HEALTH AND SAFETY PLAN
REMEDIAL ACTION ACTIVITIES

STERLING SITE NO. 3
EAST GREENBUSH, NEW YORK

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1.0 INTRODUCTION

The Health and Safety Plan (HASP) presented herein describes the health and safety procedures and emergency response guidelines to be implemented during the Remedial Action (RA) Program at the Sterling Site No. 3 (Site) located in East Greenbush, New York. Figure 1.1 presents the Site Location and Figure 1.2 presents the Site Layout.

The RA scope of work includes the following major activities:

i) mobilization and demobilization of labor, materials, and equipment to and from the Site;

ii) surveying activities;

iii) fence removal and reinstallation activities;

iv) dismantling of existing Vapor Extraction (VE) building, utility abandonment, and the removal of an existing power pole;

v) raise the east side of the existing bridge over Papscanee Creek;

vi) abandonment of existing groundwater monitoring wells and piezometers;

vii) soil excavation and trenching activities;

viii) relocation of the existing forecmain;

ix) potential drum removal activities;

x) construction of an impermeable cap;

xi) groundwater sampling activities;

xii) operation and maintenance of the VE system; and

xiii) decontamination activities.

During completion of the RA activities, personnel may come in contact with soils, sediments, groundwater, and waste materials which potentially contain hazardous substances. This HASP has been developed to ensure the following:

i) that Site personnel are not adversely exposed to the compounds of concern;

ii) compliance with applicable governmental and non-governmental (American Conference of Governmental Industrial Hygienists [ACGIH]) regulations and guidelines. In particular, the amended rules of the Occupational Safety and Health Administration (OSHA) for Subpart D of Part 1926 (Title 29 Code of Federal Regulations [CFR] Part 1926.65) will be implemented for Site work where there is a potential to come in contact with hazardous substances; and

iii) initiation of proper emergency response procedures to minimize the potential for any adverse impact to Site workers, the general public, or the environment.

The applicability of this HASP extends to all contractors and it's personnel who may potentially be exposed or have the reasonable possibility to be exposed to the safety or health hazards at the Site. As such, contractors and subcontractors selected to work at the Site will be required to prepare a HASP for their project activities. The HASP must minimally meet all the requirements of this HASP. All contractors, including those who are not required to provide a written HASP are required to comply with applicable OSHA standards found in Parts 1910 and 1926.

All RA activities at the Site will be conducted in accordance with applicable standards, the provisions of the selected contractor's approved Site-specific HASP (if required) and employer-specific Standard Operating Procedures (SOPs). A copy of any required HASPs will be maintained on Site whenever RA activities are in progress.

1.1 PROJECT ORGANIZATION

There is a potential for several contractors to be working on Site. The selected contractor(s) will be responsible for providing both a Site Superintendent and a Health and Safety Officer (HSO) to direct their activities. The Site Superintendent, if qualified, may fulfill the duties of the HSO. These individuals will be responsible for ensuring that all contract specifications are met, including those related to Site health and safety. The names of these individuals will be presented in the HASPs of each contractor. A Site Engineer will be present to ensure that all work is conducted in accordance with the project specifications including adherence to contractor-specific HASPs.

2.0 SITE CHARACTERIZATION AND POTENTIALLY HAZARDOUS COMPOUNDS

From 1956 until 1977, the Site was used for the disposal of waste, including materials currently defined as characteristically hazardous under Article 27, Title 13 of the Environmental Conservation Laws of the State of New York Section 27-1301(1). In 1977, the Site was covered and closed, and has remained inactive since that time. The Site has been the subject of ongoing investigations since 1982.

Results from previous investigations at the Site identified detectable quantities of both volatile and semi-volatile organic compounds in the saturated and unsaturated zones. The primary chemical compounds of concern identified in the Site soils and their maximum detected concentrations are presented in Table 2.1. Table 2.2 presents the exposure routes and exposure levels for the chemical compounds of concern.

The Site was the subject of an Interim Remedial Measure (IRM) from November 1989 until March 1991. During this time, approximately 8,500 buried drums were excavated and their contents disposed of at approved off-Site facilities. Drum excavation was not performed in the immediate vicinity of the decontamination pad.

3.0 BASIS FOR DESIGN

Regulations set forth by OSHA in Title 29, CFR, Parts 1910 and 1926 (29 CFR 1910 and 1926) form the basis of this HASP. Emphasis is placed on Section 1926.65 (Hazardous Waste Operations and Emergency Response), 1910 Subpart I (Personal Protective Equipment), 1910 Subpart Z (Toxic and Hazardous Substances), 1926 Subpart O (Motor Vehicles, Mechanized Equipment, and Marine Operations), and 1926 Subpart F (Excavations). Some of the specifications within this section are in addition to the OSHA regulations, and reflect the positions of the United States Environmental Protection Agency (USEPA), the National Institute for Occupational Safety and Health (NIOSH), and the United States Coast Guard (USCG) regarding safe operating procedures at hazardous waste sites.

This HASP follows the guidelines established in the following documents:

i) *Standard Operating Safety Guides*, USEPA (Publications 9285.1-03, June 1992);

ii) *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH, OSHA, USCG, USEPA (86-116), October 1985);

iii) Title 29 of the CFR, Part 1926.65;

iv) Title 29 of the CFR, Part 1926;

v) *Pocket Guide to Chemical Hazards*, DHHS, PHS, CDC, NIOSH (1997);

vi) *Threshold Limit Values*, ACGIH (1998-1999); and

vii) *Quick Selection Guide to Chemical Protective Clothing*, Forsberg, K. and S.Z. Mandsorf, 2nd Ed. (1993).

The health and safety of the public and Site personnel and the protection of the environment will take precedence over cost and scheduling considerations for all project work.

4.0 ROLES AND RESPONSIBILITIES

4.1 ALL PERSONNEL

All contractor and subcontractor personnel must adhere to the health and safety procedures during the performance of their work. Each person is responsible for completing tasks safely, and reporting any unsafe acts or conditions to his or her immediate supervisor or to the Site Superintendent. No person may work in a manner that conflicts with the safety and environmental precautions expressed in these procedures. After due warning, the Site Engineer will dismiss from the Site any person who violates safety procedures.

Required personnel shall have received training in accordance with 29 CFR 1926.65 and be familiar with the requirements and procedures contained in this document prior to the beginning of project operations.

4.2 INDUSTRIAL HYGIENIST

The Industrial Hygienist is responsible for technical health and safety aspects of the project, including review and approval of contractor HASPs. Inquiries regarding project procedures, and other technical or regulatory issues should be addressed to this individual. Any changes or addenda to this HASP must be approved by the Industrial Hygienist.

4.3 HEALTH AND SAFETY OFFICER (HSO)

The Site HSO is responsible for coordinating Site health and safety issues. The HSO will advise the Site Engineer on health and safety issues, and will establish and oversee the project air monitoring program. The HSO is the primary Site contact on occupational health and safety matters.

It is the responsibility of the HSO to:

i) verify that all on-Site personnel are made aware of the provisions of the HASP and have been informed of the nature of any physical, chemical, and biological hazards associated with the Site activities;

ii) maintain a daily logbook for recording all significant health and safety activities and incidents;

iii) verify that on-Site personnel and visitors have received the required training including instructions for safety equipment and personal protective equipment (PPE) use;

iv) suspend work if health and/or safety-related concerns arise;

v) provide on-Site technical assistance;

vi) conduct Site and personal air monitoring, including equipment maintenance and calibration. Where necessary, submit samples to an American Industrial Hygiene Association (AIHA) accredited laboratory;

vii) issue/obtain required work permits;

viii) conduct Site safety orientation training session;

ix) maintain the on-Site Hazard Communication Program including copies of Material Safety Data Sheets (MSDSs);

x) conduct brief daily safety meetings;

xi) verify that on-Site personnel have received the required physical examinations and medical certifications;

xii) maintain all Site Exclusion Zones (EZs), Contaminant Reduction Zones (CRZs), and the Support Zone (SZ);

xiii) communicate on a daily basis the proper evacuation routes and places of safe refuge based upon the working location at the Site;

xiv) if required, ensure that all drum removal and handling activities are conducted in accordance with 1965.120(j);

xv) review Site activities with respect to compliance with the HASP; and

xvi) maintain required health and safety documents and records on Site.

4.4 SITE ENGINEER

The Site Engineer is ultimately responsible for verifying that all RA activities are completed in accordance with the requirements and procedures in this plan.

It is the responsibility of the Site Engineer to:

i) report all accidents and incidents to the Industrial Hygienist and thoroughly investigate all such occurrences on the project;

ii) approve, in writing, addenda or modifications of this HASP; and

iii) suspend work if health and safety-related concerns arise.

4.5 SITE SUPERINTENDENT

The Site Superintendent is responsible for implementation of the HASP, including communication of Site requirements to all on-Site project personnel (including subcontractors). The Site Superintendent will be responsible for informing the Industrial Hygienist and the Site Engineer of any changes in the work plan or procedures so that those changes may be addressed in the HASP. Other responsibilities include:

i) consultation with the HSO on-Site health and safety issues;

ii) stopping work, as required, to ensure personal safety and protection of property, or in cases of life or property-threatening safety non-compliance;

iii) obtaining a Site map and determining and posting routes to medical facilities and emergency telephone numbers, and arranging emergency transportation to medical facilities;

iv) notifying local public emergency officers of the nature of the Site operations, and posting of their telephone numbers in an appropriate location;

v) observing on-Site project personnel for signs of chemical or physical trauma; and

vi) verifying that all Site personnel have the proper medical clearance, have met applicable training requirements, and have training documentation available in the office.

4.6 CONTRACTORS AND SUBCONTRACTORS

On-Site contractors and subcontractors and their personnel must understand and comply with the Site requirements established in their respective HASP. Subcontractors may prepare their own task-specific HASPs, which must be consistent with the requirements of this HASP. Subcontractor personnel must attend and participate in the Daily Safety Meetings and all other Site safety meetings.

4.7 ON-SITE PERSONNEL AND VISITORS

All personnel must read and acknowledge their understanding of their employer's Site-specific HASP, abide by the requirements of the plan, and cooperate with Site

supervision in ensuring a safe work site. Site personnel will immediately report any of the following situations to the Site Superintendent or HSO:

i) accidents and injuries, no matter how minor;

ii) unexpected or uncontrolled release of chemical substances;

iii) symptoms of chemical exposure;

iv) unsafe or malfunctioning equipment;

v) changes in Site conditions that may affect the health and safety of project personnel;

vi) damage to equipment or property; and

vii) situations or activities for which they are not properly trained.

5.0 EMPLOYEE TRAINING

5.1 GENERAL

Required project personnel must have completed hazardous waste operations-related training, as required by the OSHA Standard 29 CFR 1926.65. Field employees must also receive a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor. Personnel who completed their training more than 12 months prior to the start of the project must have completed an 8-hour refresher course within the past 12 months. The Site Superintendent must have completed an additional 8 hours of training for supervisors.

5.2 BASIC 40-HOUR COURSE

The following is a list of the topics typically covered in a 40-hour training course:

i) general safety procedures;

ii) physical hazards (fall protection, noise, heat stress, cold stress);

iii) names and job descriptions of key personnel responsible for Site health and safety;

iv) safety, health, and other hazards typically present at hazardous waste sites;

v) use, application, and limitations of PPE;

vi) work practices by which employees can minimize risks from hazards;

vii) safe use of engineering controls and equipment on site;

viii) medical surveillance requirements;

ix) recognition of symptoms and signs which might indicate overexposure to hazards;

x) worker right-to-know (Hazard Communication OSHA 1926.59/1910.1200);

xi) routes of exposure to contaminants;

xii) engineering controls and safe work practices;

xiii) components of a Site HASP;

xiv) decontamination practices for personnel and equipment;

xv) confined space entry procedures; and

xvi) general emergency response procedures.

5.3 SUPERVISOR COURSE

Management and supervisors receive an additional 8 hours of training which typically includes:

i) general Site safety and health procedures;

ii) PPE programs; and

iii) air monitoring techniques.

5.4 SITE-SPECIFIC TRAINING

Site-specific training will be accomplished by each Site worker reading this HASP, or through a Site briefing by the Site Engineer, Site Superintendent, or HSO on the contents of this HASP before work begins. The review must include a discussion of the chemical, physical, and biological hazards, the protective equipment and safety procedures, and emergency procedures. Appendix A provides the Training Acknowledgment Form.

5.5 DAILY SAFETY MEETINGS

Daily Safety Meetings will be held to cover the work to be accomplished, the hazards anticipated, the protective clothing and procedures required to minimize Site hazards and emergency procedures. These meetings should be conducted by the Site Superintendent or HSO prior to beginning the day's field work. No work will be performed in an EZ before the daily safety meeting has been held. The daily safety meeting must also be held prior to new tasks, and repeated if new hazards are encountered. Attachment B provides the form for documenting the daily safety meetings.

5.6 FIRST AID AND CPR

At least two employees current in first aid/CPR will be assigned to the work crew and will be on the Site during operations. Refresher training in first aid (triennially) and CPR (annually) is required to keep the certificate current. These individuals must also receive training regarding the precautions and protective equipment necessary to protect against exposure to blood-borne pathogens.

6.0 PERSONAL PROTECTIVE EQUIPMENT

PPE is required to safeguard Site personnel from various hazards. Varying levels of protection may be required depending on the level of contaminants and the degree of physical hazard. This section presents the various levels of protection and defines the conditions of use for each level.

6.1 LEVELS OF PROTECTION

Protection levels are determined based upon contaminants present in the work area. The specific protection levels to be employed at the Site for each work task are presented in Table 6.1.

6.1.1 LEVEL D PROTECTION

The minimum level of protection that will be required for all Site personnel will be Level D. The following equipment will be used:

i) work clothing as prescribed by the weather;

ii) steel toe work boots, meeting American National Standard Institute (ANSI) Z41;

iii) safety glasses or goggles, meeting ANSI Z87;

iv) hard hat, meeting ANSI Z89; and

v) hearing protection (if noise levels exceed 85 dBA, then hearing protection with a USEPA NRR of at least 20 dBA must be used).

6.1.2 MODIFIED LEVEL D PROTECTION

Modified Level D will be used when airborne contaminants are not present at levels of concern, but Site activities present an increased potential for skin contact with hazardous materials. Modified Level D consists of:

i) Tyvek® coveralls;

ii) steel toe work boots;

iii) vinyl or latex boots, or polyvinyl chloride (PVC) overboots;

iv) safety glasses or goggles;

v) hard hat;

vi) face shield in addition to safety glasses or goggles when projectiles pose a hazard;

vii) nitrile gloves; and

viii) hearing protection (if necessary).

6.1.3 LEVEL C PROTECTION

Level C protection will be required when the airborne concentrations of contaminants are present at sustained levels of 0.5 parts per million (ppm) or greater.

The following equipment will be used for Level C protection:

i) full-face air purifying respirator (APR) with organic vapor/acid gas cartridges in combination with particulate filters (P-100) which are NIOSH approved;

ii) polyethylene coated Tyvek® suit, ankles, and cuffs taped to boots and gloves;

iii) nitrile gloves over nitrile sample gloves;

iv) safety toe work boots, ANSI approved;

v) chemical resistant neoprene boots with steel toes, or latex/PVC booties over safety toe shoes;

vi) hard hat, ANSI approved; and

vii) hearing protection (if necessary).

6.1.4 LEVEL B PROTECTION

Level B protection will be worn when the airborne concentrations of contaminants are present at sustained levels greater than 25 ppm. The action level necessitating Level B protection may be revised subject to determination of the compounds triggering the Level B protection requirement.

The following equipment will be used for Level B protection:

i) supplied air respirator (NIOSH approved). Respirators may be positive pressure-demand, self-contained breathing apparatus (SCBA), or positive

pressure-demand airline respirator (with escape bottle for Immediately Dangerous to Life and Health (IDLH) or potential for IDLH atmosphere).

ii) polyethylene coated Tyvek® or Saranex® coverall with ankles and cuffs taped to boots and gloves;

iii) nitrile gloves over nitrile sample gloves;

iv) steel toe work boots, ANSI approved;

v) chemical resistant neoprene boots with steel toes, or latex/PVC booties over safety toe shoes;

vi) hard hat, ANSI approved; and

vii) hearing protection (if necessary).

6.1.5 SELECTION OF PPE

Equipment for personal protection will be selected based on the potential for contact, Site conditions, ambient air quality, and the judgement of supervising Site personnel and the Industrial Hygienist. The PPE used will be chosen to be effective against the compound(s) present on the Site.

6.2 RESPIRATORY PROTECTION

Respiratory protection is an integral part of employee health and safety at sites with potential airborne contamination.

6.2.1 SITE RESPIRATORY PROTECTION PROGRAM

The Site respiratory protection program will consist of the following:

i) all Site personnel who may use respiratory protection will have an assigned respirator;

ii) all Site personnel who may use respiratory protection will have been fit tested and trained in the use of a full-facepiece APR within the past 12 months;

iii) all Site personnel who may use respiratory protection must, within the past year, have been medically certified as being capable of wearing a respirator. Documentation of the medical certification must be provided to the HSO prior to commencement of Site work;

iv) only cleaned, maintained, NIOSH approved respirators are to be used on this Site;

v) if respirators are used, the respirator cartridge is to be properly disposed of at the end of each work shift, prior to expected breakthrough or when filter load-up occurs;

vi) contact lenses are not to be worn when a respirator is worn;

vii) all Site personnel who use respiratory protection must be clean shaven. Mustaches and sideburns are permitted, but they must not touch the sealing surface of the respirator;

viii) respirators will be inspected and a negative pressure test performed prior to each use; and

ix) after each use, the respirator will be thoroughly cleaned at the end of the work shift. The respirator will be stored in a clean plastic bag, away from direct sunlight in a clean, dry location, in a manner that will not distort the facepiece.

Respiratory protection will be required during some of the activities. This is to ensure worker protection from potentially contaminated particulates and VOCs. It is expected that Modified Level D personal protection will be worn during the waste excavation and placement activities. However, if during these excavations the real-time air monitoring program indicates the need for an upgrade in protection to Level C, then these excavations will be continued with the increased level of personal protection. Level B (supplied air respiratory equipment) will be worn when removing or handling drums whose contents are unknown.

A photoionization detector (PID) with a 11.7 eV lamp will be used to determine if organic vapors are present. A background reading will be established prior to commencing work activities at each active work area.

Action levels to determine the level of respiratory protection necessary for organic vapors are based on the concentration of Site contaminants measured within the breathing zone. The action levels and appropriate respiratory protection are as follows:

Sustained Organic Vapor Reading Above Background Within Worker Breathing Zone in Parts per Million (ppm)	*Action Taken*
<0.5	Full-Face Respirator Available
0.5-5	Wear Full-Face Respirator
>5	Wear Supplied Air Respirator, Implement Additional Engineering Controls

These action levels have been set based on the presence of unknown VOCs. However, if the ambient concentrations of organic vapors are due to identifiable substances, (i.e., through the use of draeger tubes), the level of respiratory protection may be altered in some situations (i.e., absence of drums) by the HSO and Industrial Hygienist.

6.3 USING PPE

Depending upon the level of protection selected for this project, specific donning and doffing procedures may be required. The procedures presented in this section are mandatory if Level C PPE is used.

All personnel entering the EZ must put on the required PPE in accordance with the requirements of this plan. When leaving the EZ, PPE will be removed in accordance with the procedures listed, to minimize the spread of contamination.

6.3.1 DONNING PROCEDURES

These procedures are mandatory only if Level C PPE is used on the project:

i) remove bulky outerwear. Remove street clothes and store in clean location;
ii) put on work clothes or coveralls;
iii) put on the required chemical protective coveralls or rain gear;
iv) put on the required chemical protective boots or boot covers;
v) tape the legs of the coveralls to the boots with duct tape;
vi) put on the required chemical protective gloves;
vi) tape the wrists of the protective coveralls to the gloves;
vii) don the required respirator and perform appropriate fit check;
viii) put hood or head covering over head and respirator straps and tape hood to facepiece; and

ix) don remaining PPE, such as hard hat.

When these procedures are instituted, one person must remain outside the work area to ensure that each person entering has the proper protective equipment.

6.3.2 DOFFING PROCEDURES

The following procedures are only mandatory if Level C PPE is required for this project. Whenever a person leaves a Level C work site, the following decontamination sequence will be followed:

i) upon entering the CRZ, rinse contaminated materials from the boots or remove contaminated boot covers;

ii) clean reusable protective equipment;

iii) remove protective garments, equipment, and respirator. All disposable clothing should be placed in a covered container which is labeled;

iv) wash hands, face, and neck or shower (if necessary);

v) proceed to clean area and dress in clean clothing; and

vi) clean and disinfect respirator for next use.

All disposable equipment, garments, and PPE must be placed in covered containers and labeled for disposal. See Section 10.0 for detailed information on decontamination procedures.

6.4 SELECTION MATRIX

The level of personal protection selected will be based upon real-time air monitoring of the work environment and an assessment by the Site Superintendent and HSO of the potential for skin contact with contaminated materials. The PPE selection matrix is given in Table 6.1. This matrix is based upon information available at the time this plan was written. The exposure levels presented in Table 2.2 should be used to verify that the PPE prescribed is appropriate.

6.5 DURATION OF WORK TASKS

The duration of activities involving the usage of PPE will be established by the HSO based upon ambient temperature and weather conditions, the capacity of personnel to work in the designated level of PPE (heat stress, see Section 8.3) and limitations of the protective equipment (i.e., ensemble permeation rates, life expectancy of APR cartridges, etc.). As a minimum, rest breaks will be observed at the following intervals:

i) 15 minutes midway between shift startup and lunch;

ii) 1/2 to 1 hour for lunch; and

iii) 15 minutes in the afternoon, between lunch and shift end.

All rest breaks will be taken in a clean area (e.g., SZ) after full decontamination and PPE removal. Additional rest breaks will be observed, based upon the heat stress monitoring guidelines presented in Section 8.3.

6.6 LIMITATIONS OF PROTECTIVE CLOTHING

PPE ensembles have been selected to provide protection against contaminants at anticipated concentrations. However, no protective garment, glove, or boot is chemical-proof, nor will it afford protection against all chemical types. Permeation of a given chemical through PPE is a complex process governed by contaminant concentrations, environmental conditions, physical condition of the protection garment, and the resistance of a garment to a specific contaminant; chemical permeation may continue even after the source of contamination has been removed from the garment.

In order to obtain optimum usage from PPE, the following procedures are to be followed by all Site personnel using PPE:

i) when using disposable coveralls, don a clean, new garment after each rest break or at the beginning of each shift;

ii) inspect all clothing, gloves, and boots both prior to and during use for:

   a) imperfect seams,

   b) non-uniform coatings,

   c) tears, and

   d) poorly functioning closures; and

iii) inspect reusable garments, boots, and gloves both prior to and during use for:

a) visible signs of chemical permeation,

b) swelling,

c) discoloration,

d) stiffness,

e) brittleness,

f) cracks,

g) any sign of puncture, and

h) any sign of abrasion.

Reusable gloves, boots, or coveralls exhibiting any of the characteristics listed above will be discarded. PPE used in areas known or suspected to exhibit elevated concentrations of contaminants will not be reused.

7.0 SITE CONTROL

7.1 AUTHORIZATION TO ENTER

All personnel working in EZs must have completed hazardous waste operations initial training as defined under OSHA Regulation 29 CFR 1926.65; have completed their training or refresher training within the past 12 months, and have been certified by a physician as fit for hazardous waste operations in order to enter a Site area designated as an EZ or CRZ. Personnel without such training or medical certification may enter the designated SZ only. The HSO will maintain a list of authorized persons; only personnel on the authorized persons list will be allowed within the EZ or CRZ.

7.2 SITE ORIENTATION AND HAZARD BRIEFING

No person will be allowed in the general work area during Site operations without first being given a Site orientation and hazard briefing. This orientation will be presented by the HSO, and will consist of a review of this HASP. This review must cover the chemical, physical, and biological hazards, protective equipment, safe work procedures, and emergency procedures for the project. Appendix A provides a Training Acknowledgment Form for documentation purposes. In addition to this meeting, Daily Safety Meetings will be held each day before work begins. All people on the Site, including visitors, must document their attendance to this briefing as well as the Daily Safety Meetings on the forms included with this HASP. Appendix B presents the Daily Safety Meeting Log.

7.3 CERTIFICATION DOCUMENTS

A training and medical file may be established for the project and kept on Site during all Site operations. The 40-hour training, update, and specialty training (first aid/cardiopulmonary resuscitation [CPR]) certificates, as well as current medical clearance for all project field personnel, will be maintained within that file. Contractor and subcontractor personnel must provide their training and medical documentation to the HSO prior to the start of field work.

7.4 ENTRY LOG

A log-in/log-out sheet must be maintained at the Site by the HSO. Personnel may sign in and out on a log sheet as they enter and leave the CRZ, or the HSO may document entry and exit in the field notebook.

7.5 ENTRY REQUIREMENTS

In addition to the authorization, hazard briefing and certification requirements listed above, no person will be allowed to enter the Site unless he or she is wearing the minimum support zone PPE as described in Section 6.0. Personnel entering the EZ or CRZ must wear the required PPE for those locations.

7.6 EMERGENCY ENTRY AND EXIT

People who must enter the Site on an emergency basis will be briefed of the hazards by the HSO. All hazardous activities will cease in the event of an emergency and any sources of emissions will be controlled, if possible.

People exiting the Site because of an emergency will gather in a safe area for a head count. The HSO is responsible for ensuring that all people who entered the work area have exited in the event of an emergency.

7.7 CONTAMINATION CONTROL ZONES

Contamination control zones are maintained to prevent the spread of contamination and to prevent unauthorized people from entering hazardous areas.

7.7.1 EXCLUSION ZONE (EZ)

The EZ consists of the specific work area, or may be the entire area of suspected contamination. All employees entering the EZ must use the required PPE, and must have the appropriate training and medical clearance for hazardous waste work. The EZ is the defined area where there is a possible respiratory and/or contact health hazard. The location of each EZ will be identified by cones, caution tape, or other appropriate means.

7.7.2 CONTAMINATION REDUCTION ZONE (CRZ)

The CRZ or transition area will be established to perform decontamination of personnel and equipment. All personnel entering or leaving the EZ will pass through this area to prevent any cross-contamination. Tools, equipment, and machinery will be decontaminated in a specific location. The decontamination of all personnel will be performed on Site adjacent to the EZ. Personal protective outer garments and respiratory protection will be removed in the CRZ and prepared for cleaning or disposal. This zone is the only appropriate corridor between the EZ and the SZ.

7.7.3 SUPPORT ZONE (SZ)

The SZ is a clean area outside the CRZ located to prevent employee exposure to hazardous substances. Eating and drinking will be permitted in the support area only after proper decontamination. Smoking only will be permitted in the SZ if the SZ is off Site, and subject to Site requirements.

8.0 ACTIVITY HAZARD/RISK ANALYSIS AND GENERAL SAFETY PRACTICES

This section identifies the general hazards associated with specific RA activities and presents the documented or potential health and safety hazards that exist at the Site. Every effort will be made to reduce or eliminate these hazards. Those which cannot be eliminated must be guarded against by use of engineering controls and/or PPE. Table 8.1 presents the anticipated hazards/risks and appropriate precautions.

In addition to the chemical hazards presented in Section 2.0 of this HASP, physical and biological hazards including snakes, poison ivy, poison oak, mosquitoes, bees, wasps, uneven terrain, slippery surfaces, hazards presented by the use of heavy equipment, overhead and underground utility hazards, potential drum removal and handling activities, the use of decontamination equipment, and potential heat and cold stress exist at the Site. It will be the responsibility of each contractor and their personnel to identify the physical hazards posed by the various Site RA activities and implement preventative and corrective action.

8.1 CHEMICAL EXPOSURE

Preventing exposure to toxic chemicals is a primary concern. Chemical substances can enter the unprotected body by inhalation, skin absorption, ingestion, or through a puncture wound (injection). A contaminant can cause damage at the point of contact or can act systematically, causing a toxic effect at a part of the body distant from the point of initial contact.

Chemical exposures are generally divided into two categories: acute and chronic. Symptoms resulting from acute exposures usually occur during or shortly after exposure to a sufficiently high concentration of a contaminant. The concentration required to produce such effects varies widely from chemical to chemical. The term "chronic exposure" generally refers to exposures to "low" concentrations of a contaminant over a long period of time. The "low" concentrations required to produce symptoms of chronic exposure depend upon the chemical, the duration of each exposure, and the number of exposures. For a given contaminant, the symptoms of an acute exposure may be completely different from those resulting from chronic exposure.

For either chronic or acute exposure, the toxic effect may be temporary and reversible, or may be permanent (disability or death). Some chemicals may cause obvious symptoms such as burning, coughing, nausea, tearing eyes, or rashes. Other chemicals may cause

health damage without any such warning signs (this is a particular concern for chronic exposures to low concentrations). Health effects such as cancer or respiratory disease may not become evident for several years or decades after exposure. In addition, some toxic chemicals may be colorless and/or odorless, may dull the sense of smell, or may not produce any immediate or obvious physiological sensations. Thus, a worker's senses or feelings cannot be relied upon in all cases to warn of potential toxic exposure.

The effects of exposure not only depend on the chemical, its concentration, route of entry, and duration of exposure, but may also be influenced by personal factors such as the individual's smoking habits, alcohol consumption, medication use, nutrition, age, and sex.

An important exposure route of concern at the Site is inhalation. The lungs are extremely vulnerable to chemical agents. Even substances that do not directly affect the lungs may pass through lung tissue into the bloodstream, where they are transported to other vulnerable areas of the body. Some toxic chemicals present in the atmosphere may not be detected by human senses (i.e., they may be colorless, odorless, and their toxic effects may not produce any immediate symptoms). Respiratory protection is therefore extremely important if there is a possibility that the work site atmosphere may contain such hazardous substances. Chemicals can also enter the respiratory tract through punctured eardrums. Where this is a hazard, individuals with punctured eardrums should be medically evaluated specifically to determine if such a condition would place them at an unacceptable risk and preclude their working at the task in question.

Direct contact of the skin and eyes by hazardous substances is another important route of exposure. Some chemicals directly injure the skin. Some pass through the skin into the bloodstream where they are transported to vulnerable organs. Skin absorption is enhanced by abrasions, cuts, heat, and moisture. The eye is particularly vulnerable because airborne chemicals can dissolve in its moist surface and be carried to the rest of the body through the bloodstream (capillaries are very close to the surface of the eye). Wearing protective equipment, not using contact lenses in contaminated atmospheres (since they may trap chemicals against the eye surface), keeping hands away from the face, and minimizing contact with liquid and solid chemicals can help protect against skin and eye contact.

Although ingestion should be the least significant route of exposure at the Site, it is important to be aware of how this type of exposure can occur. Deliberate ingestion of chemicals is unlikely, however, personal habits such as chewing gum or tobacco, drinking, eating, smoking cigarettes, and applying cosmetics at the Site may provide a route of entry for chemicals.

The last primary route of chemical exposure is injection, whereby chemicals are introduced into the body through puncture wounds (i.e., by stepping or tripping and falling onto contaminated sharp objects). Wearing safety shoes, avoiding physical hazards, and taking common sense precautions are important protective measures against injection.

8.2 GENERAL PRACTICES

Additional general safety practices to be implemented are as follows:

i) at least one copy of this HASP must be at the project Site, in a location readily available to all personnel, and reviewed by all project personnel prior to starting work;

ii) all Site personnel must use the buddy system (working in pairs or teams);

iii) food, beverages, or tobacco products must not be present or consumed in the EZ and CRZ. Cosmetics must not be applied within these zones;

iv) emergency equipment such as eyewash, fire extinguishers, etc., must be removed from storage areas and staged in readily accessible locations;

v) contaminated waste, debris, and clothing must be properly contained and legible and understandable precautionary labels must be affixed to the containers;

vi) removing contaminated soil from protective clothing or equipment with compressed air, shaking, or any other means that disperses contaminants into the air is prohibited;

vii) containers must be moved only with the proper equipment, and must be secured to prevent dropping or loss of control during transport; and

viii) visitors to the Site must be instructed to stay outside the EZ and CRZ and remain within the SZ during the extent of their stay. Visitors must be cautioned to avoid skin contact with surfaces which are contaminated or suspected to be contaminated.

8.2.1 BUDDY SYSTEM

All on-Site personnel must use the buddy system. Visual contact must be maintained between crew members at all times, and crew members must observe each other for

signs of chemical exposure, heat, or cold stress. Indications of adverse effects include, but are not limited to:

i) changes in complexion and skin coloration;

ii) changes in coordination;

iii) excessive salivation and pupillary response; and

iv) changes in speech pattern.

Team members must also be aware of potential exposure to possible safety hazards, unsafe acts, or noncompliance with safety procedures. Employees must inform their partners or fellow team members of non-visible effects of exposure to toxic materials. The symptoms of such exposure may include:

i) headaches;

ii) dizziness;

iii) nausea;

iv) blurred vision;

v) cramps; and

vi) irritation of eyes, skin, or respiratory tract.

If protective equipment or noise levels impair communications, prearranged hand signals must be used for communication. Personnel must stay within line of sight of another team member.

8.3 HEAT STRESS

Heat stress is caused by a number of interacting factors including environmental conditions, clothing, workload, etc., as well as the physical and conditioning characteristics of the individual. Since heat stress is one of the most common illnesses associated with heavy outdoor work conducted with direct solar load and, in particular, because wearing PPE can increase the risk of developing heat stress, workers must be capable of recognizing the signs and symptoms of heat-related illnesses. Personnel must be aware of the types and causes of heat-related illnesses and be able to recognize the signs and symptoms of these illnesses in both themselves and their co-workers.

Heat Rashes: Are the one of the most common problems in hot work environments. Commonly known as prickly heat , a heat rash is manifested as red papules and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Prickly heat occurs in skin that is persistently wetted by unevaporated sweat, and heat rash papules may become infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

Heat Cramps: Are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. It is important to understand that cramps can be caused both by too much and too little salt.

Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution (plus or minus 0.3 percent NaCl), excess salt can build up in the body if the water lost through sweating is not replaced. Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments.

Under extreme conditions, such as working for 6 to 8 hours in heavy protective gear, a loss of sodium may occur. Drinking commercially available carbohydrate-electrolyte replacement liquids is effective in minimizing physiological disturbances during recovery.

Heat Exhaustion: Occurs from increased stress on various body organs due to inadequate blood circulation, cardiovascular insufficiency, or dehydration. Signs and symptoms include pale, cool, moist skin; heavy sweating; dizziness; nausea; headache, vertigo, weakness, thirst, and giddiness. Fortunately, this condition responds readily to prompt treatment.

Heat exhaustion should not be dismissed lightly, however, for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, which is a medical emergency.

Workers suffering from heat exhaustion should be removed from the hot environment, be given fluid replacement, and be encouraged to get adequate rest.

Heat Stroke: Is the most serious form of heat stress. Heat stroke occurs when the body's system of temperature regulation fails and the body's temperature rises to critical levels. This condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict.

Heat stroke is a medical emergency. The primary signs and symptoms of heat stroke are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature, e.g., a temperature of 41°C (105.8°F). If body temperature is too high, it causes death. The elevated metabolic temperatures caused by a combination of work load and environmental heat load, both of which contribute to heat stroke, are also highly variable and difficult to predict.

If a worker shows signs of possible heat stroke, professional medical treatment should be obtained immediately. The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted and air movement around the worker should be increased to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first aid treatment.

Regardless of the worker's protestations, no employee suspected of being ill from heat stroke should not be sent home or left unattended unless a physician has specifically approved such an order.

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or exhaustion, that person may be predisposed to additional heat injuries.

Heat Stress Safety Precautions: Heat stress monitoring and work rest cycle implementation should commence when the ambient adjusted temperature exceeds 72°F. A minimum work rest regimen and procedures for calculating ambient adjusted temperature are described below.

Adjusted Temperature[1]	*Work-Rest Regimen Normal Work Ensemble*[2]	*Work-Rest Regimen Impermeable Ensemble*
90°C (32.°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5° to 90°F (30.8°C to 32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5° to 87.5°F (28.1° to 30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5° to 82.5°F (25.3° to 28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5° to 77.5°F (30.8° to 32.2°C)	After each 150 minutes of work	After each 120 minutes of work

Notes:

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

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

In order to determine if the work rest cycles are adequate for the personnel and specific Site conditions, additional monitoring of individuals heart rates will be conducted during the rest cycle. To check the heart rate, count the radial pulse for 30 seconds at the beginning of the rest period. If the heart rate exceeds 110 beats per minute, shorten the next work period by one-third and maintain the same rest period.

Additional one or more of the following control measures can be used to help control heat stress and are mandatory if any Site worker has a heart rate (measure immediately prior to rest period) exceeding 115 beats per minute:

i) Site workers will be encouraged to drink plenty of water and electrolyte replacement fluids throughout the day;

ii) on-Site drinking water will be kept cool (50 to 60°F);

iii) a work regimen that will provide adequate rest periods for cooling down will be established, as required;

iv) all personnel will be advised of the dangers and symptoms of heat stroke, heat exhaustion, and heat cramps;

v) cooling devices such as vortex tubes or cooling vests should be used when personnel must wear impermeable clothing in conditions of extreme heat;

vi) employees should be instructed to monitor themselves and co-workers for signs of heat stress and to take additional breaks as necessary;

vii) a shaded rest area must be provided. All breaks should take place in the shaded rest area;

viii) employees must not be assigned to other tasks during breaks;

ix) employees must remove impermeable garments during rest periods. This includes tyvek® garments; and

x) all employees must be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress disorders.

8.4 BIOLOGICAL HAZARDS

Biological hazards may include poison ivy, poison oak, snakes, thorny bushes and trees, ticks, mosquitoes, and other pests.

8.4.1 TICK-BORNE DISEASES

Lyme Disease, Erlichiosis, and Rocky Mountain Spotted Fever (RMSF) are diseases transmitted by ticks and occur throughout the United States during spring, summer, and fall.

Lyme Disease: The disease commonly occurs in summer and is transmitted by the bite of infected ticks. "Hot spots" in the United States include New York, New Jersey, Pennsylvania, Massachusetts, Connecticut, Rhode Island, Minnesota, and Wisconsin. Few cases have been identified in other states.

Erlichiosis: The disease also commonly occurs in summer and is transmitted by the bite of infected ticks. "Hot spots" in the United States include New York, Massachusetts, Connecticut, Rhode Island, Minnesota, and Wisconsin. Few cases have been identified in other states.

These diseases are transmitted primarily by the Deer Tick, which is smaller and redder than the common Wood Tick. The disease may be transmitted by immature ticks, which are small and hard to see. The tick may be as small as a period on this page.

Symptoms of Lyme disease include a rash or a peculiar red spot, like a bull's eye, which expands outward in a circular manner. The victim may have headache, weakness, fever, a stiff neck, swelling and pain in the joints, and eventually, arthritis. Symptoms of Erlichiosis include muscle and joint aches, flu-like symptoms, but there is typically no skin rash.

Rocky Mountain Spotted Fever: This disease is transmitted via the bite of an infected tick. The tick must be attached 4 to 6 hours before the disease-causing organism (*Rickettsia rickettsii*) becomes reactivated and can infect humans. The primary symptom of RMSF is the sudden appearance of a moderate-to-high fever. The fever may persist for two to three weeks. The victim may also have a headache, deep muscle pain, and chills. A rash appears on the hands and feet on about the third day and eventually spreads to all parts of the body. For this reason, RMSF may be confused with measles or meningitis. The disease may cause death if untreated, but if identified and treated promptly, death is uncommon.

Control: Tick repellent containing diethyltoluamide (DEET) should be used in tick-infested areas, and pants legs should be tucked into boots. In addition, workers should search the entire body every three or four hours for attached ticks. Ticks should be removed promptly and carefully without crushing, since crushing can squeeze the disease-causing organism into the skin. A gentle and steady pulling action should be used to avoid leaving the head or mouth parts in the skin. Hands should be protected with surgical gloves when removing ticks.

8.4.2 POISONOUS PLANTS

Poison ivy and poison oak may be present in the work area. Personnel should be alerted to its presence, and instructed on methods to prevent exposure.

Control: The main control is to avoid contact with the plant, cover arms and hands, and frequently wash potentially exposed skin. Particular attention must be given to avoiding skin contact with objects or protective clothing that have touched the plants. Treat every surface that may have touched the plant as contaminated, and practice contamination avoidance. If skin contact is made, the area should be washed immediately with soap and water, and observed for signs of reddening.

8.4.3 POISONOUS SNAKES

The possibility of encountering snakes exists, specifically for personnel working in wooded/vegetated areas. Snake venoms are complex and include proteins, some of which have enzymatic activity. The effects produced by venoms include neurotoxic effects with sensory, motor, cardiac, and respiratory difficulties; cytotoxic effects on red blood cells, blood vessels, heart muscle, kidneys, and lungs; defects in coagulation; and effects from local release of substances by enzymatic actions. Other noticeable effects of venomous snake bites include swelling, edema, and pain around the bite, and the development of ecchymosis (the escape of blood into tissues from ruptured blood vessels).

Control: To minimize the threat of snake bites and insect hazards, all personnel walking through vegetated areas must be aware of the potential for encountering snakes, and the need to avoid actions potentiating encounters, such as turning over logs, etc. If a snake bite occurs, an attempt should be made to kill the snake for identification. The victim must be transported to the nearest hospital within 30 minutes; first aid consists of applying a constriction band and washing the area around the wound to remove any unabsorbed venom.

8.5 NOISE

Exposure to noise over the OSHA action level can cause temporary impairment of hearing; prolonged and repeated exposure can cause permanent damage to hearing. The risk and severity of hearing loss increases with the intensity and duration of exposure to noise. In addition to damaging hearing, noise can impair voice communication, thereby increasing the risk of accidents on Site.

Control: All personnel must wear hearing protection with a Noise Reduction Rating (NRR) of at least 20 when noise levels exceed 85 dBA. When it is difficult to hear a co-worker at normal conversation distance, the noise level is approaching or exceeding 85 dBA, and hearing protection is necessary. All Site personnel who may be exposed to noise must also receive baseline and annual audiograms and training as to the causes and prevention of hearing loss.

Whenever possible, equipment that does not generate excessive noise levels will be selected for this project. If the use of noisy equipment is unavoidable, barriers or increased distance will be used to minimize worker exposure to noise, if feasible.

8.6 SANITATION

Site sanitation will be maintained according to OSHA and Department of Health requirements.

8.6.1 BREAK AREA

Breaks must be taken in the SZ, away from the active work area after Site personnel go through decontamination procedures. There will be no smoking, eating, drinking, or chewing gum or tobacco in the area other than the SZ.

8.6.2 POTABLE WATER

The following rules apply for all project field operations:

i) an adequate supply of potable water will be provided at each work Site. Potable water must be kept away from hazardous materials, contaminated clothing, and contaminated equipment;

ii) portable containers used to dispense drinking water must be capable of being tightly closed, and must be equipped with a tap dispenser. Water must not be drunk directly from the container, nor dipped from the container;

iii) containers used for drinking water must be clearly marked and not used for any other purpose; and

iv) disposable cups must be supplied, and both a sanitary container for unused cups and a receptacle for disposing of used cups must be provided.

8.6.3 SANITARY FACILITIES

Access to facilities for washing before eating, drinking, or smoking will be provided.

8.6.4 LAVATORY

If permanent toilet facilities are not available, an adequate number of portable chemical toilets will be provided.

8.6.5 TRASH COLLECTION

Trash collected from the CRZ will be separated as potentially contaminated waste. Trash collected in the support and break areas will be disposed of as non-hazardous waste. Trash receptacles will be set up in the CRZ and in the SZ.

8.7 ELECTRICAL HAZARDS

Electricity may pose a particular hazard to Site workers due to the use of portable electrical equipment. When electrical work is needed, it must be performed by a qualified electrician.

General electrical safety requirements include:

i) all electrical wiring and equipment must be a type listed by Underwriters Laboratory (UL), Factory Mutual Engineering Corporation (FM), or other recognized testing or listing agency;

ii) all installations must comply with the National Electrical Safety Code (NESC), the National Electrical Code (NEC), or United States Coast Guard regulations;

iii) portable and semi-portable tools and equipment must be grounded by a multi-conductor cord having an identified grounding conductor and a multi-contact polarized plug-in receptacle;

iv) tools protected by an approved system of double insulation, or its equivalent, need not be grounded. Double insulated tools must be distinctly marked and listed by UL or FM;

v) live parts of wiring or equipment must be guarded to prevent persons or objects from touching them;

vi) electric wire or flexible cord passing through work areas must be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, projections, or pinching;

vii) all circuits must be protected from overload;

viii) temporary power lines, switch boxes, receptacle boxes, metal cabinets, and enclosures around equipment must be marked to indicate the maximum operating voltage;

ix) plugs and receptacles must be kept out of water unless of an approved submersible construction;

x) all extension outlets must be equipped with ground fault circuit interrupters (GFCIs);

xi) attachment plugs or other connectors must be equipped with a cord grip and be constructed to endure rough treatment;

xii) extension cords or cables must be inspected prior to each use, and replaced if worn or damaged. Cords and cables must not be fastened with staples, hung from nails, or suspended by bare wire; and

xiii) flexible cords must be used only in continuous lengths without splice, with the exception of molded or vulcanized splices made by a qualified electrician.

8.8 LIFTING HAZARDS

Back strain or injury may be prevented by using proper lifting techniques. The fundamentals of proper lifting include:

i) consider the size, shape, and weight of the object to be lifted. A mechanical lifting device or additional persons must be used to lift an object if it cannot be lifted safely alone;

ii) the hands and the object should be free of dirt or grease that could prevent a firm grip;

iii) gloves must be used, and the object inspected for metal slivers, jagged edges, burrs, or rough or slippery surfaces;

iv) fingers must be kept away from points which could crush or pinch them, especially when putting an object down;

v) feet must be placed far enough apart for balance. The footing should be solid and the intended pathway should be clear;

vi) the load should be kept as low as possible, close to the body with the knees bent;

vii) to lift the load, grip firmly and lift with the legs, keeping the back as straight as possible;

viii) a worker should not carry a load that he or she cannot see around or over; and

ix) when putting an object down, the stance and position are identical to that for lifting; the legs are bent at the knees, and the back is straight as the object is lowered.

9.0 AIR MONITORING PROGRAM

This section of the HASP presents the requirements for conducting air monitoring at the Site. The air monitoring program is designed to ensure protection for both personnel working on Site and the surrounding community. The on-Site monitoring program will be conducted by the contractor who is performing work on Site and will consist of monitoring Site personnel exposures to VOCs, selected VOCs and oxygen and combustible gas levels. This monitoring will be completed with the use of both real-time reading instruments and laboratory analysis of collected samples. A Community Air Monitoring Program will be conducted by the primary contractor working on Site and will consist of real-time Site air monitoring for VOCs and particulate levels around the Site perimeter.

9.1 ON-SITE AIR MONITORING

The HSO or Environmental Monitoring Technician will perform air monitoring to evaluate the exposure of Site personnel to chemical and physical hazards, verify the effectiveness of engineering controls, and determine the proper level of PPE. During the progress of project activities, the HSO will monitor the levels of VOCs, oxygen, and combustible gases on an hourly basis or more frequently as necessary. The following monitoring equipment will be used for this purpose:

i) a PID equipped with a 11.7 eV lamp; and

ii) an oxygen level/combustible gas meter.

All instruments will be calibrated on a daily basis in accordance with the manufacturer's guidelines. Records of all calibrations and real-time measurements will be kept in a bound field log book.

9.1.1 REAL-TIME VOC MONITORING

The HSO will continuously monitor for the presence of VOCs during activities where VOCs may potentially be present. PID readings will be taken in and around all EZs. Table 9.1 presents the action levels for the on-Site Air Monitoring Program. Background concentrations of VOCs will be determined by obtaining VOC readings at an upwind location near the Site perimeter on a daily basis.

9.1.2 COMBUSTIBLE GAS AND OXYGEN

Air monitoring for combustible gases and oxygen will be conducted during waste excavation, placement, potential drum removal, and consolidation activities. The point of excavation and the immediate work area around these activities must be monitored to ensure that an adequate level of oxygen is present, and to determine if any unsafe levels of flammable atmosphere exists. Combustible gas and oxygen level monitoring will be conducted as needed in areas that are suspect. The HSO will determine the monitoring frequency based on the observed Site conditions. All work activity must stop where monitoring indicates the flammable vapors concentration is 20 percent of the lower explosive limit (LEL) at a location with a potential ignition source. Such an area must be ventilated to reduce the concentration to an acceptable level. Action levels for combustible gases and oxygen are presented in Table 9.1.

9.1.3 PERSONAL AIR MONITORING

The contractor shall also implement a personnel air monitoring program for those employees who have the highest risk of potential for exposure to chemicals present on Site. This monitoring will be done in compliance with 1926.65(h) and in accordance with OSHA's standard for benzene (1926.1128). The contractor may select additional chemical compounds to be monitored. Samples will be collected during startup of the regrading and waste excavation activities, where personnel would face potential exposure, for the purpose of verifying the adequacy of personal protection and to document the actual exposure level to the selected chemical compound. The number and frequency of sampling events will be determined by the HSO. Appropriate NIOSH methodology will be followed and all samples are to be sent to an American Industrial Hygiene Association (AIHA) accredited laboratory. Results for all personnel air sampling will be posted for all project personnel to review.

9.2 COMMUNITY AIR MONITORING PROGRAM (CAMP)

Air monitoring will be performed during performance of the RA activities to ensure that the community will not be adversely impacted during Site activities, as described below. One Davis Weather Monitor II weather station (or equivalent) will be set up at the Site to document wind direction and speed, temperature, humidity, and amount of rainfall that occur during project activities.

9.2.1 COMMUNITY AIR MONITORING

This Community Air Monitoring Plan (CAMP) will be implemented during all waste and soil handling activities and any other activity which may potentially create an airborne hazard at the Site. Real-time air monitoring for VOCs will be performed at the perimeter of the Site during all waste and contaminated soil handling activities. Real-time air monitoring for particulates will be performed at the perimeter of the Site during handling of waste, contaminated soils, or clean soils.

Community air monitoring will be conducted in accordance with the following protocols:

i) VOCs will be monitored continuously at the downwind perimeter of the Site. Readings will be recorded at 60-minute intervals or sooner if an action level has been exceeded. If sustained total organic vapor levels exceed 5 ppm above background, work activities will be temporarily halted and monitoring continued under the provisions of the Vapor Emission Response Plan (see Section 9.2.2). All monitoring readings will be recorded and available for review; and

ii) a fugitive dust suppression and real-time particulate monitoring program will be conducted in accordance with the procedures presented in Section 9.2.5.

The action levels specified for the CAMP may be revised by the HSO subject to a determination of the compounds causing the exceedance the action level.

Work stoppages resulting from sustained organic vapor levels exceeding 5 ppm above background will be reported to the on-Site Agency Representative.

9.2.2 STEP 1 VAPOR EMISSION MONITORING

If sustained ambient air concentrations of organic vapors exceeds 5 ppm above background at the downwind perimeter of the Site, then activities will be halted and additional controls (e.g., reducing the rate of excavation, reducing the area of exposed waste materials, covering of exposed waste materials) put in place to maintain levels at the Site perimeter to less than 5 ppm. When organic vapor levels decrease below 5 ppm above background at the downwind perimeter of the Site, work activities can resume.

If the organic vapor level is above 25 ppm at the downwind perimeter of the Site, air monitoring at 200 feet downwind of the Site perimeter or half the distance to the nearest residential or commercial structure, whichever is less, will be performed to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Step 2 Vapor Emission Monitoring section (Section 9.2.3).

The local fire department and on-Site Agency Representative will be notified immediately if the organic vapor level is above 25 ppm at the downward perimeter of the Site.

9.2.3 STEP 2 VAPOR EMISSION MONITORING

If sustained organic vapor levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, then the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20-Foot Zone).

If effort to abate the emission source are unsuccessful and if any of the organic vapor levels persist at 5 ppm above background or greater for more than 30 minutes in the 20-foot zone, then the Vapor Emission Response Plan (see Section 9.2.4) will automatically be placed into effect.

However, the Vapor Emission Response Plan (see Section 9.2.4) will be immediately placed into effect if organic vapor levels are greater than 10 ppm above background at the 20-Foot Zone for any one time.

9.2.4 VAPOR EMISSION RESPONSE PLAN

Upon activation, the following activities will be undertaken:

i) all emergency response contacts as listed in Section 12.1 of this HASP, starting with the local fire department, will be notified so that evacuation procedures may begin and/or the Emergency Response Plan, will go into effect; and

ii) frequent air monitoring will be conducted at 30-minute intervals within the 20-Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the HSO.

9.3 FUGITIVE DUST SUPPRESSION AND REAL-TIME PARTICULATE MONITORING PROGRAM

The following fugitive dust suppression and real-time particulate monitoring program will be employed at the Site during waste and soil handling activities or during other activities which may potentially create an airborne hazard:

i) reasonable fugitive dust suppression techniques will be employed during all Site activities which may generate fugitive dust;

ii) real-time particulate monitoring will be employed during waste handling activities or activities which may generate fugitive dust;

iii) the real-time particulate monitoring will be performed using a particulate monitor that is capable of monitoring particulate matter less than 10 microns in size. Particulate levels will be monitored at the downwind perimeter of the Site. Readings will be based on the 15-minute average concentrations;

iv) the real-time particulate monitoring will be performed by a trained technician who fully understands the operation of the monitoring equipment and calibration procedure. The technician will be responsible for keeping the air monitoring log book which will contain records of equipment calibrations and all air monitoring readings;

v) the action level will be set at 150 $\mu g/m^3$ based on a 15-minute average. If particulate levels are detected in excess of 150 $\mu g/m^3$, the upwind background level will be measured immediately using the same portable monitor. If the working site particulate measurement is greater than 100 $\mu g/m^3$ above the background level, additional dust suppression techniques (water spraying, reduced rate of excavation or backfill) will be implemented to reduce the generation of fugitive dust, and corrective actions will be taken to protect Site personnel and reduce the potential for off-Site contaminant migration. Corrective measures may include increasing the level of personal protection and implementing additional dust suppression techniques. These may include:

   a) applying potable water on haul roads,

   b) wetting equipment, waste piles, and excavation faces,

   c) spraying potable water on buckets during excavation and dumping,

   d) hauling materials in covered or tarped containers,

   e) restricting vehicle speed,

   f) immediately covering excavation areas or materials upon completion; and

g) reducing the size and/or number of ongoing work activities;

vi) if dust is observed leaving the working site, additional dust suppression techniques will be employed; and

vii) if the dust suppression techniques being utilized at the Site do not lower particulates to an acceptable level (below 150 $\mu g/m^3$) work will be suspended until appropriate corrective measures are approved to remedy the situation.

10.0 DECONTAMINATION PROCEDURES

In general, everything that enters the EZ at this Site must either be decontaminated prior to removal from the Site, or buried under the landfill cap. All personnel, including any State and local officials must enter and exit the EZ through the CRZ. Prior to demobilization or moving to clean areas of the Site, potentially contaminated equipment will be decontaminated.

10.1 EQUIPMENT DECONTAMINATION PROCEDURES

All equipment that comes in contact with waste material must be decontaminated within the CRZ upon exit from the EZ. Personnel shall wear Level C or Modified Level D protection, as determined by the HSO, when decontaminating equipment. Following decontamination and prior to exit from the EZ, the HSO shall be responsible for ensuring that the item has been sufficiently decontaminated. This inspection shall be included in the Site log. The contractor's SOP for equipment decontamination will be followed.

10.2 PERSONNEL DECONTAMINATION PROCEDURES

The selected RA construction contractor will provide and follow their SOP for going through personnel decontamination. The general guidelines for this are described in Section 6.3.2.

11.0 MEDICAL SURVEILLANCE

In accordance with the requirements detailed in 29 CFR 1926.65 and 29 CFR 1910.134, all Site personnel who will come in contact with potentially contaminated materials will have received, within one year prior to starting field activities, medical surveillance by a licensed physician or physician's group.

Medical records for all on-Site personnel will be maintained by their respective employers. The medical records will detail the tests that were taken and will include a copy of the consulting physician's statement regarding the tests and the employee's suitability for work.

The medical records will be available to the employee or his designated representative upon written request, as outlined in 29 CFR 1910.1020.

Each employer will provide certifications to their on-Site HSO that their personnel involved in Site activities will have all necessary medical examinations prior to commencing work which requires respiratory protection or potential exposure to hazardous materials. Personnel not obtaining medical certification will not perform work within contaminated areas.

Interim medical surveillance will be completed if an individual exhibits poor health or high stress responses due to any Site activity or when accidental exposure to elevated concentrations of contaminants occur.

12.0 EMERGENCY CONTINGENCIES

It is essential that Site personnel be prepared in the event of an emergency. Emergencies can take many forms; illnesses or injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather. Prior to mobilization to the Site, the RA construction contractor will develop both an on-Site and off-Site contingency and emergency response plan. The development of these plans will include a meeting with appropriate authorities to discuss and develop emergency response procedures. The following sections outline the general procedures for emergencies. Emergency information should be posted as appropriate.

If required, the local fire and police departments will notify local residents of potential problems at the Site that may require evacuation. Evacuations if required, will be coordinated by the local fire and police departments.

12.1 EMERGENCY CONTACTS

Agency/Facility/Individual	*Phone*
Police Department (Town of East Greenbush Police)	911
Fire Department (Town of East Greenbush Police)	911
Paramedics (Ambulance)	911
Albany Medical Center	(518) 262-3125
National Response Center (24 Hours)	(800) 424-8802
Poison Control Center	(800) 336-6997
Project Manager (Jamie Puskas)	(519) 884-0510
Project Engineer (Tracy Annett)	(519) 884-0510
Project Industrial Hygienist (Craig Gebhardt)	(716) 297-2160
Client Contact (Clyde Siverd)	(716) 477-1162
USEPA (Emergency Response Region I)	(617) 573-5760
Spill Response Hotline	(800) 457-7362
New York State Department of Environmental Conservation (Project Manager David Tromp)	(518) 457-5637
New York State Emergency Response Commission	(518) 457-4107

Directions from the Site to the hospital, as shown on Figure 12.1, are as follows:

- Take Riverside Ave. North to Routes 9 and 20 West
- Cross Hudson River and exist South Pearl Street (2nd exit)

- Turn left onto South Pearl Street
- Turn right onto Madison Avenue (2nd light)
- Turn left onto Eagle Street
- Turn right onto Morton Avenue
- Morton Avenue turns into Holland Avenue
- Follow Holland Avenue until end
- Albany Medical Center is at the end of Holland Avenue, 43 New Scotland Road, Albany, New York 12208

Communication between work areas and the command post, located within the CZ, will be via verbal communication, auto horn, or two-way radio. The HSO will use the nearest telephone on Site or may be in the possession of a mobile telephone to communicate with outside emergency and medical facilities.

The following signals shall be established for use with auto or compressed air-type horns:

i) 1 Long Blast (2-Second Duration): evacuate exclusion area, meet at CRZ or designated area;

ii) 1 Long Blast with 2 Short Blasts: prepare for removal of injured personnel, evacuate work area; and

iii) 3 Short Blasts: all clear.

The following hand signals will be used by downrange field teams in conjunction with the "buddy" system. These signals are very important when working with heavy equipment. They shall be known by the entire field team before operations commence.

Signal	*Meaning*
• Hand Gripping Throat	Out of Air; Can't Breathe
• Grip Partner's Wrist	Leave Area Immediately
• Hands on Top of Head	Need Assistance
• Thumbs Up	Ok, I'm All Right, I Understand
• Thumbs Down	No, Negative

12.2 EMERGENCY AND FIRST AID EQUIPMENT

Emergency safety equipment will be available for use by Site personnel and will be located and maintained on Site. The safety equipment will include, but is not limited to, the following:

i) portable emergency eye wash and drench shower (pressurized);

ii) two 20-pound ABC type dry chemical fire extinguishers;

iii) approved first-aid kit for a minimum of ten personnel;

iv) fire blanket;

v) two SCBA units; and

vi) portable air horn.

12.3 PROJECT PERSONNEL RESPONSIBILITIES DURING EMERGENCIES

HEALTH AND SAFETY OFFICER (HSO)

As the administrator of the HASP, the HSO has primary responsibility for responding to and correcting emergency situations. The HSO will:

i) take appropriate measures to protect personnel including: withdrawal from the EZ, total evacuation and securing of the Site or upgrading or downgrading the level of protective clothing and respiratory protection;

ii) take appropriate measures to protect the public and the environment including isolating and securing the Site, preventing runoff to surface waters, and ending or controlling the emergency to the extent possible;

iii) ensure that appropriate Federal, State, and local agencies are informed, and emergency response plans are coordinated. In the event of fire or explosion, the local fire department should be summoned immediately. In the event of an air release of toxic materials, the local authorities should be informed in order to assess the need for evacuation. In the event of a spill, sanitary districts and drinking water systems may need to be alerted;

iv) ensure that appropriate decontamination treatment or testing for exposed or injured personnel is obtained;

v) determine the cause of the incident and make recommendations to prevent the reoccurrence; and

vi) ensure that all required reports have been prepared.

12.4 MEDICAL EMERGENCIES

Any person who becomes ill or injured in the EZ must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed as much as possible without causing further harm to the patient. First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the HSO, Site Superintendent, and Site Engineer.

Any person transporting an injured/exposed person to a clinic or hospital for treatment should take with them directions to the hospital and a copy of the identified chemicals on Site to which they may have been exposed.

Any vehicle used to transport contaminated personnel, will be cleaned or decontaminated as necessary.

12.5 FIRE OR EXPLOSION

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the HSO or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials on Site.

If it is safe to do so, Site personnel should:

i) report to the Site Engineer;

ii) use fire fighting equipment available on Site; or

iii) remove or isolate flammable or other hazardous materials which may contribute to the fire.

12.6 SPILLS

On-Site

If a spill occurs, the following procedure will be followed:

i) notify the HSO, Site Superintendent, and Site Engineer;

ii) evacuate immediate area of spill;

iii) determine the needed level of PPE;

iv) don required level of PPE and prepare to make entry to apply spill containment and control procedures;

v) no entry will be made until atmosphere is less than 20 percent of the LEL; and

vi) absorb or otherwise clean up the spill and containerize the material, sorbent, and affected soils.

The Site Superintendent has the authority to commit resources as needed to contain and control released material and to prevent its spread to off-Site areas.

Releases from drums containing solid wastes will be placed into approved containers and covered. Each container will be labeled as to its contents. Solid spills from haulage units will be placed back into haulage units.

In the event that a drum or container of liquid is spilled on Site outside of the EZ, a drum handling team will immediately respond to the spill. The spilled liquids will be confined to the immediate area of the spill and the liquids will be pumped, with the use of a portable hand pump, into a repack drum. The spilled liquids will be confined by diking around the spill with native material or with an inert absorbent. Any residual liquids which cannot be pumped will be absorbed with a sufficient quantity of inert absorbent to ensure that no free liquids remain. If the spill occurred on soil, the visibly affected soil will be excavated to limits based on a visual determination of spill contamination with the concurrence of the on-Site Agency Representative. The absorbent and excavated material will be drummed or otherwise appropriately contained.

13.0 CONFINED SPACE ENTRY PROCEDURE

A confined space provides the potential for unusually high concentrations of contaminants, explosive atmospheres, oxygen deficient atmospheres, limited visibility, and restricted movement. This section establishes requirements for safe entry into, continued work in, and safe exit from confined spaces. Additional information regarding confined space entry can be found in 29 CFR 1926.21, 29 CFR 1910.146, and NIOSH-106. At this Site, it is not expected that confined spaces will be encountered during construction activities, however, if confined space entry is required, such work will only be undertaken in accordance with the selected contractor's SOP for confined space entry work.

14.0 RECORDKEEPING

The HSO shall establish and maintain records of all necessary and prudent monitoring activities as described below:

i) name and job classification of the employees involved on specific tasks;

ii) records of fit testing and medical surveillance results for Site personnel;

iii) records of all OSHA training certification for Site personnel;

iv) records of training acknowledgment forms and daily safety meetings;

v) emergency report sheets describing any incidents or accidents;

vi) air monitoring equipment calibrations; and

vii) air monitoring data.

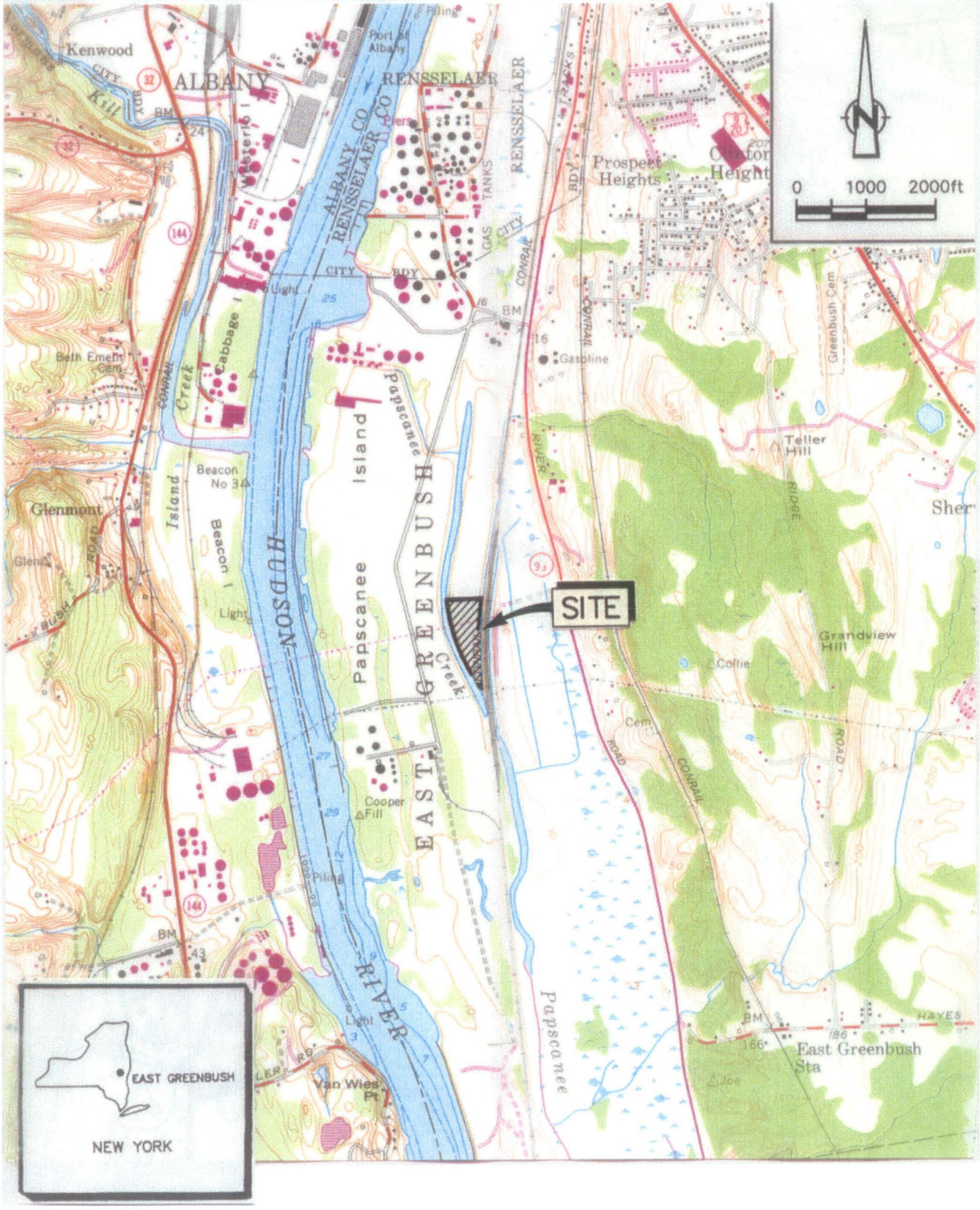
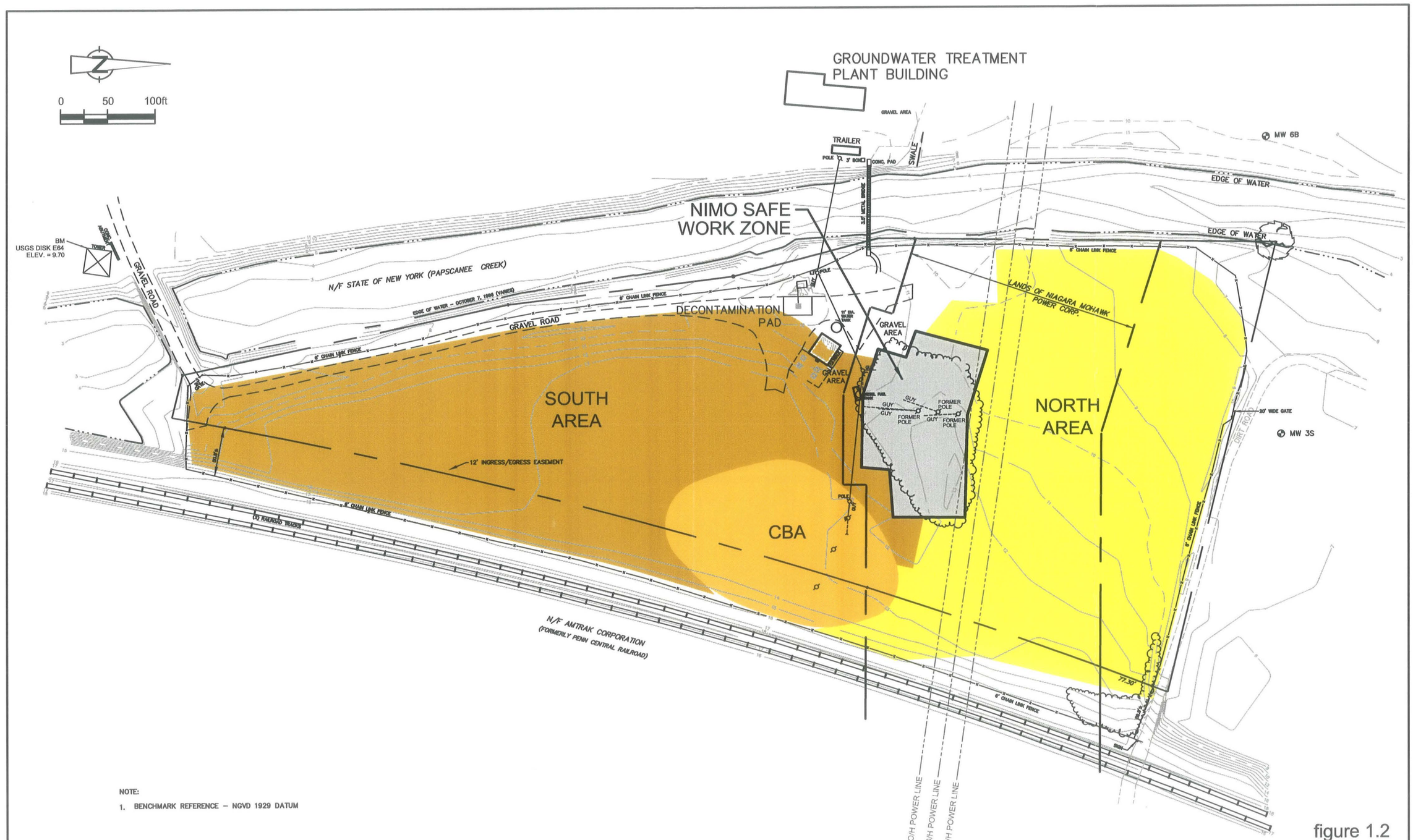


figure 1.1

SITE LOCATION
STERLING SITE 3
East Greenbush, New York

SOURCE:
U.S.G.S. TOPOGRAPHIC MAP QUADRANGLE
DELMAR AND EAST GREENBUSH, N.Y.

CRA



NOTE:

1. BENCHMARK REFERENCE – NGVD 1929 DATUM

figure 1.2

SITE LAYOUT
STERLING SITE 3
East Greenbush, New York

07830-20(041)GN-WA003 NOV 08/2000

SOURCE:
1990 DELORME MAPPING COMPANY
UPSTATE NEW YORK
CITY STREET MAPS

figure 12.1

HOSPITAL ROUTE
STERLING SITE 3
East Greenbush, New York

07830-20(041)GN-WA002 NOV 08/2000

TABLE 2.1

MAXIMUM DETECTED CONCENTRATIONS OF CHEMICAL COMPOUNDS OF CONCERN IN SITE SOILS
REMEDIAL ACTION PROGRAM
STERLING SITE NO. 3
EAST GREENBUSH, NEW YORK

Compounds	*Maximum Detected Concentrations during Remedial Investigation (mg/kg)*
Benzene	556
1,2-Dichloroethane	21
Ethyl Ether	NI
Toluene	230
Xylene	28.7
4-Methylphenol	20.6
Phenol	10.5

TABLE 2.2

EXPOSURE ROUTES AND EXPOSURE LEVELS FOR THE
CHEMICAL COMPOUNDS OF CONCERN
REMEDIAL ACTION PROGRAM
STERLING SITE NO. 3
EAST GREENBUSH, NEW YORK

Chemical Compound	*Ionization Potential*	*Exposure Routes*	*Acceptable Exposure Levels in Air*
Benzene	9.2	Inhalation, Ingestion Skin Absorption, Human Carcinogen	0.5 ppm (1) 1 ppm (2) 5 ppm (4) 500 ppm (3)
Xylene	8.5	Inhalation, Ingestion	100 ppm (1) 100 ppm (2) 900 ppm (3)
1,2-Dichloroethane	11.1	Inhalation, Ingestion	10 ppm (1) 50 ppm (2) 50 ppm (3)
Toluene	8.8	Inhalation, Ingestion Skin Absorption	50 ppm (1) 200 ppm (2) 500 ppm (3) 500 ppm (5)
Ethyl Ether	9.5	Inhalation, Ingestion	400 ppm (1) 400 ppm (2) 1900 ppm (3)
4 Methyl phenol	8.5	Inhalation, Ingestion, Skin Absorption	22 mg/m^3 (1) 22 mg/m^3 (2) 250 mg/m^3 (3)
Phenol	8.7	Inhalation, Ingestion, Skin Absorption	19 mg/m^3 (1) 19 mg/m^3 (2) 250 mg/m^3 (3)

Notes:

(1) 1998-1999 Values, American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs).
(2) Federal Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL).
(3) Immediately Dangerous to Life and Health (IDLH).
(4) Federal OSHA 15 minute ceiling standard.
(5) Federal OSHA 10 minute exposure limit.

mg/m^3 Milligrams per Cubic Meter.
ppm Parts Per Million.

TABLE 6.1

SPECIFIC PERSONAL PROTECTION LEVELS
REMEDIAL ACTION PROGRAM
STERLING SITE NO. 3
EAST GREENBUSH, NEW YORK

Work Task	*Maximum Protection Level* [1]	*Alternate Protection Level* [2]
Mobilization and Demobilization of Labor, Materials, and Equipment to and from the Site including Fence Removal and Reinstallation Activities	Modified D	D
Surveying Activities	Modified D	D
Dismantling of Existing VE Building, Utility Abandonment, and Removal of Power Pole	Modified D	D
Raise the East Side of the Bridge over Papscanee Creek	Modified D	D
Abandonment of Existing Groundwater Monitoring Wells and Piezometers	Level C	Modified D/D
Soil Excavation and Trenching Activities	Level C	Modified D/D
Construction of an Impermeable Cap	Level C	Modified D/D
Groundwater Monitoring Activities	Level C	Modified D
Relocation of the Existing Forcemain	Level C	Modified D/D
Potential Drum Removal Activities	Level B	Level C
Operation and Maintenance Activities of the VE System	Modified D	D
Decontamination Activities	Level C	Modified D

Notes:

Specific requirements of protection levels are detailed in Section 6.0.

(1) Level C: To be worn when the criterion for using air-purifying respirators (APRs) are met and a lesser level of skin protection is needed.
Modified D: To be worn when dermal protection is required, however, no respiratory hazards are present. It provides minimal protection against chemical hazards.

(2) Alternate protection levels will be used if monitoring indicates that conditions are appropriate or the HSO and Site Superintendent agree that there is a reduced potential of exposure.

TABLE 8.1

ANTICIPATED HAZARDS/RISKS AND HAZARD CONTROLS
REMEDIAL ACTION PROGRAM
STERLING SITE NO. 3
EAST GREENBUSH, NEW YORK

	Activity	*Anticipated Hazards/Risks*	*Appropriate Precautions*
1.	Mobilization and Demobilization Activities, Removal and Reinstallation Activities, Surveying Activities, Dismantling of Existing VE Building, Utility Abandonment, and Removal of a Power Pole, Relocation of the Existing Forcemain and Raise the East Side of the Bridge over Papscanee Creek	• slip/trip/fall hazards • potential back injuries from lifting heavy objects • potential heat stress • severe weather • electrical hazards from power sources • moving or backing vehicles • potential contact with poison ivy • bites and/or stings from ticks, bees, mosquitoes, wasps, and snakes • overhead utility lines • pinch points	• Modified D or Level D personal protection • practice safe lifting techniques • participate in on-Site training programs • practice good personal hygiene principles • use a spotter around moving or backing equipment • work activities will be reduced or suspended during severe weather conditions • ground fault circuit interrupters (GFCIs) should be used to reduce the hazard of electrical shock. Do not stand in water when handling equipment. Electrical equipment will be approved • keep first aid supplied readily available, including antidote kit for those allergic to bees or wasps • wear snake chaps if snakes are present
2.	Abandonment of Existing Groundwater Monitoring Wells and Piezometers, Soil Excavation and Trenching Activities, Construction of an Impermeable Cap, Groundwater Monitoring Activities, Potential Drum Removal Activities, Operation and Maintenance Activities of the VE System, and Decontamination Activities	• slip/trip/fall hazards • potential back injuries from lifting heavy objects • potential heat stress • severe weather • electrical hazards from power sources • moving or backing vehicles and equipment • personnel injuries from sharp objects, falling debris and pinch points • direct contact with potentially contaminated soils and uncharacterized wastes • hazards presented by the use of heavy equipment overhead and underground utility hazards (e.g., electrical lines) • potential burns from hot equipment hazards presented by the use of specialized equipment (e.g., decontamination equipment) • potential contact with poison ivy • bites and/or stings from ticks, bees, mosquitoes, wasps, and snakes • potential contact with drums that contain unknown contents	• Levels B and C, Modified Level D, based on realtime air monitoring and established protection levels (see Table 6.1) • practice safe lifting techniques • participate in all on-Site training programs • be trained with all appropriate equipment standard operating procedures • practice good personal hygiene principles • take proper precautions in unsafe areas • use the "buddy system" • perform an underground utilities search • only essential personnel allowed in work area • use a spotter around moving or backing equipment • identify all high temperature objects or equipment • work activities will be reduced or suspended during severe weather conditions • GFCIs should be used to reduce the hazard of electrical shock. Do not stand in water when handling equipment. Electrical equipment will be approved • keep first aid supplies readily available including antidote kit for those allergic to bees or wasps • wear snake chaps if snakes are present • remove all drums in accordance with 1926.65(j)

TABLE 9.1

ON-SITE AIR MONITORING PROGRAM ACTION LEVELS
REMEDIAL ACTION PROGRAM
STERLING SITE NO. 3
EAST GREENBUSH, NEW YORK

Monitoring Device	*Action Level*	*Action (1)*
Combustible Gas Indicator	<20 Percent LEL	Limit ignition sources. Work with caution. Be prepared to cease operations.
	>20 Percent LEL for Non-Confined Spaces	Cease operations and move to a safe place. Notify HSO. Do not continue working until conditions are constantly below 20 percent LEL.
Oxygen Meter <19.5 Percent or >23.5 Percent		Cease operations and move to a safe place. Notify HSO. Do not continue working until oxygen levels are between 19.5 and 23.5 percent. Note: When oxygen levels are outside this range, percent LEL readings are not reliable.
Photoionization Detector (PID)	0.5 to 25 ppm	Full-face air purifying respirator Level C PPE (see Notes).
	50 to 2000 ppm	Supplied air respirator Level B PPE.
	>2000 ppm	Shut down activities. Notify HSO. Implement additional engineering controls.

Notes:

HSO	Health and Safety Officer.
LEL	Lower Explosive Limit.
PPE	Personal Protection Equipment.
ppm	Parts Per Million.

APPENDIX A

TRAINING ACKNOWLEDGEMENT FORM

TRAINING ACKNOWLEDGMENT FORM

I have read and understand the HASP and/or I have attended the mandatory Site-specific initiation session and understand the information presented in the HASP. I fully understand the known potential hazards present on Site, the required levels of PPE to complete my work, and the emergency procedures for the Site. I further confirm that I have the required training to participate in the Remedial Action activities that I will be involved with. I agree to work in accordance with the guidelines presented in the HASP and I understand that failure to do so could result in removal from the Site.

Date	*Printed Name*	*Signature*	*Position*	*Company Name*

APPENDIX B

DAILY SAFETY MEETING LOG

DAILY SAFETY MEETING LOG

PROJECT: _____ LOCATION: _____

DATE/TIME: _____

1. Work Summary:
2. Physical/Chemical Hazards of Concern:
3. Protective Equipment/Procedures:
4. Emergency Procedures:
5. Signatures of Attendees
