MASTER HEALTH AND SAFETY PLAN

ITHACA GUN COMPANY
121-125 LAKE STREET
ITHACA, NEW YORK 14850

Prepared for:

United States Environmental Protection Agency
Region 2
2890 Woodbridge Avenue
Edison, New Jersey

Prepared by:

Earth Tech, Inc.
7870 Villa Park Drive, Suite 400
Richmond, VA 23228

Date: *July 2002*

Project No: 51187

MASTER HEALTH AND SAFETY PLAN

ITHACA GUN COMPANY
121-125 LAKE STREET
ITHACA, NEW YORK 14850

Project Number: *51187*

***Prepared by*:**

Kachina Oxendine Health and Safety Professional	Date

Reviewed by:

Dan Kowalski Project Manager	Date
Dale Prokopchak, CIH, CSP Director of Health and Safety	Date

Accepted by:

Jack D. Harmon On-Scene Coordinator	Date

DISCLAIMER

This Health and Safety Plan (HASP) was prepared for use by employees performing a specific, limited scope of work. It was prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the project site. Of course, it is not possible to discover, evaluate, and protect in advance against all possible hazards, which may be encountered during the completion of this project. However, adherence to the requirements of the HASP will significantly reduce the potential for occupational injury.

RECORD OF AMENDMENTS

Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date
Amendment Number	Inserted By (please print & sign)	Date

LIST OF ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
ATM	Atmosphere
Btu/lb	British thermal unit per pound
BWL	Body water loss
C	Ceiling Limit (Not to be exceeded)
°C	Degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CNS	Central nervous system
COO	Chief Operating Officer
CPR	Cardiopulmonary resuscitation
CRZ	Contamination reduction zone
CSP	Certified Safety Professional
DOT	Department of Transportation
EHS	Environmental, Health and Safety
EV	Electron Volts
EXC	30 Minute Excursion Limit
EZ	Exclusion zone
°F	Degrees Fahrenheit
HASP	Health and Safety Plan
HAZCOM	Hazard Communication
HAZWOPER	Hazardous Waste Operations and Emergency Response
HMIS	Hazardous Materials Information System
HR	Heart rate
HSM	Health and Safety Manager
IARC	International Agency for Research on Cancer
IAW	In Accordance With
IDLH	Immediately Dangerous to Life or Health
LEL	Lower explosive limit
mg/m^3	Milligrams per cubic meter
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MSDS	Material Safety Data Sheet
NIOSH	National Institute for Occupational Safety and Health
N	NIOSH
NA	Not Applicable
NK	Not Known
NPL	National Priorities List
OHST	Occupational Health and Safety Technologist

OSHA	Occupational Safety and Health Administration
OT	Oral temperature
PCB	Polychlorinated biphenyl
PEL	Permissible Exposure Limit
PM	Project Manager
PPE	Personal protective equipment
PPM	Parts per million
PVC	Polyvinyl chloride
$R_{GAS}D$	Relative Density of Gas (air = 1)
RCRA	Resource Conservation and Recovery Act
R_x	Optical correction
SARA	Superfund Amendments and Reauthorization Act
SCBA	Self-Contained Breathing Apparatus
SKIN	Danger of Skin Absorption
SOP	Standard Operating Procedure
SSHO	Site Safety and Health Officer
STEL	Short Term Exposure Limit
SVOC	Semi-Volatile Organic Compound
SZ	Support zone
THA	Task hazard analysis
TLV	ACGIH Threshold Limit Value
µg/L	Micrograms per Liter
UEL	Upper explosive limit
USCG	United States Coast Guard
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile organic compound

TABLE OF CONTENTS

APPENDICES

FIGURES

TABLES

1.0 INTRODUCTION

This Health and Safety Plan (HASP) (including Appendices A-C) provides a general description of the levels of personal protection and safe operating guidelines expected of each employee or subcontractor associated with the environmental services being conducted at the Ithaca Gun Company site, located at 121-125 Lake Street in Ithaca, New York (see Figure 1). Site-specific Health and Safety Supplements will be generated as necessary to address any additional delivery/task orders associated with this program, and will require acknowledgment in writing on their respective signature pages. Once generated, each Supplement will be inserted in Appendix C, documented on the HASP Record of Amendments, and reviewed by field personnel prior to the start of applicable work activities.

GENERAL

The provisions of this HASP are mandatory for all engaged in fieldwork associated with the environmental services being conducted at the subject site. A copy of this HASP, any applicable HASP Supplements and the Environmental Health and Safety Standard Operating Procedures (SOPs) shall be maintained on site and available for review at all times. Record keeping will be maintained in accordance with this HASP and the applicable SOPs. In the event of a conflict between this HASP, SOPs and federal, state, and local regulations, workers shall follow the more stringent, more protective requirements.

POLICY STATEMENT

It is the site policy to provide a safe and healthy work environment for all employees. No phase of operations or administration is of greater importance than injury and illness prevention. Safety takes precedence over expediency or shortcuts. Every accident and every injury is avoidable. We will take every reasonable step to reduce the possibility of injury, illness, or accident.

This HASP and its appendices present procedures for the site. The practices and procedures presented in this HASP and any supplemental documents associated with this HASP are binding on employees while engaged in work. In addition, all site visitors shall abide by these procedures. Operational change to this HASP and supplements that could affect the health or safety of personnel, the community, or the environment will not be made without prior approval of the On-Scene Coordinator (OSC), the Response Manager (RM), and the Health and Safety Manager (HSM). This HASP is based on federal and state safety and health regulations.

SITE INFORMATION

This section provides a general description and historical information associated with the site.

1.1.1 General Description

The Ithaca Gun Company site is located at 121-125 Lake Street (see Figure 1 at the end of this section). This site includes the property formerly occupied by the Ithaca Gun Company, as well as the Ithaca falls parcel which is located directly downhill from the Ithaca Gun Company Property. An apartment complex is located south of the site, and houses are located uphill east of the site, with additional homes located west of the Site across Lake Street.

1.1.2 Site Background/History

The Ithaca Gun Company was in operation from 1880 through 1986. Primary operations included the manufacture of firearms and munitions. Included in these operations were: spray paint booths and drying ovens for gun stocks; firing ranges; plating operations; metal shops; and forge areas where lead was remelted for lead polishing. Ithaca Gun Company Site is at the top of a gorge overlooking Ithaca Falls

and a popular swimming and fishing section of Fall Creek. The City of Ithaca recently purchased the Ithaca Falls parcel with the intention of turning it into parkland. Lead shot along with slag and ash appear to have been discarded on the Ithaca Gun Company property. A portion of the Ithaca Gun Company Facility is directly uphill of the Ithaca Falls parcel and appears to be the historical source of the widespread lead shot found in the Ithaca Falls parcel.

1.1.3 Previous Sampling

Soil samples collected on the Ithaca Falls parcel indicate high levels of lead contamination in surface soils. The soil samples collected by Cornell University in 1997 ranged from 740 to 111,000 milligrams per kilogram (mg/kg) with an average concentration of 28,301 mg/kg. Soil samples collected by the NY State Department of Environmental Conservation (NYSDEC) in 1998 ranged from 591 to 215,000 mg/kg with an average concentration of 39,433 mg/kg. Subsurface soil samples collected on the Ithaca Gun Company property at 15 inches contained lead in concentrations up to 28,900 mg/kg. Surface and sub-surface soil samples collected from the millrace that empties into the Falls Creek contained elevated levels of lead as well.

In addition, Arsenic concentrations ranged from non-detected to 3000 ppm in surface soil samples on the Ithaca Gun Company Property.

REFERENCES

This HASP conforms to the following guidelines established by the regulatory agencies in the following documents:

- U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), Code of Federal Regulations, Title 29 (29 CFR), Part 1910.120.
- U.S. Department of Labor, OSHA, 29 CFR, Part 1910.1200.
- U.S. Department of Labor, OSHA, 29 CFR, Part 1910 and Part 1926.
- National Institute for Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard (USCG)/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, Publication No. 85-115, 1985.

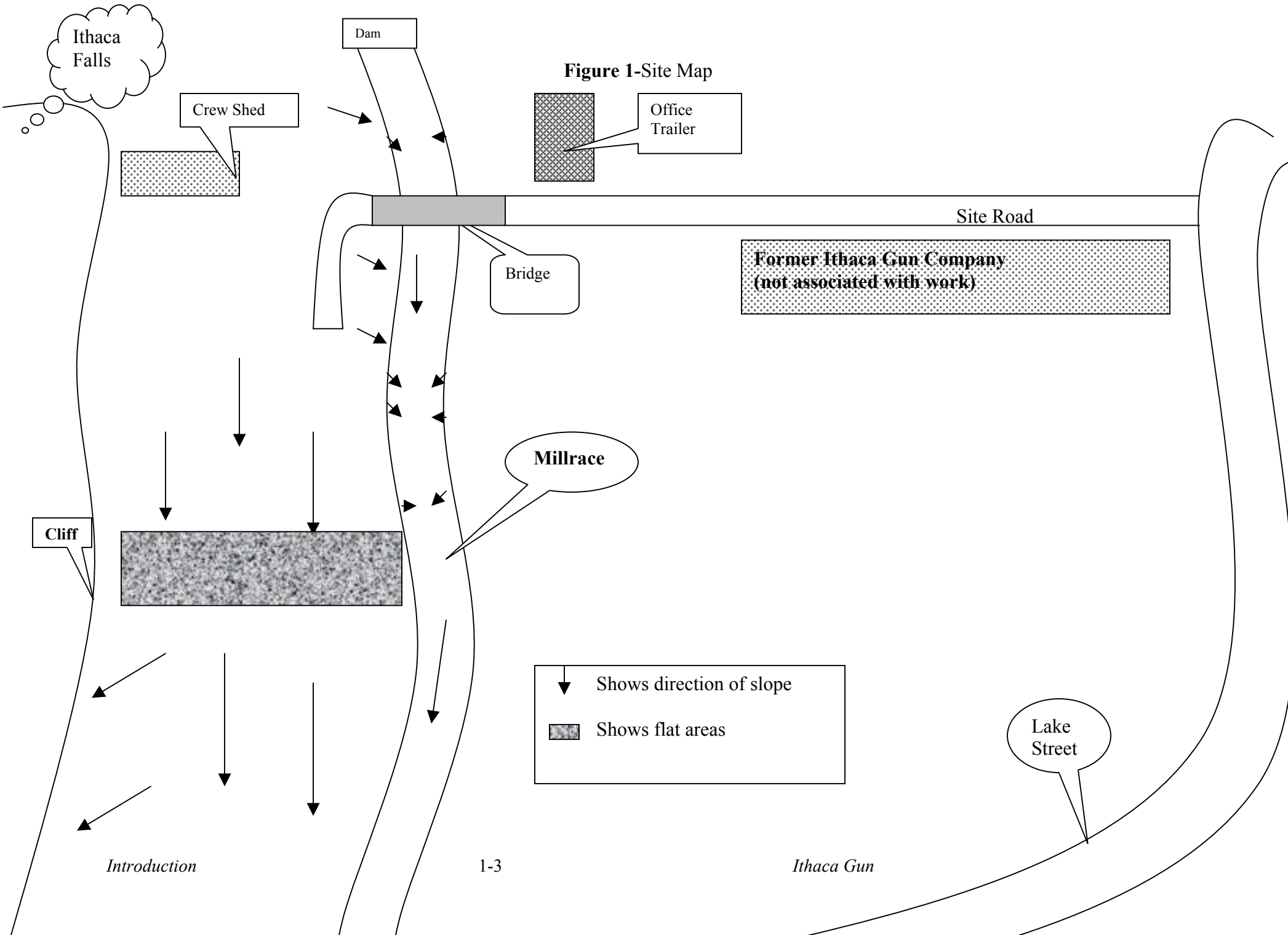


Figure 1-Site Map

2.0 SCOPE OF WORK

Earth Tech will conduct environmental services at the Site. Work will be performed in accordance with the applicable Statement of Work (SOW) and associated Work Plans developed for Ithaca Gun.

Environmental services being performed at the Site include, but are not limited to:

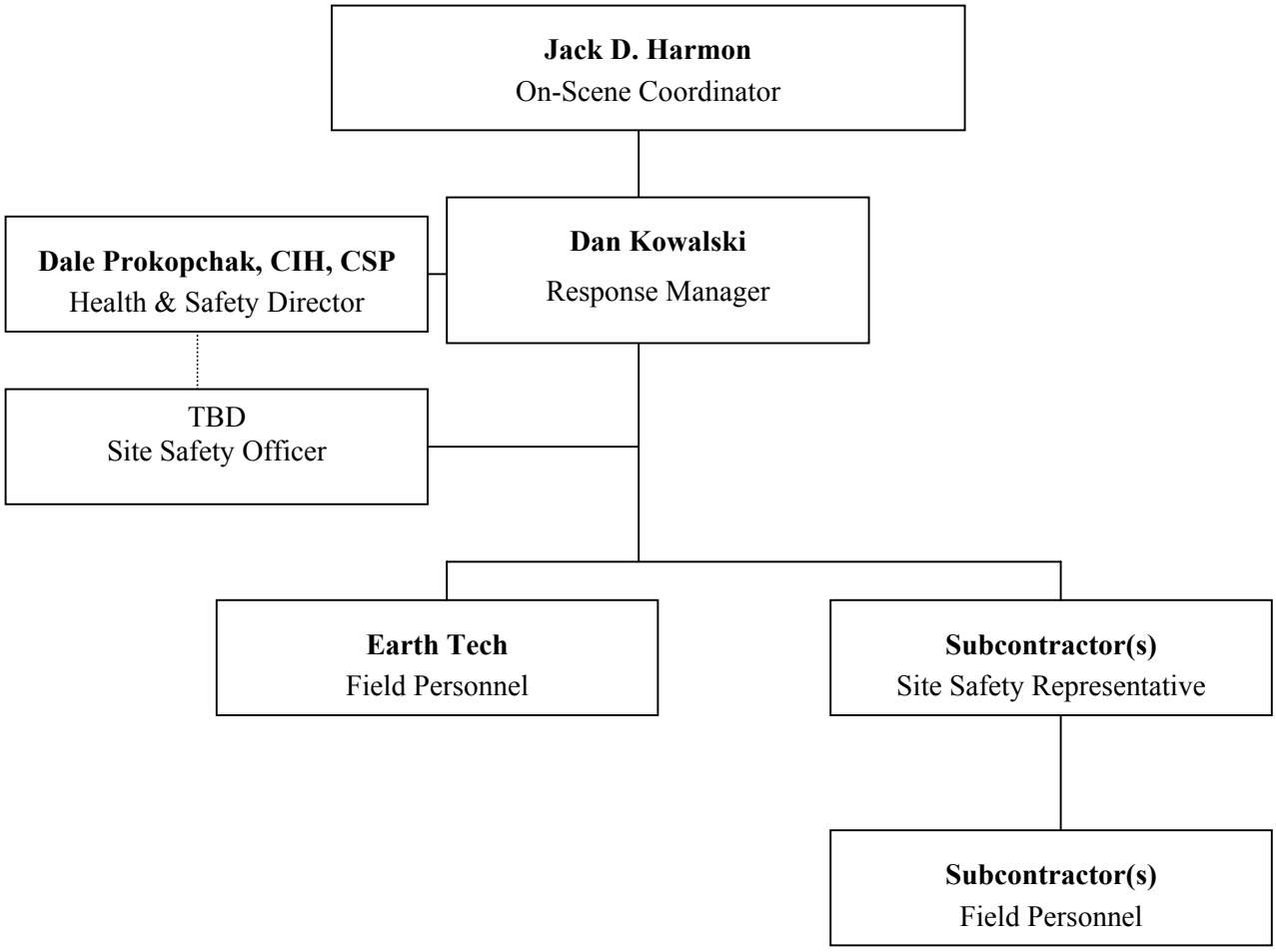
- Mobilization/demobilization
- Electrical power supply
- Erecting and repairing fencing
- Demolition of interfering structures
- Installation of erosion controls
- Clearing and grubbing
- Survey of bridge and areas close to cliff for structural integrity, weight load capability
- Vacuuming and removal of lead-contaminated soil
- Collect and analyze, via X-ray Florescence (XRF), post excavation soil samples
- Backfilling and restoration

3.0 PROJECT HEALTH AND SAFETY ORGANIZATION

ORGANIZATIONAL STRUCTURE

Figure 2 shows the organizational structure of the Health and Safety management for the Site.

Figure 2-Project Health and Safety Organization



ALL PERSONNEL

All personnel are responsible for their own health and safety, for completing tasks in a safe manner, and for reporting any unsafe acts or conditions to the OSC, their supervisor and/or the Site Safety Officer (SSO). All personnel are responsible for continuous adherence to these health and safety procedures during the performance of their work. No person may work in a manner that conflicts with the letter or intent of safety and environmental precautions expressed in these procedures. Earth Tech employees are subject to progressive discipline and may be terminated for blatant or continued violations. Subcontractor employees who violate health and safety regulations will be warned via the subcontractor's supervisor; then, after due warning, will be denied access to the Site.

PROJECT MANAGEMENT

An individual RM will lead each project and is ultimately responsible for ensuring that all project activities are completed in accordance with requirements set forth in this HASP. The Site RM will confer with the OSC and/or the HSM on all matters affecting health and safety. The RM will communicate with the OSC as frequently as dictated by the OSC, but at least daily, regarding site clean-up progress and any problems encountered. At a minimum, this will be accomplished during the Daily Work Order meeting at the end of each workday.

3.1.1 Project Management Responsibilities

The RM health and safety responsibilities relating to the Site include, but are not limited to:

- Ensuring that the project is performed in a manner consistent with this HASP.
- Ensuring that this HASP, where required, is approved and properly implemented.
- Providing the HSM with sufficient information, reasonably in advance of projects, to allow a proper evaluation of the operational or procedural hazards.
- Ensuring sufficient funds are allocated in projects to fully implement the safety procedures required.
- Ensuring that the training/medical surveillance requirements within the HASP are enforced for all Earth Tech field personnel and applicable contractors.
- Investigating and reporting accidents/incidents, and determining if modifications in work practices are required due to an accidental exposure or injury.
- Ensuring personnel are properly trained and informed about assigned tasks.

3.1.2 Project Management Authority

The authority of the RM associated with health and safety programs of the project includes, but is not limited to:

- Assigning an approved alternate SSO when the RM cannot adequately perform the SSO responsibilities as detailed in this HASP.
- Temporarily suspending field activities if the health and safety of personnel or bystanders is endangered, pending evaluation by the HSM.

HEALTH AND SAFETY MANAGER

The HSM is responsible for establishing, implementing, monitoring, and administering the corporate Health and Safety Program; ensuring that the program is in compliance with all federal, state, and/or local requirements; monitoring the effectiveness of the company's program, and making recommendations to improve it; and overseeing and coordinating all communications with federal, state, and local safety and health agencies. This includes keeping the project HASP current with new regulations and techniques, and in accordance with contract-specific health and safety requirements.

3.1.3 Health and Safety Manager Responsibilities

The HSM health and safety responsibilities relating to the project include, but are not limited to:

- Providing technical advice to the RM.
- Monitoring and interpreting changes in relevant regulations, technology, and work practices.
- Developing and/or providing input on all health and safety-related policies and procedures.
- Routinely evaluating the HASP, and reporting the status and recommended changes for activities associated with the program.
- Providing the RM with guidance relative to the requirements, effectiveness, and needs of the HASP.
- Ensuring that the medical surveillance requirements within the HASP are identified.
- Ensuring that the training requirements within the HASP are identified.
- Evaluating health and safety equipment needs for this project and reporting these needs to the RM.
- Reviewing accident investigation reports to ensure that corrective actions identified are appropriate.

3.1.4 Health and Safety Manager Authority

The authority of the HSM includes, but is not limited to:

- Approving employee qualifications to work in selected activities based on health and safety considerations.
- Approving or disapproving the HASP and supplemental documents.
- Establishing employee training and medical surveillance procedures.
- Suspending work on any project or activity that jeopardizes personnel health and safety.
- Authorizing or restricting personnel for work on hazardous waste sites based on medical and/or training status.
- Directing changes in work practices to improve health and safety.
- Acting as the official representative for safety matters within the division.
- Determining whether a change in an individual's work assignments is required due to injury, accidental exposure, or pregnancy.
- Determining the need for a HASP for specific projects or operations, or the appropriateness of specific SOPs.
- As required, meeting with clients to discuss the details of safety and health planning documents.
- Auditing facilities and field activities to evaluate performance/compliance with the Health and Safety Program on a periodic and as-needed basis.
- Directing changes in work practices to improve health and safety, and removing individuals from operations when their conduct jeopardizes the health and safety of themselves or others.
- Suspending work on any project or activity that jeopardizes the safety of anyone in the area.
- Suspending work on a project or activity if the HASP and/or protocols used appear to be inappropriate or inadequate.

SITE SAFETY OFFICER

The Response Manager will also perform the duties of the SSO unless an alternate SSO is named.

3.1.5 Site Safety Officer Responsibilities

The SSO is responsible to:

- Maintain data on regulatory information (e.g., OSHA, Superfund Amendments and Reauthorization Act (SARA) Title III, Right-to-Know) and be sure that timely reports are filed to appropriate agencies.
- Provide information to keep project current with new regulations, new techniques, and new topics for safety meetings.
- Provide leadership and support for the health and safety program.
- Assign sufficient personnel and allocate enough resources to implement the program at all levels.
- Monitor the lost time incidence rate for this project and work toward improving it.
- Monitor regulatory compliance and work toward zero citations and violations.
- Encourage site personnel to make safety their number one priority.
- Inspect the Site at least monthly (per HSM) for regulatory violations and possible hazards in accordance with SOPs.
- Train and educate workers in methods and techniques that are most hazard-free.
- Ensure that employees understand the properties and hazards of materials to be used.
- Ensure that employees have had training in the following areas as necessary:
    1. Hazard Communication (chemical safety);
    2. Confined spaces, locations, and confined space entry procedures;
    3. Emergency operations procedures;
    4. Use and care of personal protective equipment (PPE);
    5. Electrical safety including lockout and tagout procedures;
    6. Respiratory protection and equipment; and
    7. Other appropriate topics based on the hazards at the Site.
- Conduct daily safety meetings with on-site Earth Tech personnel.
- Ensure employees understand that they are responsible for their own safety and that they develop the right attitude toward safety practices.
- Ensure that employees have and use the proper tools, training, and equipment.
- Discipline employees who ignore safety rules and practices after attempts at training have failed.
- Monitor areas of responsibility to ensure that changing conditions do not result in human, situational, or environmental factors capable of causing accidents. Develop and implement corrective action plans to eliminate or mitigate hazards.
- Ensure that housekeeping in all areas under their control is up to the desired level.
- Ensure all injuries/illnesses/accidents and near misses are investigated in accordance with the HASP.
- Implement any monitoring programs established according to directives outlined in the HASP and its supplements.
- Forward any employee exposure monitoring information to the HSM to allow for exposure evaluation and employee notification.

3.1.6 Site Safety Officer Authority

The SSO has authority to:

- Temporarily suspend field activities if the health and safety of personnel are endangered, pending further consideration by the HSM.
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the HSM and the RM.

EMPLOYEES

Personnel working on the Site are required to read and acknowledge their understanding of this HASP and its supplements. Personnel are expected to abide by the requirements of this HASP and cooperate with supervisory personnel to ensure a safe and healthful work site.

It is each employee's responsibility to be familiar and in compliance with all health and safety practices and to use PPE, air monitoring equipment, and other safety devices, as required. In addition, employees shall:

- Notify the RM, in writing, of unsafe conditions and acts.
- Report all injuries, illnesses, accidents, and near misses immediately.
- Perform all work in a safe and efficient manner.
- Seek training in any area where there are questions as to the safest and most effective way to work or use equipment.

3.1.7 Employee Responsibilities

It is each employee's responsibility to be familiar and comply with all health and safety practices and to use required PPE, air monitoring equipment, and other safety devices, as required. Responsibilities of employees associated with this project include, but are not limited to:

- Complying with the provisions of and following the procedures defined in the HASP.
- Providing feedback to health and safety management relating to omissions and modifications in the Health and Safety Program.
- Notifying the RM, in writing, of unsafe conditions and acts.
- Reporting all injuries, illnesses, accidents, and near misses immediately.
- Performing all work in a safe and efficient manner.
- Seeking training in any area where questions exist as to the safest and most effective way to work or use equipment.
- Understanding the policies and procedures specified in the Health and Safety Program, and clarifying those areas where understanding is incomplete.

3.1.8 Employee Authority

The health and safety authority of each employee assigned to the Site consists of the following:

- Refusing to work in any operation that the employee feels is unsafe, or where specified safety precautions are not adequate or understood.
- Refusing to work on any site or operation where the safety procedures specified in this HASP are not being followed.
- Contacting the HSM at any time to discuss potential concerns.

SUBCONTRACTORS

Upon entering a subcontractor agreement for work performance at the Site, the subcontractor will review this HASP prior to the start of work performance, and develop and submit a HASP that is in compliance with this HASP as a minimum, as well as federal and state requirements. Subcontractors are responsible for the safety and health of their employees and the submittal of the HASP for review is not for the purpose of procedure approval, but rather to ensure compliance with the contract provisions.

3.1.9 Subcontractor Responsibilities

Responsibilities of any subcontractors associated with the project, with respect to the health and safety aspects of the program, include the following:

- Complying with the appropriate provisions of their HASP and SOPs for work performed by their employees.
- Ensuring that subcontractor employees comply with all federal and state health and safety regulations.
- Ensuring that subcontractor employees comply with any specific safety and health provisions required by the client.

3.1.10 Subcontractor Authority

The health and safety authority of subcontractors assigned to the project consists of the following:

- Refusing to work in any operation that the employee feels is unsafe, or where specified safety precautions are not adequate or understood.

ON-SCENE COORDINATOR

The OSC, as the representative of the U.S. EPA is responsible for overall project administration and for coordinating health and safety standards for all individuals on site at all times. All U.S. EPA, Earth Tech, and contractors' health and safety guidelines and requirements, as well as all applicable OHSA standards shall be applied. The OSC is the overall site safety officer and will be responsible for the health and safety of site visitors. However, each contractor (as an employer under OSHA) is also responsible for the health and safety of its employees. If there is any dispute with regard to health and safety, the following procedures shall be followed:

1) Attempt to resolve the issue on site; and
2) If the issue cannot be resolved, site personnel shall consult off-site health and safety personnel for assistance and the specific task or operation in dispute shall be discontinued until the issue is resolved.

REMOVAL SUPPORT TEAM

The Removal Support Team (RST) is responsible for providing the OSC with assistance and support in regard to all technical, regulatory and safety aspects of site activity. The RST is also available to advise the OSC on matters relating to sampling, treatment, packaging, labeling, compatibility, transport, and disposal of hazardous materials, but is not limited to the above-mentioned.

CLIENT RESPONSIBILITIES

Designated U.S. EPA employees or contract personnel, assigned to perform specific duties on the project, take responsibility for their compliance with applicable federal, state, and local statutes, ordinances, and regulations regarding health and safety requirements specified in the HASP.

VISITORS

Unauthorized visitors will not be permitted within established work site control zones. Authorized visitors (e.g., U.S. EPA, etc.) to any work location on the Site will be briefed by the RM on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies.

SITE ACCESS DOCUMENTATION

All personnel entering the Site shall complete the "Site Entry/Exit Log" located at the Command Post.

If implemented by the RM, all personnel required to enter established site control zones shall complete the Exclusion and/or "Hot Zone" Log located at the decontamination area.

4.0 HEALTH AND SAFETY PROGRAMS

MEDICAL SURVEILLANCE AND SUPPORT PROGRAM

All personnel performing field activities at the Site will be medically monitored in accordance with Earth Tech SOP 7, *Medical Surveillance*. As stated in the SOP, additional medical testing may be required for personnel performing tasks involving project-specific stressors (e.g., lead per the Construction Standard 29 CPR 1926.62 - see applicable chemical table in Section 6.). For this project, additional site-specific testing includes:

a) HAZWOPER (per CFR 1910.120),
b) Respiratory Protection (per 29 CFR 1910.134), and
c) Noise (per 29 CFR 1910.95).

In addition, any time an actual exposure above the OSHA permissible exposure limit (PEL) occurs, the employee may be tested for that material to document effect(s) of the exposure.

4.1.1 Contractor Medical Surveillance

Subcontractors, upon award of specific work, must provide appropriate documentation of medical surveillance (e.g., IAW 29 CFR 1910.120(f)), signed by an occupational physician, for all personnel that will be assigned to the project. This documentation must state the ability to perform the subject work and, if applicable, the ability to wear respiratory protection. This documentation must be provided at least seven days prior to work start-up. Medical certification for newly assigned employees must be provided before they begin field activities at the Site.

Medical certificates must be made available upon request. Any subcontractor employee whose medical certification expires must be prevented, by the subcontractor, from performing work until the medical re-certification is attained.

ACCIDENT AND INCIDENT REPORTING

The investigation and reporting requirements specified in Earth Tech SOP 6, *Accident/Incident Investigation*, shall be used for reporting and documenting accidents, injuries, and work-related illnesses involving Earth Tech employees promptly after personnel become aware of the situation.

All accidents and incidents during field activities that involve any employee or subcontractor personnel associated with this project will be promptly reported to the RM/SSO and the appropriate supervisor. The RM/SSO will provide notification to the OSC and the HSM as required by company policy. The supervisor of the injured employee or work crew where the accident occurred will initiate a written report that details the events surrounding the accident/incident in accordance with OSHA requirements.

For accidents and injuries involving Earth Tech personnel, the "Supervisor's Report Of Incident" form (attached to SOP 6) will be used to ensure all relevant information is recorded. The RM/Supervisor shall complete the "Manager" section of the form and forward/fax the form to the HSM in Grand Rapids, Michigan [(616) 940-4396] for review/reporting purposes. Copies shall be maintained in the project files.

OSHA and most states' occupational health and safety programs require verbal notification within 8 hours, and preferably during the same work shift, in the event of a fatality or severe injury requiring hospitalization of three or more employees. The HSM or RM will make such notifications to OSHA for Earth Tech and, therefore, must receive the information in time to make the notification without penalty. The subcontractor shall comply with applicable notification requirements for the subcontractor employees, and must inform the OSC and SSO after notification is made.

4.1.2 Subcontractor Accident and Incident Reporting

Accidents, incidents or near misses involving subcontractor personnel will require the completion of company-specific accident/incident report by a representative of the subcontractor, in accordance with federal, state and/or local requirements. The subcontractor will promptly provide the SSO with a copy of the documentation detailing the events surrounding the accident/incident. In addition, corrective actions undertaken by the subcontractor to prevent reoccurrence or modifications to the subcontractor's health and safety policies and procedures developed to inform their personnel of the hazard will be described. Copies of all documentation shall be maintained in the appropriate project files.

4.1.3 Additional Notifications

In the event of an accident or injury during the project, the RM will inform the HSM and the OSC of the incident and provide him/her with the appropriate information/documentation in order to initiate any additional notifications that may be required.

HEALTH AND SAFETY TRAINING PROGRAMS

All Earth Tech personnel performing work activities inside any controlled work area (see Section 9.0) will meet the requirements for training specified in Earth Tech SOP 9, *Safety Training Requirements*. All subcontractor personnel will be required to demonstrate participation in equivalent training as specified by the standards applicable to site activities being performed (i.e., HAZWOPER, etc.).

Employees handling materials as defined by the Department of Transportation (DOT) as hazardous, will also be required to complete the DOT training requirements for HazMat employees (see 49 CFR 172, Subpart H, *Training*).

All HAZWOPER 40-hour certificates and current refresher certificates shall be maintained on site. These documents should be kept in Appendix A of the plan.

4.1.4 Site-Specific Training

As stated in the SOP, safety training may be conducted at the Site by the SSO prior to work activities addressing site-specific safety concerns. Specific training may be required prior to working with certain hazardous materials, such as asbestos, lead, or other known carcinogen. Attendance of these sessions will be formally documented using the form attached to the SOP.

In addition to the general health and safety training programs, personnel will be:

- Instructed on the contents of applicable portions of this plan and any supplemental health and safety information developed for the tasks to be performed.
- Informed about the potential routes of exposure, protective clothing, precautionary measures, and symptoms or signs of chemical exposure and heat stress.
- Made aware of task-specific physical hazards and other hazards that may be encountered during site work. This includes any client-specific required training for health and safety.
- Made aware of fire prevention measures, fire extinguishing methods, and evacuation procedures.

For this project, the training required to perform work includes:

a) HAZWOPER 40-hour and current 8-hour refresher,
b) 8-hour Supervisor (at least one person on site),
c) Hearing Conservation,
d) Respiratory Protection,
e) Site-Specific training (e.g., HazCom, etc.)
f) XRF training
g) Lead training

The site-specific training will be performed prior to the worker performing the subject task or handling the impacted materials and on an as-needed basis thereafter. Training will be conducted by the SSO (or his/her designee) and will be documented on the form attached to the SOP.

4.1.5 HAZWOPER Training Exceptions

OSHA regulations mandate specific training requirements for personnel involved in remediation processes and spill response. However, incidental personnel do not require HAZWOPER certification if the site characterization indicates that the potential for health and safety concerns is low, or entry is only allowed into non-hazardous perimeter areas. Personnel who only visit or deliver to the work site perimeters (e.g., vendors, personnel working in the support zone, etc.) are exempt from the HAZWOPER standard, and do not require certification. Visitors (including regulators, inspectors, etc.) would not require HAZWOPER certification to observe work in progress from perimeter areas. The subcontractor that will provide electrical power for the site trailers does not require HAZWOPER certification.

HAZARD COMMUNICATION

The SSO/employees shall ensure compliance with the Hazard Communication SOP found in the EHS SOP Manual.

STOP WORK AUTHORITY

All employees have the right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions. Whenever the SSO determines that workplace conditions present an uncontrolled risk of injury or illness to employees, immediate resolution with the appropriate supervisor shall be sought. Should the supervisor be unable or unwilling to correct the unsafe conditions, the SSO is authorized and required to stop work, which shall be immediately binding on all affected Earth Tech employees and subcontractors.

Upon issuing the stop work order, the SSO shall implement corrective actions so that operations may be safely resumed. Resumption of safe operations is the primary objective; however, operations shall not resume until the HSM has concurred that workplace conditions meet acceptable safety standards.

5.0 HAZARD ASSESSMENT

GENERAL HAZARDS

During operations at the Site, personnel may be exposed to a number of occupational and environmental hazards. In general, the following hazards can be expected:

Chemical: Applicable health hazard information in the form of Material Safety Data Sheets (MSDSs) is included in Appendix B.
Hazardous Noise: Produced during heavy equipment operations, material handling and container handling/staging activities that may be ongoing around the work site.
Walking/Working Surfaces: Unsafe and/or elevated walking surfaces.
Vehicle Operation Hazards: Associated with the operation of heavy equipment, support/sampling equipment and vehicles.
Electrical and Other Powered Machine Hazards: Present during both the operation and maintenance of site support equipment.
Heat and Cold Stress Environments: Associated with site-specific work activities, PPE usage and geographical project locations.
Biological Hazards: Associated with exposures to plant/animal vectors and bloodborne pathogens.

It is unlikely that this HASP could anticipate all of the hazards associated with the project. Therefore, this HASP has been developed as a programmatic document outlining the protective measures for hazards most likely to be present at each project location. Site-specific Task Hazard Analysis (THA) forms, listing the significant hazards, applicable PPE (in addition to required Level D ensemble), operational programs and safety considerations of each major task, have been developed and are included at the end of Section 5. Additional tasks may become necessary during work at the Site and appropriate THAs will be developed by the HSM and forwarded as a supplement to this HASP.

Supplements associated with this HASP will not be developed as stand-alone documents. Each of the supplements generated for the project will be accompanied by this document at all times.

STANDARD OPERATING PROCEDURES

Standard Operating Procedures (SOPs) have been developed as guidance documents for specific work tasks. The following is a list of SOPs found in the EHS SOP Manual. In the table below, SOPs containing specific information regarding tasks anticipated for this project have been identified.

Table 1-Applicable SOPs

ANTICIPATED FOR THIS PROJECT	SOP NUMBER	SOP TOPIC	ANTICIPATED FOR THIS PROJECT	SOP NUMBER	SOP TOPIC
☒	001	Health and Safety Programs	☒	024	High Pressure Washers
☐	002	Proposals	☒	025	Cranes
☒	003	Health and Safety Plans	☐	026	Forklift
☒	005	General Safety	☒	027	Ladders
☒	006	Accident/Injury Investigation	☒	028	Electrical
☒	007	Medical Surveillance	☐	029	Solvents, Flammables and Compressed Gases
☒	008	Air Monitoring	☒	030	Portable Fire Extinguishers
☒	009	Training	☒	031	Asbestos
☒	010	Daily Safety Meeting	☒	032	Construction/ Demolition
☒	011	Record Keeping	☒	033	Vehicle Safety
☒	012	Personal Protective Equipment	☒	034	Emergency Response
☒	013	Respiratory Protection – Without SCBA	☐	035	Well Drilling – Non-Hazardous Sites
☐	014	Respiratory Protection – SCBA	☒	036	Contractor Requirements
☒	015	Work Zones	☒	037	Safety Inspections
☒	016	Decontamination	☐	038	Subsurface Drilling
☒	017	Heat Stress	☐	039	Excavation of Unknown Drums
☐	018	Confined Space	☐	040	Drum Handling and Sampling
☐	019	Line Entry	☐	041	Cold Stress
☒	020	Hotwork	☒	042	Hearing Protection
☒	021	Lock Out/Tag Out	☐	043	Tank Cleaning
☒	022	Excavation	☒	044	Hazard Communication
☐	023	Underground Storage Tank Removal	☐	045	Powder Actuated Tools

TASK HAZARD ANALYSIS

Task Hazard Analysis (THA) is required by OSHA to determine the potential dangers involved with work practices engaged in by employees. THAs for tasks anticipated at this Site can be found at the end of Section 5. If additional tasks are identified, contact the HSM to develop additional THAs.

ADDITIONAL SAFETY INFORMATION

The following information is included in this HASP to address specific activities on the Site.

5.1.1 Underground Utilities

Various forms of underground/overhead utility lines or pipes may be encountered during site activities. Prior to the start of intrusive operations, utility clearance is mandated, as well as obtaining authorization from all concerned public utility department offices. Should intrusive operations cause equipment to come into contact with utility lines, the SSO and the HSM will be notified immediately. Work will be suspended until the applicable utility agency is contacted and the appropriate actions for the particular situations can be taken. For this site, the applicable agency is Dig Safely New York. The phone number is provided in the Emergency Contacts list found in Section 8.

5.1.2 Biological Hazards

Contact with animals, insects, and plants can cause injury and illness to personnel. Care must be taken to ensure that these types of injuries are avoided. Some examples of biological hazards include:

- Wild animals, such as snakes, raccoons, squirrels, and rats. These animals not only can bite and scratch, but can carry transmittable diseases (e.g., rabies). Avoid the animals whenever possible. If bitten, go to the nearest medical facility. The following can possibly be found while working at the Ithaca Gun Company Site:
    - Northern Copperhead
    - Eastern Massasauga
    - Timber rattlesnake
    - Black bear
    - Coyote
    - Red fox
    - Gray fox
- Insects such as ticks, bees, and wasps. Ticks can transmit Lyme disease. Bees and wasps can sting by injecting venom, which causes some individuals to experience anaphylactic shock (extreme allergic reaction). Whenever you will enter areas that provide a habitat for insects (e.g., grass areas, woods), wear light-colored clothing, long pants and shirt, and spray exposed skin areas with a DEET-containing repellent. Keep away from high grass wherever possible. Keep your eyes and ears open for bee and wasp nests. If bitten by insects, see a doctor if there is any question of an allergic reaction.
- Plants such as poison ivy, poison oak, poison sumac and wild parsnip can cause severe rashes on exposed skin. Be careful where you walk, wear long pants, and minimize touching exposed skin with your hands after walking through thickly vegetated areas until after you have thoroughly washed your hands with soap and water.

5.1.3 Fall Protection

Fall protection shall be implemented during work activities. Employees shall be protected from cliffs 6 feet or more in depth by a guardrail system, safety net system, or personal fall arrest system. Employees shall be protected from excavations 6 feet or more in depth by guardrail systems, fences, or barricades. The RM, with the SSO and/or HSM approval, will choose the most appropriate form of protection according to each work zone.

5.1.4 Buddy System

All personnel shall use the buddy system. Workers shall be teamed with at least one additional worker or "buddy." Team members shall routinely maintain visual contact with each other and be alert for signs of illness or toxic exposure, such as:

1. Changes in complexion and skin discoloration.
2. Changes in coordination or demeanor.
3. Excessive salivation.
4. Changes in speech pattern.
5. Headaches, dizziness, blurred vision.
6. Nausea or cramps.
7. Irritation of eyes, skin, or respiratory tract.

Anyone exhibiting symptoms should be taken immediately to the nearest medical facility or stabilized for transport by qualified medical personnel. If imminent danger exists, call the applicable emergency contact number listed in Table 5 of Section 8.0.

5.1.5 Hazardous, Solid, or Municipal Waste

If hazardous, solid and/or municipal wastes are generated during any phase of the project, the waste shall be accumulated, labeled, and disposed of in accordance with applicable Federal, State, and/or local regulations.

SPILL CONTAINMENT PROCEDURE

Work activities may involve the use of hazardous materials (i.e. fuels, solvents) or work involving drums or other containers. The following procedures will be used to prevent or contain spills:

- All hazardous material will be stored in appropriate containers
- Tops/lids will be placed back on containers after use.
- Containers of hazardous materials will be stored appropriately away from moving equipment.
- At least one spill response kit, to include an appropriate empty container, materials to allow for booming or diking the area to minimize the size of the spill, and appropriate clean-up material (i.e. speedy dri) shall be available at each work site (more as needed).
- All hazardous material in use (i.e. fuels) shall be properly labeled.
- Containers shall only be lifted using equipment specifically manufactured for that purpose.
- For drums/containers, follow the procedures in SOP 39 and 40 to minimize spillage.

CLIENT SPECIFIC SAFETY REQUIREMENTS

The client has specified no additional health and safety requirements.

Task Hazard Analysis Forms

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

TASK HAZARD ANALYSIS (THA)

MOBILIZATION/DEMOBILIZATION

THA NUMBER: 001

TASK DESCRIPTION

Mobilization/demobilization activities typically present limited hazards as compared to the majority of site tasks. However, the potential still exists for exposures to a variety of hazards, typically physical in nature. These tasks include trailer set up, electrical connections, etc.

SIGNIFICANT HAZARDS

Chemical Exposure

1. None anticipated

Physical Hazards

1. Vehicle/heavy equipment traffic
2. Heavy lifting
3. Suspended loads
4. Insects, plants and animals
5. Hazardous noise
6. Severe weather
7. Heat/cold stress
8. Slips, trips, and falls
9. Electrical
10. Sunburn

PPE

Level D (see Section 6 for upgrade/downgrade criteria):

1. ANSI approved hardhat
2. ANSI approved safety glasses (with face shield for high impact hazards)
3. Work clothing (coveralls or work uniform appropriate for the weather conditions)
4. ANSI approved safety shoes/boots (metatarsal protection may be required)
5. Hearing protection (as necessary while working near noise producing equipment)
6. Reflectorized safety vest when working around vehicular traffic
7. Leather gloves while handling sharp edges
8. Use sunscreen lotion 15 SPF or higher on exposed skin as necessary.

ADDITIONAL SAFETY EQUIPMENT

ADDITIONAL SAFETY CONSIDERATIONS

1. Evaluate surrounding work area for additional hazards that may be present and modify work activities accordingly.
2. Keep area surrounding work areas free of obstructions during mobilization/demobilization activities.
3. Use Deet® containing product in areas of possible exposure to ticks, mosquitoes, etc.

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Task Hazard Analysis (THA)

CLEARING AND GRUBBING

THA NUMBER: 002

Task Description

Clearing and grubbing involves the removal of plants (e.g., trees, bushes, etc.). This is usually accomplished through physical and mechanical means using a variety of tools and equipment. Personnel working in the area of clearing and grubbing activities should be alert to their surroundings and keep in visual contact with the equipment operators.

Significant Hazards

Chemical Exposure

1. See Table in Section 6 of the HASP for specific chemical hazards.

Physical Hazards

1. Vehicle/heavy equipment traffic
2. Powered equipment (chainsaws, chippers, etc…)
3. Heavy lifting
4. Pinchpoints
5. Insects, plants and animals
6. Hazardous noise
7. Severe weather
8. Heat/cold stress
9. Slips, trips, and falls
10. Electrical
11. Sunburn

PPE

Level D (see Section 6 for upgrade/downgrade criteria):

1. ANSI approved hardhat
2. ANSI approved safety glasses (with face shield for high impact hazards)
3. Work clothing (coveralls or work uniform appropriate for the weather conditions)
4. ANSI approved safety shoes/boots (metatarsal protection may be required)
5. Hearing protection (as necessary while working near noise producing equipment)
6. Reflectorized safety vest when working around vehicular traffic
7. Leather gloves while handling sharp edges
8. Use sunscreen lotion 15 SPF or higher on exposed skin as necessary.

Additional Safety Equipment

1. Chaps for work with powered cutting tools

ADDITIONAL SAFETY CONSIDERATIONS

1. Evaluate surrounding work area for additional hazards that may be present and modify work activities accordingly.
2. Keep area surrounding work areas free of obstructions during mobilization/demobilization activities.
3. Use Deet® containing product in areas of possible exposure to ticks, mosquitoes, etc.
4. Pre-plan walking surfaces prior to work performance due to the steepness of the ground and the loose rock covering.
5. Maintain a minimum safe clearance of at LEAST 5 feet from the edge of any steep slopes or cliffs without the use of fall protection.
6. Operator of powered cutting equipment will have a working knowledge or training with the equipment.

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Task Hazard Analysis (THA)

SURVEYING

THA NUMBER: 003

Task Description

Surveying for structural support of the bridge and proposed site for crane activities typically present limited hazards as compared to the majority of site tasks. However, the potential still exists for exposures to a variety of hazards, typically physical in nature.

Significant Hazards

Chemical Exposure

1. See Table in Section 6 of the HASP for specific chemical hazards.

Physical Hazards

1. Insects, plants and animals
2. Severe weather
3. Heat/cold stress
4. Slips, trips, and falls
5. Sunburn

PPE

Level D (see Section 6 for upgrade/downgrade criteria):

1. ANSI approved hardhat
2. ANSI approved safety glasses (with face shield for high impact hazards, etc.)
3. ANSI approved safety shoes/boots
4. Work clothing (coveralls or work uniform appropriate for the weather conditions)
5. Leather gloves while handling sharp edges
6. Protective coveralls (as needed)
7. Use sunscreen lotion 15 SPF or higher on exposed skin as necessary

Additional Safety Equipment

ADDITIONAL SAFETY CONSIDERATIONS

1. Evaluate surrounding work area for additional hazards that may be present and modify work activities accordingly.
2. Keep area surrounding work areas free of obstructions.
3. Use Deet® containing product in areas of possible exposure to ticks, mosquitoes, etc
4. Pre-plan walking surfaces prior to work performance due to the steepness of the ground and the loose rock covering.
5. Maintain a minimum safe clearance of at LEAST 5 feet from the edge of any steep slopes or cliffs without the use of fall protection..

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Task Hazard Analysis (THA)

EQUIPMENT DECONTAMINATION

THA NUMBER: 004

Task Description

This task includes selecting, constructing, and removal of the decontamination areas, as well as performing equipment decontamination.

Significant Hazards

Chemical Exposure

1. See Table in Section 6 of the HASP for specific chemical hazards.
2. Decon solutions and/or detergents

Physical Hazards

1. Vehicle/heavy equipment traffic
2. High pressure washer (eye/body impact)
3. Heavy lifting
4. Hazardous noise
5. Severe weather
6. Heat/cold stress
7. Slips, trips, falls, and Protruding objects

PPE

Modified Level D (see Section 6 for upgrade/downgrade criteria):

1. ANSI approved hardhat
2. ANSI approved safety glasses
3. Face shield (if splash or high impact hazards exist)
4. ANSI approved safety shoes/boots
5. Work clothing (coveralls or work uniform appropriate for the weather conditions)
6. Hearing protection (as necessary while working near noise producing equipment)
7. Reflectorized safety vest when working around vehicular traffic
8. Leather gloves while handling sharp edges
9. Nitrile or Neoprene gloves
10. Protective coveralls (as needed)
11. Rain suit or Apron (as needed)
12. Safety harness (tied off appropriately) for fall protection when working near excavations ≥ 6 feet in depth during construction of decon area.
13. Use sunscreen lotion 15 SPF or higher on exposed skin as necessary.

Additional Safety Equipment

1. Knee pads (or equivalent) when decontaminating the undercarriage of equipment or vehicles.

ADDITIONAL SAFETY CONSIDERATIONS

1. Do not direct high pressure spray in the direction of site personnel.
2. Never decon PPE with the high pressure washer.
3. Evaluate surrounding work area for additional hazards that may be present and modify work activities accordingly.
4. Keep area surrounding work areas free of obstructions.
5. Use Deet® containing product in areas of possible exposure to ticks, mosquitoes, etc.
6. Always keep in view of drivers of heavy equipment or vehicles.
7. Routinely use hand signals to communicate with the equipment operators.

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Task Hazard Analysis (THA)

SITE DEMOLITION

THA NUMBER: 005

Task Description

1. Perform demolition of site structures.

Significant Hazards

Chemical Exposure

1. See Table in Section 6 of the HASP for specific chemical hazards.

Physical Hazards

1. Slip, trip, falls, and protruding objects
2. Heat Stress
3. Lacerations
4. Heavy lifting
5. Hazardous noise
6. Severe weather
7. Vehicle/heavy equipment traffic
8. Suspended loads

PPE

Modified Level D (see Section 6 for upgrade/downgrade criteria):

1. ANSI approved hardhat
2. ANSI approved safety glasses (with face shield for high impact hazards, etc.)
3. ANSI approved safety shoes/boots
4. Work clothing (coveralls or work uniform appropriate for the weather conditions)
5. Hearing protection (as necessary while working near noise producing equipment)
6. Reflectorized safety vest when working around vehicular traffic
7. Leather gloves while handling sharp edges
8. Protective coveralls (Tyvek QC®)
9. Impervious gloves (Nitrile)
10. Safety harness (tied off appropriately) for fall protection when working near excavations ≥ 6 feet in depth
11. Use sunscreen lotion 15 SPF or higher on exposed skin as necessary.

Additional Safety Equipment

ADDITIONAL SAFETY CONSIDERATIONS

1. Evaluate surrounding work area for additional hazards that may be present and modify work activities accordingly.
2. Keep area surrounding work areas free of obstructions.
3. Use Deet® containing product in areas of possible exposure to ticks, mosquitoes, etc.
4. Keep vehicles at least 3 feet away from the edge of the excavation to prevent the vehicle from falling in.
5. Always keep in view of drivers of heavy equipment or vehicles.
6. Flagging for temporary work locations.
7. Routinely use hand signals to communicate with the equipment operators.
8. Clear utilities (underground and overhead) in the immediate work area or travel route prior to positioning equipment or starting sampling activities.
9. Provide adequate light (5-foot candles)
10. If necessary, assess in accordance with federal/NY state requirements, structures for asbestos content prior to demolition.
11. Use water spray during demolition to minimize particulate emissions.

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

TASK HAZARD ANALYSIS (THA)

EARTH MOVING

THA NUMBER: 006

Task Description

Earth moving (e.g., vacuuming, stump removal, grading, backfilling, etc.) involves the removal or backfilling of material. This is usually accomplished through mechanical means using a turbo-vac truck and a variety of heavy equipment. Personnel working in the area of these activities should be alert to their surroundings and keep in visual contact with the equipment operators.

Significant Hazards

Chemical Exposure

2. See Table in Section 6 of the HASP for specific chemical hazards.

Physical Hazards

6. Vehicle/heavy equipment traffic
7. Suspended loads
8. Insects, plants and animals
9. Hazardous noise
10. Severe weather
11. Heat/cold stress
12. Slips, trips, and falls
13. Sunburn

PPE

Modified Level D/Level C (see Section 6 for upgrade/downgrade criteria):

8. ANSI approved hardhat
9. ANSI approved safety glasses (with face shield for high impact hazards, etc.)
10. ANSI approved safety shoes/boots
11. Work clothing (coveralls or work uniform appropriate for the weather conditions)
12. Hearing protection (as necessary while working near noise producing equipment)
13. Reflectorized safety vest when working around vehicular traffic
14. Leather gloves while handling sharp edges
15. Protective coveralls (as needed)
16. Safety harness (tied off appropriately) for fall protection when working near excavations ≥ 6 feet in depth
17. Respiratory protection if air monitoring requires upgrade
18. Use sunscreen lotion 15 SPF or higher on exposed skin as necessary.

Additional Safety Equipment

2. Trenchbox or appropriate shoring, benching and/or sloping if entry is required.

ADDITIONAL SAFETY CONSIDERATIONS

4. Evaluate surrounding work area for additional hazards that may be present and modify work activities accordingly.
5. Keep area surrounding work areas free of obstructions.
6. Use Deet® containing product in areas of possible exposure to ticks, mosquitoes, etc.
7. Keep vehicles away from the edge of the excavation to prevent the vehicle from falling in.
8. Always keep in view of drivers of heavy equipment or vehicles.
9. Flagging for temporary work locations.
10. Routinely use hand signals to communicate with the equipment operators.
11. Clear utilities (underground and overhead) in the immediate work area or travel route prior to positioning equipment or starting sampling activities.

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Task Hazard Analysis (THA)

SAMPLING

THA NUMBER: 007

Task Description

Sampling involves collecting known or unknown materials for characterization purposes. These materials may include water, groundwater, sediments, soil, leachate, sludge, or other unspecified material. Sampling techniques may include pumps, bailers, augers, mechanized equipment (e.g., hydraulic push-rod system, hollow-stem or air rotary drill rig, etc.) and/or other hand tools.

Significant Hazards

Chemical Exposure

3. See Table in Section 6 of the HASP for specific chemical hazards.

Physical Hazards

1. Slips trips falls and protruding objects
2. Heavy lifting
3. Vehicle/equipment traffic
4. Hazardous noise
5. Insects, plants and/or animals
6. Severe weather
7. Heat/cold stress

PPE

Modified Level D (see Section 6 for upgrade/downgrade criteria):

1. Work clothing (coveralls or work uniform appropriate for the weather conditions)
2. ANSI approved hardhat
3. ANSI approved safety glasses
4. ANSI approved safety shoes/boots
5. Hearing protection (as necessary while working near noise producing equipment)
6. Reflectorized safety vest when working around vehicle/equipment traffic
7. Impervious gloves when applicable
8. Protective coveralls when applicable
9. Respiratory Protection (full face respirator) as needed
10. Leather gloves while handling sharp edges
11. Safety harness (for confined space entry)

Additional Safety Equipment

12. Multi-gas meter (if entering confined space)
13. Tripod (if entering confined space)

ADDITIONAL SAFETY CONSIDERATIONS

- Evaluate surrounding work area for additional hazards that may be present and modify work activities accordingly.
- Keep area surrounding work areas free of obstructions.
- Use Deet® containing product in areas of possible exposure to ticks, mosquitoes, etc.
- Clear utilities (underground and overhead) in the immediate work area or travel route prior to positioning equipment or starting sampling activities.

6.0 CHEMICAL AND MONITORING INFORMATION

CHEMICAL INFORMATION

6.1.1 Chemical Exposures

Preventing exposure to toxic chemicals is a primary concern during any activity that may present an exposure potential to site personnel. Personnel must be aware of the potential to encounter chemical contaminants while performing environmental services at the Site.

Substances can enter the body by inhalation, skin absorption, ingestion, or through a puncture wound (injection). A contaminant can cause damage at the point of contact or it can act systemically, causing a toxic effect at a part of the body distant from the point of initial contact.

Chronic exposure refers to relatively low levels of exposure over a long period of time. Acute exposure refers to high levels of exposure for short periods. The differing toxicity of the chemicals anticipated must be taken into account. Chronic toxins may show no adverse health effects at the time of exposure, but could appear years later. Acute toxins may be capable of extreme health effects during or immediately after excessively high exposures, and may show no residual effects after that. Many chemicals cause both chronic and acute conditions that may vary greatly.

Inhalation, ingestion, and skin contact are possible routes of exposure during project activities. The primary chemicals of concern are listed below in Table 2 along with a brief outline of their applicable exposure limits and physical properties. These compounds have the potential to create an unhealthful ambient environment for site workers. The following information has been compiled from the July 2000 NIOSH *Pocket Guide to Chemical Hazards,* and the 2001 American Conference of Governmental Industrial Hygienists (ACGIH) *Guide to Occupational Exposure Values*.

Table 2-Chemical, Physical and Exposure Information

CHEMICAL	EXPOSURE LIMITS (UNITS AS DESIGNATED)			VAPOR PRESSURE (mm/Hg or as designated)	IONIZATION POTENTIAL (eV)	LEL/UEL (PERCENT)	SPECIFIC GRAVITY	POTENTIAL CARCINOGEN
	PEL (or as designated)	STEL/ CEILING (C)	IDLH					
Arsenic (inorganic)	0.01 mg/m^3	NA	5 mg/m^3	0	NA	NA	5.73	Yes
Lead	0.05 mg/m^3	NA	100 mg/m^3	0	NA	NA	11.34	No

*See the front of this document for a complete *List of Acronyms*

6.1.2 Symptom/First Aid Information

Exposure symptoms and applicable first aid information for each material listed above can be referenced from the MSDSs in Appendix B of this HASP.

MONITORING INFORMATION

6.1.3 Environmental Sampling

Monitoring shall be performed within the work area on site in order to detect the presence and relative levels of toxic substances. The data collected throughout monitoring shall be used to determine the appropriate levels of PPE. Monitoring shall be conducted in order to determine baseline data on potential hazards prior to entry in the work area, and periodically while conducting site work to evaluate any changes in conditions of the specific work area.

Per the New York State Department of Health's Generic Community Air Monitoring Plan:

PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS

Particulate concentrations should be monitored **continuously** at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of one-second every minute for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate an exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the one-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Additionally, periodic monitoring on the Site will consist of initial monitoring, during changes in site conditions (e.g., excavating in a new location, wind direction change), and at regular intervals throughout the day, during intrusive, handling, sampling, transportation, and decontamination activities, or as deemed necessary by the SSO. Tables 3 and 4 provide the monitoring equipment and action level requirements for this project.

Table 3-Monitoring Equipment

Instrument:	Mini-Ram, Dust, Aerosol, Fume and Mist Monitor
Frequency:	During environmental and construction activities
Monitoring Location:	Breathing zone; ambient locations

Instrument:	Personal Air Sampling Pumps capable of a flow of 2 liters per minute
Frequency:	During performance of new tasks with potential lead exposure
Monitoring Location:	Breathing zone

Instrument:	Real-time particulate monitor, PM_{10}
Frequency:	Continuously during environmental and construction activities
Monitoring Location:	Upwind and downwind perimeters of exclusion zone

6.1.4 Personal Sampling

Site activities warrant performing personal sampling of employees. Each job classification shall be measured for lead without regard to the use of respiratory protection. Within five working days after the receipt of monitoring results, the HSM will notify each employee, in writing, of the results that represent that employee's exposure. Copies of air sampling results will be maintained in the project files. In addition, copies shall be provided to the HSM for inclusion in medical records as necessary.

6.1.5 Monitoring Equipment Calibration

All instruments used will be calibrated in accordance with the manufacturer's recommendations. If the owner's manual is not available, the personnel operating the equipment will contact the applicable office representative, rental agency or manufacturer for technical guidance for proper calibration. If equipment cannot be pre-calibrated to specifications, site operations requiring monitoring for worker exposure or off-site migration of contaminants will be postponed or temporarily ceased until this requirement complete.

6.1.6 Health and Safety Action Levels

An action level is a point at which increased protection is required due to the concentration of contaminants in the work area or other environmental conditions. The concentration level (above background level) and the ability of the PPE to protect against that specific contaminant determine each action level. The action levels are based on concentrations in the breathing zone.

If ambient levels are measured which exceed the action levels in areas accessible to unprotected personnel, necessary control measures (barricades, warning signs, and mitigative actions, etc.) must be implemented prior to commencing activities at the specific work area.

Personnel should also be able to upgrade or downgrade their level of protection with the concurrence of OSC and SSO.

Reasons to upgrade:

- Known or suspected presence of dermal hazards.
- Occurrence or likely occurrence of gas, vapor, or dust emission.
- Change in work task that will increase the exposure or potential exposure to hazardous materials.

Reasons to downgrade:

- New information indicating that the situation is less hazardous than was originally suspected.
- Change in site conditions that decrease the potential hazard.
- Change in work task that will reduce exposure to hazardous materials.

Table 4-Action Levels During Environmental Services

(refer to Table 3 for Monitoring Methods)

PARAMETER	LOCATION AND INTERVAL	RESPONSE LEVEL (Meter units/ppm above background)	RESPONSE
Dust, Mist, Aerosols (Total by Mini-Ram)* **These action levels are to be followed in the absence of personal air monitoring data**	At least every 15 minutes in the worker's breathing zone during intrusive activities involving impacted materials. In addition, site perimeter monitoring may be initiated by the SSO based on elevated air monitoring results.	Initial excavation or disturbance of unknown materials	Level C ensemble as listed in this HASP and per SSO and HSM.
		$<$ 0.15 mg/m^3 (Sustained for more than 5 minutes)	Continue Level D work and continue monitoring.
		$\geq$ 0.15 mg/m^3 (Sustained for more than 5 minutes)	Upgrade to Level C PPE. Immediately take background readings upwind. Contact the RM and SSO, implement mitigation measures, and continue Level C (minimum P100 cartridges) and continue monitoring.
		$\geq$ 0.10 mg/m^3 above background (Sustained for more than 5 minutes)	Temporarily cease work operations, contact the RM and HSM to discuss improving site mitigation measures. Possible upgrade to Level B for exclusion zone workers.
		$\geq$ 1.5 mg/m^3 (Sustained for more than 5 minutes)	Temporarily cease work operations, contact the RM and HSM to discuss improving site mitigation measures. Possible upgrade to Level B for exclusion zone workers.
Lead	Personal monitoring during activities which can generate airborne lead.	$<$ 0.05 mg/m^3	Continue work and continue monitoring.
		$\geq$ 0.05 mg/m^3 $<$ 0.5 mg/m^3	Upgrade to Level C PPE. Contact the RM and SSO, implement mitigation measures, and continue Level C (minimum P100 cartridges) and continue monitoring.
		$\geq$ 0.5 mg/m^3	Temporarily cease work operations, contact the RM and HSM to discuss improving site mitigation measures. Possible upgrade to Level B for exclusion zone workers.

Table 4: Action Levels During Environmental Services (con't)

(refer to Table 3 for Monitoring Methods)

Exclusion Zone Perimeter Monitoring

PARAMETER	LOCATION AND INTERVAL	RESPONSE LEVEL (Meter units/ppm above background)	RESPONSE
Dust, Mist, Aerosols (Total by Data-Ram)*	Site perimeter at least every 15 minutes during intrusive activities involving impacted materials. Monitoring may be initiated or performed more frequently by the SSO based on elevated air monitoring results in work area(s).	$<$ 0.1 mg/m^3	Continue work and continue monitoring.
		$\geq$ 0.1 mg/m^3 (Sustained for more than 5 minutes)	Temporarily cease work operations, contact the SSO and RM to discuss improving site mitigation measures.

* = or equivalent method approved by HSM.

7.0 PERSONAL PROTECTIVE EQUIPMENT

The harmful effects that chemical substances may have on the human body often necessitate the use of personal protective clothing/equipment (PPE). The purpose of PPE is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities.

The level of protection (LOP) required must correspond to the level of hazards known, or suspected, in the specific work area. Protection against different types of chemicals and differing concentrations of those substances can be quite varied. Level A provides the highest level of protection and Level D provides the lowest. A protective clothing ensemble can range from safety glasses, hard hats, and safety shoes/boots to fully encapsulating suits with a supplied source of breathing air. See SOP 12 for an outline of the general PPE ensembles available.

Site-specific tasks being performed, the probability of exposure to the hazards, and the environmental conditions must all be considered when specifying PPE. Once the specific hazards have been identified, the appropriate equipment can be selected (see THAs in Section 5 for the initial LOP and the Action Level Table in Section 6). To assist project personnel with the PPE selection and procurement process, an inventory list has been attached to summarize the equipment required by this HASP (Table 5). The PPE listed has been selected consistent with the hazards associated with the expected field activities, and is available in various sizes to provide a good fit for all personnel during the subject tasks. Site workers are responsible for the proper maintenance and clean storage of PPE and associated support equipment at the Site.

HEAD PROTECTION

Employees will wear hard hats if the potential exists for exposure to flying or falling objects, or when working around heavy equipment. Hard hats are mandatory when working in areas where overhead hazards are present and to provide protection during operation of heavy equipment. Ear protection and face shields may be attached to hard hats. Hard hats purchased after July 5, 1994 shall comply with ANSI Z89.1, 1986. Head protection purchased prior to July 5, 1994 shall comply with ANSI Z89.1, 1969.

EYE PROTECTION

Eye protection will be worn at all times within work areas. Sunglasses may be permitted during activities performed outside as long as they meet the requirements of safety glasses. Wire-framed sunglasses used for eye protection will not be permitted at any time. Subcontractor employees who do not have suitable eye protection will have an appropriate type of eye protection provided to them by their respective employers prior to performing work at the Site.

Eye protection will meet the following minimum requirements:

- Provide adequate protection against the particular hazards for which they are designed.
- Is reasonably comfortable when worn under the designated conditions.
- Fit snugly and not unduly interfere with the wearer's movements.
- Be durable.
- Be easily cleaned and disinfected.
- Comply with ANSI Z87.1, 1989 (if purchased prior to July 5, 1994, comply with ANSI Z87.1, 1968).

Table 5-Site Specific Personal Protective Equipment List

TYPE	MATERIAL	ADDITIONAL INFORMATION
Boots	Leather	Safety toe
Gloves	Nitrile, Neoprene	Leather if working with sharp objects
Suits	Tyvek®	If handling impacted material
Respirator (Negative Pressure)	MSA(Full Face or equivalent) equipped with P100	Training as required
Hard Hat	ANSI Approved	
Tape	Duct (or equivalent)	Joints on the suit/gloves, etc.
Decontamination Supplies	Water, Alconox (or equivalent) if necessary	
Ear Plugs		Disposable or muffs
Safety Glasses	ANSI Approved	Side Shields
Safety Vests		Orange

HEARING PROTECTION

Appropriate hearing protection, including ear plugs, canal caps, and ear muffs, will be provided when noise may be a problem, such as around heavy machinery, power support equipment, and impact tools. When employees may be exposed to hazardous noise, a hearing conservation program will be implemented in accordance with 29 CFR 1910.95.

FOOT PROTECTION

Employees will wear appropriate foot protection while working on site, which will consist of leather or water and chemical-resistant boots with safety toes. Footwear (including leather work boots and chemical-resistant boots) must meet the specifications of ANSI Z41.1-1969 (if purchased after July 5, 1994, ANSI Z41, 1991), which is the standard for industrial footwear with safety toes. Protection against liquid hazardous chemicals requires boots of neoprene, polyvinyl chloride (PVC), butyl rubber, or other material selected for resistance to the specific chemical. For tasks where contact with contaminated materials is expected to be slight or nonexistent, leather work boots with safety toes are appropriate.

HAND PROTECTION

Employees will use appropriate hand protection when exposed to hazards that could cause injury to the hands. Gloves must resist puncturing and tearing as well as provide any necessary chemical resistance.

Protective clothing will be worn over glove cuffs to prevent any liquid from spilling into the gloves. A pair of inner gloves adds an extra layer of protection for the hands during the removal of outer gloves and other chemical protective items and will be worn at all times when outer protective gloves are required. Where necessary, heavy leather gloves may be worn over chemical-protective gloves when doing heavy work. If they become contaminated, they will be discarded because leather is difficult to decontaminate.

RESPIRATORY PROTECTION

Respiratory protection may be used during this project as specified by the THAs in Section 5. If respiratory protection is selected and used for worker comfort, or is worn as specified by the THAs, the

requirements outlined in SOP 13 will be met. Respiratory protection upgrade criteria are specified in Section 6 of this HASP.

BODY PROTECTION

Protective clothing and body protection are selected on the basis of the tasks to be performed and the hazards, both chemical and physical, to which the worker may be exposed. For all work areas, including the support and administrative areas, appropriate work clothing will be worn that, at a minimum, covers from the skin from the boots to the shoulders. Tank and halter-tops are not appropriate. Shorts and cut-off pants are not appropriate.

In more hazardous work areas, substantial pants and long sleeves are appropriate. Chemical-protective body protection may be selected using predicted chemical exposures and the clothing manufacturer's chemical-specific permeation and degradation information to provide optimum protection.

PPE DONNING AND DOFFING INFORMATION

The following information is to provide field personnel with helpful hints that, when applied, make donning and doffing of PPE a more safe and manageable task:

- Never cut disposable booties from your feet with basic utility knives. This has resulted in workers cutting through the booty and the underlying sturdy leather work boot, resulting in significant cuts to the legs/ankles. Recommend using a pair of scissors or a package/letter opener (cut above and parallel with the work boot) to start a cut in the edge of the booty, then proceed by manually tearing the material down to the sole of the boot for easy removal.
- When applying duct tape to PPE interfaces (wrist, lower leg, around respirator, etc.) and zippers, leave approximately one inch at the end of the tape to fold over onto itself. This will make it much easier to remove the tape by providing a small handle to grab while still wearing gloves. Without this fold, trying to pull up the tape end with multiple gloves on may be difficult and result in premature tearing of the PPE.
- Have a "buddy" check your ensemble to ensure proper donning before entering controlled work areas. Without mirrors, the most obvious discrepancies can go unnoticed and may result in a potential exposure situation.

8.0 EMERGENCY RESPONSE PLAN

INTRODUCTION

The purpose of this Emergency Response Plan is to outline the necessary response during times of emergency; to minimize hazards to human health; and to protect against fire, explosion, flood, and chemical release to soil and air. Effective emergency planning requires coordination and forethought by Earth Tech personnel. Constant vigilance and awareness of potential hazards and a continuing effort to eliminate or control them are prime requisites to accident prevention. Emergencies sometimes develop, however, and an important part of any safety program is preparation for any emergency so proper action may be taken.

This Emergency Response Plan and SOP 34, Emergency Response, are meant to serve as guides to identify the major considerations in an emergency.

WHAT IS AN EMERGENCY?

An emergency is any situation (on or off the Site) that immediately threatens human life, health, the environment, or damage to facilities. The ultimate determination of an emergency situation is left to the discretion of each individual.

Many emergencies potentially include a combination of two or more types of situations. Emergencies that might arise at this facility probably fall within the following categories:

- Explosions
- Hazardous Materials Emergency (Toxic Chemicals, Laboratory Spills)
- Leaking Pipelines, Tanks, Vessels
- Severe Weather
- Fires
- Power Interruption
- Medical Emergencies
- Safety Equipment Problems

To ensure that facility operations go on with minimum disruption of service, emergencies must be anticipated so plans using alternate methods of operation, emergency repair, first aid, or other emergency response procedures may be put into action. OSHA (and state-sponsored health and safety agencies) requires this written Emergency Response Plan along with specific information and training for employees to be available at this site.

IMPLEMENTATION OF EMERGENCY PLAN

It is necessary for an Emergency Response Plan to be at each individual project location. The desire to protect staff members as well as off-site neighbors drives the development and planning of these specific procedures and practices designed to provide rapid, accurate, practical, and safe responses to emergency situations on this project site.

The decision to implement the Emergency Response Plan depends on whether an impending incident could threaten human health or the environment. If an emergency situation arises, decide on the course of action, and then carry out the plans in a safe, orderly, and controlled manner. Do not panic—remain calm and deal with the incident in a logical and methodical fashion. If the procedure required to correct an

emergency situation is too extensive or unsafe to be handled by the personnel on hand, additional personnel must be contacted. ***DO NOT ATTEMPT RESOLUTION OF AN EMERGENCY IF A LOGICAL COURSE OF ACTION IS NOT READILY APPARENT—GET HELP!!***
Any person discovering an emergency situation should contact the proper agencies (e.g., Police Department, Fire Department) and the Primary Emergency Coordinator or the Alternate if the Primary Coordinator is unavailable or cannot be reached. The Primary and Alternate Coordinators have complete authority to commit all Earth Tech resources in the event of an emergency. The Emergency Coordinator will determine which organizations must be contacted based on the nature of the emergency. The list in Table 6 provides the list of the emergency contacts, and the necessary phone and/or pager numbers. A copy of the list shall be posted at all phones with outside lines. Figure 3 depicts the route to the nearest hospital from the Site.

EMERGENCY COORDINATOR AND STAFF

Earth Tech recognize the need to be prepared in the event of an emergency so that damage to human health and to the environment can be avoided or minimized. A key figure in implementing a response plan is the Emergency Coordinator. His or her specific responsibilities and duties during and after the emergency incident are described in the following section. However, the emphasis on prevention and immediate response to hazardous conditions requires that the Coordinator be free to use professional judgment in emergency situations. Frequent inspection and active participation in this project on a daily basis by the Primary and Secondary Coordinator minimizes the chance of a major accident.

It is the Emergency Coordinator's responsibility to manage emergency situations with all available assets instead of merely providing a response to a crisis. Emergency management applies good planning, definition of roles and authority, and direction of a trained and motivated staff to control the situation and resolve it quickly and efficiently.

In the event of an emergency, call the emergency service agency (e.g., Fire Department) immediately and, if there are injuries, ask for medical assistance. Next, contact an Emergency Coordinator. When calling in the emergency, give your location, describe the nature of the emergency, and provide your name.

Any time the Emergency Response Plan is implemented, a detailed report of the entire incident will be developed by the Emergency Coordinator. Careful documentation during and after an emergency will be needed for insurance issues, legal issues, accident investigations and analysis to prevent re-occurrence. Good record keeping and a critique of an incident after the fact can provide an excellent method of preventing another incident. All records will be maintained in project files.

EMERGENCY CONDITION AND RESPONSE

The purpose of this section is to provide guidance to the Emergency Coordinator and staff in making emergency decisions. The following provides a number of possible emergency situations, which could occur at this site. Remember that many emergencies may include a combination of two or more types of situations at the same time.

In the event of any emergency incident, the following general requirements apply:

- Work activities will cease and all personnel will be evacuated from the work location. The evacuation will proceed in a direction opposite the critically affected area, with all personnel assembling in a pre-designated location outside of the site proper.
- A headcount will be taken of the assembled employees and any injured individuals shall be administered first aid.

- If not present at the work location, the SSO, Emergency Coordinator and OSC will be contacted immediately.
- Send someone to meet the responders outside the area to direct them to the scene and provide information about the conditions that may exist, including appropriate MSDS of hazardous material. The Fire Department has spill containment dikes, absorbents, neutralizing chemicals and other forms of attack for spills or leaks.
- Without endangering personnel, make a quick assessment of the situation. Call the emergency services agency (Fire Department, etc.) immediately and, if there are injuries, ask for medical assistance. Next, contact an Emergency Coordinator. When calling in the emergency, give your location, describe the nature of the emergency, and provide your name.

A universal signal for emergency evacuation (e.g., use of a horn), and designation of the evacuation assembly location, shall be established by the SSO and Emergency Coordinator and briefed to all workers during initial site-specific training. Any alterations mandated by changing conditions shall be determined by the Emergency Coordinator and communicated to workers during the tailgate safety briefing.

For this specific site, all personnel will evacuate and assemble in the office/trailer area, unless otherwise directed by the RM or SSO.

8.1.1 Explosion

The possibility of an explosion may exist. Some explosion risks include:

- Flammable containers (contents of many of the containers have flash points at room temperature).

8.1.2 Hazardous Material Release

The most common hazardous materials at this project are:

- Fuels/oil
- Laboratory/field chemicals
- Cleaning solutions, acids/bases

The appropriate emergency response to a hazardous materials incident will be dictated by the MSDS (see Appendix B).

To deter or minimize a release of a hazardous material, a person may close a valve or flick a switch as they are leaving the affected area. ***Do not attempt to re-enter the affected area without proper equipment, training, and assistance.***

Special response equipment and PPE are needed when responding to hazardous materials incidents.

Site personnel who are trained and HAZWOPER-certified (see Appendix A) are available to assist the local fire department and Emergency Coordinators in addressing the incident.

8.5.2.1 MATERIAL RELEASE RESPONSE

In the event of a spill or release of hazardous materials brought on site or during the transportation of site materials, the owner and/or carrier of the material is responsible for appropriate notification, remedial and disposal activities. Clean-up operations must return the impacted area or equipment back to pre-release condition.

If a spill or release occurs on site or at a nearby off-site location (requiring limited travel) involving removed or treated materials, personnel will provide support to mitigate any further release of the material and clean up the results of the release as requested by the OSC.

8.1.3 Severe Weather

Severe weather includes tornadoes, lightning, and flooding. Some of these conditions, such as tornadoes, can come upon the work site suddenly, with little to no warning. The following actions shall be implemented for each situation:

- *Tornadoes* - Radio stations will provide continual updates when conditions are right for tornado formation. The Emergency Action Coordinator will listen to the continual updates, and if conditions worsen, personnel will either be sent to their homes (if time and conditions allow), or to pre-designated shelters. In the event of being outside when a tornado forms, personnel shall evacuate all equipment and lay flat in the nearest low point in the ground (unless time permits evacuation to the designated shelter).
- *Lightning* - In the event of lightning, all construction equipment shall be shut off, and personnel shall enter the nearest structure. Under no circumstances should you stand under a solitary tree. If a structure is not nearby, either remain in an enclosed vehicle, or lay flat at a low point on the ground.
- *Flooding* - When flooding is expected, take all equipment to the highest ground level possible. Then workers shall proceed to the highest available point (i.e., multi-story building).

8.1.4 Fires

The possibility of a fire may exist in any work areas at this site. Fires are most frequently in electrical devices, in storage areas, and in work areas. A fire may also create hazards subsequent to the fire itself, such as an explosion or toxic vapor release. The following potential fire sources are located at this site:

- Fuel
- Electrical sources

If the fire is small, try to extinguish it ***only after help is on the way***. It is better to have the fire out when the Fire Department arrives than to discover too late that you cannot control the fire and should have called for help. Pre-planning and training is necessary before performing this task—if you have not been trained in the proper usage of fire extinguishers, do not attempt to control the fire. Leave the area immediately. ***EXCEPTION: NEVER TRY TO FIGHT A FIRE IN A HAZARDOUS MATERIALS STORAGE AREA.***

If you cannot extinguish the fire, follow these general procedures (if it is safe to do so) to prevent further spread of the fire, and minimize damage to personal health and/or the facilities.

1. Never endanger your own life.
2. Remove any combustible material from the vicinity of the fire.
3. Shut down gas supply lines to the area.

4. If it is an electrical fire, cut the power to the affected area by pulling the appropriate circuit breaker.
5. Hose down nearby structures (only after shutting down all utilities to the structures.)
6. Remove any equipment that can be safely moved from the area.
7. Close doors, windows, and vents.
8. Be aware of chemicals located in the affected area such as welding equipment, propane, and other hazardous materials.
9. Make appropriate MSDSs available to fire fighters before entry.
10. Keep all personnel away from affected area.

Fire extinguishers are primarily first response instruments, intended for use on fires in their beginning stages before they get a chance to spread. Portable fire extinguishers have specific regulations developed governing their type and use. Only personnel trained in the use of fire extinguishers shall operate them. Fire extinguishers available for use shall be inspected monthly to ensure they are fully charged and have not been used. Particular attention must be given to selecting the proper type of fire extinguisher for the particular type of fire. The following list shows various types of fire extinguishers, listed in order of preference, typically used with each class of fire.

- Class A for use on materials such as wood, cloth, paper, and rubber;
- Class B for use on flammable liquids, gases, and greases;
- Class C for use on energized electrical fires (Class A and B extinguishers may be used effectively on de-energized electrical fires);
- Class D for use on combustible metals such as magnesium, titanium, zirconium, sodium, and potassium.

NEVER USE A SOLID STREAM OF WATER ON ELECTRICAL FIRES. WATER IS AN EXCELLENT CONDUCTOR OF ELECTRICITY AND ITS USE MAY RESULT IN ELECTRICAL SHOCK.

Remember, if evacuation from a burning facility becomes necessary, ***Move Quickly*** to the nearest exit***, Keep Calm*** and ***Stay Low.*** The temperature difference between the air at the floor level and eye level can be considerable. Try not to inhale smoke; if necessary, breathe through a damp cloth. ***If your clothing catches fire "DO NOT RUN" and "STOP, DROP, AND ROLL"*** Running simply fans the flames and intensifies the fire. If there is a rug, coat, or blanket available, roll in it. Rolling will smother the flames. Once out of the affected area, proceed to an out-of-danger area and when possible, assemble in groups. This prevents interference with fire fighters and at the same time gives the opportunity to account for personnel and to issue further instructions. If you cannot account for everyone and suspect they may still be inside the facility, notify the Fire Department. They give first priority to the preservation of life.

Do Not Re-enter the Building for any reason. Clothing, valuables, or other items that were left inside are not worth your life.

The following shall be implemented to minimize the potential for fires:

- No smoking around potential fire sources
- For work in the field, all electrical shall be equipped with ground fault circuit interrupters and comply with SOP 28 provisions.
- Proper storage of flammable and combustible materials (SOP 29)
- Spark proof tools/equipment shall be used when working with flammable materials.

8.1.5 Power Interruptions

Interruptions in power may become emergency situations. Almost all of the equipment used to operate and maintain the project uses electricity.

Power interruptions are emergencies when the potential for damage to human health or the environment exists. Usually during power interruptions, other hazards are present (such as severe weather, etc.).

The person responding to a power interruption should assess the situation, and then contact an emergency coordinator if the potential for an emergency situation exists. Contact the utility company and the client to notify them of the power failure and potential emergency. When calling in the emergency, give location, describe the nature of the emergency, provide your name, and ask when the power is expected to be restored.

If the power interruption is not caused by the power company, an electrician should be called to determine the cause and make corrections.

MEDICAL EMERGENCIES

Medical emergencies can be described as situations that present a significant threat to the health of personnel. These can result from chemical exposures, physical injury, heat stress, cold stress, and poisonous insect or snake bites. Medical emergencies must be dealt with immediately and proper care should be administered. This may be in the form of first aid and emergency hospitalization.
In the event of a medical emergency:

- Contact the ambulance using the number in Table 6.
- All injured individuals shall not be moved unless in immediate danger of a hazard. First aid can be provided by onsite qualified first aid personnel (qualified by training, such as that received from the American Red Cross).
- If the employee is in the hot zone, and the emergency responders or qualified first aid person allows it, the employee can be removed from the hot zone by personnel wearing proper personal protective equipment. If the situation warrants it, the injured employee can be removed from his/her personal protective equipment without following all the decontamination procedures as long as the materials of concern are not a greater hazard (i.e. skin absorbable or IDLH). In the event that the PPE is removed in this manner, then decon shall be performed at the earliest possible opportunity when it is safe to do so.

SAFETY EQUIPMENT PROBLEMS

An emergency may develop due to malfunction or other problems associated with health and safety equipment being used by field personnel. These equipment problems must be corrected before proceeding with field activities. Health and safety problems that may occur include:

- Leaks or tears in protective clothing.
- Failure of respiratory protective devices (e.g., APRs).
- Encountering contaminants for which prescribed PPE may not be suitable.

EMERGENCY/SAFETY EQUIPMENT

8.1.6 List of Equipment

The following equipment will be available in the field trailer or site vehicles:

- Cartridge-type respirators
- Tyvek suits (or equivalent)
- Portable radios
- Cleaner-sanitizer for personal safety equipment
- Explosion-proof, 3-cell flashlights with batteries
- Eye and face protection
- Fire extinguishers
- First aid kits
- Hard hats
- Hearing protection devices
- Hand protection (gloves)
- Orange hi visibility vests

8.1.7 First Aid Kits

Each work site shall have a first-aid kit meeting the following requirements:

- First-aid kits in weather-proof containers will be assembled, provided, and maintained in accordance with ANSI and shall be present at all locations where employees will be working.
- First-aid kits shall be available at the work areas at all times.
- First-aid kits shall be inspected and restocked as necessary.
- For jobs outside the local area, the site supervisors shall replenish the kit from the nearest pharmaceutical source, with supplies equivalent to those used.
- Personnel permitted to use first-aid kits shall possess a current first-aid/CPR card.

8.1.8 Fire Extinguishers

As a minimum, fire extinguishers capable of extinguishing Class A, B, and C fires will be available for use at the Site at all times. Site personnel will be readily aware of the location of the fire extinguisher at all times in the event of an incident where a fire extinguisher may be used.

EVACUATION PROCEDURES

In the event that employees must evacuate the area due to an emergency situation, the primary muster point will be the onsite office/trailer, which should be sited in the prevalent upwind direction. In the event that evacuation must be downwind and a significant chemical release/fire is occurring, evacuated personnel should move a minimum of 800 meters away from the chemical release/fire source.

COMMUNICATIONS

A telephone shall be available at all times at the Site (either cellular or land line) to allow personnel to call for emergency assistance. A copy of the Emergency Contact shall be posted in the vicinity of all land lines with outside calling capability.

The following hand signals will be used to signal an emergency:

Hand Signal	Meaning
Hand clutching throat	• Out of air; can't breathe
Hands on top of head	• Need assistance
Thumbs up	• OK; I'm alright; I understand
Thumbs down	• No; negative
Grip partner's wrist or both hands around partners waist	• Leave area immediately

Employees will be equipped with radios when feasible for internal communications. In the event that radios are not feasible, other means of communication such as air horns will be set up by the SSO.

Table 6-Emergency Contacts

Emergency Coordinators / Key Personnel

Name	Title/Workstation	Telephone Number	Cellular Phone
Jack Harmon	OSC	607-273-3871	732-689-0021
Dan Kowalski	Response Manager	607-273-5982	570-815-6895
Dale Prokopchak	Health & Safety Director	804-515-8556	
Ron Partilla	Health & Safety Professional	800-688-9828 616-863-4953 (home)	616-446-6911
Kachina Oxendine	Health & Safety Professional	800-462-4046	804-839-8334
Steve Baril	Health & Safety Professional	616-940-4292	616-450-9533

Organization / Agency

Police Department	911 or 607-272-3245	
Fire Department	911 or 607-272-1234	
State Police	607-347-4440	
Ambulance Service ***(EMT will determine appropriate hospital for treatment)***		911 or 607-272-1234

Hospital ***(Use by site personnel is only for non-emergency cases)***

Cayuga Medical Center of Ithaca — 607-274-4411
101 Dates Drive
Ithaca NY 14850 (Hospital Route Maps on following page)

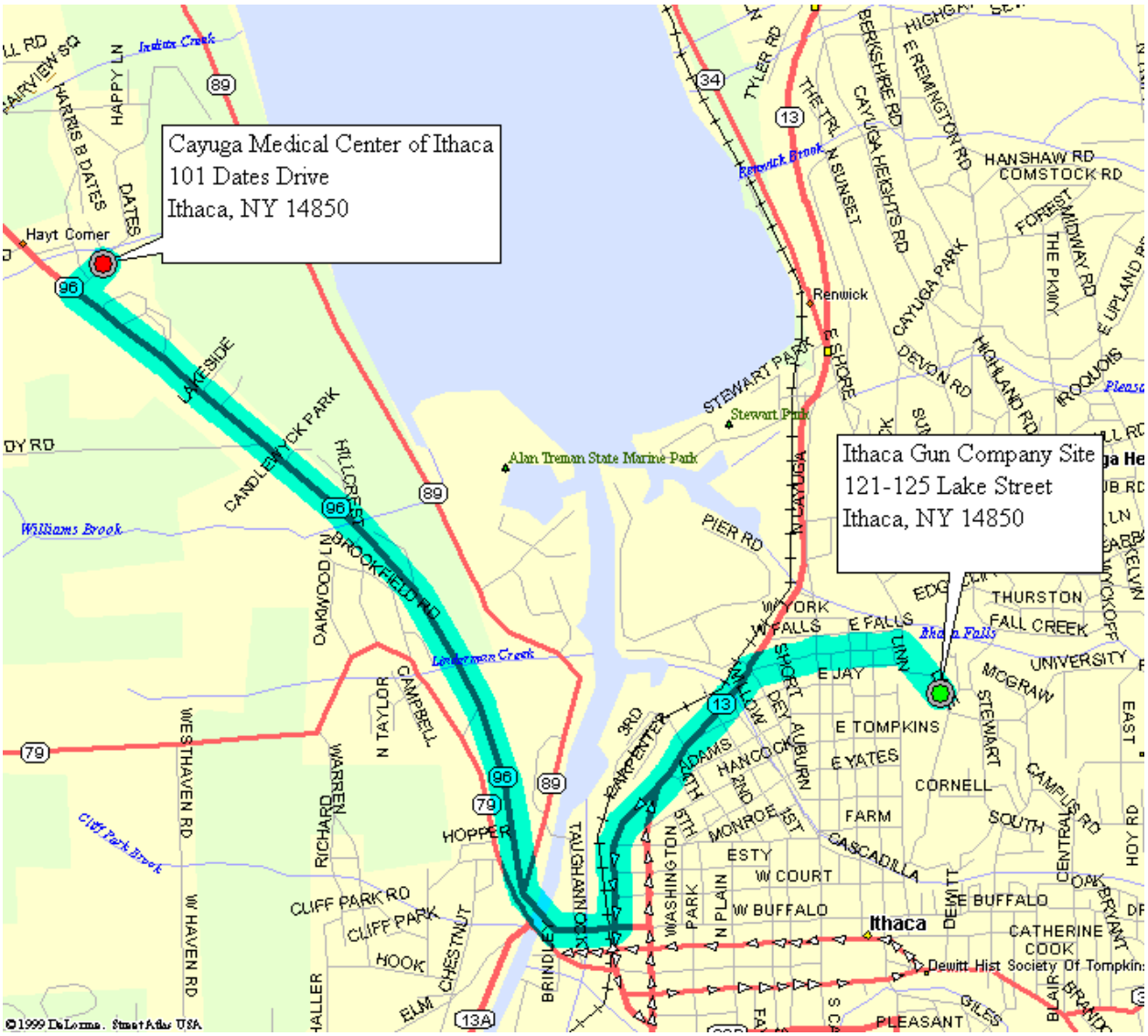
Hospital Route: From site, make a right on Lake Street. Turn left onto E. Falls Street. Continue on W. Falls Street. Bear left onto SR-13(34). Turn right onto sr-39 (W. State Street). Bear right onto SR-96 (Cliff Street). Go about 2.2 miles then make a right onto Dates Drive. Look for Medical Center.

Poison Control Center	800-222-1222
Pollution Emergency	800-292-4706
National Response Center	800-424-8802
Chem-Trec	800-424-9300
Title 3 Hotline	800-535-0202

Public Utilities

Dig Safely New York	800-962-7962

Figure 3-Hospital Route/Detail Maps



North = top of page

9.0 SITE CONTROL

GENERAL

The purpose of site control is to minimize potential contamination of workers, protect the public from site hazards, and prevent vandalism. The degree of site control necessary depends on the site characteristics, site size, and the surrounding community.

Site-specific work zones will be established at each work area, and if required, will be established directly prior to the work being conducted (SOP 15). The work zones will be drawn on site maps, posted in the support vehicle or trailer and discussed during the daily safety meetings. If the site layout changes, the new zones and their potential hazards will be discussed immediately after the changes are made or prior to the next work shift. General examples of zone layouts have been developed for earth moving activities (e.g., excavating, trenching, etc.) and are attached to this section.

Each work area will establish three zones:

- ***Exclusion Zone:*** Contaminated work area.
- ***Contamination Reduction Zone:*** Decontamination area.
- ***Support Zone***: Uncontaminated or "clean area" where personnel should not be exposed to hazardous conditions.

Each zone will be periodically monitored in accordance with the air monitoring requirements established in this HASP. The Exclusion Zone and the Contamination Reduction Zone are considered work areas. The Support Zone is accessible to the public (e.g., vendors, inspectors).

The work zones will be narrow bands in a north-south orientation starting at the highest point, eastern boundary, and work westward/downhill. Each band will be fully completed before moving downhill.

EXCLUSION ZONE

The Exclusion Zone is the area where primary activities occur, such as sampling, remediation operations, cleanup work, etc. This area must be clearly marked with hazard tape, barricades or cones, or enclosed by fences or ropes. Only personnel involved in work activities will be allowed in the Exclusion Zone.

CONTAMINATION REDUCTION ZONE

The Contamination Reduction Zone is the transition area between the contaminated area and the clean area. Decontamination is the main focus in this area. The decontamination of workers and equipment limits the physical transfer of hazardous substances into the clean area. This area must also be clearly marked with hazard tape and access limited to personnel involved in decontamination. Decontamination is explained in Section 10.0 of this plan.

SUPPORT ZONE

The Support Zone is an uncontaminated zone where administrative and other support functions, such as first aid, equipment supply, emergency information, etc., are located. The Support Zone shall have minimal potential for exposure to contaminants and is equivalent to that of background.

Employees will establish a decontamination area and Support Zone (if necessary) at the Site before the commencement of site activities. The Support Zone would also serve as the entry point for controlling site access. All personnel leaving the Support Zone, in addition to the associated PPE required, will be required to wear (at a minimum) chemical-resistant outer boots when traversing the Site.

SITE SECURITY

Site security is necessary to:

- Prevent the exposure of unauthorized, unprotected people to site hazards.
- Avoid the increased hazards from vandals or persons seeking to abandon other wastes on the Site.
- Prevent theft.
- Avoid interference with safe working procedures.

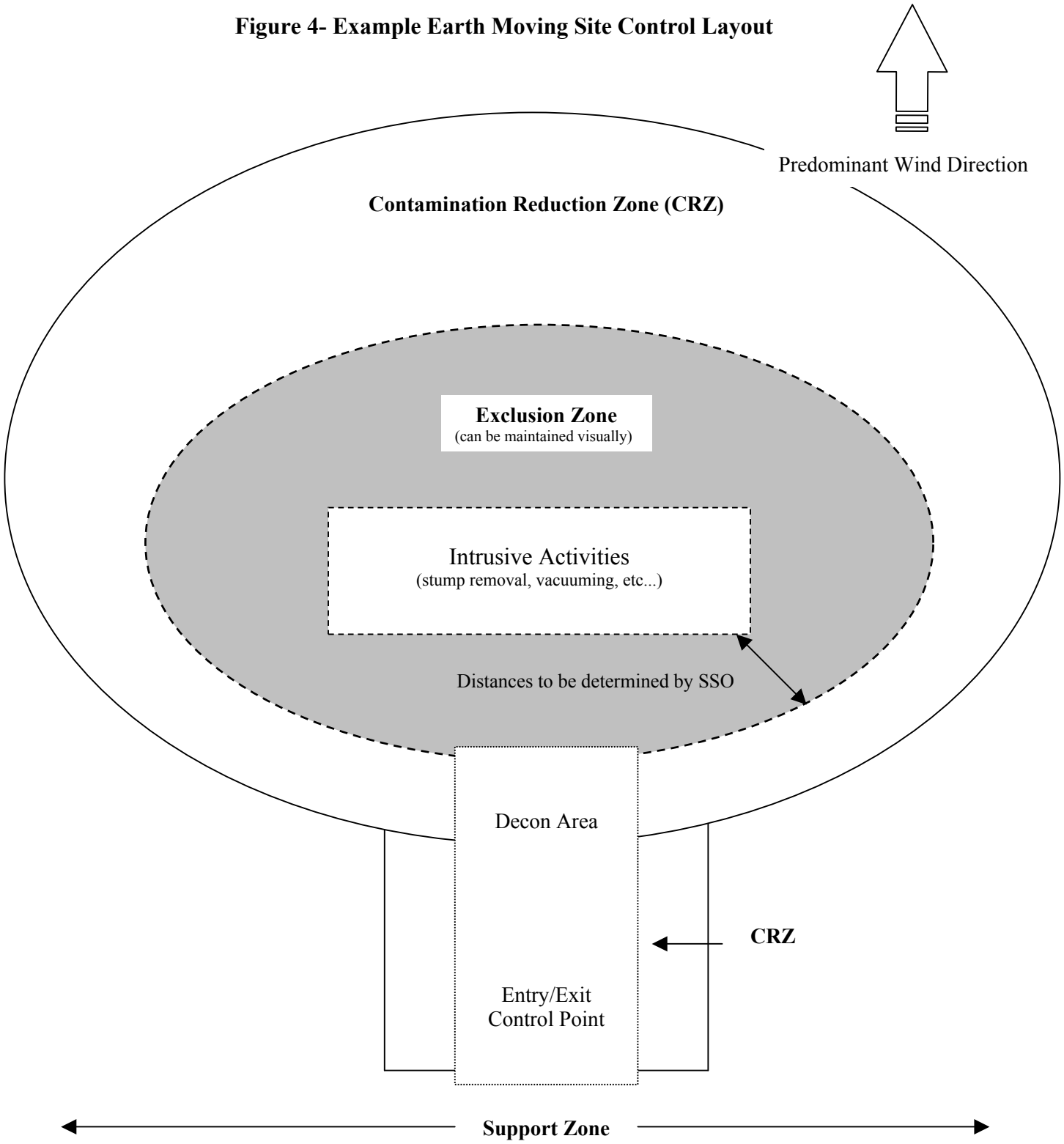
To maintain site security during working hours:

- Maintain security in the Support Zone and at access control points.
- Establish an identification system to identify authorized persons and limitations to their approved activities.
- Assign responsibility for enforcing authority for entry and exit requirements.
- When feasible, install fencing or other physical barrier around the Site.
- If the Site is not fenced, post signs around the perimeter and whenever possible, use guards to patrol the perimeter. Guards must be fully apprised of the hazards involved and trained in emergency procedures.
- Have the OSC or RM approve all visitors to the Site. Make sure they have valid purpose for entering the Site. Have trained site personnel accompany visitors at all times and provide them with the appropriate protective equipment.

To maintain site security during off-duty hours:

- If possible, assign trained, in-house technicians for site surveillance. They will be familiar with the Site, the nature of the work, the Site's hazards, and respiratory protection techniques.
- If necessary, use security guards to patrol the Site boundary. Such personnel may be less expensive than trained technicians, but will be more difficult to train in safety procedures and will be less confident in reacting to problems around hazardous substances.
- Enlist public enforcement agencies, such as the local police department, if the Site presents a significant risk to local health and safety.
- Secure the equipment.

Figure 4- Example Earth Moving Site Control Layout



10.0 DECONTAMINATION

PERSONAL DECONTAMINATION

All PPE will be disposed of or decontaminated at each extended break (i.e., lunch) or at the conclusion of each workday (see SOP 16). A designated container for protective suits and other disposable equipment will be located on the Site. Protective suits and other disposable clothing (e.g., gloves, booties) will be doffed replaced with new equipment before starting work after the break or the following day. Respiratory equipment, boots, outer gloves, and foul weather gear will be washed and rinsed at the end of the day and stored in sanitized bags. Decontamination of PPE will consist of manual washing and rinsing in a soap/water solution and double rinsing in bottled water and/or tap water.

Before any eating, drinking, smoking, and/or using smokeless tobacco, personnel will, at a minimum, wash hands, arms, neck, and face. Temporary unzipping of protective coveralls may be allowed during breaks under certain site conditions to allow workers to cool off. The coveralls will be zipped prior to re-entering controlled work zones.

10.1.1 Personnel Decontamination Steps

MODIFIED LEVEL D

In EZ (near boundary of CRZ):

1. Equipment drop on plastic sheet
2. Remove the majority of gross contamination
3. Wash boot covers and outer gloves
4. Rinse boot covers and outer gloves
5. Remove tape
6. Remove boot covers and outer gloves

In CRZ (keeping the more contaminated equipment closest to the boundary of the EZ):

7. Wash safety boots
8. Rinse safety boots
9. Safety boot removal
10. Wash inner gloves
11. Rinse inner gloves
12. Remove inner gloves.
13. Remove inner clothing (if necessary)

In SZ:

14. Finish with personal decon/hygiene wash procedures
15. Redress (if necessary).

LEVEL C

In EZ (near boundary of CRZ):

1. Equipment drop on plastic sheet
2. Remove the majority of gross contamination
3. Wash boot covers and outer gloves
4. Rinse boot covers and outer gloves
5. Remove tape
6. Remove boot covers and outer gloves

In CRZ (keeping the more contaminated equipment closest to the boundary of the EZ):

7. Wash protective suits and safety boots
8. Rinse protective suits and safety boots
9. **Change out (if required): Filter/mask change and redress (boot covers and outer gloves)**
10. Safety boot removal
11. Remove protective suit
12. Wash inner gloves
13. Rinse inner gloves
14. Remove respirator/mask
15. Remove inner gloves
16. Remove inner clothing (if necessary)

In SZ:

17. Finish with personal decon/hygiene wash procedures
18. Redress (if necessary)

EQUIPMENT DECONTAMINATION

All equipment removed from the EZ will be considered contaminated and, therefore, will be thoroughly decontaminated before it is removed from the Site. Decontamination procedures will vary depending on the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steaming the exterior of the equipment. Personnel performing this task will wear the proper PPE as prescribed by the SSO.

Steam cleaning or pressure washing may be selected to decontaminate heavy equipment (reference SOP 24). Small or delicate equipment (including drum sampling devices, etc.) may be washed using a mixture of Alconox and water (or equivalent solution/mixture), and followed by a final rinse with water.

DISPOSAL

Liquids and disposable protective clothing will be treated as contaminated waste and disposed of properly. Water generated from equipment decontamination will be retained for disposal. A dumpster for "CLEAN TRASH ONLY" will also be available.

11.0 PERSONNEL ACKNOWLEDGEMENT

All employees, subcontractors, and visitors must sign the Health and Safety Acknowledgement form, in this section, before conducting field activities at this site and/or entering the Exclusion or Contamination Reduction Zones (including decontamination and restricted staging/delivery areas).

By signing this form, employees agree that:

1. I have read this Health and Safety Plan and I understand the requirements of the Plan.

2. I will conduct work at this site in accordance with the requirements of the HASP.

By signing this form, subcontractors and visitors agree that:

1. I have read and understood the potential hazards associated with the Site.

2. I will ensure compliance with my company's policies on health and safety in regards to site entry at remediation locations.

Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature

Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature
Print Name & Company	Date	Signature

Appendix A
HAZWOPER Certifications

Appendix B
Material Safety Data Sheets

LEAD

ICSC: 0052

Lead metal
Plumbum
Pb
Atomic mass: 207.2
(powder)
Atomic mass: Atomic mass: 207.2

ICSC # 0052
CAS # 7439-92-1
RTECS # OF7525000
UN #
EC #

HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Finely divided lead powder is flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking (if in powder form).	In case of fire in the surroundings: all extinguishing agents allowed.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Abdominal cramps. Drowsiness. Headache. Nausea. Vomiting. Weakness. Pallor. Hemoglobinuria. Collapse.	Ventilation (not if powder). Avoid inhalation of fine dust and mist. Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN			
•EYES			
•INGESTION	Abdominal cramps (further see Inhalation).	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING

Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment (extra personal protection: P2 filter respirator for harmful particles).	Separated from strong oxidants, strong bases, strong acids, food and feedstuffs.	R: S: UN Hazard Class:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0052	Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1999. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

IMPORTANT DATA	BLUISH-WHITE OR SILVERY-GREY SOLID IN VARIOUS FORMS. TURNS TARNISHED ON EXPOSURE TO AIR. **PHYSICAL DANGERS:** Dust explosion possible if in powder or granular form, mixed with air. **CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. Reacts with hot concentrated nitric acid, boiling concentrated hydrochloric and sulfuric acids. Attacked by pure water and by weak organic acids in the presence of oxygen. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: ppm; 0.05 mg/m^3 (as TWA) (ACGIH 2001) OSHA PEL*: 1910.1025 TWA 0.050 mg/m^3 See Appendix C *Note: The PEL also applies to other lead NIOSH REL*: TWA 0.050 mg/m^3 See Appendix C *Note: The REL also applies to other lead NIOSH IDLH: 100 mg/m^3 (as Pb)	The substance can be absorbed into the body by inhalation of its aerosol and by ingestion. **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance may cause effects on the gastrointestinal tract, blood, central nervous system and kidneys , resulting in colics, shock, anemia, kidney damage and encephalopathy. Exposure may result in death. The effects may be delayed. Medical observation is indicated. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The substance may have effects on the gastrointestinal tract, nervous system, blood, kidneys and immune system , resulting in severe lead colics, paralysis of muscle groups of the upper extremities (forearm, wrist and fingers), anemia, mood and personality changes, retarded mental development, and irreversible nephropathy. May cause retarded development of the new-born. Danger of cumulative effect.
PHYSICAL PROPERTIES	Boiling point: 1740°C Melting point: 327.5°C	Relative density (water = 1): 11.34 Solubility in water: none
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air and water. In the food chain important to humans, bioaccumulation takes place, specifically in plants and water organisms, especially shellfish. 	

Explosive limits are unknown in literature. Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is indicated. Do NOT take working clothes home. Refer also to cards for specific lead compounds, e.g., lead chromate (ICSC # 0003), lead(II) oxide (ICSC # 0288).

Transport Emergency Card: TEC (R)-61G12b

ADDITIONAL INFORMATION

ICSC: 0052 **LEAD**

INTERNATIONAL CHEMICAL SAFETY CARDS

ARSENIC

ICSC: 0013

ARSENIC
Grey arsenic
Metallic arsenic
As
Atomic mass: 74.9

CAS # 7440-38-2
RTECS # CG0525000
ICSC # 0013
UN # 1558
EC # 033-001-00-X

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames. NO contact with strong oxidizers. NO contact with hot surfaces.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Risk of fire and explosion is slight if in the form of fine powder or dust when exposed to hot surfaces or flames.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
• **INHALATION**	Cough. Diarrhoea. Shortness of breath. Sore throat. Vomiting. Weakness. Grey skin.	Closed system and ventilation.	Fresh air, rest. Artificial respiration if indicated. Refer for medical attention.
• **SKIN**	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
• **EYES**	Redness.	or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• **INGESTION**	Diarrhoea. Nausea. Sore throat. Unconsciousness. Vomiting (further see Inhalation).	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment (extra personal protection: complete protective clothing including self-contained breathing apparatus).	Provision to contain effluent from fire extinguishing. Separated from strong oxidants, acids, halogens, food and feedstuffs. Well closed. Keep in a well-ventilated room.	Do not transport with food and feedstuffs. T symbol R: 23/25 S: (1/2-)20/21-28-45 UN Hazard Class: 6.1 UN Packing Group: II Marine pollutant.

SEE IMPORTANT INFORMATION ON BACK

INTERNATIONAL CHEMICAL SAFETY CARDS

ARSENIC

ICSC: 0013

I	**PHYSICAL STATE; APPEARANCE:** ODOURLESS, BRITTLE, GREY, METALLIC-LOOKING CRYSTALS.	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by

IMPORTANT DATA	LOOKING CRYSTALS. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. Reacts violently with strong oxidants and halogens causing fire and explosion hazard. Reacts with nitric acid, hot sulfuric acid. Toxic arsine gas may be formed in contact with acid or acidic substances and certain metals, such as galvanized or light metals. **OCCUPATIONAL EXPOSURE LIMITS (OELs):** TLV: ppm; 0.01 mg/m^3 (as TWA) A1 (ACGIH 1994-1995).	inhalation of its aerosol, through the skin and by ingestion. **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance irritates the eyes, the skin and the respiratory tract. The substance may cause effects on the circulatory system, nervous system, kidneys and gastrointestinal tract , resulting in convulsions, kidney impairment, severe hemorrhage, losses of fluids, and electrolytes, shock and death. Exposure may result in death. The effects may be delayed. Medical observation is indicated. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis. Repeated or prolonged contact may cause skin sensitization. The substance may have effects on the mucous membranes, skin, kidneys, liver , resulting in neuropathy, pigmentation disorders, perforation of nasal septum and tissue lesions. This substance is carcinogenic to humans.
PHYSICAL PROPERTIES	Sublimation point: 613°C Relative density (water = 1): 5.7	Solubility in water: none
ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. It is strongly advised not to let the chemical enter into the environment because it persists in the environment.	

N O T E S

The substance is combustible but no flash point is available in literature. Depending on the degree of exposure, periodic medical examination is indicated. Do NOT take working clothes home. Refer also to cards for specific arsenic compounds, e.g., Arsenic pentoxide (ICSC # 0377), Arsenic trichloride (ICSC # 0221), Arsenic trioxide (ICSC # 0378), Arsine (ICSC # 0222).

ADDITIONAL INFORMATION

ICSC: 0013 **ARSENIC**

Appendix C
Site-Specific Health and Safety Plan Supplements

MASTER HEALTH
AND
SAFETY PLAN

ENVIRONMENTAL SERVICES
ITHACA GUN
121-125 LAKE STREET
ITHACA, NEW YORK 14850

Project Number: *51187*

Prepared for:

United States Environmental Protection Agency
Region 2
2890 Woodbridge Avenue
Edison, New Jersey

Prepared by:

Earth Tech, Inc.
7870 Villa Park Drive, Suite 400
Richmond, VA 23228

May 2002