-to-day project management activities.
- Manager, Fairfax Regional Office. Leads all aspects of this 130 person office to include personnel management, profit and loss, and business development in all business sectors and market areas.
- Senior Project Manager. Provides direction and management of major programs. Assembles project teams to provide expertise to meet client's needs. Ensures technical excellence in all products using all available tools, including total quality management. Specific accomplishments include:
- Program Manager, $100M, 5 year, HQ Air Combat Command Environmental Compliance and Analysis Services, contract. Consistently receives 4.5/5.0 client evaluations.
- Manager, Environmental Health and Information Systems Department. This department focuses on relational data base management systems development and maintenance, geographic information systems, data validation, ergonomics, and

other industrial hygiene services for internal and external clients.

- Project Manager for US Army Corps of Engineers Spring Valley Project, Washington, DC. This $8.5M remedial investigation of unexploded ordnance (UXO) and potentially chemical warfare material contaminated soil also included an engineering evaluation/cost analysis (EE/CA) to remove potential UXO and contaminated soil from World War I bunkers.
- Project Manager for ergonomics survey at 21 Air Combat command installations worldwide. Developed risk screening methodology to focus resources on those workplaces with the greatest ergonomic hazards.
- Project Manager for respiratory protection program evaluation for the US Air Force. Includes developing criteria for including personnel on the respiratory protection program and preparing a return on investment for the evaluation.
- Project Manager for water system Safe Drinking Water Act compliance analysis and requirements evaluation. Included preparation of DD Form 1391s.
- Project Manager for development and fielding of an automated system to define environmental compliance sampling requirements, budget estimating, sample scheduling, and analysis results tracking and trend analysis. Also includes a geographic information system interface.
- Technical Director for industrial wastewater pretreatment evaluation at seven locations. Included sampling and evaluation of existing pretreatment devices and recommendations for pollution prevention and operational changes to minimize industrial discharges.
- Project Manager/technical director for development and implementation of the Department of Defense Relative Risk Site Evaluation Program for all active US Air Force Installations, Air Force Base Realignment and Closure (BRAC) installations, and US Army Corps of Engineers Formerly Used Defense Sites (FUDS)
- Technical Director, Technical Information System (TIS) and Risk Assessment Interface for the US Air Force Aeronautical Systems Center (ASC). The TIS is the integration of all applicable data bases for the installation restoration program and development of graphical user interfaces to ease data retrieval tasks for users.
- Technical Director for pollution prevention process evaluations, process ranking, and economic analyses for Hill Air Force Base, UT.
- Technical Director for manufacturing and maintenance process module (M2PM) life cycle cost analysis model for the US Air Force Human Systems Center. M2PM will evaluate all costs associated with manufacturing and maintenance (e.g., training, procurement, operational, maintenance, environmental, health, safety, etc.)
- Author or approval authority for site health and safety plans for hazardous waste investigations and remediations.
- Contributing author to *Protecting Personnel at Hazardous* Waste *Sites,* 2 Ed, 1994.

Other Experience

Jan. 1991 - June1992 Greenhorne & O'Mara, Greenbelt, Maryland. **Part Time Employee, Corporate Health and Safety Officer/Consultant.** Developed comprehensive corporate health and safety plan. Evaluated and recommended occupational medicine services for employees. Reviewed toxicological data for materials at hazardous waste sites.

Sept. 1986 - July 1992 Office of the Air Force Surgeon General, Bolling AFB, Washington, D.C. **Senior Bioenvironmental Engineering Program Manager.** Developed and managed occupational health, industrial hygiene, and environmental protection programs worldwide. Negotiated Air Force policies with the DoD, Congress, the National Academy of Sciences, and federal agencies, including EPA and OSHA. Developed and advocated large multi-disciplinary programs and policies including an $80M budget to ensure Air Force compliance with EPA monitoring requirements for RCRA, Clean Air, Water, and Safe Drinking Water Acts, storm water runoff, and NPDES permits. Senior program manager for: $2.5M, 135 installation, radon assessment and mitigation program; hazardous material identification and tracking aspects of the Air Force pollution prevention program; hazardous materials transportation risk assessments; hazard communication program for 350,000 employees; OSHA chemical laboratory safety implementation; hazardous waste operation implementation and energy response trading, 29CFR1910.120; and computerization of occupational health functions Air Force-wide. Performed Indoor Air Quality Survey of U.S. Air Force Services Executive Offices in the Pentagon. Organized and co-chaired two national conferences on the environmental and occupational health concerns of advanced composite materials.

August 1983 August 1986 Environmental Health Laboratory, US Air Force, Europe. **Chief, Industrial Hygiene Engineering**. Managed staff of Air Force officers, civilians, and technicians responsible for providing industrial hygiene and environmental protection consultation to Air Force installations in Europe. Consultations encompassed evaluating potentially contaminated water supplies and recommending protective measures, including an incidence of potential hydrazine contamination of a German domestic water supply; developing the protocol for evaluating diesel and jet engine exhaust contaminants during aircraft maintenance operations in aircraft shelters; air monitoring for fallout from the Chernobyl nuclear accident; and evaluating waste anesthetic gases during surgical procedures and ethylene oxide from gas sterilizers. Interfaced with European corporations, governments, professionals, and standard setting organizations.

Sept. 1980 - July 1983 Air Force Occupational and Environmental Health Laboratory, Brooks AFB, Texas. **Bioenvironmental Engineering Consultant**. Oversight of engineers and technicians responsible for bioenvironmental engineering consultative support to Air Force bases world-wide. Primary emphasis on risk and exposure assessments for organic compounds. Recognized Air Force expert on health effects, sampling, and analysis of distillate hydrocarbon fuels. Developed the risk assessment for exposure to jet fuel vapor. Special expertise in direct reading instruments for hazardous waste site operations and general workplace monitoring. Developed the sampling protocol and performed initial surveys for fuel and oxidizer propellants during Titan II missile deactivation and hydrogen chloride aerosol and vapor during space shuttle launches.

Dec. 1975 - August 1976 USAF Hospital, Robins AFB, Georgia. **Chief, Bioenvironmental Engineering Services**. Directed a staff of technicians responsible for programs in environmental pollution monitoring, industrial hygiene, radiation protection (ionizing and non-ionizing), and drinking water surveillance. The installation contained over 300 industrial work areas and approximately 17,000 workers involved with aircraft reconditioning and maintenance. Activities included: polychlorinated biphenyl transformer spill cleanup and disposal; redesign of industrial waste treatment plant from contractor proposed ozonation to activated carbon treatment to treat phenolic wastes; evaluation of process wastestreams; and base radiation protection.

July 1974 - May 1975 Air Force Rocket Propulsion Laboratory, Edwards AFB, California. **Project Officer**. Technical and fiscal responsibility for $100K in contracts involving basic research in liquid rocket propellant technology. Research contracts included long-term storability corrosion tests of nitrogen tetroxide oxidizer and material compatibility of hydrazine fuels produced from different chemical processes. Interfaced with EPA on the disposal of waste stream associated with the manufacture of unsymmetrical dimethyl hydrazine (UDMH) rocket propellant.

Professional Affiliations

American Board of Industrial Hygiene, Certified in Comprehensive Practice, No. 1648, 1979

American Academy of Industrial Hygiene

American Conference of Governmental Industrial Hygienists

American Industrial Hygiene Association

Adjunct Assistant Professor of Preventive Medicine/Biometrics, Uniformed Services University of the Health Sciences, 1987-1991

Honorary Affiliations

Bernard S. Tebbens Award for Outstanding Student at UC Berkeley School of Public Health, 1980

Air Force Meritorious Service Award, 1983, 1986, 1992

Air Force Commendation Medal, 1976

Air Force Achievement Medal, 1984

Papers and Publications

"Air Monitoring At Hazardous Waste Sites," *Protecting Personnel at Hazardous Waste Sites*, Butterworth-Heinemann Boston, 1994 (coauthor W.F. Martin and S.P. Levine).

"Occupational and Environmental Air Monitoring at Hazardous Waste Sites," Professional Development Course Instructor, American Industrial Hygiene Conference and Exposition, 1992.

"Operation and Selection of Portable Combustible and Organic Vapor Instruments and Fixed Continuous-Monitoring Systems," Professional Development Course Instructor, American Industrial Hygiene Conference and Exposition, 1982 - present.

"Industrial Hygiene Laboratory: Measurement Techniques for Air Quality and Ventilation," Harvard School of Public Health, 1990 - 1991.

"Conference on Advanced Composites," Co-Chair, American Conference of Governmental Industrial Hygienists, San Diego, California, 1991.

"The Air Force Approach - Emergency Response," presented at the Chemical Risk Assessment in the DoD: Science, Policy, and Practice Symposium, Dayton, Ohio, 1991.

"Conference on the Occupational Health Aspects of Advanced Composite Technology in the Aerospace Industry," Co-organizer, Department of the Air Force, Dayton, Ohio, 1989.

"Implementation of the OSHA Laboratory Standard," presented at the R&D Laboratory Safety Symposium, USAF Academy, Colorado, 1988.

"Army Expert Field Medical Badge (EFMB) Enhances Air Force Medical Readiness," Military Medicine, 1987 (coauthor E. L. Fieg, et al).

"Waste Anesthetic Gas Survey," USAF Europe Environmental Health Laboratory Technical Report 85-22, 1985.

"Field Comparison Between Two Nitrous Oxide (N2O) Passive Monitors and Conventional Sampling Methods," American Industrial Hygiene Journal, 1984 (coauthor M. Hossain).

"International Symposium on Health and Safety Issues Associated With the Operational Use of

Hardened Aircraft Shelters," Symposium Chairman, Wiesbaden, Germany, 1984.

"Quality Control Requirements for Gaseous and Liquid Breathing Air and Oxygen," USAF Europe Environmental Health Laboratory Technical Report 84-13, 1984.

"Industrial Hygiene Survey of F-111 Integrated Combat Turns," USAF Europe Environmental Health Laboratory Technical Report 84-07, 1984.

"Protocol for Industrial Hygiene Surveys in Hardened Aircraft Shelters," USAF Europe Environmental Health Laboratory Technical Report 84-27, 1984.

"Recommendations for Monitoring Waste Anesthetic Gases," USAF Europe Environmental Health Laboratory Technical Report 84-28, 1984.

Industrial Hygiene Survey of Ethylene Oxide Sterilizer Central Supply," USAF Europe Environmental Health Laboratory Technical Report 84-49, 1984.

"Industrial Hygiene Survey of RF-4C Operations in TAB-VEE Shelters," USAF Europe Environmental Health Laboratory Technical Report 84-46, 1984.

"Industrial Hygiene Survey of F-111 Hardened Aircraft Shelter Operations During Exercise Conditions," USAF Europe Environmental Health Laboratory Technical Report 84-36, 1984.

"Combustible Gas Meters for Use in Atmospheres Above the Upper Explosive Limit," USAF Occupational and Environmental Health Laboratory Report, 83-063EH118MFB, 1983.

"Industrial Hygiene Survey of Titan II Deactivation Fuel Propellant Operations, Site 571-6," USAF Occupational and Environmental Health Laboratory Report 83-113EA047BFB, 1983.

"Rationale for a threshold Limit Value (TLV)\ for JP-4/Jet B Wide Cut Aviation Turbine Fuel," USAF Occupational and Environmental Health Laboratory Report 83-128EH111DGA, 1983.

"Fuel Propellants and NDMA Survey of Deactivated Titan II Sites," USAF Occupational and Environmental Health Laboratory Report 83-184EH047EFB, 1983.

Background Levels of Hydrazine, UDMH, and NDMA at Titan II Complexes," USAF Occupational and Environmental Health Laboratory Report 83-213EH047GFB, 1983.

"Industrial Hygiene Survey of Fuel Propellants and NDMA During Titan III, Agena, and Associated Operations," USAF Occupational and Environmental Health Laboratory Report 83-232EH195JGA, 1983.

"Industrial Hygiene Survey of F-16 Integrated Combat Turns," USAF Europe Environmental Health Laboratory Technical Report 83-31-W, 1983.

"Predicting Relative Vapor Ratios for Organic Solvent Mixtures," *American Industrial Hygiene Journal,* 1982 (coauthor W. Popendorf, et al).

"Field Evaluation of Passive Monitors for Waste Anesthetic Gases," USAF Occupational and Environmental Health Laboratory TR 82-4, 1982.

"Evaluation of Portable Instruments for JP-9 and JP-10 Detection," USAF Occupational and Environmental Health Laboratory Report 82-013EH111GSA, 1982.

"Evaluating Health Hazards Associated with Aircraft Fuel Cell Maintenance," presented at the Environmental Toxicology Conference, Dayton, Ohio, 1981.

"Evaluation of Aircraft Touch-up Painting," USAF Occupational and Environmental Health Laboratory TR 81-41, 1981.

"Review of Respiratory Protection Requirements During Aircraft Fuel Cell Maintenance," USAF Occupational and Environmental Health Laboratory TR 81-35, 1981.

"The Statistics of Sampling," presented at the Bioenvironmental Engineering Symposium, Brooks AFB, Texas, 1978.

"Paint Stripping Wastewater Characteristics, Robins AFB, Georgia," USAF Occupational and Environmental Health Laboratory, 1978.

"Industrial Hygiene Review of the Preparation and Coating of Concrete Flooring with Chemical Resistant Urethane Coating," USAF Hospital Robins, 1976.

WILLIAM L. BRADFORD
Supervising Toxicologist

Experience Summary

Mr. Bradford is the Health and Safety (H&S) Manager for 75 workers in the Syracuse Parsons office, and is the H&S Coordinator for the nationwide Parsons BP Program. He is a supervising toxicologist on major projects for industrial and governmental clients. He has served as the lead human health risk assessor on numerous hazardous waste site projects. He has extensive experience working for and negotiating with regulatory agencies. He was the lead toxicologist for the risk assessment of pesticides used in the Gulf War for the DoD Deployment Health Support Directorate (DHSD).

Experience:

General experience: 28 years

Specific experience: 22 years in the areas of health & safety, toxicology, and risk assessment.

Years with Parsons:

17

Education

M.S. in Biology (Insecticide Toxicology), 1981, State University of New York College of Environmental Science and Forestry (SUNY ESF) and Syracuse University, Syracuse, New York.

B.S. in Biology (Zoology), 1978, SUNY ESF and Syracuse University, Syracuse, New York.

Primary Experience

January 1988-Date: Parsons, **Supervising Toxicologist** on major projects for industrial and governmental clients. Mr. Bradford is the H&S Manager responsible for 75 employees in the Syracuse Parsons office, and is the H&S Coordinator for the nationwide Parsons BP Program. Project H&S Officer for Honeywell, Wyeth, DoD, and other investigation and remedial construction projects.

Since May 1997, Mr. Bradford has been contracted to Northrop Grumman Mission Systems and assigned to DoD DHSD as part of a team based in Falls Church, VA, originally investigating the potential causes of Persian Gulf War Illnesses, and now monitoring health issues for many past and present deployments. He held the lead role in conducting a comprehensive risk assessment of pesticide exposures to US forces during the 1990-1991 Operations Desert Shield and Desert Storm. The risk assessment was retrospective, incorporating thousands of veteran interviews, military records, toxicological data, and epidemiological data. The risk assessment comprised a major portion of the Pesticides Environmental Exposure Report published on www.GulfLINK.osd.mil in April 2003. This high-profile and sensitive project necessitated close cooperation with or review by physicians and scientists from many agencies, including USEPA Office of Pesticide Programs. Mr. Bradford is also assisting the Boston Environmental Hazards Center with an epidemiologic study of veterans exposed to neurotoxicants.

He previously served as the lead risk assessor for site-specific projects across the US. These were mainly CERCLA-type RI/FS projects, and typically included the quantification of baseline risks, determination of cleanup levels, and the quantification of the risks associated with each of the remedial alternatives. Examples of human health evaluations include manufactured gas plant (MGP) sites for National Fuel Gas, Niagara Mohawk Power Corporation, Philadelphia Electric Company, Public Service of New Hampshire, and EnergyNorth; cement kiln dust landfill for Southdown Inc.; numerous DoD/DoE sites including Griffiss AFB; Savannah River; Charleston AFB; Fort Leonard Wood; Fort Irwin; Eglin AFB; Eielson AFB; Wright-Patterson AFB; Volk Field ANGB; Escanaba Defense Fuel Supply Point; sites throughout New York for NYS Dept of Environmental Conservation (NYSDEC), including Napanoch Paper Mill, Schatz Plant Site, and Lehigh; and an aircraft products manufacturing site in Ohio for TRW.

Mr. Bradford also conducted numerous small risk assessment projects for Bristol-Myers Squibb, Lederle, Chevron, BP Oil Company, Shell Oil Co., UNOCAL, and Greyhound. He assisted in the creation of a risk assessment guidance document for the Air Force Center for Environmental Excellence (AFCEE). He provided technical support to USEPA in revising federal risk assessment guidance.

He has extensive experience negotiating the application and interpretation of risk assessment guidance with regulatory agencies, including USEPA, NYSDEC, Ohio EPA, Ohio Bureau of Underground Storage Tank Regulation, New Jersey DEPE, Michigan DNR, California EPA, Pennsylvania DEP, South Carolina DHEC, as well as state and county departments of health.

June 1987-January 1988 Syracuse Research Corporation, Syracuse, New York. **Toxicologist.** Responsible for the preparation of USEPA Technical Support Documents used for test rule development under TSCA, as well as the compilation of a computer data base for USEPA Office of Pesticide Programs (OPP). Prepared sections on the health effects of potentially toxic chemicals including aryl phosphates, aliphatic monocarboxylic acids, and pesticide "inerts."

April 1982-January 1985: FMC Corporation, Princeton, New Jersey, **Biochemical Toxicologist** (Laboratory Supervisor). Conducted research aimed at identifying new insect biochemical targets for insecticides.

April 1981-October 1981: Syracuse Research Corporation, Syracuse, New York. **Research Assistant.** Assisted in research on the pharmacokinetics of chemicals under grants from NIH.

September 1978-April 1981: SUNY ESF, Syracuse, New York. **Research Assistant.** Performed research in biochemical toxicology under grant from NIH.

May 1977-August 1978: SUNY ESF, **Research Technician.** General laboratory support.

Other Experience

August 1985-June 1987: **Free Lance Writer.**

Affiliations & Training

The Society for Risk Analysis

HAZWOPER Training

DOT Training

First Aid/CPR Training

Publications and Presentations

"Pesticide Exposure and Gulf War Illnesses," Poster presented at U.S. Army Force Health Protection Conference, August 2001.

"Perfusion Analysis of Periportal and Centrilobular Metabolism of Paraoxon in the Rat Liver," *Pesticide Biochemistry and Physiology*, 1982 (coauthor T. Nakatsugawa).

"Hepatic Disposition of Parathion: Uptake by Isolated Hepatocytes and Chromatographic Translobular Migration," *Pesticide Biochemistry and Physiology*, 1980 (coauthors T. Nakatsugawa, K. Usui).

J. DANIEL DOUGLASS

Senior Scientist/Industrial Hygienist

Experience Summary

Mr. Douglass manages asbestos and lead-based paint issues, along with other Industrial Hygiene concerns, in the Syracuse, NY office. He has worked on dozens of projects for the U.S. Air Force with Parsons and other firms, domestically and abroad. He has worked as Project Manager, investigated Indoor Air Quality problems, monitored worker exposure, provided contractor and safety oversight, and conducted training among other facets of Industrial Hygiene, to a variety of clients. In addition, he has performed site investigations for and drafted Storm Water Pollution Prevention Plans and compiled Emergency Response Plans for several facilities of a federal agency.

Years of Experience:

12

Years with Parsons:

3

Education

B.S. in Environmental Studies, State University of New York College of Environmental Science and Forestry, Syracuse, NY.

A.A.S. in Business Administration, Corning Community College, Corning, NY.

Certifications

OSHA 40-Hour HAZWOPER Certification

EPA Lead Risk Assessor

New York State Asbestos Building Inspector

New York State Asbestos Project Monitor

Memberships

American Industrial Hygiene Association (AIHA).

Primary Experience

June 2002 – Date: **Senior Scientist / Industrial Hygienist**, Parsons, Liverpool, NY. Manages asbestos, lead-based paint (LBP) and other Industrial Hygiene issues. Has prepared Storm Water Pollution Prevention Plans and Emergency Response Plans, assisted in compiling Spill Prevention, Control and Countermeasure plans, contract documents including work plans, health and safety plans, work specifications, sampling plans, O&M plans, and project reports. Provided field oversight of contractors and for health and safety at various client work sites. Also:

- Managing asbestos issues for industrial multi-building demolition project
- Coordinating and monitoring contractor activities for several clients
- LBP survey and risk assessment for USAF
- Revise Storm Water Pollution Prevention plans and prepare safety training materials for DNSC
- Oversight during construction / repair of USAF pollution control trenches, lagoons
- Updating facility asbestos surveys and O&M plans (for the U.S. Army and industrial facilities)
- Performing pre-demolition asbestos surveys for various clients
- Supporting radiation characterization survey for U.S. Army

- Assisting groundwater sampling and monitoring projects.

May 2000 – May 2002. **Project Manager**, Colden Corporation, East Syracuse, NY. Developed and managed projects for clients of a regional consulting firm. Worked with architect and engineering firms, manufacturers, hospitals, schools, governmental agencies and other concerns. Co-developed a plan to abate lead contamination from a school's HVAC system and crawlspaces; helped to resolve mold and moisture problems in homes for a housing authority. Performed a variety of services that included:

- Investigating Indoor Air Quality issues; survey buildings for asbestos and lead
- Testing for mold and bacteriological contamination
- Perform workplace personal and area air monitoring for contaminants and assess worker exposure
- Interpret regulations from OSHA, EPA and other federal and state standards
- Conduct ventilation surveys
- Develop and deliver training classes and monitor for noise exposure
- Provide contractor safety oversight
- Study and analyze survey and sampling results, and recommend corrective or remedial actions
- Development of contract specifications and work plans for lead and asbestos projects
- Compose budgets, proposals and written reports issued to clients
- Operate a variety of testing equipment including photoionization detectors (PID), summa canisters, dosimeters, anemometers, balometers, various sampling pumps, and other devices.

Familiar with OSHA, state, local and other regulations relating to safety, heat stress, communications, PPE, fall protection, asbestos, lead, hazardous wastes, and occupational health and safety issues. Additional duties included asbestos Project Monitoring and Air Monitoring, and assisting in designing asbestos abatement projects.

March 1993 – May 2000. **Industrial Hygienist / Team Leader**, ENSR Consulting (formerly Galson Corporation), East Syracuse, NY. Senior Field Manager for up to twenty workers performing asbestos and lead-based paint surveys and risk assessments conducted for the U.S. Air Force throughout the U.S., Korea and Japan. Trained to use Niton XRF analyzer. Work included:

- Ensuring Quality Control
- Completing projects within time and budgetary constraints while training, scheduling and supervising field personnel
- Learning, teaching and trouble-shooting unique corporate software
- Assisted in stack testing
- Drafted Standard Operating Procedures for various tasks, contributed to the preparation of budgets and final reports for various projects.
- Performed personal and area exposure monitoring.
- Performed asbestos and lead monitoring and consulting, and numerous other Industrial Hygiene duties.

Other Experience

Management, Retail: 1980 – 1990.

NEIL W. FEIST
UXO SAFETY/QC Manager

Experience Summary

Mr. Feist provides review and approval of safety and quality control functions; assists in staffing, scheduling, and cost issues related to UXO personnel; and interfaces with contractors in creation and implementation of OE Sector policies and procedures. He is a member of the American Society of Quality, 2002.

Years of Experience:

20

Years with Parsons:

4

Education/Training

Basic EOD School, 1985

EOD Refresher, July 1990

1348-2 Transportation of Hazardous Materials, 1991

PROFESSIONAL CERTIFICATIONS

HAZWOPER 40 Hours, January 1994

HAZWOPER 8-Hour Refresher, 1996, '97, '98, '99, 2000, '01

HAZWOPER 8-Hour Supervisor, 1995

Member, American Society for Quality

Primary Experience

PARSONS

Jun 01 – Present Parsons. **UXO QC Manager, OE Sector**. Responsible for establishment, incorporation, and periodic review of quality control policies and procedures. Liaison between contractor, Parsons P.M. and Parsons QA Manager.

Deputy OE Operations Manager, OE Sector; Assist in review and approval of all OE Sector documents. Assist P.M.s in staffing, scheduling and cost issues related to UXO personnel. Interface with contractors and Parsons P.M.s. Assist in creation and implementation of OE Sector policies and procedures.

Operations Manager, Huntsville CEA Program. Responsible for day to day operations and management of Parsons personnel and assets within the Iraq CEA Integrated Operations Center (IOC). Duties include providing strategic direction in providing logistics support to over 2,300 personnel performing collection and destruction of captured enemy ammunition in Iraq. Implements and oversees the Parsons-Huntsville safety and health program.

Oct 00 – Jun 01 Parsons. **UXO Safety Officer**, Fort Ord , CA

Oversee daily field operations and demolition operations to ensure compliance with state and federal OSHA regulations. Monitor and schedule HAZWOPER and annual OSHA physicals. Incorporate plans and policies into Field operations.

OTHER EXPERIENCE

Nov 99 – Oct 00 USA Environmental, Inc., Fort Ord, CA. **Site Safety and Health Officer.**

Oversee daily field operations and demolition operations to ensure compliance with state and federal OSHA regulations. Monitor and schedule HAZWOPER and annual OSHA physicals.

Aug 95 – Oct 99 CMS Environmental, Inc.,/USA Environmental, Inc., Fort Ord, CA. **UXO Supervisor.**

Sweep team supervisor, responsible for locating and identifying unexploded ordnance and OEW. Team leader of the demolition team. Responsible for daily disposal operations of hazardous munitions items located by sweep teams. Supervise heavy equipment operations. Fill in Site Safety and Health Officer.

Apr 94 – Aug 95 Environmental Chemical Corporation, Camp Elliot (Mission Trails) Ordnance Removal Project, San Diego, CA. **UXO Supervisor**.

Performs the detection and removal of surface and sub-surface UXOs and OEW from Mission Trails Regional Park. Performs duties as brush crew supervisor and conducts UXO identification training class for brush crews and UXO sweep teams.

Feb 92 – Mar 93 Explosives Ordnance Disposal World Services, Inc., Ft. Walton Beach, FL. **UXO Specialist/Supervisor.**

Employed under a subcontract to Conventional Munitions Systems, Inc., clearing unexploded ordnance, mines, military vehicles, and equipment left by the Iraqi Army and coalition forces in the U.S. Sector of Kuwait. Conducted and supervised large land area ground sweeps. performed mapping and navigation using Trimble Global Positioning System (Basic and Pro model of GPS). Functioning as team member and supervised laborers and heavy equipment operators during ammunition supply point clean-up and bunker downloading. Instrumental in the location and disposal of over 12,000 tons of hazardous munitions.

1990 – 1991 554th Air Base Operability Squadron, Nellis AFB, NV. **EOD Technician.**

Planned, scheduled, and conducted disposal of hazardous munitions and munitions waste. Provided monthly reports to the Environmental Protection Agency. Functional as an EOD team member on annual clearances of aircraft bombing and gunnery ranges.

1987 – 1990 50th EOD Flight, Hahn AB, Germany. **EOD Specialist.**

Explosives custodian accountant. Participated in clearance of Army gunnery ranges in Hohenfels, Germany.

1986 – 1987 6405th EOD Flight, Kunsan AB, Korea. **EOD Specialist.**

Provided training for Korean counterparts in the operation of EOD tools and techniques. Cleared Army gunnery ranges and aircraft bombing ranges with ROKAF EOD teams. Participated in the clearance of UXOs from WWII off of Lily Hill at Clark Air Base, Philippines.

Timothy S. Mustard, C.I.H.
Industrial Hygienist

Experience Summary

Certified industrial hygienist (C.I.H.) responsible for development and implementation of site-specific safety procedures and employee exposure monitoring. Also responsible for development and implementation of hazardous waste site health and safety plans to protect workers and the general public. Served as safety manager on numerous highly hazardous field projects involving drummed wastes, military chemical agents, chemical agent byproducts, and unexploded ordnance. Serves as Parsons Corporate Training Coordinator for hazardous waste site health and safety courses and Corporate Technical Director for asbestos projects. Maintains health and safety records, including medical monitoring and training records. Serves as an adjunct professor, teaching OSHA health and safety courses for hazardous waste site workers at a Denver college.

Years of Experience:

26

Years with Parsons:

17

Education

B.S., Botany, 1976, Michigan State University, East Lansing, Michigan

M.S., Plant Systematics, 1979, Michigan State University, East Lansing, Michigan

Professional Certifications and Affiliations

American Board of Industrial Hygiene, Certified in Comprehensive Practice, 1995

American Industrial Hygiene Association

Experience

1985-Date. Parsons. **Industrial Hygienist.** Develops and implements site health and safety plans, conducts health and safety field audits, and conducts health and safety training courses for company personnel. Assisted in preparation of corporate health and safety policy manual and training manual.

CIH/Health and Safety Manager, Remediation of Former Stapleton Airport. This project involved multiple subcontractors and teams of workers (totaling up to 60 workers per day at times). Project hazards included ground personnel working in proximity to heavy construction equipment, excavations in jet fuel-contaminated soil, asbestos-wrapped piping systems, and underground utilities and accrued more than 1,400 days with over 350,000 man hours without a lost time incident. Mr. Mustard managed all safety aspects; including preparation of the SSHP, establishment of an air monitoring program and selection of PPE levels. Mandated and conducted daily safety meetings; tracked personnel training and medical health monitoring. Conducted daily safety inspections during excavation and remediation activities.

CIH/Health and Safety Manager, Denver Radium Streets Project. Involved demolition and restoration of city streets, and removal of low level radioactive (radium) contamination. This was a fast-track project successfully conducted from June to November 2003 before the winter season set in. The project consisted of removal of more than 6,000 tons of radium-contaminated road base and asphalt material, and, included transportation and disposal of waste at a licensed facility, and reconstruction of the street to its original design condition. Project hazards included radioactive materials, automobile traffic, heavy equipment working in very confined work areas, excavations, and heat stress. This project involved multiple subcontractors and engineering and environmental specialists from Parsons. Approximately 24,000 man-hours were spent with no lost time incidents.

Has prepared industrial hygiene and safety procedures for various construction and environmental remediation projects. Some of these included:

- Remediation of fuel-contaminated soils at the former Stapleton International Airport in Denver, CO. Over 320,000 man-hours were incurred at this site with no lost-time injuries.
- Scientific Advisor for I-25 Transportation Expansion (T-REX) project, Denver, CO.
- Ambient air and employee exposure monitoring to support the construction of three hazardous waste storage tanks at the Rocky Mountain Arsenal (RMA). Over 50,000 man-hours were spent on this project with no lost-time injuries. Managed other air monitoring projects at RMA to support water treatment plant retrofits and construction of a new containment basin around existing vapona (pesticide) storage tanks. Also managed preparation of the RMA emergency contingency and response plan.
- Development of safety and industrial hygiene program plans and procedures for the National Energy Technology Laboratory (NETL) in Pennsylvania and West Virginia.
- Development of a fall protection procedure for Parsons' employees and subcontractors at McClellan Air Force Base (AFB), California. Provided fall protection training for employees.
- Development of industrial hygiene program plans and procedures for environmental restoration and waste management at the Rocky Flats Environmental Technology Site (RFETS) in Colorado. Also assisted in preparation of the program health and safety plan (HASP).
- Development of administrative recordkeeping, medical monitoring, and respiratory protection procedures for site remediation at the RMI facility, Ashtabula, Ohio.
- Preparation of a safety and environmental training needs matrix for over 400 personnel at a steel mill in Texas.

Representative examples of asbestos projects:

Task manager for asbestos and lead-based paint (LBP) inspection at Altus Air Force Base (AFB) in Oklahoma and Tyndall AFB in Florida. The inspections encompassed all non-housing facilities on the bases and a representative 10 percent of military family housing units. Bulk asbestos and paint chip samples were collected for laboratory analyses. Additionally, x-ray fluorescence (XRF) surveys of suspected LBP were conducted in the facilities. Field data were loaded into a computerized data management system along with previously collected sampling data. The results are being used to plan repair, renovation, and demolition projects; rank health risks; and plan responses to emergency situations.

Project manager for three contracts to provide asbestos management services at Fitzsimons Army Medical Center near Denver, Colorado. Tasks include asbestos inspections and sampling, and preparation of design drawings and specifications for asbestos removal. Projects have involved asbestos management in several wings of Building 500, a major hospital, and Building 205, an office facility.

Project manager for hazardous waste, asbestos, noise, lead-based paint, and air quality services for the redesign of a congested Denver highway intersection. Managed a detailed investigation and inventory of asbestos and lead in a commercial multistory building scheduled for either remodeling or removal. The findings of this survey played an important role in negotiating the fair market value of the structure and associated land. The project also included estimating unit prices and total costs, including permit acquisition and other planning requirements, to remove and clean up asbestos-containing materials.

Task manager for an asbestos and radon gas inventory and assessment of two buildings at Bear Creek Lake Park in Lakewood, Colorado. The buildings were being considered for ownership transfer with subsequent restoration, remodeling, or demolition. Samples were collected to determine asbestos and/or radon presence and concentrations. The regulatory implications of sample concentrations were used to determine whether the city should assume ownership of the structures from the current owner. Costs for asbestos cleanup and construction management were provided as part of a technical task report

Project manager for the preparation of asbestos management plans and associated cost estimates for approximately 40 buildings at NASA's Goldstone Deep Space Communications Complex in southern California. Prepared preliminary engineering reports, asbestos abatement specifications, and cost estimates for each building. The project was complicated by the fact that millions of dollars worth of computers and satellite tracking equipment had to be protected and remain operational while abatement occurred.

Project manager for a base-wide asbestos management plan to address management and reporting requirements for asbestos in more than 500 buildings at Hill Air Force Base in Utah. The buildings encompass approximately 6.5 million square feet of space. Also prepared an operating plan which provided directives and guidance for maintenance personnel, in-house asbestos removal teams, and outside contractors to handle the removal and disposal of asbestos in the buildings.

Project manager for asbestos management services for three major buildings at the Air Force Academy. Surveyed and sampled each building, and prepared summary reports, including cost estimates for removal and replacement. Then managed the preparation of bid packages and detailed plans and specifications for asbestos removal and material replacement. For Mitchell Hall, which contained the cadet main dining hall and kitchen, asbestos removal was design to keep these facilities functional throughout the removal process. The design was particularly complicated by the presence of a large open plenum above the dining hall.

Project manager for asbestos sampling and removal at a large commercial bakery in Denver, Colorado. ACM included transite duct panels located at the ceiling and insulation on pipes under the transite panels. Then managed the preparation of detailed removal plans and specifications, developed bid packages, provided services during bidding, and assisted in contractor selection. The design was complicated by the need to keep the facility operational at all times. During the removal phase, managed contractor oversight, air monitoring, and project close-out.

Responsible for design and management of worker exposure air monitoring and industrial safety projects, including:

- Evaluation of workplace protection factors (WPFs) for the use of a loose-fitting supplied-air respirator in an aircraft hangar spray painting operation at Tinker AFB, Oklahoma.
- Evaluation of the effectiveness of a new technology ventilation system at an aircraft hangar spray booth at Hill AFB, Utah.
- Measurement of worker exposure at a bus maintenance facility, Denver, Colorado.

Served as industrial hygienist for hazardous waste projects at numerous Department of Defense (DoD) facilities, most of which involved safety considerations for radioactive materials, military chemical agents, agent byproducts, and/or unexploded ordnance. Some of these included:

- Ordnance and explosive cleanup at the former Ft. Ord, California.
- Engineering Evaluation and Cost Analysis (EE/CA) for The Badlands Bombing Range, South Dakota.
- Ordnance and Explosives Engineering Evaluation and Cost Analysis (EE/CA) for Amchitka Island, Alaska.
- Radiation survey of 11 buildings at the U.S. Army Garrison, Fitzsimons near Denver to support NRC license termination;

- Lead dust abatement at 4 U.S. Army Reserve indoor firing ranges in the midwestern U.S.
- Characterization of 31 hazardous waste sites at the Fort Irwin National Training Center in California;
- Several hazardous waste projects at the Dugway Proving Ground in Utah, including characterization of 130 potential hazardous waste sites;
- Multiple construction, characterization, and remediation projects at the Rocky Mountain Arsenal in Colorado, including the highly successful hot gas decontamination demonstration for a building contaminated with mustard agent;
- Design of asbestos removal at the U.S. Air Force Academy in Colorado Springs; and
- Removal of approximately 800 drums, some of which contained military chemical agent, from Landfill 4 at Eielson Air Force Base, Alaska.

Also managed health and safety services at U.S. Department of Energy (DOE) facilities. Projects have included hazardous waste site investigations and remedial design at the 12-acre Solar Evaporation Ponds (OU4) at the Rocky Flats Environmental Technology Site (RFETS), a former nuclear weapons production facility near Denver, and groundwater remediation at the 881 Hillside (OU1).

Other projects have included characterization and cleanup of the Micronutrients CERCLA site in Utah; environmental baseline survey for the Spokane Satellite Tracking Station in Washington; site characterization and damage assessments at the Eagle Mine and the Yak Tunnel/California Gulch NPL sites in Colorado; numerous underground storage tank (UST) projects for Burlington Northern Railroad and Public Service Company of Colorado; a study of innovative technology at the Woodland Township, New Jersey NPL site; and hazardous waste investigations at the Leyden Street NPL site OU1 in Colorado and at a former pesticide-formulating plant in Arizona.

1979-1985. Camp Dresser & McKee, Inc. Denver, Colorado. **Hazardous Waste Site Technician (1981-1995).** Served as field investigator, site health and safety officer, and decontamination supervisor for hazardous waste site investigations in Washington and Oregon. Was among the first in the country to receive certification to conduct Superfund hazardous waste site activities. Assisted in the preparation of three RCRA Part B applications as well as numerous hazardous waste site work plans, project operation plans, and health and safety plans.

Plant Ecologist (1979-1980). Chief field botanist for site selection surveys for electric utilities in Michigan and Wisconsin, and environmental resources inventories of underground coal mine sites in Indiana. Other responsibilities included report and proposal writing, and assisting in bird, mammal, herpetofaunal, and benthic macroinvertebrate field and laboratory studies.

1979. Michigan Department of Natural Resources. Lansing, Michigan. **Private Consultant.** Conducted studies of distribution, abundance, habitat requirements, and management considerations of a threatened plant species occurring at a burial site for livestock contaminated with polybrominated biphenyl (PBB).

SPECIAL TRAINING

EPA - Accredited (AHERA) Building Inspector Course (2004)

EPA - Accredited (AHERA) Asbestos Management Planning Course (2002)

OSHA 40-hour and 8-hour Training for Hazardous Waste Workers and Supervisors' Training (teaches these courses)

Practices and Procedures in Asbestos Control and Abatement (1986)

Red Cross CPR and First Aid Certifications (2000)

MSA Air Mask Maintenance Certification (1985)

EPA Response Decision-Making Workshop (1985)

Basic Principals of Hazardous Waste Site Investigation (1984)

PUBLICATIONS

Denver Radium Streets Project. Proceedings of the American Industrial Hygiene Conference and Exposition (AIHCE), Atlanta, GA. May 2004. (Coauthor A. Sogue).

Use Of Personal Digital Assistants (PDAs) on Ordnance Projects. Proceedings of the American Industrial Hygiene Conference and Exposition (AIHCE), Dallas, TX. May 2003.

Safety Procedures for Operations in Remote Locations. Proceeding of the American Industrial Hygiene Conference and Exposition (AIHCE), San Diego, CA. June 2002.

Safety and Health Considerations for the Emerging Older Workforce. Proceeding of the American Industrial Hygiene Conference and Exposition (AIHCE), San Diego, CA. June 2002. (Coauthor M.J. Loshak).

Telecommuting Safely. *Occupational Hazards*. April 2001. pp. 38-39.

"Workplace Protection Factors - Supplied Air Hood." American Industrial Hygiene Association Journal (AIHAJ). Jan/Feb. 2001. pp. 96-99. (Coauthors T.J. Nelson and T.H Wheeler).

Site Communications. *Occupational Health and Safety*. December 2000. pp.38-41. (Coauthor J.A. Blakemore).

Use of the Global Positioning System in Environmental and Hazardous Waste Operations. *Occupational Hazards*. September 2000. (Coauthor R. Stankoff).

"Emergency Drum Removal Action". Proceedings of the American Industrial Hygiene Conference and Exposition (AIHCE), Toronto, Canada. June 1999.

"Unexploded Ordnance Detonation Incident," Proceedings of the American Industrial Hygiene Conference and Exposition (AIHCE), Atlanta, GA, May 1998.

"Better Methods for Locating Underground Utilities," Proceedings of the American Industrial Conference and Exposition (AIHCE), Atlanta, GA, May 1998 (coauthor M.J. Loshak).

"Military Chemical Agent Industrial Hygiene Issues," Proceedings of the Hazardous Materials Control Resources Inst. (HMCRI) Federal Environmental Restoration IV and Defense Cleanup Southeast Conference, Atlanta, GA, March 1995 (coauthor W.M. Perrin).

"Direct-Reading Instruments Have Advantages, Limitations at Hazwaste Sites," *HAZMAT WORLD,* June 1992, pp.46-48 (coauthor M.J. Loshak).

"OSHA Proposes Accreditation Rules for HAZWOPER Training Providers," *Occupational Health and Safety*. September 1991. pp. 44-46 (coauthor M.J. Loshak).

"Remote Detection of Ground Water Contamination Using Soil Gas Surveys," AICHE Summer National Meeting, Denver, Colorado, August 1988 (Coauthors T.C. Shangraw and D.P. Michaud).

JIM L. OWEN, CSHM
Corporate Manager PI&T

Experience Summary

Provide in-depth in house services to reduce cost of risk, analyze loss history to identify gaps in safety management process. Coordinate and facilitate review meetings to ensure managers are proactively working to resolve issues. Develop and implement audit processes to measure program success. Supervise and support safety professionals through out Parsons Infrastructure & Technology.

EXPERIENCE

Parsons
2003 Present
Dick Corporation
1994 - 2003
Brown & Root
1973 - 1990

CERTIFICATIONS & SPECIAL TRAINING

- OSHA 40-Hour Health and Safety Training (29 CFR 1910.120)
- 8-Hour Supervisory Training
- 60-Hour Health and Safety Management (OSHA 501)
- 60-Hour Health and Safety Supervisor (OSHA 501)
- 8-Hour Scaffold Regulations
- 10-Hour Crane and Rigging Qualified Crane Operator Instructor OSHA 500, 10 Hour and 30 Hour
- CCO Instructor

PROFESSIONAL AFFILIATIONS

- American Society Safety Engineers
- Institute for Safety and Health Management
- Governors Committee for Safety Management

TECHNICAL SPECIALTIES

- Construction Health and Safety
- Asbestos Abatement
- Safety Training & Instruction
- Crane Operations

EDUCATION

University of Houston (South Texas)
Harris County Community College

Joined Construction Industry in 1973 within the marine and petrochemical markets. Primary functions as Corporate Manager, Safety and Health, Parsons Infrastructure & Technology include the planning and implementation of accident and fire protection programs, maintaining compliance with safety program standards, and supervision of project safety personnel.

Duties include review of contract documents with business unit estimators prior to bid to determine potential safety issues which may impact the project, conduct pre-project planning sessions with project team members to develop "site specific" safety plans, coordinate the corporate return-to-work program with the manager of claims administration, and assist in the preparation of all pre-bid qualifications with regard to experience modification and incident rates as well as handling questions regarding corporate field safety programs.

Representative Projects

- Regional Manager Dick Corporation overseeing the construction of the North Coast Superaquaduct, including water treatment plants, reservoirs, tanks and pipelines.
- Corps of Engineers responsible for the construction and maintenance of facilities in Ceiba, Puerto Rico working under EM-385-1-1.
- Bechara Channel Corp project San Juan, developed safety manual under the FAR and EM 385.
- Responsible for multi story construction of hotels, military/private hospitals, federal prisons, and bridge & highway projects.

- Maintained Safety requirements of EM 385 on 23 NMCI Corp projects though out the U.S.
- Project Safety Manager for the demolition and reconstruction of Birmingham steel mill.
- Write Safety Program and oversee Safety Requirements for Nellis Air Force base construction of Explosive Ordnance Facility.

Audit construction safety of BEQ'S and family housing Pearl Harbor area bases.

- ENSR Remediation and Construction Sun Oil Middle Creek Abatement Project, Marcus Hook, Site Safety Supervisor for night turn multi-million dollar Remediation project on a multi-contractor site with over 250 employees.
- Temple Associates Simpson Paper Rebuild Project, Pasadena, Tx. Site Safety Manager for the complete rebuild of #49 machine.
- Brown & Root Shell West Hollow Research Center, Houston, Tx. Site Safety Supervisor for maintenance project.
- Saline Water Conversion Corporation Jeddah, Saudi Arabia Manager, Safety Inspection for Easter Providence with over 500 employees. Responsibilities included inspection of plants; 150 miles of pipelines for pump stations, three fire brigades, and eleven safety specialists.
- Ford, Bacon and Davis Temple Inland, Evedale, TX Site Safety Manager on rebuild of paper machine, including structural steel, concrete work, machine work and heavy crane operations
- Brown & Root Middle East, Manama, Bahrain
- Barge Foreman, off shore construction of oil facilities and pipelines.

Responsibilities included training, record keeping and compliance with all regulations including U.S. Coast Guard, with over 400 employees in all aspects of construction, both on and off shore.

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Bangor, Pa. 18013-1648
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E-mail SAMOLLE@AOL.COM

CITIZENSHIP……………………………………………… …USA
GRADUATED FROM INDIAN HEAD………………………….. ….1975
MILITARY EOD EXPERIENCE…………………… 12.83 YEARS/USN
COMMERICAL UXO EXPERIENCE…………………14.00 YEARS

EDUCATION/TRAINING

- **U.S. NAVAL EXPLOSIVE ORDNANCE SCHOOL, INDIAN HEAD MD (1975)**
- **NAVY UNDERWATER SWIMMER SCHOOL, KEY WEST, FLORIDA (1975)**
- **MASTER TRAINING SPECIALIST (1989)**
- **OSHA 40 HOUR HAZARDOUS WASTE SITE WORKERS COURSE (1993)**
- **08 HOUR SUPERVISORS COURSE (1993)**
- **OSHA 8 HOUR REFRESHER TRAINING COURSE (1994/95/96/97/98/99/00/01/02/03/04/05)**

MILITARY EOD/UXO ASSIGNMENTS

12/75-08/80 **EOD Demo Range Officer. EOD Unit One, Barbers Point, Hawaii. OIC- Shipboard EOD teams. Demo OPS in Hawaii, Philippines, and Thailand.**

08/80-08/82 **EODOIC Det. Subic Bay, Republic of the Philippines. AOIC 0f Det. COMUSNAV Philippines, Live fire range safety and EOD officer.**

08/82-12/84 **OIC Det. Brunswick. EOD Group TWO, NAS Brunswick. NAS demo range officer.**

12/84-07/87 **EOD Detachment West Pac, Subic Bay, Republic of the Philippines. AOIC of Det. COMUSNAV Philippines. Live fire range safety and EOD Officer.**

07/87-01/88 **EOD Mobile Unit 5, Subic Bay, Republic of the Philippines. AOIC of Det. COMUSNAV Philippines. Live fire range safety and EOD Officer.**

01/88-08/89 **EOD School, Indian Head, Maryland. IED Division Officer and NAVSCOL EOD Demo Range Officer.**

CIVILIAN EOD/UXO ASSIGNMENTS

04/92-03/93 **Team Member EODWSI, Kuwait. Performed disposal operations throughout Kuwait. QA division member- Worked 80 Indians & 4 EOD Tech conducting walking sweeps of sub-sectors.**

05/93-10/93 **UXO Specialist, Former Raritan Arsenal, Edison NJ U.S. Army Corps of Engineers Huntsville Division's OEW Remediation East of the Mississippi Program.**

04/94-06/94 **UXO Specialist, Former Raritan Arsenal, Edison NJ U.S. Army Corps of Engineers Huntsville Division's OEW Remediation East of the Mississippi Program.**

07/94-10/94 **UXO Supervisor, Former Raritan Arsenal, Edison NJ U.S. Roy F. Weston's U.S. Army Corps of Engineers Environmental Program.**

03/95-05/95 **Senior UXO Supervisor/Field Operations Manager, Camp Green, Charlotte, NC. Environmental Science and Engineering EE/CA Program – CEHNC.**

05/95-09/95 **Senior UXO Supervisor/Project Manager/UXO Site Manager, EOD Technology, Inc, Picatinny Arsenal, Dover,NL-ICF Kaiser. Supervised and managed soil sampling and well installation, UXO and OEW identification and avoidance.**

11/95-12/95 **Senior UXO Supervisor/Project Manager, EOD Technology, Inc, Barry M. Goldwater Bombing Range, Gila Bend, AZ. Dam & Moore AFCEE Program. Supervised and managed this OB/OD closure projects which included sifting of soil using a shaker.**

01/96-04/96 **Senior UXO Supervisor/Project Manager, EOD Technology, Inc, Picatinny Arsenal, Dover, NJ, ICF Kaiser. Supervised and managed soils sampling and monitoring well installation. UXO & OEW identification and avoidance.**

04/96-07/96 **Senior UXO Supervisor/Project Manager/UXO Site Manager, EOD Technology, Inc, Former Raritan Arsenal, Edison, NJ, R.F. Weston. Supervised and managed well installation, trench excavation, brush removal and UXO/OEW identification and avoidance.**

08/96 **Senior UXO Supervisor/Project Manager/UXO Site manager, EOD Technology, Inc, Picatinny Arsenal, Dover, NJ, ICF Kaiser. Waterborne UXO identification and avoidance in the taking of lake bottom soil samples.**

10/96 **Senior UXO Supervisor/Project Manager/UXO Site Manager, EOD Technology, Inc, TCAAP, New Brighton, MN. QA of OB/OD area to include a ferrous and non-ferrous geophysical survey and intrusive investigation.**

11/96 **Senior UXO Supervisor/Project Manager/UXO Site Manager, EOD Technology, Inc, Fort Knox, KY. SAIC. Surveying in grids and conducting an EM-31 survey to identify burial pits. Surface clearance of UXO/OEW.**

11/96 **Senior UXO Supervisor/Project Manager/UXO Site Manager, EOD Technology Inc, Picatinny Arsenal, Dover, NJ. ICF Kaiser. UXO/OEW identification and avoidance in support of soil sampling and well installation.**

03/97 **Senior UXO Supervisor, EOD Technology, Inc, Fort Knox KY. Conducting UXO Survey utilizing EM-31 to identify burial pits. Surface clearance of UXO/OEW.**

04/97-05/97 Senior UXO Supervisor, EOD Technology, Inc, Somerville, NJ. Bechtel National, Inc. UXO/OEW identification and clearance as a Radiological Worker II during soil sifting operations.

08/97 Senior UXO Supervisor. Vance International V.I.P. support, Rockville, MD.

10/97-11/97 UXO Team Leader, EOD Technology, Inc. Former Camp Claiborne, LA. USAESCH. UXO/OEW remediation operations.

11/97-12/97 Senior UXO Supervisor, EOD Technology, Inc. Jefferson Barracks, St Louis, MO. UXO/OEW remediation operations.

01/98-06/98 Senior UXO Supervisor, EOD Technology, Inc. McGregor Range, Ft. Bliss, TX. USAESCH. First EE/CA of an active range using Garmin GPS with Newton hand held computer for fixing over 3,000 locations.

06/98 Senior UXO Supervisor, EOD Technology, Inc. Raritan Arsenal, Edison NJ. R.F. Weston. UXO/OEW avoidance in support soil sampling and well installations.

09/98-12/98 Senior UXO Supervisor, EOD Technology, Inc. Seneca Army Depot, Romulus, NY. USAESCH. Geophysical Survey of OBG range and UXO/OEW clearance of proposed HTRW stockpile area.

01/99-02/99 Senior UXO Supervisor, EOD Technology, Inc. Woodbine, GA. APEX Corp. UXO/OEW remediation of (CS) burial sites.

03/99-04/99 Senior UXO Supervisor, EOD Technology, Inc. Sierra Army Depot, CA. CEHNC. UXO/OEW clearance while conducting an EE/CA of a 185-mile meandering track using a Geophysical Towed Array to collect data.

04/99-06/99 Senior UXO Supervisor, EOD Technology, Inc. Seneca Army Depot, Romulus, NY. USAECH. Proposed Prison Site Areas 44A &43. Conducted a Geophysical survey with the EM-61 man-carried of both sites. Area 44A was turned into a removal action and area 43 cleared and returned to base.

06/99-12/99 Senior UXO Supervisor/ Project Manager, EOD Technology, Inc. Seneca Army Depot, Romulus, NY. USAECH. UXO/OEW/HTRW remediation of the former OBG area. Project in excess of 2.5 million.

01/00-03/00 Project Manager, EOD Technology, Inc. Fort Campbell, KY. Project in excess of $400,000.

04/00 Senior UXO Supervisor, EOD Technology, Inc. Fort Hero, Montak, NY. R.F. Weston. UXO/OEW avoidance during soil sampling operations.

04/00-06/00 Project Manager, EOD Technology, Inc.

06/00 **Senior UXO Supervisor, Parsons, Dugway, Utah. UXO/OEW avoidance during GeoProbe Operations.**

07/00-09/00 **Site Safety and Health Officer, Parsons, Shumaker, Ark. UXO/OEW avoidance during EE/CA investigation.**

09/00-10/00 **Site Safety and Health Officer, Parsons,Gadston, Al UXO/OEW avoidance during EE/CA investigation.**

10/00-11/00 **Site Quality Control Supervisor, Parsons, Conway Bombing Range, Myrtle Beach, SC, Performed QC of grids completed during this removal action.**

12/00-01/04 **Site Operation Manager, CWM Site, Parsons, Spring Valley, Washington, DC**

03/04-05/04 **Site Operations Manager, OE Live Range Maintenance Contract, Fort Riley, KS, OE Scrap Certification, Two areas OE clearance Range 52 & SEIA Roadway, EE/CA Investigation OLD BAZOOKA Range.**

06/04-09/04 **Site Operations Manager, Former Camp Sibert CWM EE/CA, Gadsden, AL**

10/04-10/04 **UXOQCS for DCD OFF POST project, Deseret Army Depot, Tooele, UT**

04/05-05/05 **Site Manager/SUXOS, MEC surface Sweeps of Dog Island, FL. One live 4.2mm mortar was located and destroyed and Certified MEC scrap generated.**

07/05-07/05 **UXOSO for soil sampling MSC, project at Former Camp Butner, Creedmore, NC**

08/05-09/05 **Site Manager/SUXOS for MEC Roadway Sweeps, Deseret Chemical Depot. Tooele, UT. Discovered CWM in SWMU-1 and project was stopped.**

APPENDIX C **PARSONS ACCIDENT REPORTING INSTRUCTIONS**
PARSONS ACCIDENT REPORT FORM

On-Line Safety Reporting System

Policy Requirements

- Initial incident reports for all incidents, including near misses, shall be reported within 4 hours.
- Detail incident reports are required within 24 hours.
- Reporting is done via on-line (PWeb) incident report form.
- Injuries with Days Away from Work - immediate supervisor and PM must teleconference with GBU President within 4 hours.
- Projects enter hours via on-line form by FIRST Friday of new period.

Reporting Incidents

Corporate policy requires that all employees report safety incidents to their supervisor immediately. Supervisors must report all incidents to the appropriate Project Manager (Department Manager if the incident is not related to a project), who must officially report the incident to the GBU within four hours. This official reporting is done via the PWeb, unless PWeb is unavailable, in which case the incident can be reported by email, fax or telephone.

"Incidents" include work related injuries, work related illness, accidents with property damage only and near misses. "Near misses" are any unplanned event that had the potential to (but did not) result in injury or property damage.

Incident reports should reflect the best available information at the time. Where exact information is not known (recordability, days away from work, etc.) the PM's best judgment should be used when completing the initial incident report. This information can be subsequently revised when the detail incident report is submitted.

When in doubt, submit an initial report or contact the GBU Safety Manager.

On-line Reporting System

The on-line reporting system can be found on the PI&T Safety Page on PWeb. To locate the system, follow these steps:

1. From the Corporate PWeb Homepage, select PI&T from the Org Units menu
2. Locate and select "Safety" from the list of pages in the right hand column
3. Select the "Incident Reporting Form" link

To create and submit a new incident report, select the orange "Add" button from the main page of the reporting system. To update and existing incident report or complete the Detail Incident page, locate and select the appropriate incident from the list.

Creating or Updating Incidents

The Initial Incident page of the report must be completed within four hours of the incident occurring. This page includes basic information needed for the first notification to our insurance carriers. If possible, all of the fields should be completed in the initial report. A list is provided at the end of this document describing all fields contained on the initial incident page.

Incident Detail Reports

Within 24 hours of the incident occurring, the Incident Detail page of the on-line report must be completed. This page includes detailed information about the injured party, the nature and extent of injuries, medical treatment provided, corrective actions taken, and witness statements. In the event of property damage, this page also includes descriptive information on the property owner. Finally, the page includes a section to include electronic attachments. These might include photographs, signed witness statements, etc.

Monthly Reporting of Hours

Hours must be entered into the on-line reporting system no later than the first Friday of the new period. If an accurate accounting of hours is not available, estimated hours are submitted into the system. The estimated hours can be revised later in the month, or the following month, when accurate data is available.

From the “Hours” page, select the GBU and the period (month and year) that is being reported. The system only allows hours to be entered for the period selected. MTD and PTD figures are calculated totals based on the sum of all monthly entries. To enter or correct a prior period entry, simply select that month from the drop-down box and correct the figures for that month.

Be sure to select the correct month and year when entering hours.

Hours must be entered for each (as applicable) of six different labor categories. The categories are as follows:

- Contractor (Field/Craft)
- Contractor (Office/Admin)
- JV Partner (Field/Craft)
- JV Partner (Office/Admin)
- Parsons Employee (Field/Craft)
- Parsons Employee (Office/Admin)

Monthly Statistics Summary Reports

The on-line reporting system automatically calculates incident rates based on incidents and hours entered into the system. To view the statistics, select the “Reports” page from the on-line system. Select “Parsons Safety Statistics Summary”, the appropriate GBU, and the appropriate period. (NOTE: The system does not yet provide reports at the Division and Sector level. That enhancement is pending.) Use the checkboxes to select the labor categories desired.

Contact Rick McAlpin or Jim Owen for Assistance

Initial Incident Report Fields

1. GBU – Select the GBU from the drop down box. Incidents are reported primarily by project, and the GBU should reflect the unit responsible for the project. This may be different from the GBU that employees the person injured.
2. Field Project Name, Office Location or Other – If the applicable project is listed in the "Field Project" list, select from that box. If not, and if the incident occurred in a Parsons corporate office, select the office from the drop box. Otherwise, type in the name of the responsible organizational unit in the "Other" field. The GBU must be selected BEFORE attempting to select a Project/Office. Do NOT select both a field project AND an Office Location (or Other). If the appropriate Project or Office name can not be found, manually enter it into the "Other" field.
3. Job and WBS Numbers – These fields should reflect the charge number responsible for the incident. In general, that will be the number that the employee was charging at the time of the incident. Projects are responsible for visitors, regardless of what charge number they use while visiting the job. For example, if the Division Manager is injured while visiting Project X, the project number is entered, not the division overhead account.
4. Near Miss – Check this box if the report is for a near miss only (no injury or property damage occurred).
5. Emergency Response Notified – Check this box if fire, police or ambulance was called as a result of the incident.
6. Three or More Employees Hospitalized – Check this box if three or more employees were injured as the result of a single incident. In this case, the GBU or Corporate Safety Manager must also be immediately notified by telephone.
7. Extent of Injury – Select the appropriate radio button. First aid cases are as defined by OSHA 1904 criteria. All other injuries are considered recordable.
8. Restricted Duty (# of days) – If the injured person was limited (by a physician) to less than normal work duration or duties, enter the number of days. Estimate the days if unknown, and correct the number later. NOTE: this is the number of CALENDAR days (not scheduled work days), and it does NOT include the day of the injury.
9. Days Away From Work (# of days) – If the injured person was ordered by a physician not to return to work, enter the number of days missed. Estimate the days if unknown, and correct the number later. NOTE: this is the number of CALENDAR days (not scheduled work days), and it does NOT include the day of the injury. Injuries with Days Away From Work require a phone call to the GBU President within 4 hours.
10. Fatality (Date of Death) – In the event of a work related fatality, enter the date of death here. NOTE: Fatalities require immediate phone notification of the Division Manager, GBU President, GBU Safety Manager, and Corporate Safety Manager.
11. Property Damage – Check the appropriate boxes if applicable.
12. Place – Describe the exact location that incident occurred. For example, "in the north stairwell of building 21, between the second and third floor."
13. Date – This field reflects the date the incident occurred, not necessarily the date it was reported. If the exact date is not known, an estimate should be used.
14. Time – This field reflects the time of day that the incident occurred. If the exact time is not known, an estimate should be used.
15. Incident Description – Provide a detailed description of the incident. This is a memo field and text will scroll down the window as it is entered. Use as much space as needed to accurately describe the incident and the resulting injuries.

16. Reported by – This field defaults to the employee login ID that was used to access PWeb. However, the field can be over-written if needed.
17. Name – First and last name of the injured party.
18. Status – Select the most appropriate category from the drop box (Employee - Field, Subcontractor - Field, Partner - Field, Employee - Office, Subcontractor - Office, Partner - Office or 3rd Party).
19. Trade/Function – Select the most appropriate category from the drop box.

Parsons Project Incident/Accident Report Form

PLEASE PRINT

Attach all supplemental documentation, including photos, diagrams, witness statements and field reports

PROJECT Information	Project Title		Location	
	Subcontractor			
	Address			
	City, State, Zip			
	Contact Name		Phone Number	

INCIDENT Type	☐ **Worker's Compensation** ☐ Emergency Response Notified (Police, Fire, Medic, etc.) ☐ First-Aid Only ☐ Recordable Injury	☐ **General Liability** ☐ Bodily Injury/Illness ☐ Real Property Damage ☐ Personal Property Damage ☐ Utility Property Damage	☐ **Builder's Risk** ☐ Equipment ☐ Supplies ☐ Machinery ☐ Work

Incident Location	Date of Loss		Time of Loss	
	Place (exact location)			

Incident Description	Detailed Description of Accident

Worker's Comp Or Personal Injury (circle one)	Injured Name			
	Address			
	City, State, Zip			
	Home Phone		Date of Birth	
	Nature of Injury			
	Medical Facility		Work Status	
	Treatment Received			

Property Damage Or Builder's Risk (circle one)	Owner's Name			
	Address			
	City, State, Zip			
	Home Phone		Work Phone	
	Damage Type		Estimated Cost	
	Utility Type		Marked or Unmarked	
	Description of Damage			

WITNESS Information	Name			
	Address			
	City, State, Zip			
	Home Phone		Work Phone	
	Where to contact		Time to contact	

Contractor Subcontractor Action	Describe actions taken

Signature ______________________ Employer ______________________

Print Name ______________________ Date ______________________

Phone No. ______________________ Fax Number ______________________

APPENDIX D **ARMY ACCIDENT REPORTING REQUIREMENTS (5 APRIL 2004)**
ARMY ACCIDENT REPORT FORM (ENG FORM 3394)

CEHNC-SO (385-10f) 5 April 2004

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Accident Reporting Requirements

1. References:

a. AR 385-40, Accident Reporting, 1 November 1994

b. U.S. Army Corps of Engineer (USACE) Draft Supplement 1 to AR 385-40, 5 October 2000

c. USASC Message, CSSC-Z, 081810Z Jun 01, subject: Clarification of Army Accident Classes

d. CEHNCR 385-1-1, Safety and Occupational Health Program Management, 19 June 1997

e. EM 385-1-1, U.S. Army Corps of Engineers Safety Manual, 03 November 2003

2. Accident Definitions:

a. Class A - Fatality or permanent total disability (Government Civilian, Military Personnel, and/or Contractor), or > $1,000,000 property damage*.

b. Class B - Permanent partial disability or inpatient hospitalization of 3 or more persons (Government Civilian, Military Personnel, and/or Contractor), $200,000 ≤ $1,000,000 property damage*.

c. Class C - Lost Workday (Contractor) or Lost Time (Government Civilian and Military Personnel), $20,000 ≤ $200,000 property damage*.

d. Class D - $2000 ≤ $20,000 property damage*.

*Property damage examples - rental cars, leased items/equipment, GSA property, Huntsville Center (HNC) property, installation property, land owner property.

3. All accidents meeting the definitions above, both contactor and government civilian, are to be reported immediately. Government civilian accidents are to be reported to the first line supervisor; for contractor accidents, either the project manager (PM), contracting officer (KO), contracting officer representative (COR) and/or resident engineer (RE) herein referred to as the "Government Designated Authority (GDA)", who by position is responsible for overseeing, managing, directing, and/or administering the project/activity, operation, material

or person(s) involved at the time of an accident. The supervisor or GDA upon learning of an accident must promptly contact the CEHNC Safety Office and provide a brief summary of the events surrounding the accident. The Safety Office will notify the Command Group.

4. In addition to the accidents described in paragraph 2, the following conditions must also be reported per the guidance outlined in paragraph 3.

a. Army civilian or contractor personnel injured while on duty or on TDY status. Exception: Contractor employee injuries, occupational illnesses, and property damage accidents that occur away from, and involve activities unrelated to, a Corps project/activity for which the contractor is working, are not required to be reported.

b. Accidents or mishaps incident to a Corps project/activity that could cause embarrassment to USACE.

c. Serious near misses.

d. Injuries to CEHNC military personnel, on or off-duty.

e. Medical expenses incurred by government civilians regardless of whether or not the injury meets one of the accident definitions above.

5. For government civilian accidents the supervisor is responsible for investigating the accident. For contractor accidents occurring incident to a CEHNC project/activity, the contractor is responsible for performing the accident investigation in accordance with the contractor's accepted Accident Prevention Plan (APP). The investigation is the supervisor's or contractor's documented internal review, analysis and account of the accident, based on factual information gathered by a thorough and conscientious examination of all causal factors. Its purpose is PREVENTION. Therefore, it is essential for the supervisor or contractor to take positive measures and any necessary corrective actions to prevent future occurrences. At the conclusion of the investigation, the supervisor or contractor must submit a completed original ENG Form 3394, with its instructions to the CEHNC Safety Office for review and processing within 5 working days following the accident. A copy of the ENG Form 3394 can be found at:

http://www.hnd.usace.army.mil/engrdir/organization/systems-eng/Safety/safety2.htm

This form must be routed through the appropriate Director's office for review and signature prior to submitting to the Safety Office.

6. On the original ENG Form 3394, if block 11b is checked "Yes," the job/activity hazard analysis for the task/activity being performed at the time of the accident must be submitted as an attachment. If the block is checked "No," and the accident is on a project/activity for which EM 385-1-1, Corps Safety Manual is applicable, an activity hazard analysis must be developed and submitted to the CEHNC Safety Office for review and acceptance prior to resuming the specific work activity being performed at the time of the accident. The CEHNC Safety Office will assess the adequacy of the investigation as described in the ENG Form 3394 along with all submitted analyses to determine whether the information provided is acceptable. If the investigation report is found acceptable, the Safety Office will notify the supervisor or GDA that the specific work activity may resume.

7. For government civilian claims, all Class A through C accidents require the submission of a Department of Labor (DOL) Form CA-1 (injury), CA-2 (illness/disease/stress) or CA-6 (fatality) in addition to the ENG Form 3394. Please note that a CA-1 or CA-2 is a mandatory submission if medical expenses are incurred. The employee is responsible for completing and submitting the appropriate form to their immediate supervisor for processing. The supervisor is responsible for reviewing, signing and delivering the form to the CEHNC Safety Office for processing. The CA-1 and CA-2 forms are time sensitive and must be submitted within 15 working days from the date of the accident. A timely submission will ensure the forms reach the Office of Workers' Compensation Program (OWCP) administrator as required and expedites the judicious payment of expenses incurred. In the unlikely event a fatality should occur, please call the Safety Office immediately.

8. If assistance is needed in reporting or investigating accidents, please contact the undersigned at 256-895-1583 or Greg Bayuga, 256-895-1596. Completed sample forms are available in the Safety Office.

/s/
CHARLES R. (RAY) WAITS, JR.
Chief, Safety and Occupational
Health Office

DISTRIBUTION:

A & B (Branch Level)
CEHNC-SO (Williams, Bayuga, Plyler, Taylor, Griffin, Sawyers)

(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	DIVING
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 | e. GRADE

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 (1) PRIME: (2) SUBCONTRACTOR:

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)* ______

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 HOSPIT-ALIZED | D. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED — PRIMARY ______ (CODE) # — SECONDARY ______ (CODE) #

f. NATURE OF ILLNESS / INJURY ______ (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 FLOATATION 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	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)*

See attached page.

11. **CAUSAL FACTOR(S)** *(Read Instruction Before Completing)*

a. (Explain YES answers in item 13) — YES / NO

DESIGN: Was design of facility, workplace or equipment a factor?

INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?

PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?

OPERATING PROCEDURES: Were operating procedures a factor?

JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?

HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?

ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?

a. *(CONTINUED)* — YES / NO

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?

OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?

SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?

PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?

DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident

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

See attached page.

b. INDIRECT CAUSE(S)

See attached page.

14. **ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).**

DESCRIBE FULLY:

See attached page.

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

*U.S. GOVERNMENT PRINTING OFFICE: 1993-0-791-757

10. ACCIDENT DESCRIPTION *(Continuation)*

13a. DIRECT CAUSE *(Continuation)*

13b. INDIRECT CAUSES *(Continuation)*

14. ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) *(Continuation)*

GENERAL. Complete a separate report for each person who was *injured, caused, or contributed* to the accident (excluding uninjured personnel and witnesses). Use of this form for reporting USACE employee first-aid type injuries not submitted to the Office of Workers' Compensation Programs (OWCP) shall be at the descretion of the FOA commander. Please type or print legibly. Appropriate items shall be marked with an "X" in box(es). If additional space is needed, provide the information on a separate sheet and attach to the completed form. Ensure that these instructions are forwarded with the completed report to the designated management reviewers indicated in sections 16. and 17.

INSTRUCTIONS FOR SECTION 1 — ACCIDENT CLASSIFICATION. *(Mark All Boxes That Are Applicable.)*

a. GOVERNMENT. Mark "CIVILIAN" box if accident involved government civilian employee; mark "MILITARY" box if accident involved U.S. military personnel.

(1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in any government civilian employee injury, illness, or fatality that requires the submission of OWCP Forms CA-1 (injury), CA-2 (illness), or CA-6 (fatality) to OWCP; mark if accident resulted in military personnel lost-time or fatal injury or illness.

(2) PROPERTY DAMAGE — Mark the appropriate box if accident resulted in any damage of $1000 or more to government property (including motor vehicles).

(3) VEHICLE INVOLVED — Mark if accident involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY — Mark if the accident involved an in-house USACE diving activity.

b. CONTRACTOR

(1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in any contractor lost-time injury/illness or fatality.

(2) PROPERTY DAMAGE — Mark the appropriate box if accident resulted in any damage of $1000 or more to contractor property (including motor vehicles).

(3) VEHICLE INVOLVED — Mark if accident involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY — Mark if the accident involved a USACE Contractor diving activity.

c. PUBLIC.

(1) INJURY/ILLNESS/FATALITY — Mark if accident resulted in public fatality or permanent total disability. (The "OTHER" box will be marked when requested by the FOA to report an unusual non-fatal public accident that could result in claims against the government or as otherwise directed by the FOA Commander).

(2) VOID SPACE — Make no entry.

(3) VEHICLE INVOLVED — Mark if accident resulted in a fatality to a member of the public and involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS/FATALITY" is marked.

(4) VOID SPACE — Make no entry.

INSTRUCTIONS FOR SECTION 2 — PERSONAL DATA

a. NAME — (MANDATORY FOR GOVERNMENT ACCIDENTS. OPTIONAL AT THE DISCRETION OF THE FOA COMMANDER FOR CONTRACTOR AND PUBLIC ACCIDENTS). Enter last name, first name, middle initial of person involved.

b. AGE — Enter age

c. SEX — Mark appropriate box.

d. SOCIAL SECURITY NUMBER — (FOR GOVERNMENT PERSONNEL ONLY) Enter the social security number (or other personal identification number if no social security number issued).

e. GRADE — (FOR GOVERNMENT PERSONNEL ONLY) Enter pay grade. Example: O-6; E-7; WG-8; WS-12; GS-11; etc.

f. JOB SERIES/TITLE — For *government civilian employees* enter the pay plan, full series number, and job title, e.g. GS-0810/Civil Engineer. For *military personnel* enter the primary military occupational specialty (PMOS), e.g., 15A30 or 11G50. For *contractor employees* enter the job title assigned to the injured person, e.g. carpenter, laborer, surveyor, etc.,

g. DUTY STATUS — Mark the appropriate box.

(1) ON DUTY — Person was at duty station during duty hours or person was away from duty station during duty hours but on official business at time of the accident.

(2) TDY - Person was on official business, away from the duty station and with travel orders at time of accident. Line-of-duty investigation required.

(3) OFF DUTY - Person was not on official business at time of accident

h. EMPLOYMENT STATUS — (FOR GOVERNMENT PERSONNEL ONLY) Mark the most appropriate box. If "OTHER" is marked, specify the employment status of the person.

INSTRUCTION FOR SECTION 3 — GENERAL INFORMATION

a. DATE OF ACCIDENT — Enter the month, day, and year of accident.

b. TIME OF ACCIDENT — Enter the local time of accident in military time. Example: 1430 hrs (not 2:30 p.m.).

c. EXACT LOCATION OF ACCIDENT — Enter facts needed to locate the accident scene. (installation/project name, building number, street, direction and distance from closest landmark, etc.,).

d. CONTRACTOR NAME

(1) PRIME — Enter the exact name (title of firm) of the prime contractor.

(2) SUBCONTRACTOR — Enter the name of any subcontractor involved in the accident.

e. CONTRACT NUMBER — Mark the appropriate box to identify if contract is civil works, military, or other: if "OTHER" is marked, specify contract appropriation on line provided. Enter complete contract number of prime contract, e.g., DACW 09-85-C-0100.

f. TYPE OF CONTRACT — Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.

g. HAZARDOUS/TOXIC WASTE ACTIVITY (HTW) — Mark the box to identify the HTW activity being performed at the time of the accident. For Superfund, DERP, and Installation Restoration Program (IRP) HTW activities include accidents that occurred during inventory, predesign, design, and construction. For the purpose of accident reporting, DERP Formerly Used DoD Site (FUDS) activities and IRP activities will be treated separately. For Civil Works O&M HTW activities mark the "OTHER" box.

INSTRUCTIONS FOR SECTION 4 — CONSTRUCTION ACTIVITIES

a. CONSTRUCTION ACTIVITY — Select the *most appropriate* construction activity being performed at time of accident from the list below. Enter the activity name and place the corresponding code number identified in the box.

CONSTRUCTION ACTIVITY LIST

1. MOBILIZATION	14. ELECTRICAL
2. SITE PREPARATION	15. SCAFFOLDING/ACCESS
3. EXCAVATION/TRENCHING	16. MECHANICAL
4. GRADING (EARTHWORK)	17. PAINTING
5. PIPING/UTILITIES	18. EQUIPMENT/MAINTENANCE
6. FOUNDATION	19. TUNNELING
7. FORMING	20. WAREHOUSING/STORAGE
8. CONCRETE PLACEMENT	21. PAVING
9. STEEL ERECTION	22. FENCING
10. ROOFING	23. SIGNING
11. FRAMING	24. LANDSCAPING/IRRIGATION
12. MASONRY	25. INSULATION
13. CARPENTRY	26. DEMOLITION

b. TYPE OF CONSTRUCTION EQUIPMENT -- Select the equipment involved in the accident from the list below. Enter the name and place the corresponding code number identified in the box. If equipment is not included below, use code 24, "OTHER", and write in specific type of equipment.

CONSTRUCTION EQUIPMENT

1. GRADER
2. DRAGLINE
3. CRANE (ON VESSEL/BARGE)
4. CRANE (TRACKED)
5. CRANE (RUBBER TIRE)
6. CRANE (VEHICLE MOUNTED)
7. CRANE (TOWER)
8. SHOVEL
9. SCRAPER
10. PUMP TRUCK (CONCRETE)
11. TRUCK (CONCRETE/TRANSIT MIXER)
12. DUMP TRUCK (HIGHWAY)
13. DUMP TRUCK (OFF HIGHWAY)
14. TRUCK (OTHER)
15. FORKLIFT
16. BACKHOE
17. FRONT-END LOADER
18. PILE DRIVER
19. TRACTOR (UTILITY)
20. MANLIFT
21. DOZER
22. DRILL RIG
23. COMPACTOR/VIBRATORY ROLLER
24. OTHER

INSTRUCTIONS FOR SECTION 5 — INJURY/ILLNESS INFORMATION

a. SEVERITY OF INJURY / ILLNESS - Reference para 2-10 of USACE Suppl 1 to AR 385-40 and enter code and description from list below.

NOI NO INJURY
FAT FATALITY
PTL PERMANENT TOTAL DISABILITY
PPR PERMANENT PARTIAL DISABILITY
LWD LOST WORKDAY CASE INVOLVING DAYS AWAY FROM WORK
NLW RECORDABLE CASE WITHOUT LOST WORKDAYS
RFA RECORDABLE FIRST AID CASE
NRI NON-RECORDABLE INJURY

b. ESTIMATED DAYS LOST — Enter the estimated number of workdays the person will lose from work.

c. ESTIMATED DAYS HOSPITALIZED — Enter the estimated number of workdays the person will be hospitalized.

d. ESTIMATED DAYS RESTRICTED DUTY — Enter the estimated number of workdays the person, as a result of the accident, will not be able to perform all of their regular duties.

e. BODY PART AFFECTED — Select the most appropriate primary and when applicable, secondary body part affected from the list below. Enter body part name on line and place the corresponding code letters identifying that body part in the box.

GENERAL BODY AREA	CODE	BODY PART NAME
ARM/WRIST	AB	ARM AND WRIST
	AS	ARM OR WRIST
TRUNK, EXTERNAL MUSCULATURE	B1	SINGLE BREAST
	B2	BOTH BREASTS
	B3	SINGLE TESTICLE
	B4	BOTH TESTICLES
	BA	ABDOMEN
	BC	CHEST
	BL	LOWER BACK
	BP	PENIS
	BS	SIDE
	BU	UPPER BACK
	BW	WAIST
	BZ	TRUNK OTHER
HEAD, INTERNAL	C1	SINGLE EAR INTERNAL
	C2	BOTH EARS INTERNAL
	C3	SINGLE EYE INTERNAL
	C4	BOTH EYES INTERNAL
	CD	BRAIN
	CC	CRANIAL BONES
	CO	TEETH
	CJ	JAW
	CL	THROAT, LARYNX
	CM	MOUTH
	CN	NOSE
	CR	THROAT, OTHER
	CT	TONGUE
	CZ	HEAD OTHER INTERNAL
ELBOW	EB	BOTH ELBOWS
	ES	SINGLE ELBOW
FINGER	F1	FIRST FINGER
	F2	BOTH FIRST FINGERS
	F3	SECOND FINGER
	F4	BOTH SECOND FINGERS
	F5	THIRD FINGER
	F6	BOTH THIRD FINGERS
	F7	FOURTH FINGER
	F8	BOTH FOURTH FINGERS
TOE	G1	GREAT TOE
	G2	BOTH GREAT TOES
	G3	TOE OTHER
	G4	TOES OTHER
HEAD, EXTERNAL	H1	EYE EXTERNAL
	H2	BOTH EYES EXTERNAL
	H3	EAR EXTERNAL
	H4	BOTH EARS EXTERNAL
	HC	CHIN
	HF	FACE
	HK	NECK/THROAT
	HM	MOUTH/LIPS
	HN	NOSE
	HS	SCALP
KNEE	KB	BOTH KNEES
	KS	KNEE
LEG, HIP, ANKLE, BUTTOCK	LB	BOTH LEGS/HIPS/ ANKLES/BUTTOCKS
	LS	SINGLE LEG/HIP ANKLE/BUTTOCK
HAND	MB	BOTH HANDS
	MS	SINGLE HAND
FOOT	PB	BOTH FEET
	PS	SINGLE FOOT
TRUNK, BONES	R1	SINGLE COLLAR BONE
	R2	BOTH COLLAR BONES
	R3	SHOULDER BLADE
	R4	BOTH SHOULDER BLADES
	RB	RIB
	RS	STERNUM (BREAST BONE)
	RV	VERTEBRAE (SPINE; DISC)
	RZ	TRUNK BONES OTHER
SHOULDER	SB	BOTH SHOULDERS
	SS	SINGLE SHOULDER
THUMB	TB	BOTH THUMBS
	TS	SINGLE THUMB
TRUNK, INTERNAL ORGANS	V1	LUNG, SINGLE
	V2	LUNGS, BOTH
	V3	KIDNEY, SINGLE
	V4	KIDNEYS, BOTH
	VH	HEART
	VL	LIVER
	VR	REPRODUCTIVE ORGANS
	VS	STOMACH
	VV	INTESTINES
	VZ	TRUNK, INTERNAL; OTHER

f. NATURE OF INJURY/ILLNESS - Select the most appropriate nature of injury / illness from the list below. This nature of injury / illness shall correspond to the primary body part selected in 5e, above. Enter the nature of injury / illness name on the line and place the corresponding CODE letters in the box provided.

* The injury or condition selected below must be caused by a specific incident or event which occurred during a single work day or shift.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
*TRAUMATIC INJURY OR DISABILITY	TA	AMPUTATION
	TB	BACK STRAIN.
	TC	CONTUSION; BRUISE; ABRASION
	TD	DISLOCATION
	TF	FRACTURE
	TH	HERNIA
	TK	CONCUSSION
	TL	LACERATION, CUT
	TP	PUNCTURE
	TS	STRAIN, MULTIPLE
	TU	BURN, SCALD, SUNBURN
	TI	TRAUMATIC SKIN DISEASES/ CONDITIONS INCLUDING DERMATITIS
	TR	TRAUMATIC RESPIRATORY DISEASE
	TQ	TRAUMATIC FOOD POISONING
	TW	TRAUMATIC TUBERCULOSIS
	TX	TRAUMATIC VIROLOGICAL/ INFECTIVE/PARASITIC DISEASE
	T1	TRAUMATIC CEREBRAL VASCULAR CONDITION/STROKE
	T2	TRAUMATIC HEARING LOSS
	T3	TRAUMATIC HEART CONDITION
	T4	TRAUMATIC MENTAL DISORDER; STRESS; NERVOUS CONDITION
	T8	TRAUMATIC INJURY — OTHER (EXCEPT DISEASE, ILLNESS)

**A nontraumatic physiological harm or loss of capacity produced by systemic infection; continued or repeated stress or strain; exposure to toxins, poisons, fumes, etc.; or other continued and repeated exposures to conditions of the work environment over a long period of time. For practical purposes, an occupational illness/disease or disability is any reported condition which doses not meet the definition of traumatic injury or disability as described above.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
**NON-TRAUMATIC ILLNESS/DISEASE OR DISABILITY		
RESPIRATORY DISEASE	RA	ASBESTOSIS
	RB	BRONCHITIS
	RE	EMPHYSEMA
	RP	PNEUMOCONIOSIS
	RS	SILICOSIS
	R9	RESPIRATORY DISEASE, OTHER
VIROLOGICAL, INFECTIVE & PARASITIC DISEASES	VB	BRUCELLOSIS
	VC	COCCIDIOMYCOSIS
	VF	FOOD POISONING
	VH	HEPATITIS
	VM	MALARIA
	VS	STAPHYLOCOCCUS
	VT	TUBERCULOSIS
	V9	VIROLOGICAL/INFECTIVE/ PARASITIC—OTHER
DISABILITY, OCCUPATIONAL	DA	ARTHRITIS, BURSITIS
	DB	BACK STRAIN, BACK SPRAIN
	DC	CEREBRAL VASCULAR CONDITION; STROKE
	DD	ENDEMIC DISEASE (OTHER THAN CODE TYPES R&S)
	DE	EFFECT OF ENVIRONMENTAL CONDITION
	DH	HEARING LOSS
	OK	HEART CONDITION
	DM	MENTAL DISORDER, EMOTIONAL STRESS NERVOUS CONDITION
	DR	RADIATION
	DS	STRAIN, MULTIPLE
	DU	ULCER
	DV	OTHER VASCULAR CONDITIONS
	D9	DISABILITY, OTHER

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
SKIN DISEASE OR CONDITION	SB	BIOLOGICAL
	SC	CHEMICAL
	S9	DERMATITIS, UNCLASSIFIED

g. TYPE AND SOURCE OF INJURY/ILLNESS (CAUSE) - Type and Source Codes are used to describe what caused the incident. The Type Code stands for an ACTION and the Source Code for an OBJECT or SUBSTANCE. Together, they form a brief description of how the incident occurred. Where there are two different sources, code the initiating source of the incident (see example 1, below). Examples:

(1) An employee tripped on carpet and struck his head on a desk.
TYPE: 210 (fell on same level) SOURCE: 0110 (walking/working surface)

NOTE: This example would NOT be coded 120 (struck against) and 0140 (furniture).

(2) A Park Ranger contracted dermatitis from contact with poison ivy/oak.
TYPE: 510 (contact) SOURCE: 0920 (plant)

(3) A lock and dam mechanic punctured his finger with a metal sliver while grinding a turbine blade.
TYPE: 410 (punctured by) SOURCE: 0830 (metal)

(4) An employee was driving a government vehicle when it was struck by another vehicle..
TYPE: 800 (traveling in) SOURCE: 0421 (government-owned vehicle, as driver)

NOTE: The Type Code 800, "Traveling In" is different from the other type codes in that its function is not to identify factors contributing to the injury or fatality, but rather to collect data on the type of vehicle the employee was operating or traveling in at the time of the incident.

Select the most appropriate TYPE and SOURCE identifier from the list below and enter the name on the line and the corresponding code in the appropriate box.

CODE	TYPE OF INJURY NAME
	STRUCK
0110	STRUCK BY
0111	STRUCK BY FALLING OBJECT
0120	STRUCK AGAINST
	FELL, SLIPPED, TRIPPED
0210	FELL ON SAME LEVEL
0220	FELL ON DIFFERENT LEVEL
0230	SLIPPED, TRIPPED (NO FALL)
	CAUGHT
0310	CAUGHT ON
0320	CAUGHT IN
0330	CAUGHT BETWEEN
	PUNCTURED, LACERATED
0410	PUNCTURED BY
0420	CUT BY
0430	STUNG BY
0440	BITTEN BY
	CONTACTED
0510	CONTACTED WITH (INJURED PERSON MOVING)
0520	CONTACTED BY (OBJECT WAS MOVING)
	EXERTED
0610	LIFTED, STRAINED BY (SINGLE ACTION)
0620	STRESSED BY (REPEATED ACTION)
	EXPOSED
0710	INHALED
0720	INGESTED
0730	ABSORBED
0740	EXPOSED TO
0800	TRAVELING IN

CODE	SOURCE OF INJURY NAME
0100	BUILDING OR WORKING AREA
0110	WALKING/WORKING SURFACE (FLOOR, STREET, SIDEWALKS, ETC)
0120	STAIRS, STEPS
0130	LADDER
0140	FURNITURE, FURNISHINGS, OFFICE EQUIPMENT
0150	BOILER, PRESSURE VESSEL
0160	EQUIPMENT LAYOUT (ERGONOMIC)
0170	WINDOWS, DOORS
0180	ELECTRICITY

CODE	SOURCE OF INJURY NAME
0200	ENVIRONMENTAL CONDITION
0210	TEMPERATURE EXTREME (INDOOR)
0220	WEATHER (ICE, RAIN, HEAT, ETC.)
0230	FIRE, FLAME, SMOKE (NOT TOBACCO)
0240	NOISE
0250	RADIATION
0260	LIGHT
0270	VENTILATION
0271	TOBACCO SMOKE
0280	STRESS (EMOTIONAL)
0290	CONFINED SPACE
0300	MACHINE OR TOOL
0310	HAND TOOL (POWERED: SAW, GRINDER, ETC.)
0320	HAND TOOL (NONPOWERED)
0330	MECHANICAL POWER TRANSMISSION APPARATUS
0340	GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK)
0350	VIDEO DISPLAY TERMINAL
0360	PUMP, COMPRESSOR, AIR PRESSURE TOOL
0370	HEATING EQUIPMENT
0380	WELDING EQUIPMENT
0400	VEHICLE
0411	AS DRIVER OF PRIVATELY OWNED/RENTAL VEHICLE
0412	AS PASSENGER OF PRIVATELY OWNED/RENTAL VEHICLE
0421	DRIVER OF GOVERNMENT VEHICLE
0422	PASSENGER OF GOVERNMENT VEHICLE
0430	COMMON CARRIER (AIRLINE, BUS, ETC.)
0440	AIRCRAFT (NOT COMMERCIAL)
0450	BOAT, SHIP, BARGE
0500	MATERIAL HANDLING EQUIPMENT
0510	EARTHMOVER (TRACTOR, BACKHOE, ETC.)
0520	CONVEYOR (FOR MATERIAL AND EQUIPMENT)
0530	ELEVATOR, ESCALATOR, PERSONNEL HOIST
0540	HOIST, SLING CHAIN, JACK
0550	CRANE
0551	FORKLIFT
0560	HANDTRUCK, DOLLY
0600	DUST, VAPOR, ETC.
0610	DUST (SILICA, COAL, ETC.)
0620	FIBERS
0621	ASBESTOS
0630	GASES
0631	CARBON MONOXIDE
0640	MIST, STEAM, VAPOR, FUME
0641	WELDING FUMES
0650	PARTICLES (UNIDENTIFIED)
0700	CHEMICAL, PLASTIC, ETC.
0711	DRY CHEMICAL—CORROSIVE
0712	DRY CHEMICAL—TOXIC
0713	DRY CHEMICAL—EXPLOSIVE
0714	DRY CHEMICAL—FLAMMABLE
0721	LIQUID CHEMICAL—CORROSIVE
0722	LIQUID CHEMICAL—TOXIC
0723	LIQUID CHEMICAL—EXPLOSIVE
0724	LIQUID CHEMICAL—FLAMMABLE
0730	PLASTIC
0740	WATER
0750	MEDICINE
0800	INANIMATE OBJECT
0810	BOX, BARREL, ETC.
0820	PAPER
0830	METAL ITEM, MINERAL
0831	NEEDLE
0840	GLASS
0850	SCRAP, TRASH
0860	WOOD
0870	FOOD
0880	CLOTHING, APPAREL, SHOES
0900	ANIMATE OBJECT
0911	DOG
0912	OTHER ANIMAL
0920	PLANT
0930	INSECT
0940	HUMAN (VIOLENCE)
0950	HUMAN (COMMUNICABLE DISEASE)
0960	BACTERIA, VIRUS (NOT HUMAN CONTACT)

CODE	SOURCE OF INJURY NAME
1000	PERSONAL PROTECTIVE EQUIPMENT
1010	PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES
1020	RESPIRATOR, MASK
1021	DIVING EQUIPMENT
1030	SAFETY BELT, HARNESS
1040	PARACHUTE

INSTRUCTIONS FOR SECTION 6 — PUBLIC FATALITY

a. ACTIVITY AT TIME OF ACCIDENT—Select the activity being performed at the time of the accident from the list below. Enter the activity name on the line and the corresponding number in the box. If the activity performed is not identified on the list, select from the *most* appropriate primary activity area (water related, non-water related or other activity), the code number for "Other", and write in the activity being performed at the time of the accident.

WATER RELATED RECREATION

1. Sailing
2. Boating—powered
3. Boating—unpowered
4. Water skiing
5. Fishing from boat
6. Fishing from bank dock or pier
7. Fishing while wading
8. Swimming/supervised area
9. Swimming/designated area
10. Swimming/other area
11. Underwater activities (skin diving, scuba, etc.)
12. Wading
13. Attempted rescue
14. Hunting from boat
15. Other

NON-WATER RELATED RECREATION

16. Hiking and walking
17. Climbing (general)
18. Camping/picnicking authorized area
19. Camping/picnicking unauthorized area
20. Guided tours
21. Hunting
22. Playground equipment
23. Sports/summer (baseball, football, etc.)
24. Sports/winter (skiing, sledding, snowmobiling etc.)
25. Cycling (bicycle, motorcycle, scooter)
26. Gliding
27. Parachuting
28. Other non-water related

OTHER ACTIVITIES

29. Unlawful acts (fights, riots, vandalism, etc.)
30. Food preparation/serving
31. Food consumption
32. Housekeeping
33. Sleeping
34. Pedestrian struck by vehicle
35. Pedestrian other acts
36. Suicide
37. "Other" activities

b. PERSONAL FLOTATION DEVICE USED—If fatality was water-related was the victim wearing a person flotation device? Mark the appropriate box.

INSTRUCTIONS FOR SECTION 7—MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE—Mark appropriate box for each vehicle involved. If more than one vehicle of the same type is involved, mark both halves of the appropriate box. USACE vehicle(s) involved shall be marked in left half of appropriate box.

b. TYPE OF COLLISION—Mark appropriate box.

c. SEAT BELT—Mark appropriate box.

INSTRUCTIONS FOR SECTION 8—PROPERTY/ MATERIAL INVOLVED

a. NAME OF ITEM—Describe all property involved in accident. Property/material involved means material which is damaged or whose use or misuse contributed to the accident. Include the name, type, model; also include the National Stock Number (NSN) whenever applicable.

b. OWNERSHIP—Enter ownership for each item listed. (Enter one of the following: *USACE; OTHER GOVERNMENT; CONTRACTOR; PRIVATE)*

c. $ AMOUNT OF DAMAGE—Enter the total estimated dollar amount of damage (parts and labor), if any.

INSTRUCTIONS FOR SECTION 9—VESSEL/ FLOATING PLANT ACCIDENT

a. TYPE OF VESSEL/FLOATING PLANT—Select the most appropriate vessel/floating plant from list below. Enter name and place corresponding number in box. If item is not listed below, enter item number for "OTHER" and write in specific type of vessel/ floating plant.

VESSEL/FLOATING PLANTS

1. ROW BOAT	7. DREDGE/DIPPER
2. SAIL BOAT	8. DREDGE/CLAMSHELL, BUCKET
3. MOTOR BOAT	9. DREDGE/PIPE LINE
4. BARGE	10. DREDGE/DUST PAN
5. DREDGE/HOPPER	11. TUG BOAT
6. DREDGE/SIDE CASTING	12. OTHER

b. COLLISION/MISHAP—Select from the list below the object(s) that contributed to the accident or were damaged in the accident.

COLLISION/MISHAP

1. COLLISION W/OTHER VESSEL	7. HAULAGE UNIT
2. UPPER GUIDE WALL	8. BREAKING TOW
3. UPPER LOCK GATES	9. TOW BREAKING UP
4. LOCK WALL	10. SWEPT DOWN ON DAM
5. LOWER LOCK GATES	11. BUOY/DOLPHIN/CELL
6. LOWER GUIDE WALL	12. WHARF OR DOCK
	13. OTHER

INSTRUCTIONS FOR SECTION 10—ACCIDENT DESCRIPTION

DESCRIBE ACCIDENT—Fully describe the accident. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and equipment are clearly specified. Continue on blank sheets if necessary and attach to this report.

INSTRUCTIONS FOR SECTION 11—CAUSAL FACTORS

a. Review thoroughly. Answer each question by marking the appropriate block. If any answer is yes, explain in item 13 below. Consider, as a minimum, the following:

(1) DESIGN—Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?

(2) INSPECTION/MAINTENANCE—Did inadequately or improperly maintained equipment, tools, workplace, etc. create or worsen any hazards that contributed to the accident? Would better equipment, facility, work site or work activity inspections have helped avoid the accident?

(3) PERSON'S PHYSICAL CONDITION—Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was over exertion a factor?

(4) OPERATING PROCEDURES—Did a lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?

(5) JOB PRACTICES—Were any of the provisions of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?

(6) HUMAN FACTORS—Was the person under undue stress (either internal or external to the job)? Did the task tend toward overloading the capabilities of the person; i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach, strength, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?

(7) ENVIRONMENTAL FACTORS—Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, heat, sun, temperature changes, wind, tides, floods, currents, dust, mud, glare, pressure changes, lightning, etc., play a part in the accident?

(8) CHEMICAL AND PHYSICAL AGENT FACTORS—Did exposure to chemical agents (either single shift exposure or long-term exposure) such as dusts, fibers (asbestos, etc.), silica, gases (carbon monoxide, chlorine, etc.,), mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by-products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation (UV radiation created during welding, etc.) contribute to the accident/incident?

(9) OFFICE FACTORS—Did the fact that the accident occurred in an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?

(10) SUPPORT FACTORS—Was the person using an improper tool for the job? Was inadequate time available or utilized to safely accomplish the task? Were less than adequate personnel resources (in terms of employee skills, number of workers, and adequate supervision) available to get the job done properly? Was funding available, utilized, and adequate to provide proper tools, equipment, personnel, site preparation, etc?

(11) PERSONAL PROTECTIVE EQUIPMENT—Did the person fail to use appropriate personal protective equipment (gloves, eye protection, hard-toed shoes, respirator, etc.) for the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard(s)? Did lack of or inadequate maintenance of protective gear contribute to the accident?

(12) DRUGS/ALCOHOL—Is there any reason to believe the person's mental or physical capabilities, judgement, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".

b. WRITTEN JOB/ACTIVITY HAZARD ANALYSIS—Was a written Job/Activity Hazard Analysis completed for the task being performed at the time of the accident? Mark the appropriate box. *If one was performed, attach a copy of the analysis to the report.*

INSTRUCTIONS FOR SECTION 12—TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?—For the purpose of this section "trained" means the person has been provided the necessary information (either formal and/or on-the-job (OJT) training) to competently perform the activity/task in a safe and healthful manner.

b. TYPE OF TRAINING—Mark the appropriate box that best indicates the type of training; (classroom or on-the-job) that the injured person received before the accident happened.

c. DATE OF MOST RECENT TRAINING—Enter the month, day, and year of the last *formal* training completed that covered the activity-task being performed at the time of the accident

INSTRUCTIONS FOR SECTION 13—CAUSES

a. DIRECT CAUSES—The direct cause is that single factor which most directly lead to the accident. See examples below.

b. INDIRECT CAUSES—Indirect causes are those factors which contributed to but did not directly initiate the occurrence of the accident.

Examples for section 13:

a. Employee was dismantling scaffold and fell 12 feet from unguarded opening.
Direct cause: failure to provide fall protection at elevation.
Indirect causes: failure to enforce USACE safety requirements; improper training/motivation of employee (possibility that employee was not knowledgeable of USACE fall protection requirements or was lax in his attitude towards safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

b. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by USACE vehicle. (note USACE vehicle was in proper/safe working condition).
Direct cause: failure of USACE driver to maintain control of and stop USACE vehicle within safe distance.
Indirect cause: Failure of employee to pay attention to driving (defensive driving).

INSTRUCTIONS FOR SECTION 14—ACTION TO ELIMINATE CAUSE(S)

DESCRIPTION—Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/illnesses. Continue on blank sheets of paper if necessary to fully explain and attach to the completed report form.

INSTRUCTIONS FOR SECTION 15—DATES FOR ACTION

a. BEGIN DATE—Enter the date when the corrective action(s) identified in Section 14 will begin.

b. COMPLETE DATE—Enter the date when the corrective action(s) identified in Section 14 will be completed.

c. TITLE AND SIGNATURE—Enter the title and signature of supervisor completing the accident report. For a GOVERNMENT employee accident/illness the immediate supervisor will complete and sign the report. For PUBLIC accidents the USACE Project Manager/Area Engineer responsible for the USACE property where the accident happened shall complete and sign the report. For CONTRACTOR accidents the Contractor's project manager shall complete and sign the report and provide to the USACE supervisor responsible for oversight of that contractor activity. This USACE Supervisor shall also sign the report. Upon entering the information required in 15.d, 15.e and 15.f below, the responsible USACE supervisor shall forward the report for management review as indicated in Section 16.

d. DATE SIGNED—Enter the month, day, and year that the report was signed by the responsible supervisor.

e. ORGANIZATION NAME—For GOVERNMENT employee accidents enter the USACE organization name (Division, Branch, Section, etc.) of the injured employee. For PUBLIC accidents enter the USACE organization name for the person identified in block 15.c. For CONTRACTOR accidents enter the USACE organization name for the USACE office responsible for providing contract administration oversight.

f. OFFICE SYMBOL—Enter the latest complete USACE Office Symbol for the USACE organization identified in block 15.e.

INSTRUCTIONS FOR SECTION 16—MANAGEMENT REVIEW (1st)

1ST REVIEW—Each USACE FOA shall determine who will provide 1st management review. The responsible USACE supervisor in section 15.c shall forward the completed report to the USACE office designated as the 1st Reviewer by the FOA. Upon receipt, the Chief of the Office shall review the completed report, mark the appropriate box, provide substantive comments, sign, date, and forward to the FOA Staff Chief (2nd review) for review and comment.

INSTRUCTIONS FOR SECTION 17—MANAGEMENT REVIEW (2nd)

2ND REVIEW—The FOA Staff Chief (i.e., FOA Chief of Construction, Operations, Engineering, Planning, etc.) shall mark the appropriate box, review the completed report, provide substantive comments, sign, date, and return to the FOA Safety and Occupational Health Office.

INSTRUCTIONS FOR SECTION 18—SAFETY AND OCCUPATIONAL HEALTH REVIEW

3RD REVIEW—The FOA Safety and Occupational Health Office shall review the completed report, mark the appropriate box, ensure that any inadequacies, discrepancies, etc, are rectified by the responsible supervisor and management reviewers, provide substantive comments, sign, date and forward to the FOA Commander for review, comment, and signature.

INSTRUCTION FOR SECTION 19—COMMAND APPROVAL

4TH REVIEW—The FOA Commander shall (to include the person designated Acting Commander in his absence) review the completed repod, comment if required, sign, date, and forword the report to the FOA Safety and Occupational Health Office. Signature authority shall not be delegated.

APPENDIX E PARSONS SAFETY STATISTICS SUMMARY, 2000-2005

PARSONS

2000 - 2005 SAFETY STATISTIC SUMMARY

Parsons Employees - Infrastructure & Technology Group Inc

YEAR	MANHOURS	# REC INJURIES	RIFR	# LOST WORKDAY CASES	LWCR	# LOST WORKDAYS	SEVERITY RATE
2000	10,375,814	54	1.04	27	0.52	161	3.10
2001	8,712,298	45	1.03	21	0.48	64	1.47
2002	9,577,166	60	1.25	26	0.54	285	5.95
2003	6,796,078	66	1.94	26	0.76	375	11.03
2004	6,242,447	40	1.28	4	0.13	44	1.41
2005	7,291,127	14	0.38	3	0.08	131	3.59

Updated 2/13/06 from PWEB Incident Reporting System

PARSONS

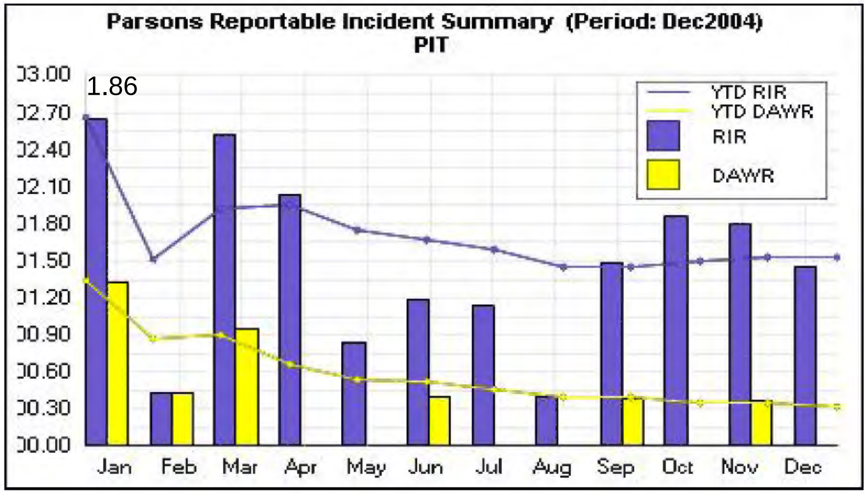
2000 - 2005 SAFETY STATISTIC SUMMARY

Parsons Employees - Overall Corporation

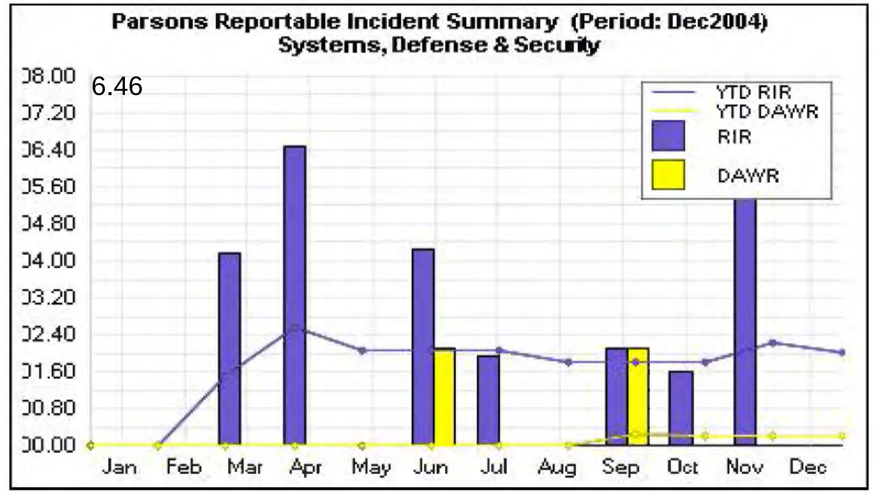
YEAR	MANHOURS	# REC INJURIES	RIFR	# LOST WORKDAY CASES	LWCR	# LOST WORKDAYS	SEVERITY RATE
2000	27,878,716	211	1.51	93	0.67	960	6.89
2001	25,405,995	166	1.31	71	0.56	385	3.03
2002	18,521,860	141	1.52	65	0.7	618	6.67
2003	17,782,579	123	1.38	46	0.52	729	8.20
2004	16,328,363	76	0.93	16	0.2	300	3.67
2005	22,066,960	62	0.56	17	0.15	499	4.53

Updated 2/13/06 from PWEB Incident Reporting System

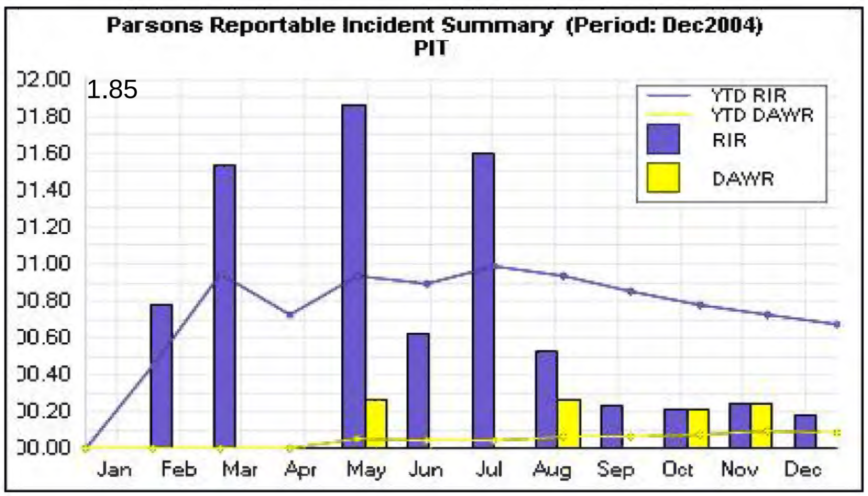
APPENDIX F PIT SAFETY PERFORMANCE AND TRENDS



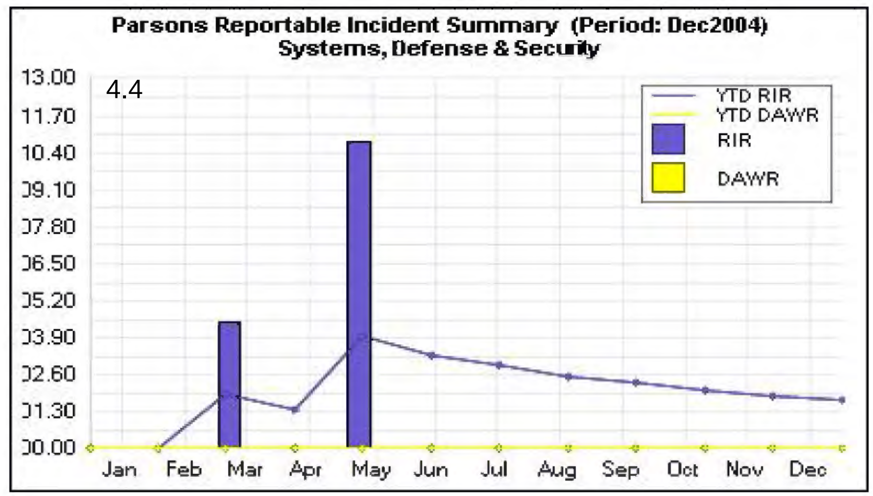
Employees Only - PIT



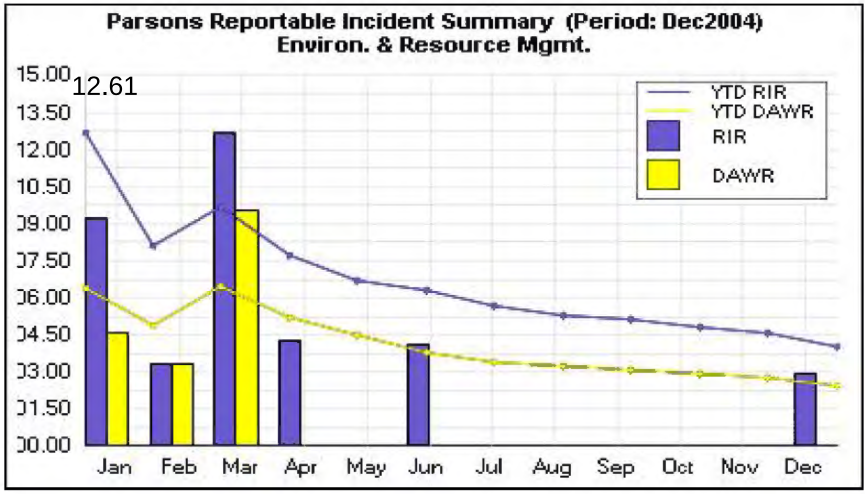
Employees Only - SDS



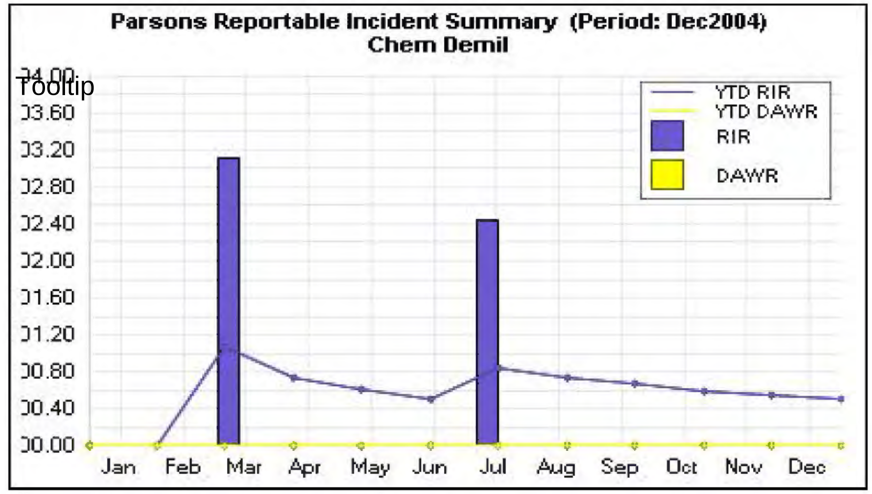
Subcontractors and Others - PIT



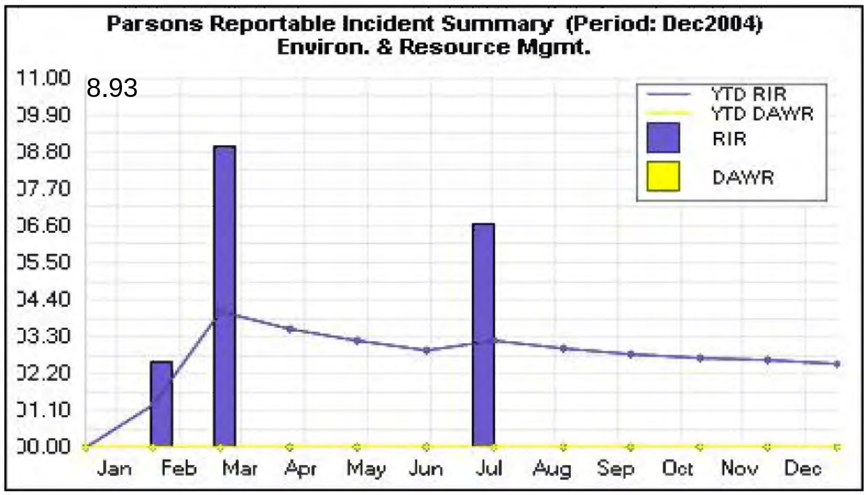
Subcontractors and Others - SDS



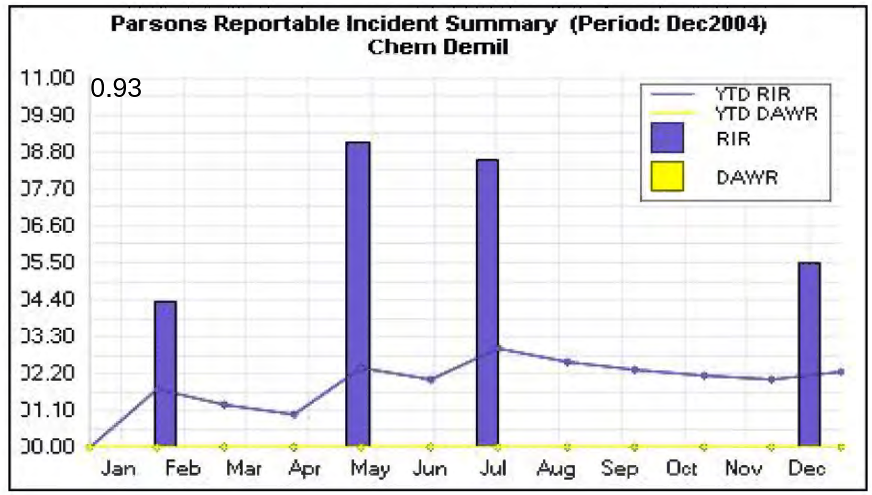
Employees Only - ERM



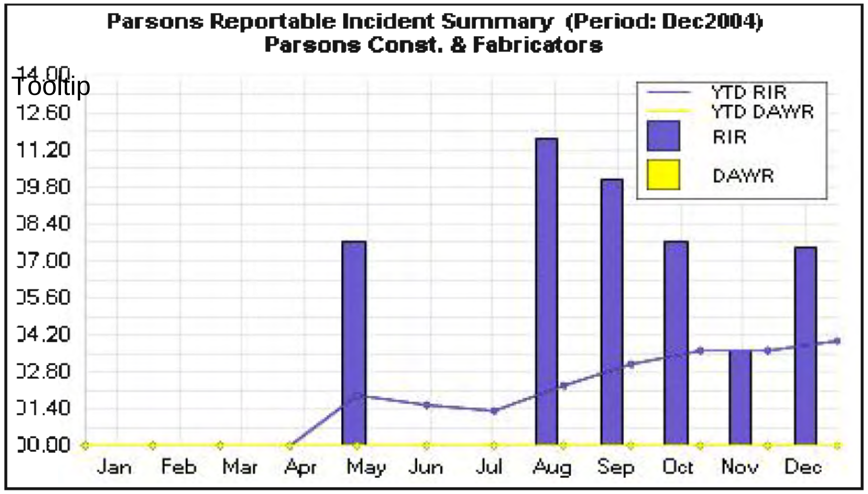
Employees Only - Chem Demil



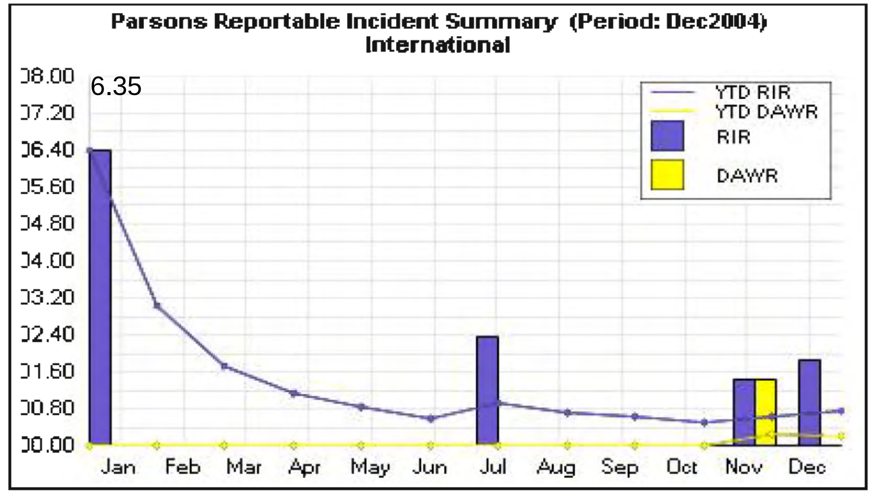
Subcontractors and Others - ERM



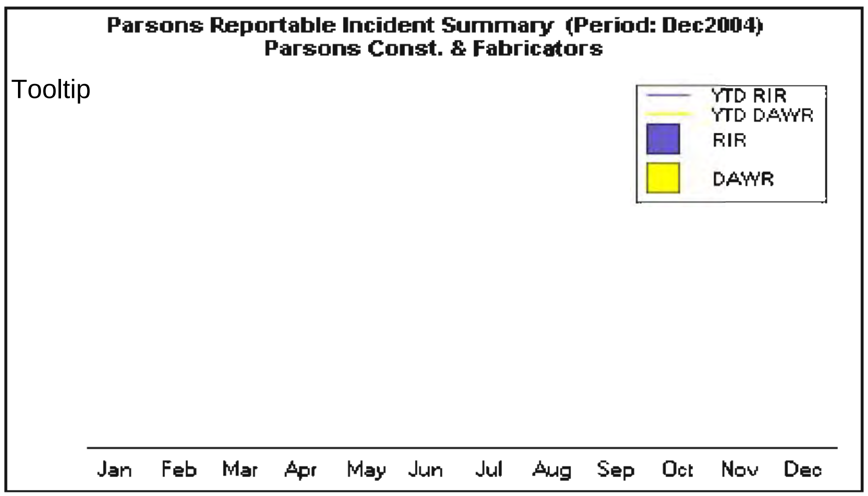
Subcontractors and Others - Chem Demil



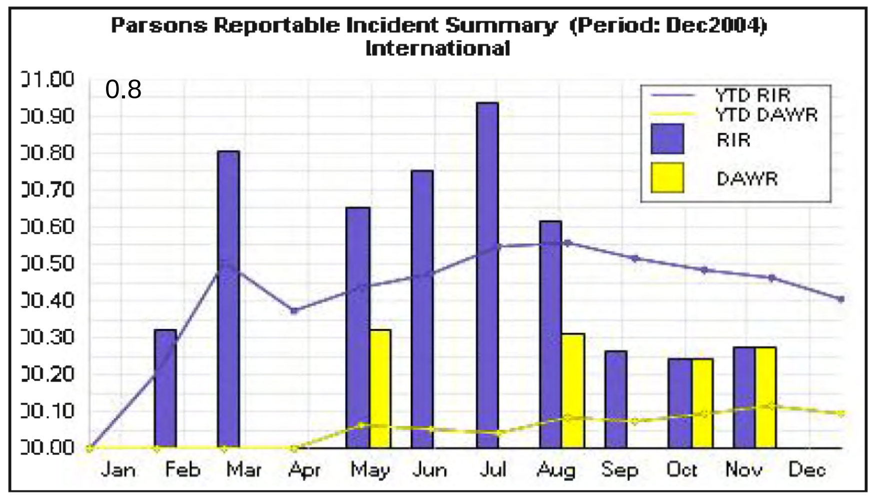
Employees Only - PCFI



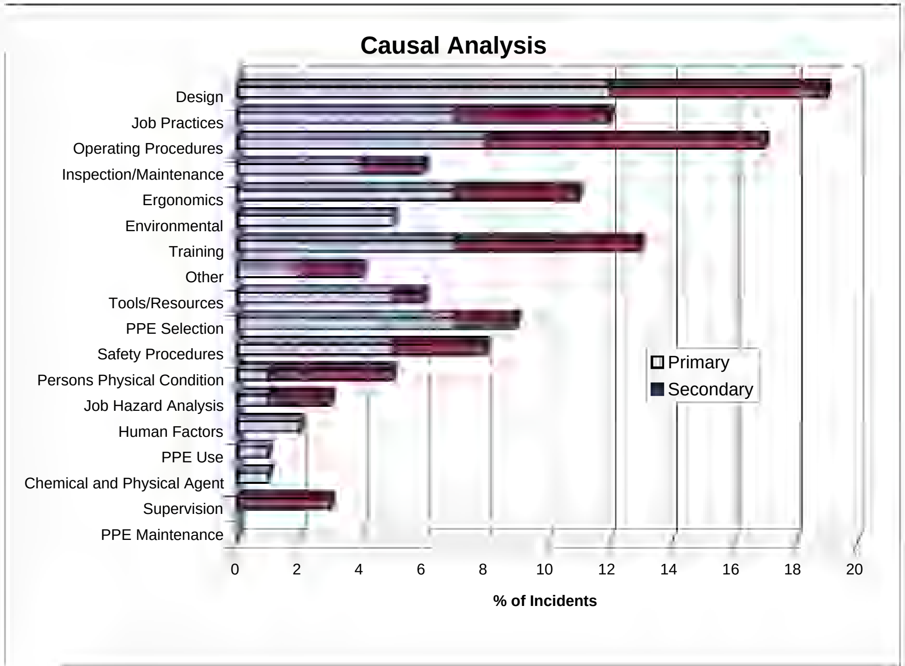
Employees Only - International

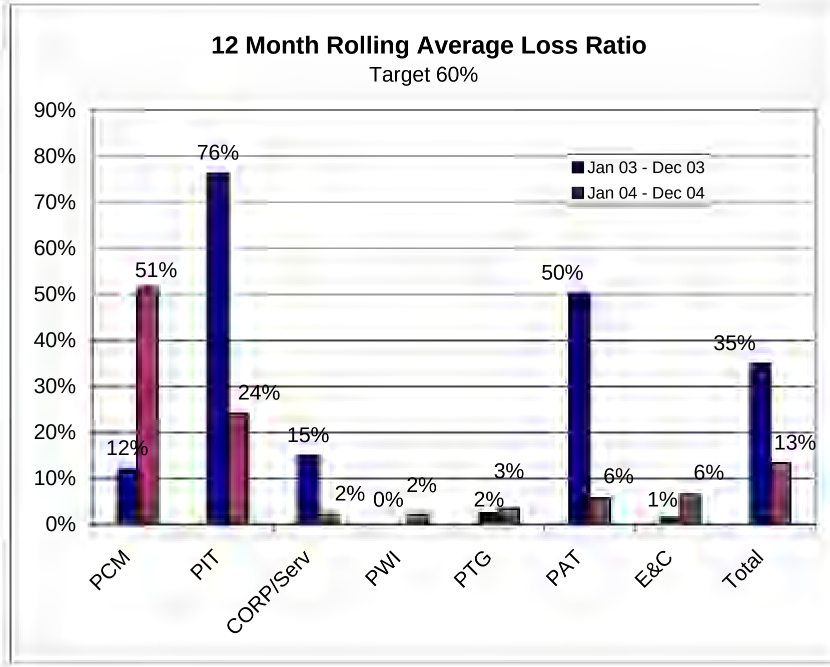


Subcontractors and Others - PCFI



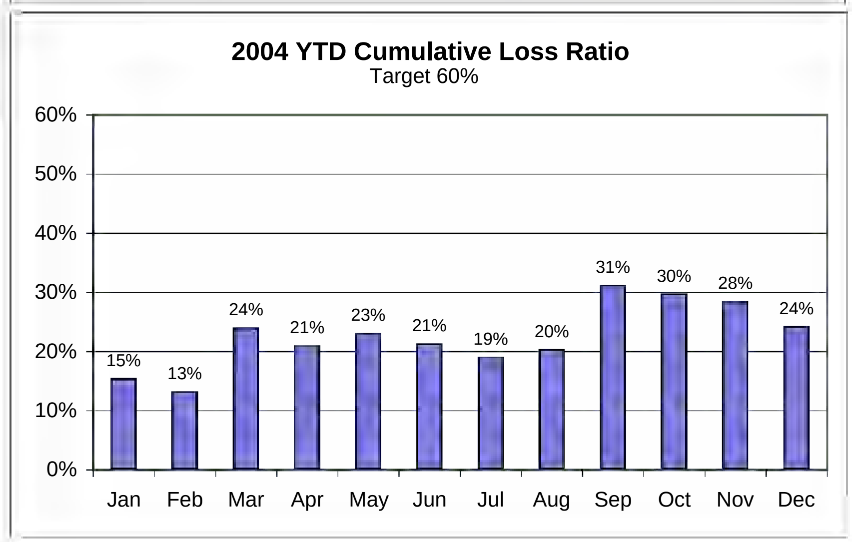
Subcontractors and Others - International



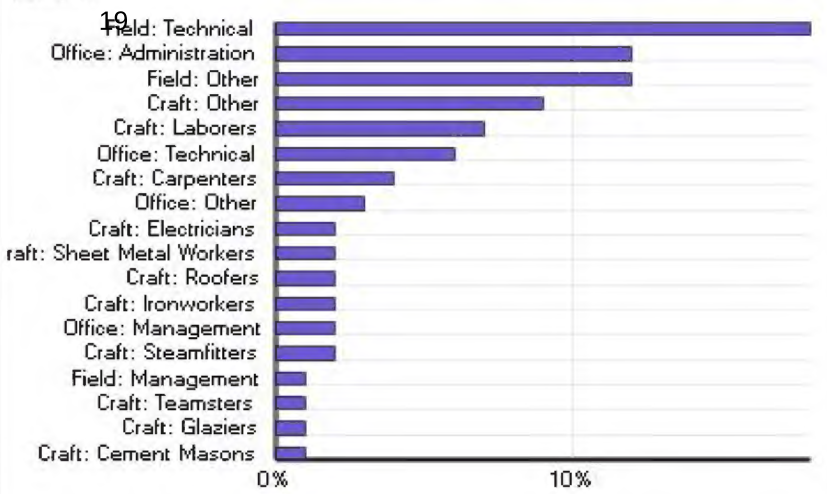


Design - To what degree was the design of facility, workplace, or equipment a factor?
Job Practices - To what degree was the failure to follow job safety/health practices a factor?
Operating Procedures - To what degree were operating procedures a factor?
Safety Procedures - To what degree was the existence or availability of safety procedures a factor?
Environmental - To what degree was heat, cold, dust, sun, glare, etc. a factor?
Ergonomics - To what degree was ergonomics or workplace design a factor?
Tools/Resources - To what degree was inappropriate or inadequate tools or resources a factor?
Training - To what degree was training or the lack thereof a factor?
PPE Selection - To what degree was improper selection of PPE a factor?
Other - What other factors contributed to the incident?
Persons Physical Condition - In your opinion, to what degree was a person's physical condition, such as obesity or limited mobility, a factor?
Inspection/Maintenance - To what degree was Inspection & Maintenance a factor?
Human Factors - To what degree were human factors, such as a person's size or strength, a factor?
Job Hazard Analysis - To what degree was the lack of an adequate activity hazard analysis a factor?
PPE Use - To what degree was improper use of PPE a factor?
Supervision - To what degree was the lack of adequate supervision a factor?
Chemical and Physical Agent - To what degree was exposure to chemical agents, such as dust, fumes, mist, vapors, or physical agents such as noise, radiation, etc. a factor?

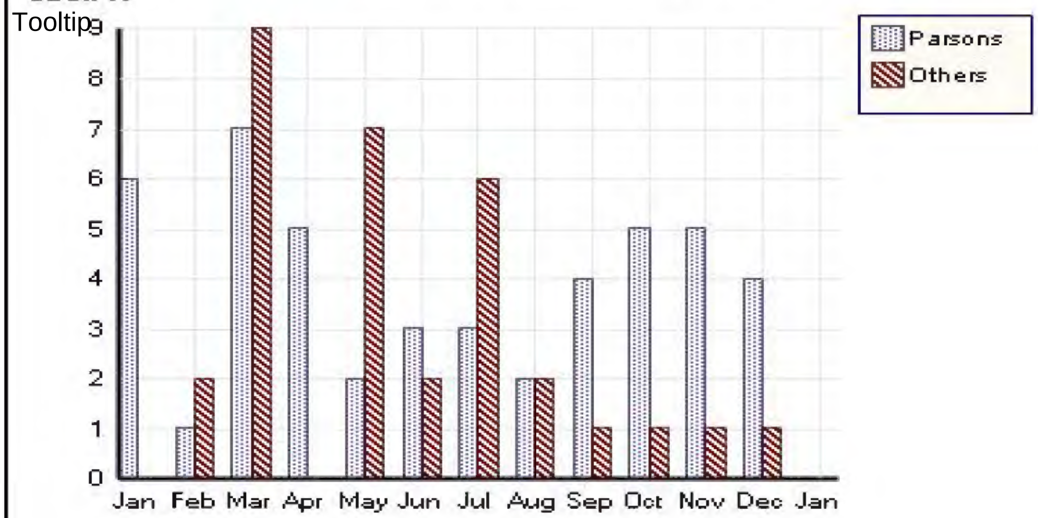
PPE Maintenance - To what degree was improper maintenance of PPE a factor?
Drugs/Alcohol - In your opinion, to what degree were drugs or alcohol a factor?



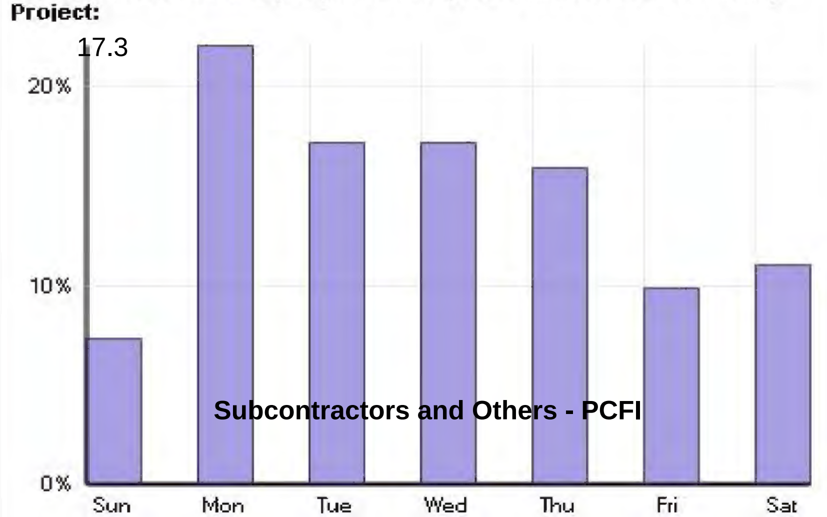
Recordable Incidents By Function (From: Jan 2004 To: Dec 2004)
GBU:PIT



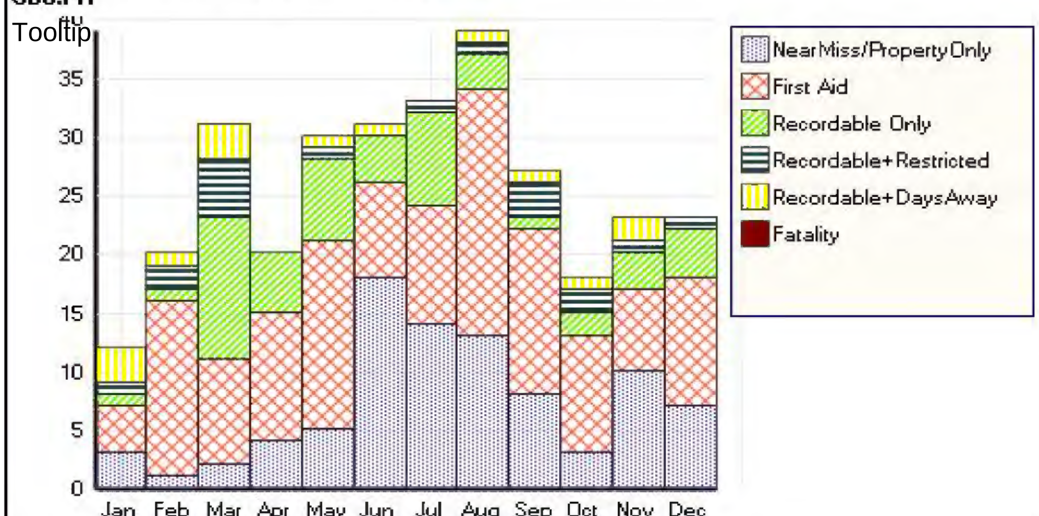
Recordable Incidents By Month (From: Jan 2004 To: Dec 2004)
GBU:PIT



Recordable Incidents By Day Of Week (From: Jan 2004 To: Dec 2004)
Project:



Recordable Incidents By Month (Dec 2004)
GBU:PIT



Parsons Safety Statistics Summary

Included Statuses: Contractor (Field/Craft), JV Partner (Field/Craft), Contractor (Office/Admin), JV Partner (Office/Admin)

Included Incident Types: occupational health and safety

Period: December 2004

	HOURS WORKED		Recordable Cases Including Lost Time and Fatality Cases		Recordable Cases Incident Rate		Days Away From Work Cases		Days Away From Work Cases Incident Rate		Number Of Days Away From Work		Severity Rate		FATALITIES	
Project	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD
Administration & Office Staff	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
(reserved)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(Andrews AFB - Closed)	0	2,186	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VDMA Diversion Valve	0	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFCEE WERC O&M at Tinker AFB	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fernald Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc. ERM Projects/Field Work	0	44,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743485 LA AFB SAMS Complex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
744255 CSSA SCADA Installation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
744223 CSSA Construction & Interim Remedial Actions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742220 Maxwell AFB A76 Outsourcing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742340 Navy CAP Support	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals for Environ. & Resource Mgmt.	**15,830**	**488,166**	**0**	**6**	**0**	**2.46**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Division : International																
Iraq - Captured Enemy Ammunition (CEA)	162,560	1,929,190	0	7	0	0.73	0	1	0	0.1	0	10	0	1.04	0	0
Iraq - Bldgs, Ed & Health DB (743907)	0	532,947	0	1	0	0.38	0	1	0	0.38	0	42	0	15.76	0	0
Russia CTRIC-SLBM	28,258	306,817	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RCWDF	190,506	2,525,223	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq - Taji II	9,552	1,107,890	0	7	0	1.26	0	0	0	0	0	0	0	0	0	0
Russia CTRIC TORP-52	19,344	287,990	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq - Security & Justice DB	497,508	946,873	0	2	0	0.42	0	2	0	0.42	0	27	0	5.7	0	0
Iraq - PCO Oil North	15,046	388,615	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq - Water SPMO	0	76,487	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq - Bechtel/USAID	128,304	411,293	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals for International	**1,051,078**	**8,513,325**	**0**	**17**	**0**	**0.4**	**0**	**4**	**0**	**0.09**	**0**	**79**	**0**	**1.86**	**0**	**0**
Division : Parsons Const. & Fabricators																
Pasco Fabrication Shop	1,023	26,848	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pasco Hanford Fabrication	2,044	2,188	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals for Parsons Const. & Fabricators	**3,067**	**29,036**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Division : Systems, Defense & Security																
FAA/TSSC-III Consolidated	30,161	361,690	0	2	0	1.11	0	0	0	0	0	0	0	0	0	0
NASA-Goddard - Facets	3,252	48,770	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pittsburgh DOE/NETL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743591 - LA MATOC Vandenberg GMD	0	48,037	0	2	0	8.33	0	0	0	0	0	0	0	0	0	0
PENREN BERR Project and Master Plan (CLOSED)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
744056 Salt Waste Processing Facility	2,291	18,231	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743926 Glass Waste Storage Building	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals for Systems, Defense & Security	**35,704**	**476,728**	**0**	**4**	**0**	**1.68**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Totals for GBU	**1,142,155**	**10,050,143**	**1**	**33**	**0.18**	**0.66**	**0**	**4**	**0**	**0.08**	**0**	**79**	**0**	**1.57**	**0**	**0**

Parsons Safety Statistics Summary

Included Statuses: Parsons Employee (Field/Craft), Parsons Employee (Office/Admin)
Included Incident Types: occupational health and safety
Period: December 2004

	HOURS WORKED		Recordable Cases Including Lost Time and Fatality Cases		Recordable Cases Incident Rate		Days Away From Work Cases		Days Away From Work Cases Incident Rate		Number Of Days Away From Work		Severity Rate		FATALITIES	
Project	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD
Administration & Office Staff	**177,766**	**2,453,412**	**2**	**14**	**2.25**	**1.14**	**0**	**2**	**0**	**0.16**	**0**	**16**	**0**	**1.3**	**0**	**0**
Division : Chem Demil																
Newport - NECDF (Direct Hire)	68,797	821,961	0	2	0	0.49	0	0	0	0	0	0	0	0	0	0
Totals for Chem Demil	**68,797**	**821,961**	**0**	**2**	**0**	**0.49**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Division : Environ. & Resource Mgmt.																
Huntsville UXO	5,366	104,893	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fort Ord OE Clean-up	4,964	52,020	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spring Valley	0	2,412	0	1	0	82.92	0	0	0	0	0	0	0	0	0	0
UXB-Kaho'olawe (CLOSED)	0	129,504	0	7	0	10.81	0	6	0	9.27	0	26	0	40.15	0	0
738992 - ACC#2 DY09 RRAD MISC Sites GW Investigation	0	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0
740906 - ACC#2 DY10 RRAD 1025/1027 Invest. (CLOSED)	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
740907 - ACC#2 DY11 RRAD X-1 Investigation	0	2,025	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742529 - ACC#2 DY14 Hays Treatment (CLOSED)	0	432	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742724 - Selfridge UST Remediation (CLOSED)	0	522	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743151 - Grissom AFB (CLOSED)	0	2,021	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743288 - ACC#2 DY17 LSAAP Compliance Monitoring	0	1,023	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743313 Bolling AFB, ENRAC	60	914	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Camp Stanley AOC 55 Removal Action (CLOSED)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Camp Stanley SWMU Closure	470	6,253	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chanute AFB Interim RA LF2 & LF3 (CLOSED)	0	1,556	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COE Buffalo DO-1 Harshaw	0	5,554	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSSA MW Install, GW Monitor (Camp Stanley Monitoring Wells)	0	4,205	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Everglades Restoration AE SV	17,890	37,687	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RRAD Dual Phase Pilot Study	44	1,742	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(reserved 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Parsons Safety Statistics Summary

Included Statuses: Parsons Employee (Field/Craft), Parsons Employee (Office/Admin)
Included Incident Types: occupational health and safety
Period: December 2004

	HOURS WORKED		Recordable Cases Including Lost Time and Fatality Cases		Recordable Cases Incident Rate		Days Away From Work Cases		Days Away From Work Cases Incident Rate		Number Of Days Away From Work		Severity Rate		FATALITIES	
Project	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD
(reserved)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(Andrews AFB - Closed)	0	687	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VDMA Diversion Valve	0	169	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFCEE WERC O&M at Tinker AFB	0	4,791	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fernald Services	0	11,252	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Misc. ERM Projects/Field Work	0	92,774	0	2	0	4.31	0	0	0	0	0	0	0	0	0	0
743485 LA AFB SAMS Complex	1,598	4,208	0	0	0	0	0	0	0	0	0	0	0	0	0	0
744255 CSSA SCADA Installation	0	306	0	0	0	0	0	0	0	0	0	0	0	0	0	0
744223 CSSA Construction & Interim Remedial Actions	0	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742220 Maxwell AFB A76 Outsourcing	37,920	41,133	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742340 Navy CAP Support	0	504	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals for Environ. & Resource Mgmt.	**68,312**	**508,772**	**0**	**10**	**0**	**3.93**	**0**	**6**	**0**	**2.36**	**0**	**26**	**0**	**10.22**	**0**	**0**
Division : International																
Iraq - Captured Enemy Ammunition (CEA)	22,851	241,928	0	3	0	2.48	0	1	0	0.83	0	2	0	1.65	0	0
Iraq - Bldgs, Ed & Health DB (743907)	0	259,839	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Russia CTRIC-SLBM	2,792	31,523	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RCWDF	14,607	138,104	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq - Taji III	2,772	47,904	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Russia CTRIC TORP-52	293	2,657	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq - Security & Justice DB	25,516	198,018	1	1	7.84	1.01	0	0	0	0	0	0	0	0	0	0
Iraq - PCO Oil North	33,062	102,281	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq - Water SPMO	0	20,231	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iraq - Bechtel/USAID	6,040	37,097	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals for International	**107,933**	**1,079,582**	**1**	**4**	**1.85**	**0.74**	**0**	**1**	**0**	**0.19**	**0**	**2**	**0**	**0.37**	**0**	**0**
Division : Parsons Const. & Fabricators																
Pasco Fabrication Shop	12,057	251,960	0	2	0	1.59	0	0	0	0	0	0	0	0	0	0
Pasco Hanford Fabrication	14,673	54,069	1	4	13.63	14.8	0	0	0	0	0	0	0	0	0	0
Totals for Parsons Const. & Fabricators	**26,730**	**306,029**	**1**	**6**	**7.48**	**3.92**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Division : Systems, Defense & Security																
FAA/TSSC-III Consolidated	57,363	682,583	0	6	0	1.76	0	1	0	0.29	0	2	0	0.59	0	0
NASA-Goddard - Facets	12,032	117,817	0	1	0	1.7	0	0	0	0	0	0	0	0	0	0
Pittsburgh DOE/NETL	11,793	209,644	0	4	0	3.82	0	0	0	0	0	0	0	0	0	0
743591 - LA MATOC Vandenberg GMD	0	35,483	0	1	0	5.64	0	0	0	0	0	0	0	0	0	0
PENREN BERR Project and Master Plan (CLOSED)	0	4,346	0	0	0	0	0	0	0	0	0	0	0	0	0	0
744056 Salt Waste Processing Facility	19,405	135,490	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743926 Glass Waste Storage Building	1,035	16,832	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals for Systems, Defense & Security	**101,628**	**1,202,195**	**0**	**12**	**0**	**2**	**0**	**1**	**0**	**0.17**	**0**	**2**	**0**	**0.33**	**0**	**0**
Totals for GBU	**551,166**	**6,371,951**	**4**	**48**	**1.45**	**1.51**	**0**	**10**	**0**	**0.31**	**0**	**46**	**0**	**1.44**	**0**	**0**

Parsons Safety Statistics Summary

Included Statuses: Contractor (Field/Craft), JV Partner (Field/Craft), Contractor (Office/Admin), JV Partner (Office/Admin)

Included Incident Types: occupational health and safety

Period: December 2004

	HOURS WORKED		Recordable Cases Including Lost Time and Fatality Cases		Recordable Cases Incident Rate		Days Away From Work Cases		Days Away From Work Cases Incident Rate		Number Of Days Away From Work		Severity Rate		FATALITIES	
Project	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD	MO.	YTD
Administration & Office Staff	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Division : Chem Demil																
Newport - NECDF (Direct Hire)	36,476	542,888	1	6	5.48	2.21	0	0	0	0	0	0	0	0	0	0
Totals for Chem Demil	**36,476**	**542,888**	**1**	**6**	**5.48**	**2.21**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Division : Environ. & Resource Mgmt.																
Huntsville UXO	3,684	58,311	0	1	0	3.43	0	0	0	0	0	0	0	0	0	0
Fort Ord OE Clean-up	9,527	159,505	0	4	0	5.02	0	0	0	0	0	0	0	0	0	0
Spring Valley	0	350	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UXB-Kaho'olawe (CLOSED)	0	183,662	0	1	0	1.09	0	0	0	0	0	0	0	0	0	0
738992 - ACC#2 DY09 RRAD MISC Sites GW Investigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
740906 - ACC#2 DY10 RRAD 1025/1027 Invest. (CLOSED)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
740907 - ACC#2 DY11 RRAD X-1 Investigation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742529 - ACC#2 DY14 Hays Treatment (CLOSED)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742724 - Selfridge UST Remediation (CLOSED)	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743151 - Grissom AFB (CLOSED)	0	246	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743288 - ACC#2 DY17 LSAAP Compliance Monitoring	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743313 Bolling AFB, ENRAC	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Camp Stanley AOC 55 Removal Action (CLOSED)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Camp Stanley SWMU Closure	80	2,496	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chanute AFB Interim RA LF2 & LF3 (CLOSED)	0	1,923	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COE Buffalo DO-1 Harshaw	0	4,832	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSSA MW Install, GW Monitor (Camp Stanley Monitoring Wells)	0	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Everglades Restoration AE SV	2,539	30,136	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RRAD Dual Phase Pilot Study	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(reserved 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0