APPENDIX B

CONSTRUCTION HEALTH AND SAFETY PLAN
CONSTRUCTION HEALTH AND SAFETY PLAN

for

FONF Expansion/Sabre Park BCP
1705 Factory Outlet Boulevard
Town of Niagara, New York 14304

Prepared For:

Fashion Outlets II, LLC and Macerich-Niagara, LLC
c/o Macerich Management Co.
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Santa Monica, California 90401

Prepared By:

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Associate

9 October 2013
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<th>Description</th>
</tr>
</thead>
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</tr>
</tbody>
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Attachment A Air Monitoring Equipment Calibration, Maintenance, and Documents
Attachment B Forms For Health And Safety Related Activities
(Accident Report Form, Project Health and Safety Plan and Work Plan Acceptance Form, Safety Briefing Incident Report Form, and Site-Specific Health and Safety Training Form)

Attachment C  Material Safety Data Sheets
Attachment D  Standard Safe Work Practices

LIST OF APPENDICES

Appendix A  Jobsite Safety Inspection Checklist
Appendix B  Decontamination Procedures
HEALTH AND SAFETY PLAN (HASP) SUMMARY

Emergency Contacts

Emergency contacts are listed on Table 0.1.

Emergency Procedures

Emergency procedures are described in Section 6.

Site Specific Hazards and Training

Site Specific Hazards are described in Section 2.

The Field Safety Officer (FSO) will be responsible for providing site-specific training to all personnel that work at the site. This training will cover the following topics:

- Names of personnel responsible for site safety and health.
- Hazards potentially present at the site.
- Proper use of personal protective equipment.
- Work practices by which the employee can minimize risk from hazards.
- Acute effects of compounds at the site.
- Decontamination procedures.

Personnel will be required to sign and date the Site-Specific Training Form provided in Attachment B prior to working on-site.

General Health and Safety Requirements

Personnel will be required to sign and date the Health and Safety Plan and Work Plan Acceptance Form provided in Attachment B prior to working on-site.

Personnel Protective Equipment

Level D protection will be worn for initial entry on-site and for all activities except as noted in Section 3. Level D protection will consist of:

- Standard work clothes
- Steel-toe safety boots
- Safety glasses or goggles must be worn when splash hazard is present
Nitrile outer gloves and PVC or nitrile inner gloves must be worn during all sampling activities.

Hard hat (must be worn during all activities)

**Modified Level D** protection may be required under conditions where potential contact of the skin or clothes with significant contamination occurs. Modified Level D is the same as Level D but includes Tyvek coveralls and disposable polyethylene overboots.

**Level C** protection, unless otherwise specified in Section 3, will consist of Level D equipment and the following additional equipment:

- Full-face or half-mask air-purifying respirator (APR)
- Combination dust/organic vapor cartridges
- Tyvek coveralls if particulate hazard present
- PE-Coated Tyvek coverall if liquid contamination present
- PVC or nitrile inner and nitrile outer gloves
- 5-minute escape SCBA

**Level B** protection, unless otherwise specified in Section 3, will consist of Level D equipment and the following additional equipment:

- Hard hat
- Positive Pressure SCBA or positive pressure airline and respirator with escape SCBA
- PE-Coated Tyvek coverall
- Nitrile outer and PVC or nitrile inner gloves
- Nitrile boot covers

**Air Monitoring**

A summary of the action levels and restrictions is presented on Table 0.2.
FIGURE 1

HOSPITAL ROUTE PLAN (Mount Saint Mary’s Hospital)

Site Location: 1705 Factory Outlet Boulevard, Niagara, NY
Hospital Location: 1 Colomba Drive Ste 5, Niagara Falls, NY
Emergency Room (716) 285-3464

1. Start out going southwest on Factory Outlet Blvd toward Sabre Park/Nateau Dr. 0.5 mi

2. Take the 1st right onto Niagara Falls Blvd/US-62. 0.08 mi
   Niagara Falls Blvd is 0.1 miles past Mountain Dr. Bob Evans Restaurant is on the corner
   If you are on US-62 and reach Connecting Blvd you’ve gone about 0.1 miles too far.

3. Merge onto I-190 S/Niagara Expo. 3.5 mi
   If you are on US-62 and reach Connecting Blvd you’ve gone a little too far.

4. Take the RT-31 Wittmer Rd exit, EXIT 24. 0.2 mi

5. Turn right onto Wittmer Rd/RT-31. 0.07 mi
   If you reach I-190 if you’ve gone about 0.1 miles too far.

6. Take the 1st right onto Colomba Dr. 0.2 mi
   If you reach Wittmer Rd you’ve gone a little too far.

7. 1 COLOMBA DR STE 5 is on the right.
   Your destination is at the end of Colomba Dr.
TABLE 0.1

EMERGENCY CONTACTS

In the event of any situation or unplanned occurrence requiring assistance, the appropriate contact(s) should be made from the list below. For emergency situations, contact should first be made with the Field Team Leader (or designee) and the Site Safety Officer, who will notify emergency personnel who will then contact the appropriate response teams. This emergency contacts list must be in an easily accessible location at the site.

<table>
<thead>
<tr>
<th>Emergency Contacts</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Department:</td>
<td>911</td>
</tr>
<tr>
<td>Police:</td>
<td>911</td>
</tr>
<tr>
<td>Dig Safely – New York: (3 day notice required for utility markouts)</td>
<td>(800)-962-7962</td>
</tr>
<tr>
<td>Poison Control Center:</td>
<td>(800) 222-1222</td>
</tr>
<tr>
<td>Pollution Toxic Chemical Oil Spills:</td>
<td>(800) 424-8802</td>
</tr>
</tbody>
</table>

**Medical Emergency**

<table>
<thead>
<tr>
<th>Emergency Contacts</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulance Service:</td>
<td>911</td>
</tr>
<tr>
<td>Hospital Name:</td>
<td>Mount Saint Mary’s Hospital</td>
</tr>
<tr>
<td>Hospital Phone Number:</td>
<td>(716) 285-3464</td>
</tr>
<tr>
<td>Hospital Address:</td>
<td>1 Colomba Dr. Ste 5, Niagara Falls, NY</td>
</tr>
<tr>
<td>Route to Hospital:</td>
<td>See Page 3</td>
</tr>
<tr>
<td>Travel Time From Site:</td>
<td>7 minutes</td>
</tr>
</tbody>
</table>

**Langan Contacts**

<table>
<thead>
<tr>
<th>Emergency Contacts</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Director:</td>
<td>Jamie B. Barr, L.E.P. (917) 882-5428</td>
</tr>
<tr>
<td>Program/Project Manager:</td>
<td>Jamie B. Barr, L.E.P. (917) 882-5428</td>
</tr>
<tr>
<td>Project Executive</td>
<td>Joel B. Landes, P.E. (212) 479-5404</td>
</tr>
<tr>
<td>Project Executive</td>
<td>Steve Ciambruschini, L.E.P. (201) 410-0238</td>
</tr>
<tr>
<td>Program Quality Assurance Monitor</td>
<td>Jamie B. Barr, L.E.P. (917) 882-5428</td>
</tr>
<tr>
<td>Langan Health &amp; Safety Officer:</td>
<td>Tony Moffa (215) 756-2523</td>
</tr>
<tr>
<td>Field Safety Officer</td>
<td>Justin Hall (203) 640-3180</td>
</tr>
</tbody>
</table>
**TABLE 0.2**

**SUMMARY OF ACTION LEVELS AND RESTRICTIONS**

**Conditions for Level D:**

All areas

PID readings < 5 ppm and benzene < 1 ppm

No visible fugitive dust emissions from site activities (<150 ug/m$^3$)

**Conditions for Level C:**

All areas

Where PID readings > 25 ppm (sustained for 15 minutes in the breathing zone) to 200 ppm and benzene < 5ppm, and/or

Sustained visible fugitive dust emissions from site activities in excess of 150 ug/m$^3$ (not anticipated).

**Conditions for Level B (or retreat):**

All areas

Where PID readings > 500 ppm or benzene > 25 ppm,

Visible fugitive dust emissions from site activities cloud the surrounding air and are in excess of 150 ug/m$^3$ (not anticipated).
1.0 INTRODUCTION

1.1 Purpose, Policy, and Scope of Work

The purpose of this Construction Health and Safety Plan (CHASP) is to establish personnel protection standards and mandatory safety practices and procedures for the implementation of the Interim Remedial Measures Work Plan (IRMWP) at the Fashion Outlets of Niagara Falls (FONF) Expansion/Sabre Park BCP Site located at 1705 Factory Outlet Boulevard (the “Site”) in Niagara, New York. The IRMWP will include excavation/removal of soil, as needed for Site remediation and redevelopment, engineering and institutional controls including physical (demarcation) barriers over soil exceeding NYSDEC RSCOs and installation of sub-slab depressurization systems (SSDS) beneath the proposed building. This plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise while operations are being conducted during environmental remediation and construction at the Site.

Intrusive activities that are either construction-related or related to the remedial action activities that Langan will monitor include: cutting and removal of existing concrete floor slabs, excavation of soil with a backhoe or excavator (standard Category 1-type soil removal) for various construction related activities (i.e., utilities, foundations etc.) and soil handling and loading of soil into trucks for transport to staging areas or off-site transport.

The provisions of the plan are mandatory for all on-site personnel. Any supplemental plans used by subcontractors shall conform to this plan at a minimum. All personnel who engage in project activities must be familiar with this plan, comply with its requirements, and sign the Plan Acceptance Form (Attachment B), prior to working on the site. The Plan Acceptance Form must be submitted to the Langan Field Safety Officer (FSO). In addition to this plan, all work shall be performed in accordance with all applicable federal, state and local regulations.

1.2 Site Description

The proposed Site development area subject to the Brownfield Cleanup Agreement (BCA), encompasses approximately 48-acres and includes the approximately 34-acre former Sabre Park Mobile Home Community located at 1705 Factory Outlet Boulevard (Assessor’s Parcel Numbers 160-08-1-2, 160-08-1-6 and 160-08-1-7), an approximate 11-acre parcel located on the southern portion of the larger ±41-acre Fashion Outlets of Niagara Falls (Fashion Outlets) property located at 1900 Military Road, (Assessor’s Parcel Numbers 145-20-1-14 and 145-20-1-15), and a smaller parcel encompassing approximately 3-acres on the western side of the Site located at 1755 Factory Outlet Boulevard (Assessor’s Parcel Number 160-08-1-1). A Site
Location Map is provided as Figure 1. Figures 2 and 3 (see IRMWP) depict surrounding property use and the tax parcel locations, respectively.

The Sabre Park parcels were previously occupied by 278 mobile home lots from approximately 1972 to 2013 when demolition commenced. The remainder of the Sabre Park parcels consist of asphalt/gravel parking areas, asphalt driveways, and landscaped areas.

The Fashion Outlets parcels are currently occupied by three one-story commercial retail buildings and associated asphalt parking, driveway aisles, and landscaped islands. The largest building (Building A) was constructed in 1960 and has an approximate area of 528,000 square feet. Two smaller buildings, identified as Building B and Building C, were constructed circa 1989 and have approximate areas of 54,000 and 15,500 square feet, respectively. Building A occupies the southern portion of the Fashion Outlets parcels and is adjacent to the proposed Site development area. This building contains numerous commercial retail stores, including Gap, Saks Off 5th Avenue, Nike, Old Navy, and Polo Ralph Lauren. Building B contains four outlet stores, including Marshall’s. Building C is located on the eastern portion of the property and contains three stores, including Honey’s restaurant. The three buildings are depicted in Figure 2.

The parcel located at 1755 Factory Outlet Boulevard is currently improved with a Secure Storage facility and associated asphalt parking.

### 1.3 Langan Project Team Organization

Table 1.1 describes the responsibilities of Langan on-site personnel associated with this project. The names of principal personnel associated with this project are:

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Director:</td>
<td>Jamie B. Barr, L.E.P.</td>
<td>(917) 882-5428</td>
</tr>
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<td>Program/Project Manager:</td>
<td>Jamie B. Barr, L.E.P.</td>
<td>(917) 882-5428</td>
</tr>
<tr>
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<td>Joel B. Landes, P.E.</td>
<td>(212) 479-5404</td>
</tr>
<tr>
<td>Project Executive</td>
<td>Steve Ciambruschini, L.E.P.</td>
<td>(201) 410-0238</td>
</tr>
<tr>
<td>Program Quality Assurance Monitor</td>
<td>Jamie B. Barr, L.E.P.</td>
<td>(917) 882-5428</td>
</tr>
<tr>
<td>Langan Health &amp; Safety Officer:</td>
<td>Tony Moffa</td>
<td>(215) 756-2523</td>
</tr>
<tr>
<td>Field Safety Officer</td>
<td>Justin Hall</td>
<td>(203) 640-3180</td>
</tr>
<tr>
<td>Field Team Leader</td>
<td>Justin Hall</td>
<td>(203) 640-3180</td>
</tr>
</tbody>
</table>
Langan personnel have been appropriately trained in first aid and hazardous waste safety procedures, including the operating and fitting of personal protective equipment, and are experienced with the field operations planned for this site.
**TABLE 1.1**

**ON-SITE PERSONNEL AND RESPONSIBILITIES**

**PROJECT MANAGER** - Assumes control over site activities and reports to upper-level management. Has authority to direct response operations.

**Responsibilities:**

Prepares and organizes the background review of the situation, the Work Plan, the Site Health and Safety Plan, and the field team.

Obtains permission for site access and coordinates activities with appropriate officials.

Ensures that the Work Plan is executed and on schedule.

Briefs the field team on their specific assignments.

Coordinates with the site Health and Safety Officer (HSO) to ensure that health and safety requirements are met.

Prepares the final report and support files on the response activities.

Serves as the liaison with public officials.

**FIELD SAFETY OFFICER (FSO)** - Advises the HSO and Project Manager on aspects of health and safety on site. Stops work if operations threaten worker or public health or safety.

**Responsibilities:**

Ensures that all necessary Health and Safety Equipment is available on-site. Ensures that all equipment is functional.

Periodically inspects protective clothing and equipment.

Ensures that protective clothing and equipment are properly stored and maintained.

Controls entry and exit at the Access Control Points.

Coordinates health and safety program activities with the Project HSO.

Confirms each team member’s suitability for work based on a physician’s recommendation.

Monitors the work parties for signs of stress, such as cold exposure, heat stress, and fatigue.

Implements the Site Health and Safety Plan.

Conducts periodic inspections to determine if the Site Health and Safety Plan is being followed.

Enforces the “buddy” system.

Knows emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.
Notifies, when necessary, local public emergency officials.

Coordinates emergency medical care.

Sets up decontamination lines and the decontamination solutions appropriate for the type of chemical contamination on the site.

Controls the decontamination of all equipment, personnel, and samples from the contaminated areas.

Assures proper disposal of contaminated clothing and materials.

Ensures that all required equipment is available.

Advises medical personnel of potential exposures and consequences.

Notifies emergency response personnel by telephone or radio in the event of an emergency.

**FIELD TEAM LEADER** - Advises on all aspects of health and safety on site. Stops work if any operation threatens worker or public health or safety. Is directly responsible for the field team and the safety of site operations.

**Responsibilities:**

Manages field operations.

Executes the Work Plan and schedule.

Enforces safety procedures.

Coordinates with the Site Safety Officer in determining protection level.

Enforces site control.

Documents field activities and sample collection.

Serves as a liaison with public officials.

**WORK TEAM** – Operators, laborers, samplers. The work party must consist of at least two people.

**Responsibilities:**

Safely completes the on-site tasks required to fulfill the Work Plan.

Complies with Site Safety Plan.

Notifies Site Safety Officer or supervisor of suspected unsafe condition

**SUBCONTRACTOR RESPONSIBILITIES**

The construction manager and all subcontractors involved with remedial action and redevelopment activities must adhere to applicable OSHA regulations, and shall develop and
comply with their own HASP that shall incorporate, as a minimum, the Langan Site-specific HASP elements. The construction manager Health and Safety Officer (HSO) shall inform subcontractors of the Site emergency response procedures and any potential fire, explosion, health, safety, or other hazards that have been identified. The construction manager HSO shall inform subcontractors of observed activities that do not meet the elements of this CHASP or the HASP that the construction manager developed.
2.0 RISK ANALYSIS

2.1 Chemical Hazards

The primary potential chemical hazard is exposure to metals (specifically chromium), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs). Other compounds that may be encountered are site equipment fuels (gasoline, diesel, etc.) that also contain volatile components. Relevant properties of these compounds are outlined in Table 2.1.

Dust with chemical constituents may be generated during implementation of the IRMWP. Therefore, air will be monitored for particulates and organic vapors continuously within the work zone and periodically at the Site perimeter.

Material Safety Data Sheets for substances that will be used on site are included in Attachment C.

Of the listed VOCs, benzene has the lowest Permissible Exposure Limit (PEL) as set by OSHA, and hence sets the action limit for monitoring with a photoionization detector (PID). Other constituents of concern (COCs) will be indirectly monitored with dust meters and the actions levels will be individually set for each remediation-related excavation. The action levels for all the monitored COCs are described in Sections 3.3 and 6.4 Engineering controls such as localized ventilation, wetting, and altering the work method and pace will be used to maintain the working conditions below the set action levels.

The site’s COCs could pose significant health threats if ingested. Therefore, personnel will not be allowed to eat in the work area and must wash their hands after they come into contact with contaminated soil and before leaving the site. On-site personnel will make efforts to work upwind of any intrusive excavations and potential contaminated materials brought to the surface.

In addition to the COCs detected on Site, some solvents used in decontamination of equipment are potentially hazardous to human health if they are not used properly. Material Safety Data Sheets for any substances that will be used on site will be provided. Any substances brought on-site will be added to Attachment C of this CHASP. All site personnel will be briefed on any added MSDSs.
It is anticipated that dust, odors, and VOCs during remedial the investigation and remedial action activities will not be a problem. Engineering controls such as localized ventilation, wetting, and altering the work method and pace will be used to maintain working conditions safely within Level D conditions.
<table>
<thead>
<tr>
<th>Compound (Synonym)</th>
<th>OSHA PEL (ppm)</th>
<th>IDLH (ppm)</th>
<th>LEL (%)</th>
<th>Odor Threshold (ppm)</th>
<th>Odor Character</th>
<th>Vapor Pressure (mm Hg)</th>
<th>Physical State</th>
<th>Detectable w/ 10.6 eV lamp PID (l.P. eV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acenaphthene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>9 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Acenaphthylene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>9 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Acetone</td>
<td>1,000</td>
<td>2,500</td>
<td>2.1</td>
<td>62</td>
<td>Fruity, Mint-like, Fragrant, Ethereal</td>
<td>180</td>
<td>Flammable</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Alpha BHC (Alpha Hexachlorocyclohexane)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>9 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Anthracene</td>
<td>NA</td>
<td>NA</td>
<td>0.6</td>
<td>NA</td>
<td>Faint</td>
<td>9 x 10^{-4}</td>
<td>Colorless</td>
<td>Solid.</td>
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<tr>
<td>Arsenic (As)</td>
<td>0.01</td>
<td>5</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>0.5</td>
<td>1,100</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>6.5 x 10^{-4}</td>
<td>Flammable</td>
<td>Solid</td>
</tr>
<tr>
<td>Benzaldehyde</td>
<td>1</td>
<td>500</td>
<td>1.2</td>
<td>1.5</td>
<td>Sweet aromatic odor</td>
<td>75</td>
<td>Combustible</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Benzaldehyde</td>
<td>0.2</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Faint aromatic</td>
<td>5.49 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Benzo[a]pyrene</td>
<td>0.2</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Faint aromatic</td>
<td>5.49 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Benzo[k]fluoranthene</td>
<td>0.2</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Faint aromatic</td>
<td>5.49 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Beryllium</td>
<td>.002</td>
<td>4</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Beta BHC (Beta Hexachlorocyclohexane)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>5</td>
<td>2,000</td>
<td>2.0</td>
<td>NA</td>
<td>Musty aromatic or gasoline-like odor</td>
<td>1,800</td>
<td>Flammable</td>
<td>Gas.</td>
</tr>
<tr>
<td>sec-Butylbenzene</td>
<td>NA</td>
<td>NA</td>
<td>0.8</td>
<td>NA</td>
<td>NA</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>0.005</td>
<td>50</td>
<td>NA</td>
<td>0.1</td>
<td>Sweet, ether-like odor</td>
<td>207.6</td>
<td>Colorless</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Carbon Disulfide</td>
<td>20</td>
<td>500</td>
<td>1.3</td>
<td>0.2</td>
<td>Almond-like</td>
<td>8.6</td>
<td>Flammable</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Chlorobenzene</td>
<td>75</td>
<td>2,400</td>
<td>1.3</td>
<td>0.2</td>
<td>Pleasant, Sweet, Ethereal</td>
<td>158</td>
<td>Non-flammable liquid.</td>
<td></td>
</tr>
<tr>
<td>Chloroform</td>
<td>50</td>
<td>500</td>
<td>NA</td>
<td>85</td>
<td>Pleasant, Sweet, Ethereal</td>
<td>158</td>
<td>Non-flammable</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Chloromethane</td>
<td>100</td>
<td>2,000</td>
<td>7</td>
<td>NA</td>
<td>Faint sweet odor</td>
<td>3,796</td>
<td>Flammable</td>
<td>Gas.</td>
</tr>
<tr>
<td>Chromium III</td>
<td>0.5</td>
<td>25</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Chromium, Hexavalent</td>
<td>0.005</td>
<td>15</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>0.1</td>
<td>250</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Chrysoene</td>
<td>0.2</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>1</td>
<td>100</td>
<td>NA</td>
<td>NA</td>
<td>1</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Cyanide (Cr)</td>
<td>5</td>
<td>25</td>
<td>NA</td>
<td>NA</td>
<td>Faint almond-like</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>300</td>
<td>1,300</td>
<td>10</td>
<td>25</td>
<td>Mild, sweet odor</td>
<td>96.75</td>
<td>Flammable</td>
<td>Liquid.</td>
</tr>
<tr>
<td>DDD</td>
<td>1</td>
<td>500</td>
<td>NA</td>
<td>NA</td>
<td>Faint aromatic</td>
<td>0 (approx)</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>DDE</td>
<td>1</td>
<td>500</td>
<td>NA</td>
<td>NA</td>
<td>Faint aromatic</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>DOT</td>
<td>1</td>
<td>500</td>
<td>NA</td>
<td>NA</td>
<td>Faint aromatic</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Delta BHC (Delta Hexachlorocyclohexane)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Dibenz[a,h]anthracene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Dibenzofuran</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>NA</td>
<td>NA</td>
<td>2</td>
<td>NA</td>
<td>Pleasant odor</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>1,3-Dichlorobenzene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>1,4-Dichlorobenzene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>Dichlorodifluoromethane</td>
<td>1,000</td>
<td>15,000</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>1.87 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
<tr>
<td>1,1-Dichloroethane (1,1-DCA)</td>
<td>100</td>
<td>3,000</td>
<td>5.4</td>
<td>120</td>
<td>Slight chloroform-like odor</td>
<td>180</td>
<td>Flammable</td>
<td>Liquid.</td>
</tr>
<tr>
<td>1,1-Dichloroethylene (1,1-DCE)</td>
<td>NA</td>
<td>NA</td>
<td>6.5</td>
<td>150</td>
<td>Sweet, chloroform-like odor</td>
<td>90</td>
<td>Chloroform</td>
<td>Liquid.</td>
</tr>
<tr>
<td>cis-1,2-Dichloroethylene (cis-1,2-DCE)</td>
<td>NA</td>
<td>NA</td>
<td>9.7</td>
<td>NA</td>
<td>Pleasant odor</td>
<td>90</td>
<td>Chloroform</td>
<td>Liquid.</td>
</tr>
<tr>
<td>trans-1,2-Dichloroethylene (trans-1,2-DCE)</td>
<td>200</td>
<td>NA</td>
<td>6.7</td>
<td>NA</td>
<td>Pleasant odor</td>
<td>90</td>
<td>Chloroform</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Dieldrin</td>
<td>0.25</td>
<td>450</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>6.5 x 10^{-4}</td>
<td>Noncombustible</td>
<td>Solid</td>
</tr>
</tbody>
</table>

TABLE 2.1 RELEVANT PROPERTIES OF VOLATILES (PETROLEUM [GASOLINE, DIESEL, ETC.]), METALS AND SEMIVOLATILES KNOWN OR SUSPECTED AT THE SITE
### TABLE 2.1
RELEVANT PROPERTIES OF VOLATILES (PETROLEUM [GASOLINE, DIESEL, ETC.]), METALS AND SEMIVOLATILES KNOWN OR SUSPECTED AT THE SITE

<table>
<thead>
<tr>
<th>Compound (Synonym)</th>
<th>OSHA PEL (ppm)</th>
<th>IDLH (ppm)</th>
<th>LEL (%)</th>
<th>Odor Threshold (ppm)</th>
<th>Odor Character</th>
<th>Vapor Pressure (mm Hg)</th>
<th>Physical State</th>
<th>Detectable w/ 10.6 eV lamp PID (I.P. eV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylbenzene</td>
<td>100</td>
<td>800</td>
<td>0.8</td>
<td>2.3</td>
<td>Sweet aromatic odor</td>
<td>7</td>
<td>Combustible Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>Fluoranthene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Noncombustible</td>
<td>NA</td>
</tr>
<tr>
<td>Fluorene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Noncombustible</td>
<td>NA</td>
</tr>
<tr>
<td>Gamma BHC (Lindane)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Noncombustible</td>
<td>NA</td>
</tr>
<tr>
<td>Heptachlor Epoxide</td>
<td>0.5</td>
<td>36</td>
<td>NA</td>
<td>0.02</td>
<td>Camphor-like</td>
<td>3.0 x 10⁻⁵</td>
<td>Noncombustible</td>
<td>NA</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>500</td>
<td>750</td>
<td>1.06</td>
<td>150</td>
<td>Gasoline-like</td>
<td>40</td>
<td>Flammable Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>Hexachlorobenzene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Noncombustible</td>
<td>NA</td>
</tr>
<tr>
<td>2-Hexanone</td>
<td>100</td>
<td>1,600</td>
<td>0.18</td>
<td>12</td>
<td>Acetone-like</td>
<td>12</td>
<td>Flammable Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>n-Hexane</td>
<td>50</td>
<td>1,100</td>
<td>1.1</td>
<td>120</td>
<td>Gasoline-like</td>
<td>120</td>
<td>Flammable Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>Indeno(1,2,3-c,d)pyrene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Noncombustible</td>
<td>NA</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>400</td>
<td>2,000</td>
<td>2.0</td>
<td>22</td>
<td>Pleasant odor</td>
<td>33</td>
<td>Flammable Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>5</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Noncombustible</td>
<td>NA</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>0.05</td>
<td>11</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>Noncombustible Solid</td>
<td>NA</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>5</td>
<td>600</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>Noncombustible Solid</td>
<td>NA</td>
</tr>
<tr>
<td>Magnesium (Mg)</td>
<td>5</td>
<td>900</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>0 (approx)</td>
<td>Combustible Solid</td>
<td>NA</td>
</tr>
<tr>
<td>2-Mercaptobenzothiazole</td>
<td>NA</td>
<td>NA</td>
<td>15</td>
<td>NA</td>
<td>0 (approx)</td>
<td>100</td>
<td>Combustible Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>0.1</td>
<td>10</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>2.7</td>
<td>Combustible Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>Methyl ethyl ketone (2-Butanone)</td>
<td>NA</td>
<td>NA</td>
<td>0.25</td>
<td>NA</td>
<td>Acetone-like, pleasant, sweet</td>
<td>NA</td>
<td>Flammable Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)</td>
<td>100</td>
<td>500</td>
<td>1.2</td>
<td>0.1</td>
<td>Pleasant</td>
<td>16</td>
<td>Flammable Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>Methyl Tert-Butyl Ether (MTBE)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>246</td>
<td>Flammable Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>Methylene Chloride</td>
<td>25</td>
<td>2,300</td>
<td>13</td>
<td>214</td>
<td>Chloroform-like</td>
<td>360</td>
<td>Combustible Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>10</td>
<td>250</td>
<td>0.9</td>
<td>0.038</td>
<td>Aromatic</td>
<td>NA</td>
<td>Flammable Solid</td>
<td>NA</td>
</tr>
<tr>
<td>N-nitrosodiphenylamine</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>1.0</td>
<td>Combustible Solid</td>
<td>NA</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>1</td>
<td>10</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>4.5</td>
<td>Combustible Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>PCBs</td>
<td>0.5</td>
<td>5</td>
<td>NA</td>
<td>NA</td>
<td>Mild, hydrocarbon odor</td>
<td>1.0 x 10⁻³</td>
<td>Noncombustible Solid</td>
<td>NA</td>
</tr>
<tr>
<td>Phenanthrene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Combustible Solid</td>
<td>NA</td>
</tr>
<tr>
<td>Pyrene</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Noncombustible Solid</td>
<td>NA</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>0.2</td>
<td>1</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>2.7</td>
<td>Combustible Solid</td>
<td>NA</td>
</tr>
<tr>
<td>Silver (2,4,6-TP)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Combustible Solid</td>
<td>NA</td>
</tr>
<tr>
<td>Tetrachloroethylene (PCE)</td>
<td>100</td>
<td>150</td>
<td>NA</td>
<td>1</td>
<td>Chloroform-like odor</td>
<td>14</td>
<td>Colorless Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>Toluene</td>
<td>200</td>
<td>500</td>
<td>1.1</td>
<td>2.9</td>
<td>Sweet aromatic odor</td>
<td>21</td>
<td>Combustible Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>1,2,4-Trichlorobenzene</td>
<td>NA</td>
<td>NA</td>
<td>2.5</td>
<td>3</td>
<td>Faint aromatic</td>
<td>1.0</td>
<td>Combustible Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>1,1,1-Trichloroethane (1,1,1-TCA)</td>
<td>350</td>
<td>700</td>
<td>7.5</td>
<td>400</td>
<td>Chloroform-like odor</td>
<td>100</td>
<td>Colorless Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>Trichloroethylene (TCE)</td>
<td>100</td>
<td>1,000</td>
<td>8</td>
<td>28</td>
<td>Chloroform-like odor</td>
<td>58</td>
<td>Colorless Liquid</td>
<td>NA</td>
</tr>
<tr>
<td>Trichlorofluoromethane</td>
<td>1,000</td>
<td>2,000</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>600</td>
<td>Colorless liquid or gas</td>
<td>NA</td>
</tr>
<tr>
<td>1,2,4-Trichlorobenzene</td>
<td>NA</td>
<td>NA</td>
<td>0.9</td>
<td>NA</td>
<td>NA</td>
<td>4.5</td>
<td>Colorless Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>1,3,5-Trichlorobenzene</td>
<td>NA</td>
<td>NA</td>
<td>0.88</td>
<td>NA</td>
<td>NA</td>
<td>2.5</td>
<td>Flammable Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>Vinyl Chloride (VC)</td>
<td>1</td>
<td>NA</td>
<td>3.6</td>
<td>3000</td>
<td>Pleasant odor</td>
<td>3600</td>
<td>Colorless Gas</td>
<td>NA</td>
</tr>
<tr>
<td>Aromatics (total)</td>
<td>100</td>
<td>900</td>
<td>0.9</td>
<td>1</td>
<td>Faint aromatic</td>
<td>7</td>
<td>Combustible Liquid</td>
<td>Yes</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>5</td>
<td>50</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0 (approx)</td>
<td>Combustible Solid</td>
<td>NA</td>
</tr>
</tbody>
</table>

(1) 29 CFR 1910, June 30, 1993 (8-hour Time weighted average unless otherwise specified.)
(2) ACGIH 1989 Highest reported value of acceptable odor threshold range.
(3) Slight explosive hazard if dust is exposed to flame
(4) Sponge catalyst may ignite spontaneously in the air.
(5) Powder may ignite spontaneously in the air, and can continue burning under water.
[IDLH: Immediately dangerous to life or health. ]
[CA: Suspect carcinogen - Minimize all possible exposures]
2.2 Potential Radiation Hazards

According to the NYSDEC, historic steel slag, containing low levels of radiation (non-harmful to humans), has reportedly been deposited in areas nearby the Site. The NYSDEC indicated that the slag originated from a nearby smelting plant. As the Site is known to have received off-site fill, there is a potential that the radioactive slag was placed at the Site. Upon identification in the field, an assessment of the radioactivity will be completed, if deemed necessary.

2.3 Biological Hazards

Animals

During site operations, animals such as dogs, pigeons, sea gulls, mice, and rats may be encountered. Workers will use discretion and avoid all contact with animals. Bites and scratches from dogs can be painful and if the animal is rabid, the potential for contracting rabies exists. Contact with rat and mice droppings may lead to contracting hantavirus. Inhalation of dried pigeon droppings may lead to psittacosis; cryptococcosis and histoplasmosis are also diseases associated with exposure to dried bird droppings but these are less likely to occur in this occupational setting.

Insects

Insects, including bees, wasps, hornets, mosquitoes, and spiders, may be present at this site. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition. In addition, mosquito bites may lead to St. Louis encephalitis or West Nile encephalitis. Personnel that have been bitten or stung by an insect at the Site should notify the HSO or FSO of such immediately. The following is a list of preventive measures:

- Apply insect repellent prior to fieldwork and or as often as needed throughout the shift.
- Wear proper protective clothing (work boots, socks and light colored pants).
- When walking in wooded areas, to the extent possible avoid contact with bushes, tall grass, or brush.
- Field personnel who may have insect allergies (e.g., bee sting) should provide this information to the HSO or FSO prior to commencing work, and will have allergy medication on Site.

The HSO or FSO will instruct the project personnel in the recognition and procedures for encountering potentially hazardous insects at the Site.
Lyme disease is caused by infection from a deer tick that carries a spirochete. During the painless tick bite, the spirochete may be transmitted into the bloodstream, which could lead to the worker contracting Lyme disease. This flu like illness occurs out of season, commonly happening between May and October when ticks are more active. Symptoms can include a stiff neck, chills, fever, sore throat, headache, fatigue and joint pain. Early signs may include an expanding skin rash and joint pain. If left untreated, Lyme disease can cause serious nerve or heart problems as well as a disabling type of arthritis. If personnel feel sick or have signs similar to those above, they should notify the HSO or FSO immediately.

It is recommended that personnel check themselves when in areas that could harbor deer ticks, wear light color clothing and visually check themselves and their buddy when coming from wooded or vegetation covered areas. If a tick is found biting an individual, the HSO or FSO should be contacted immediately. The tick can be removed by pulling gently at the head with tweezers. The affected area should then be disinfected with an antiseptic wipe.

2.4 Physical Hazards

2.4.1 Explosion

No explosion hazards are expected for the scope of work at this site.

2.4.2 Heat Stress

The use of Level C protective equipment, or greater, may create heat stress. Monitoring of personnel wearing personal protective clothing should commence when the ambient temperature is 72°F or above. Table 2.2 presents the suggested frequency for such monitoring. Monitoring frequency should increase as ambient temperature increases or as slow recovery rates are observed. Refer to the Table 2.3 below to assist in assessing when the risk for heat related illness is likely. To use this table, the ambient temperature and relative humidity must be obtained (a regional weather report should suffice). Heat stress monitoring should be performed by the Field Safety Officer, who shall be able to recognize symptoms related to heat stress.

To monitor the workers, be familiar with the following heat-related disorders and their symptoms:

**Prickly Heat** (Heat rash)
- Painful, itchy red rash. Occurs during sweating, on skin covered by clothing.

**Heat Cramps**
- Painful spasm of arm, leg or abdominal muscles, during or after work.
Heat Exhaustion


Heat Fatigue

- Weariness, irritability, loss of skill for fine or precision work. Decreased ability to concentrate. No loss of temperature control.

Heat Syncope (Heat Collapse)

- Fainting while standing in a hot environment.

Heat Stroke

- Headache, nausea, weakness, hot dry skin, fever, rapid strong pulse, rapid deep respirations, loss of consciousness, convulsions, coma. This is a life threatening condition.

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

To monitor the worker, measure:

Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period.

If the heart rate exceeds 100 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.

If the heart rate still exceeds 100 beats per minute at the next rest period, shorten the following work cycle by one-third. A worker cannot return to work after a rest period until their heart rate is below 100 beats per minute.

Oral temperature. Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).

If oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the rest period. A worker cannot return to work after a rest period until their oral temperature is below 99.6°F.

If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following cycle by one-third.

Do not permit a worker to wear a semi-permeable or impermeable garment when oral temperature exceeds 100.6°F (38.1°C).
Prevention of Heat Stress - Proper training and preventative measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress the following steps should be taken:

Adjust work schedules.
Mandate work slowdowns as needed.
Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
Maintain worker’s body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, id., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
Maintain water temperature 50º to 60ºF (10º to 16.6ºC).
Provide small disposal cups that hold about four ounces (0.1 liter).
Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
Train workers to recognize the symptoms of heat related illness.

2.4.3 Cold-Related Illness

If work on this project begins in the winter months, thermal injury due to cold exposure can become a problem for field personnel. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally called frostbite.

Hypothermia - Hypothermia is defined as a decrease in the patient core temperature below 96ºF. The body temperature is normally maintained by a combination of central (brain and spinal cord) and peripheral (skin and muscle) activity. Interference with any of these mechanisms can result in hypothermia, even in the absence of what normally is considered a
“cold” ambient temperature. Symptoms of hypothermia include: shivering, apathy, listlessness, sleepiness, and unconsciousness.

**Frostbite** - Frostbite is both a general and medical term given to areas of local cold injury. Unlike systemic hypothermia, frostbite rarely occurs unless the ambient temperatures are less than freezing and usually less than 20°F. Symptoms of frostbite are: a sudden blanching or whitening of the skin; the skin has a waxy or white appearance and is firm to the touch; tissues are cold, pale, and solid.

**Prevention of Cold-Related Illness** - To prevent cold-related illness:

Educate workers to recognize the symptoms of frostbite and hypothermia
Identify and limit known risk factors:
Assure the availability of enclosed, heated environment on or adjacent to the site.
Assure the availability of dry changes of clothing.
Assure the availability of warm drinks.
Start (oral) temperature recording at the job site:
At the FSO or Field Team Leader’s discretion when suspicion is based on changes in a worker’s performance or mental status.
At a worker’s request.
As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind-chill less than 20°F, or wind-chill less than 30°F with precipitation).
As a screening measure whenever any one worker on the site develops hypothermia.
Any person developing moderate hypothermia (a core temperature of 92°F) cannot return to work for 48 hours.

**Noise**

The operation of heavy machinery and other equipment may result in momentary high noise levels during advancement of soil borings. Hearing protection (e.g., ear plugs, headphones) will be used as necessary.

2.4.5 **Hand and Power Tools**

To complete the various tasks for the project, personnel will utilize hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Ground Fault Circuit Interrupters (GFCIs) are required for all portable electric tools.
2.4.6 Slips, Trips and Fall Hazards

Care should be exercised when walking at the site, especially when carrying equipment. The presence of surface debris, uneven surfaces, pits, facility equipment, and soil piles contribute to tripping hazards and fall hazards. To the extent possible, all hazards should be identified and marked on the Site, with hazards communicated to all workers in the area.

2.4.7 Utilities (Electrocution and Fire Hazards)

The possibility of encountering underground utilities poses fire, explosion, and electrocution hazards. All intrusive work will be preceded by notification of the subsurface work to the N.Y. One Call Center. Potential adverse effects of electrical hazards include burns and electrocution, which could result in death.

2.4.8 Working near Heavy Machinery

Care should be exercised when working near heavy machinery such as the excavators. Workers should always stay in view of the equipment operator; give equipment wide berth. Clear communications signals, including hand signals, should be established prior to commencement of work and the equipment should have a back-up alarm.

2.4.9 Lifting

Improper lifting and carrying of equipment and materials and shoveling soil may cause strains. Safe lifting and general material handling techniques should be exercised.

2.4.10 Falling Hazards

Soil material, crushed stone, tools, etc. may fall from power shovels, front-end loaders, etc. Hard hats are to be worn at all times while in work zones.

2.4.11 Vehicle Hazards.

Trucks and other work vehicles will be entering and leaving the Site during work hours. In addition, the hydraulic excavators, dump trucks, and other construction vehicles will be working throughout the Site. Care should be taken when working on-Site and be aware of surroundings at all times. When working near vehicular traffic or work zones, attempt to keep eye contact with the machine operators.

2.4.12 Hearing Loss Prevention.
Work activities during the remediation and construction activities may be conducted at locations with high noise levels from the operation of equipment. Hearing protection will be used as necessary.

2.5 Task Hazard Analysis

Hazards that are potentially present have been determined for each specific task to be undertaken at the Site. Table 2.5 provides a summary of chemical exposure and physical hazards that could potentially be encountered by personnel during the following major task efforts.

2.5.1 Excavation, Removal of Soil, Engineering and Institutional Controls

Identified potential issues related to work at this site include; low levels of regulated compounds in soil and/or groundwater (i.e., aromatic and halogenated volatile organic compounds, semi volatile organic compounds, specifically polycyclic aromatic hydrocarbons, mercury and lead in soil, and pesticides), and drilling/cutting with gas-powered equipment indoors potentially generating CO and \( \text{CO}_2 \) in the exhaust fumes.

Soil Removal for Site Redevelopment and/or the Installation of Foundations and Utilities

The following hazards are associated with the removal and sampling of soil: heavy excavation equipment (impact hazard to on-foot workers), open excavations (fall and cave-in hazard), uneven land surface (slip and trip hazard), and contaminated media (chemical exposure hazard).

2.5.3 Soil Backfill

The backfilling of the excavated areas have similar hazards as those associated with the removal of soil.

Chemical exposure may occur as workers encounter soil and groundwater across the site, or are exposed to products used at the site including gasoline, diesel and motor oil. Soil and groundwater sampling presents similar potential exposure hazard. Activities will be conducted initially in Level D but may be upgraded to Modified Level D. Although not anticipated, there will be a Level C and B contingency should pockets of contaminants be brought to the surface and breathing zone air become contaminated.
If evidence of historic or unknown contamination, such as oily materials, high PID readings, etc., is encountered during intrusive work, the FSO will determine the appropriate level of personnel protection.
Table 2.2  
**Suggested Frequency of Physiological Monitoring**  
For Fit and Acclimated Workers\(^a\)

<table>
<thead>
<tr>
<th>Adjusted Temperature(^b)</th>
<th>Normal Work Ensemble(^c)</th>
<th>Impermeable Ensemble</th>
</tr>
</thead>
<tbody>
<tr>
<td>90°F or above (32.2°C) or above</td>
<td>After each 45 min. of work</td>
<td>After each 15 min. of work</td>
</tr>
<tr>
<td>87.5°F (30.8°-32.2°C)</td>
<td>After each 60 min. of work</td>
<td>After each 30 min. of work</td>
</tr>
<tr>
<td>82.5°-87.5°F (28.1°-30.8°C)</td>
<td>After each 90 min. of work</td>
<td>After each 60 min. of work</td>
</tr>
<tr>
<td>77.5°-82.5°F (25.3°-28.1°C)</td>
<td>After each 120 min. of work</td>
<td>After each 90 min. of work</td>
</tr>
<tr>
<td>72.5°-77.5°F (22.5°-25.3°C)</td>
<td>After each 150 min. of work</td>
<td>After each 120 min. of work</td>
</tr>
</tbody>
</table>

\(^a\) For work levels of 250 kilocalories/hour.

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

\(^c\) A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.
### Table 2.3 - HEAT INDEX

<table>
<thead>
<tr>
<th>RELATIVE HUMIDITY</th>
<th>70</th>
<th>75</th>
<th>80</th>
<th>85</th>
<th>90</th>
<th>95</th>
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<th>105</th>
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</tr>
</tbody>
</table>

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

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

Note: Exposure to full sunshine can increase Heat Index values

<table>
<thead>
<tr>
<th>Apparent Temperature</th>
<th>Heat Stress Risk with Physical Activity and/or Prolonged Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-105</td>
<td>Heat Cramps or Heat Exhaustion Possible</td>
</tr>
<tr>
<td>105-130</td>
<td>Heat Cramps or Heat Exhaustion Likely, Heat Stroke Possible</td>
</tr>
</tbody>
</table>
### TABLE 2.5
Task Hazard Analysis

#### A. CONTAMINANT HAZARDS OF CONERN

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Monitoring Device</th>
<th>Source of Concentration on Site</th>
<th>Route of Exposure</th>
<th>Toxicological Effects, Symptoms, and Hazards</th>
<th>First Aid</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOCs</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>PID</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irrit eyes, skin, nose</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
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<td>VOCs</td>
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<td></td>
</tr>
<tr>
<td>Benene</td>
<td>PID</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irrit eyes, skin, nose, resp tract., gidd, head, nau, staggered gait; lass, derr, bone marrow depress. (card)</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
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<tr>
<td>1,3-Butadiene</td>
<td>PID</td>
<td>Soil Gas</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irrit eyes, skin, nose, resp tract, reproductive system, mucous membranes</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
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<tr>
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<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irrit eyes, skin, nose, resp tract</td>
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<td>Carbon Disulfide</td>
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<td>Irrit eyes, skin, nose, kidneys, nervous system, liver damage</td>
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<tr>
<td>Chloroform</td>
<td>PID</td>
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<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
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<td>Cyclohexane</td>
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<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>VOCs</td>
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<tr>
<td>1,2-Dichlorobenzene</td>
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<td>Inh, Ing, Con</td>
<td>Irrit eyes, skin, nose, kidneys, mucous membranes, liver damage</td>
<td>Eyes: Irritate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>VOCs</td>
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<tr>
<td>1,3-Dichlorobenzene</td>
<td>N/A</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irrit eyes, skin, nose</td>
<td>Eyes: Irritate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
</tbody>
</table>

**EXPLANATION OF ABBREVIATIONS**

- **PID** = Photoionization Detector
- **ppm = parts per million**
- **Derm = Dermatitis**
- **Dizz = Dizziness**
- **Inj = Injury**
- **Ing = Ingestion**
- **Abdom = Abdominal**
- **Tg = Fatigue**
- **Lass = Lassitude**
- **Gastro = Gastro-intestinal**
- **Depress = Depressant**
- **Gidd = Giddiness**
- **Muc membb = mucous membrane**
- **PEL = Permissible Exposure Limit (8-hour Time Weighted Average)**
- **Resp = Respiratory**
- **CNS = Central Nervous System**
- **Inc = Incordination**
- **Nau = Nausea**
- **Card = Cardiac**
- **Card = Cardiac**
- **(card) = Potential occupational Carcinogen**
- **Abs = Skin absorption**
- **Verti = Vertigo**
<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Monitoring Device</th>
<th>AIR - PEL</th>
<th>Source of Concentration on Site</th>
<th>Route of Exposure</th>
<th>Toxicological Effects, Symptoms, and Hazards</th>
<th>First Aid</th>
</tr>
</thead>
</table>
| 1,4-Dichlorobenzene                       | N/A               | NA        | Soil/Groundwater                | Inh, Abs, Ing, Con | Irrit eyes, skin, nose, carcinogenic, resp. tract, kidneys, mucous membranes, liver damage                  | Eyes: Irrigate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| Dichlorodifluoromethane                    | PID               | 1,000 ppm | Soil Gas                        | Inh, Ing, Con     | Irrit eyes, skin, nose, nervous system, Resp. tract                                                      | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| 1,1-Dichloromethane (1,1-DCA)              | PID               | 100 ppm   | Soil/Groundwater                | Inh, Ing, Con     | Irrit eyes, skin, nose, carcinogenic, CNS                                                                | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| 1,1-Dichloroethylene (1,1-DCE)             | N/A               | NA        | Soil/Groundwater                | Inh, Abs, Ing     | Nervous system, liver, lung damage, fainting                                                            | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| cis-1,2-Dichloroethylene (cis-1,2-DCE)     | N/A               | NA        | Soil/Groundwater                | Inh, Abs, Ing     | Irrit. dizziness, drowsiness, nervous system, liver damage                                             | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| trans-1,2-Dichloroethylene (trans-1,2-DCE) | N/A               | 200 ppm   | Soil/Groundwater                | Inh, Abs, Ing     | Irrit. dizziness, drowsiness, nervous system, liver damage                                             | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| n-Heptane                                 | PID               | 500 ppm   | Soil Gas                        | Inh, Ing, Con     | Irrit eyes, skin, lungs, CNS, resp. tract                                                              | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| 2-Hexanone                                | PID               | 100 ppm   | Soil Gas                        | Inh, Con          | Irrit eyes, skin                                                                                        | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| n-Hexane                                  | PID               | 50 ppm    | Soil Gas                        | Inh, Abs, Ing, Con| Irr to eyes, skin, blood, CNS, liver, resp. tract                                                      | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| Ethylbenzene                              | PID               | 100 ppm   | Soil/Groundwater                | Inh, Abs, Ing, Con| Irrit eyes, skin, nose, resp tract., gidd, head, nau, staggered gait; lass, derm, bone marrow depress   | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| Isopropanol                               | PID               | 400 ppm   | Soil Gas                        | Inh, Ing, Con     | Irrit eyes, skin, resp tract, kids, liver                                                                | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| Methyl Isobutyl Ketone (4-Methyl-2-Pentanone) | PID               | 100 ppm   | Soil/Groundwater                | Inh, Ing, Con     | Irrit eyes, skin, resp tract, CNS, mucous membrane                                                   | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |
| Methyl Tert-Butyl Ether                    | N/A               | NA        | Soil/Groundwater                | Inh, Ing, Con     | Irrit eyes, skin, nose, resp tract                                                                           | Eyes: Irritate immediately
                                               |                   |           |                                 |                   | Skin: Soap wash promptly
                                               |                   |           |                                 |                   | Breath: Resp. support
                                               |                   |           |                                 |                   | Swallow: Med. attn. immediately |

**EXPLANATION OF ABBREVIATIONS**

- PID = Photoionization Detector
- NA = Not Available
- ppm = parts per million
- Abdom = Abdominal
- Dizz = Dizziness
- Resp = Respiratory
- PEL = Permissible Exposure Limit (8-hour Time Weighted Average)
- Ing = Ingestion
- Gastro = Gastrointestinal
- CNS = Central Nervous System
- Resp = Respiratory
- Depress = Depressant
- Resp = Respiratory
- Lass = Lassitude
- Muco = Mucous membrane
- Nas = Nasal
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
- Resp = Respiratory
TABLE 2.5
Task Hazard Analysis

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Monitoring Device</th>
<th>AIR - PEL</th>
<th>Source of Concentration on Site</th>
<th>Route of Exposure</th>
<th>Toxicological Effects, Symptoms, and Hazards</th>
<th>First Aid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene Chloride</td>
<td>PID</td>
<td>25 ppm</td>
<td>Soil/Groundwater</td>
<td>Inh, Ing, Con</td>
<td>Irr. eyes, skin, carcinogen, resp tract, CNS, mucous membrane, liver damage</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Tetrachloroethylene (PCE)</td>
<td>N/A</td>
<td>100 ppm</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irr. to resp, skin, ey, CNS, naus. Vomiting, chest pain, difficulty breathing, headache, dizz., Tg, Gidd, Inco., Carc.</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Toluene</td>
<td>PID</td>
<td>200 ppm</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irr. eyes, skin, nose, resp tract., gidd, head, nau, staggered gait; lass, derm, bone marrow depress</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>1,2,4-Trichlorobenzene</td>
<td>N/A</td>
<td>NA</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irr. to resp, liver damage</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>1,1,1-Trichloroethane (1,1,1-TCAI)</td>
<td>PID</td>
<td>350 ppm</td>
<td>Soil/Groundwater</td>
<td>Inh, Ing, Con</td>
<td>Irr. eyes, resp., throat,</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Trichloroethylene (TCE)</td>
<td>N/A</td>
<td>100 ppm</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing</td>
<td>Irr. eyes, resp., throat, naus., dizz., headache, CNS damage, vomiting, liver damage, card</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Trichlorofluoromethane</td>
<td>PID</td>
<td>1,000 ppm</td>
<td>Soil Gas</td>
<td>Inh, Abs, Ing</td>
<td>Irr. eyes, skin, heart, lungs, liver</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>1,2,4-Trimethylbenzene</td>
<td>N/A</td>
<td>NA</td>
<td>Soil/Groundwater</td>
<td>Inh, Ing, Con</td>
<td>Irr. eyes, skin, nose, CNS</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>1,3,5-Trimethylbenzene</td>
<td>N/A</td>
<td>NA</td>
<td>Soil/Groundwater</td>
<td>Inh, Ing, Con</td>
<td>Irr. eyes, skin, nose, resp tract.</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Vinyl Chloride</td>
<td>N/A</td>
<td>1 ppm</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irr. eyes, skin, nose, resp tract., gidd, head, nau, staggered gait; lass, derm, bone marrow depress</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Xylenes</td>
<td>PID</td>
<td>100 ppm</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irr. eyes, skin, nose, resp tract., gidd, head, nau, staggered gait; lass, derm, bone marrow depress</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
</tbody>
</table>

EXPLANATION OF ABBREVIATIONS
PID = Photoionization Detector
ppm = parts per million
Abdom = Abdominal
Derm = Dermatitis
Dizz = Dizziness
Depres = Depressant
Gastro = Gastro-intestinal
Gidd = Giddiness
Inco = Incoordination
Inj = Injury
Lass = Lassitude
Lass = Lassitude
Muc membr = mucous membrane
Nau = Nausea
Resp = Respiratory
Resp = Respiratory
Carc = Potential occupational Carcinogen
Inh = Inhalation
Card = Cardiac
<table>
<thead>
<tr>
<th>SVOCs/Pesticides</th>
<th>Monitor Type</th>
<th>Abbreviations</th>
<th>Unit</th>
<th>Exposure Limits</th>
<th>Health Effects</th>
</tr>
</thead>
</table>
| Acenaphthene Dust Monitor   | NA           | Soil/Groundwater | Inh, Ing, Con | Irrit eyes, skin | Eyes: Irrigate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| Acenaphthylene Dust Monitor | NA           | Soil/Groundwater | Inh, Ing, Con | Irrit eyes, skin, resp. tract, CNS, mucous membranes  
                           |               |               |                  | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| Alpha-BHC Dust Monitor      | NA           | Soil          | Inh, Ing, Con | (carc) Irrit eyes, skin, CNS | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| Anthracene Dust Monitor     | NA           | Soil/Groundwater | Inh, Ing, Con | Irrit eyes, skin, carcinogenic, kidneys, lungs, mucous membranes  
                           |               |               |                  | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| Benzo[a]anthracene Dust Monitor | NA           | Soil/Groundwater | Inh,Con | Irrit eyes, skin, headache, naus, cancer | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| Benzo[a]pyrene Dust Monitor | 0.2 mg/m3    | Soil/Groundwater | Inh, Ing | (Carc), mutagenic, neoplastic | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| Benzo[b]fluoranthene Dust Monitor | 0.2 mg/m3    | Soil/Groundwater | Inh, Ing, Abs | Irrit eyes, skin, carcinogen, ung damage | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| Benzo[k]fluoranthene Dust Monitor | 0.2 mg/m3    | Soil/Groundwater | Inh, Ing, Abs | Irrit eyes, skin, carcinogen, ung damage | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| Benzo[a]pyrene Dust Monitor | 0.2 mg/m3    | Soil/Groundwater | Inh, Ing, Con | Irrit eyes, skin, carcinogen, ung damage | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| Chrysene Dust Monitor       | 0.2 mg/m3    | Soil          | Inh, Ing | Irrit, cancer, pulmonary edema, sensitizer, dermatitis, naus, kidney damage | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |
| DDD Dust Monitor            | 1 ppm        | Soil          | Inh, Abs, Ing, Con | Irrit, head naus, tremors, seizures, cancer | Eyes: Irritate immediately  
                           |               |               |                  | Skin: Soap wash promptly  
                           |               |               |                  | Breath: Resp. support  
                           |               |               |                  | Swallow: Med. attn. immediately |

**EXPLANATION OF ABBREVIATIONS**

PID = Photoionization Detector  
Abdom = Abdominal  
Diz = Dizziness  
Tg = Fatigue  
Abs = Absorption  
Derm = Dermatitis

Ing = Ingestion  
Gastro = Gastrointestinal  
Depres = Depressant  
Gidd = Giddiness  
Muc mem = mucous membrane

Con = Skin and/or eye contact  
Resp = Respiratory  
CNS = Central Nervous System  
Inc = Incoordination  
Nau = Nausea

PEL = Permissible Exposure Limit (8-hour Time Weighted Average)  
Inh = Inhalation  
Card = Cardiac  
IC = Potential occupational Carcinogen  
Vert = Vertigo
<table>
<thead>
<tr>
<th>Task Hazard Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table 2.5</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance</th>
<th>Dust Monitor</th>
<th>ppm</th>
<th>Soil/Groundwater</th>
<th>Inh, Abs, Ing, Con</th>
<th>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DDE Dust Monitor</strong></td>
<td>1 ppm</td>
<td>Soil</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irrit., head, nau., tremors, seizures, cancer</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>DDT Dust Monitor</strong></td>
<td>1 ppm</td>
<td>Soil</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irrit., head, nau., tremors, seizures, cancer, liver, reproductive, and nervous system damage</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Delta-BHC Dust Monitor</strong></td>
<td>NA</td>
<td>Soil</td>
<td>Inh, Abs, Ing</td>
<td>Irrit., eyes, cancer, kidney, liver, heart, and nervous system damage</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Dibenz[a,h]anthracene Dust Monitor</strong></td>
<td>NA</td>
<td>Soil</td>
<td>Inh, Abs, Ing, Con</td>
<td>(car) Irrit., eyes, skin, resp. tract, digestive tract</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Dibenzofuran Dust Monitor</strong></td>
<td>NA</td>
<td>Soil</td>
<td>Inh, Abs, Ing</td>
<td>Irrit., eyes, skin, toxic by ingestion</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Dieldrin Dust Monitor</strong></td>
<td>0.25 mg/m3</td>
<td>Soil</td>
<td>Inh, Abs, Ing</td>
<td>Irrit., headache, dizziness, nau., seizures</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Fluoranthene Dust Monitor</strong></td>
<td>NA</td>
<td>Soil/Groundwater</td>
<td>Inh, Ing</td>
<td>Irrit., eyes, skin, digestive tract</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Fluorene Dust Monitor</strong></td>
<td>NA</td>
<td>Soil/Groundwater</td>
<td>Inh, Ing</td>
<td>Irrit., eyes, skin, digestive tract</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Gamma-BHC Dust Monitor</strong></td>
<td>NA</td>
<td>Soil/Groundwater</td>
<td>Inh, Ing, Con</td>
<td>Carcinogen, Irrit., eyes, skin, resp. tract, blood, kidney, liver, and CNS</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Heptachlor Epoxide Dust Monitor</strong></td>
<td>NA</td>
<td>Soil</td>
<td>Inh</td>
<td>Fatal &amp; toxic</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Hexachlorobenzene Dust Monitor</strong></td>
<td>NA</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing</td>
<td>(car) Irrit., eyes, skin</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>Indeno(1,2,3-c,d)pyrene Dust Monitor</strong></td>
<td>NA</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing</td>
<td>(car) Irrit., eyes, skin</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td><strong>2-mercaptothiazole Dust Monitor</strong></td>
<td>NA</td>
<td>Soil</td>
<td>Inh, Abs, Ing</td>
<td>Irrit., Digestive tract, nau., headache, unconsciousness, dermatitis</td>
<td>Eyes: Irritate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
</tbody>
</table>

**Explanation of Abbreviations**
- PID = Photoionization Detector
- ppm = parts per million
- Derm = Dermatitis
- Dizz = Dizziness
- Fatigue = Fatigue
- Lassitude = Lassitude
- Inh = Inhalation
- Abdom = Abdominal
- Gastro = Gastro-intestinal
- Depress = Depressant
- Odd = Oddness
- Muc mem = mucous membrane
- FEL = Permissible Exposure Limit (8-hour Time Weighted Average)
- Resp = Respiratory
- CNS = Central Nervous System
- Inco = Incoordination
- Nau = Nausea
- Car = Cardiac
- Carcinogen = Potential occupational Carcinogen
- Abs = Skin absorption
- Vert = Vertigo
<table>
<thead>
<tr>
<th>Substance</th>
<th>Monitor Type</th>
<th>Exposure</th>
<th>Route</th>
<th>Hazard</th>
<th>Symptoms</th>
<th>Immediate First Aid Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naphthalene</td>
<td>Dust Monitor</td>
<td>ppm</td>
<td>Soil/ Groundwater</td>
<td>Inh, Ing, Con</td>
<td>Irr. eyes, skin</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>N-nitrosodiphenylamine</td>
<td>Dust Monitor</td>
<td>NA</td>
<td>Soil</td>
<td>Inh, Abs, Ing</td>
<td>Irr. eyes, cancer, nausea, vomiting, headaches, liver damage</td>
<td>Eyes: Irritate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>PCBs</td>
<td>Dust Monitor</td>
<td>0.5 mg/m³</td>
<td>Soil</td>
<td>Inh, Abs, Ing</td>
<td>Irr. Resp. possible damage to liver, kidney, CNS</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Phenanthrene</td>
<td>Dust Monitor</td>
<td>NA</td>
<td>Soil/ Groundwater</td>
<td>Inh, Ing, Con</td>
<td>Irr. eyes, skin</td>
<td>Eyes: Irritate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Pyrene</td>
<td>Dust Monitor</td>
<td>0.2 mg/m³</td>
<td>Soil</td>
<td>Inh, Ing, Con</td>
<td>Cancer, mutagenic, neoplastic</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Silvex (2,4,5-TP)</td>
<td>Dust Monitor</td>
<td>NA</td>
<td>Soil</td>
<td>Inh, Ing, Con</td>
<td>Irr. eyes, skin, nose, throat</td>
<td>Eyes: Irritate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Metals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>Dust Monitor</td>
<td>NA</td>
<td>Soil/ Groundwater</td>
<td>Inh, Abs, Ing, Con</td>
<td>Irr. eyes, skin, nose, resp. tract., gidd, head, nau, staggered gait; lass, derm, bone marrow depress, [canc]</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Barium</td>
<td>Dust Monitor</td>
<td>0.5 mg/m³</td>
<td>Soil/ Groundwater</td>
<td>Inh, Ing, Con</td>
<td>Irr. eyes, skin, nose, resp tract</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Beryllium</td>
<td>Dust Monitor</td>
<td>0.002 mg/m³</td>
<td>Soil</td>
<td>Inh, Ing, Con</td>
<td>Carcinogen, mutagen, lung fibrosis, dyspnea, weight loss</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Cadmium</td>
<td>Dust Monitor</td>
<td>0.005 ppm</td>
<td>Soil</td>
<td>Inh, Ing, Con</td>
<td>Carcinogen, Irr. eyes, skin, nose</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Chromium</td>
<td>Dust Monitor</td>
<td>1 mg/m³</td>
<td>Soil</td>
<td>Inh, Ing, Con</td>
<td>Irr. eyes, skin, corrosive on tissue, ulcer</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Copper</td>
<td>Dust Monitor</td>
<td>1 mg/m³</td>
<td>Soil</td>
<td>Inh, Abs, Ing</td>
<td>Irr. skin, eyes, resp. tract, birth defects, kidney cancer, chills, sweating, fever, nau</td>
<td>Eyes: Irrigate immediately; Skin: Soap wash promptly; Breath: Resp. support; Swallow: Med. attn. immediately</td>
</tr>
</tbody>
</table>

**EXPLANATION OF ABBREVIATIONS**

PID = Photoionization Detector  
Ppm = parts per million  
Derm = Dermatitis  
Diz = Dizziness  
Ing = Ingestion  
Inh = Inhalation  
Abdom = Abdominal  
Gastro = Gastro-intestinal  
Depress = Depressant  
Gidd = Giddiness  
Lass = Lassitude  
Muc mem = mucous membrane  
PEL = Permissible Exposure Limit (8-hour Time Weighted Average)  
Resp = Respiratory  
CNS = Central Nervous System  
INCD = Incoordination  
Card = Cardiac  
ICard = Potential occupational Carcinogen  
Abs = Skin absorption  
Vert = Vertigo  
Carc = Potential occupational Carcinogen
<table>
<thead>
<tr>
<th>Compound</th>
<th>Dust Monitor</th>
<th>Concentration</th>
<th>Exposure Route</th>
<th>Symptoms</th>
<th>Immediate Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyanide</td>
<td>Dust Monitor</td>
<td>5 ppm</td>
<td>Soil/Groundwater</td>
<td>Inh, Abs, Ing, Irrit. to lungs, gastrointestinal tract, nau Skin inflammation and blistering, Corrosive to eyes</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Iron</td>
<td>Dust Monitor</td>
<td>5 ppm</td>
<td>Soil</td>
<td>Inh, Abs, Ing, Irrit. to lungs, gastrointestinal tract, nau, Headache, dizziness, convulsions, liver damage, blue colored skin/haits</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Lead</td>
<td>Dust Monitor</td>
<td>0.05 mg/m³</td>
<td>Groundwater</td>
<td>Inh, Ing, Con, Irrit. skin, eyes, vomiting, stupor, coma, insomnia, paralysis</td>
<td>Eyes: Irrigate immediately, Skin: Water wash promptly, Breath: Resp. support, Swallow: Induce vomiting, med att.</td>
</tr>
<tr>
<td>Magnesium</td>
<td>Dust Monitor</td>
<td>15 mg/m³ (as for MgO)</td>
<td>Soil</td>
<td>Inh, Con, Irrit. skin, eyes, resp tract, gastro</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Manganese</td>
<td>Dust Monitor</td>
<td>5 mg/m³</td>
<td>Soil</td>
<td>Inh, Ing, Con, Irrit. skin, eyes, CNS</td>
<td>Eyes: Irrigate immediately, Skin: Water wash promptly, Breath: Resp. support, Swallow: Induce vomiting, med att.</td>
</tr>
<tr>
<td>Mercury</td>
<td>Dust Monitor</td>
<td>0.1 mg/m³</td>
<td>Soil</td>
<td>Inh, Ing, Con, Nervous irritability, lass, tremor, gingivitis, graying of eye</td>
<td>Eyes: Irrigate immediately, Skin: Water wash promptly, Breath: Resp. support, Swallow: Induce vomiting, med att.</td>
</tr>
<tr>
<td>Nickel</td>
<td>Dust Monitor</td>
<td>1 mg/m³</td>
<td>Soil</td>
<td>Inh, Ing, Con, Irrit. skin, eyes</td>
<td>Eyes: Irritate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Zinc</td>
<td>Dust Monitor</td>
<td>1 mg/m³</td>
<td>Soil</td>
<td>Inh, Ing, Con, Toxic</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support, Swallow: Med. attn. immediately</td>
</tr>
<tr>
<td>Nuisance Dust</td>
<td>Dust Monitor</td>
<td>15 mg/m³</td>
<td>Soil</td>
<td>Inh, Ing, Irrit. eyes, skin, resp tract</td>
<td>Eyes: Irrigate immediately, Skin: Soap wash promptly, Breath: Resp. support</td>
</tr>
</tbody>
</table>

Note: See CHASP for a discussion of how the Dust Monitor will be used to monitor the compounds of concern listed in this table.

**EXPLANATION OF ABBREVIATIONS**

- PID = Photoionization Detector
- ppm = parts per million
- Derm = Dermatitis
- Diz = Dizziness
- Inj = Injury
- Ing = Ingestion
- Abdom = Abdominal
- Gastro = Gastro-intestinal
- Depress = Depressant
- Fatigue = Fatigue
- Nausea = Nausea
- Lass = Lassitude
- Muc mem = mucous membrane
- PEL = Permissible Exposure Limit (8-hour Time Weighted Average)
- Resp = Respiratory
- CNS = Central Nervous System
- Inco = Incoordination
- Card = Cardiac
- Abs = Skin absorption
- Vert = Vertigo
- Inhal = Inhalation
- Carcinogen = Potential occupational Carcinogen
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Description</th>
<th>Control Measures</th>
<th>First Aid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin contact</td>
<td>Sample spills on skin; splashes in eyes.</td>
<td>Wear proper PPE; follow safe practices</td>
<td>See Table 1 – Part “A” above</td>
</tr>
<tr>
<td>Lacerations, abrasions, punctures</td>
<td>Cutting bailer twine, pump tubing, etc. with knife. Using tools in tight spaces, etc.</td>
<td>Wear proper PPE; follow safe practices</td>
<td>See pages 48-51, NSC'First Aid an CPR Standard' manual</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Opening wells, purging and sampling exposes sampler</td>
<td>Follow air monitoring plan; have quick access to respirator</td>
<td>See Table 1 – Part “A” above</td>
</tr>
<tr>
<td>Explosive atmosphere</td>
<td></td>
<td>Follow air monitoring plan</td>
<td></td>
</tr>
<tr>
<td>Lifting</td>
<td>Improper lifting/carrying of equipment and materials causing strains</td>
<td>Follow safe lifting techniques</td>
<td>Follow the RICE procedures (p.99 in NSC manual)</td>
</tr>
<tr>
<td>Slips, trips, and falls</td>
<td>Any number of injuries could occur from slips, trips, and falls in carrying out tasks</td>
<td>Good housekeeping at site, constant awareness and focus on the task</td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>Drill rig engine and soil boring.</td>
<td>Wear hearing protection</td>
<td></td>
</tr>
<tr>
<td>Falling objects</td>
<td>Soil material, tools, etc. dropping from drill rigs, front-end loaders, etc.</td>
<td>Hard hats to be worn at all times while in work zones</td>
<td></td>
</tr>
<tr>
<td>Underground/overhead utilities</td>
<td>Excavators and demolition equipment making contact with utilities</td>
<td>&quot;One Call&quot; before dig; follow safe practices</td>
<td></td>
</tr>
</tbody>
</table>
### C. Task-by-Task Risk Analysis

<table>
<thead>
<tr>
<th>Task</th>
<th>Hazard</th>
<th>Description</th>
<th>Control Measures</th>
<th>First Aid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of Targeted Soil and Fill</td>
<td>Heavy machinery</td>
<td>Demolition and excavation with hydraulic equipment</td>
<td>Wear proper PPE; follow safe practices</td>
<td>See Table 1 - Part 'A' above</td>
</tr>
<tr>
<td></td>
<td>Building Demolition</td>
<td>Demolition with hydraulic equipment, falling building material</td>
<td>Wear proper PPE; follow safe practices</td>
<td>See pages 48-51, NSC &quot;First Aid an CPR Standard&quot; manual</td>
</tr>
<tr>
<td></td>
<td>Working and Sampling within the Excavations</td>
<td>Surveying size of excavation, Screening and sampling end-point samples</td>
<td>Wear proper PPE; follow air monitoring plan; have quick access to respirator</td>
<td>See Table 1 - Part 'A' above</td>
</tr>
<tr>
<td></td>
<td>Exposure to contaminated media</td>
<td>Working within the hot zones</td>
<td>Wear proper PPE; follow air monitoring plan</td>
<td>See decon procedures in CHASP</td>
</tr>
<tr>
<td>Groundwater Treatment and Sampling</td>
<td>Splash Hazards</td>
<td>Sample spills on skin; splashes in eyes.</td>
<td>Wear proper PPE; follow safe lifting techniques</td>
<td>Follow the RICE procedures (p.99 in NSC manual)</td>
</tr>
<tr>
<td></td>
<td>Exposure to contaminated groundwater</td>
<td>Inhalation and dermal absorption risk</td>
<td>Wear proper PPE; good housekeeping at site, constant awareness and focus on the task</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposure to moving pump components</td>
<td></td>
<td>Keep loose clothing from equipment. Keep safety gloves on.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Potential Explosive Hazard</td>
<td>Soil material, tools, etc. dropping from drill rigs, front-end loaders, etc.</td>
<td>Wear proper PPE; hard hats to be worn at all times while in work zones</td>
<td></td>
</tr>
<tr>
<td>UST Closure</td>
<td>Potential Exposure to Confining Spaces</td>
<td>Drill rig auger makes contact with underground object; boom touches</td>
<td>Wear proper PPE; &quot;One Call&quot; before dig; follow safe practices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Potential for explosive or flammable conditions</td>
<td>Static charge may ignite residual explosive and flammable vapors</td>
<td>Follow proper UST closure proceedings for tank venting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Removal of UST and soil</td>
<td></td>
<td>See &quot;Removal of Targeted Soil and Fill&quot;</td>
<td></td>
</tr>
<tr>
<td>Soil Backfill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering Control Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.0 PERSONNEL PROTECTION AND MONITORING

3.1 OSHA Training

All on-site personnel who will be actively involved in Site remediation and construction activities and can potentially encounter hazardous waste must have completed hazardous waste operations-related training, as required by OSHA Regulations 29 CFR 1910.120. Personnel who completed this 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. Documentation of OSHA training for project personnel must be provided to Langan prior to starting work.

3.2 Site-Specific Training

The Field Safety Officer will be responsible for developing a site-specific occupational hazard training program and providing training to all personnel that are to work at the site. This training will be conducted prior to starting field work and will consist of the following topics:

- Names of personnel responsible for site safety and health.
- Hazards potentially present at the site.
- Proper use of personal protective equipment.
- Requirements of this CHASP.
- Work practices by which the employee can minimize risk from hazards. This may include a specific review of heavy equipment safety, safety during inclement weather, changes in common escape rendezvous point, site security measures, or other site-specific issues that need to be addressed before work begins.
- Safe use of engineering controls and equipment on the site.
- Acute effects of compounds present at the site.
- Decontamination procedures.

Upon completion of site-specific training, workers will sign the Site-Specific-Training Form provided in Attachment B. A copy of the completed Site-Specific Training Form will be included in the project files for future reference.

3.3 Monitoring Requirements

Worker air monitoring and community air monitoring (as described in Section 6.4) will be conducted at the start of field work.
Fugitive dust generation that could affect site workers, site occupants, or the public may be expected due to excavation and soil disturbance activities. Care will be taken to minimize dust generation. The FSO will visually monitor the perimeter of the work area for evidence of sustained visible emissions. Work activities will be suspended until dust levels diminish to an acceptable level if sustained emissions are observed.

Air monitoring of the breathing zone will be conducted periodically or continuously during boring advancement, test pitting, and sampling activities to assure proper health and safety protection.

VOCs will be monitored with a PID in accordance with the HASP with an action level of 25 ppm in the absence of benzene. If the action level is exceeded and adequate ventilation cannot be provided, work will cease and the potential affected portion of the work area will be evacuated until adequate mechanical ventilation can be setup to control the hazard. Level C respiratory protection may be donned in accordance with the HASP if untrained personnel are not present and the action level is exceeded.

If air monitoring during operations identifies the presence of volatile organic compounds (not anticipated because of natural ventilation), the action levels, permissible exposure, engineering controls, and personal protective equipment specified in this HASP will be implemented. A PID (MiniRAE 2000 or equivalent) will be used to monitor for organic vapors in the breathing zone and to screen soil samples. Air monitoring results will be recorded in the field book during investigation activities and made available for review.

### 3.4 Summary Of Action Levels And Restrictions

A PID, such as the RaeSystems MiniRae 2000 equipped with a 10.6 eV lamp, shall be used to screen for total organic vapors. All readings pertain to sustained readings for 15 minutes in the worker breathing zone. The following conditions shall apply to each level of protection.

#### Conditions for Level D:

- All areas
  - PID readings < 25 ppm and benzene < 1 ppm
  - No visible fugitive dust emissions from site activities

#### Conditions for Level C:

- All areas
  - Where PID readings > 25 ppm (sustained for 15 minutes in the breathing zone) to 200 ppm and benzene < 5ppm, and/or
Any visible fugitive dust emissions from site activities that disturb contaminated soil.

**Conditions for Level B (or retreat):**

All areas
- Where PID readings > 500 ppm or benzene > 25 ppm,
- Visible fugitive dust emissions from site activities cloud the surrounding air.

3.4.1 Level D and Modified Level D

Level D protection will be worn for initial entry on-site and initially for all activities. Level D protection will consist of:
- Standard work clothes
- Steel-toe safety boots
- Safety glasses (goggles must be worn when splash hazard is present)
- Nitrile outer gloves and PVC inner gloves must be worn during all activities requiring contact with soils.
- Hard hat (must be worn during all site activities)

Modified Level D is the same as Level D but includes Tyvek coveralls and disposable polyethylene overboots to contact with the skin or clothes if significant contamination is present in subsurface materials.

3.4.2 Level C

The level of personal protection will be upgraded to Level C if the concentration of volatile organic compounds which can be detected with a photoionization detector (PID) in the breathing zone equals or exceeds the specified action limits and the contaminants of concern have characteristic warning properties appropriate for air purifying respirators (e.g. taste, odor). Level C protection will consist of the following equipment:
- Full-face or half-mask air-purifying respirator (APR) or powered air purifier (PAPR), depending on presence and abundance of airborne toxic constituents of concern
- Combination HEPA filter/organic vapor cartridges
- Tyvek coveralls must be worn if particulate hazard present
- PE-coated Tyvek coveralls if liquid contamination present
- Steel-toe safety boots
- Nitrile outer gloves and PVC inner gloves must be worn during all activities requiring contact with soils.
- Hard hat (must be worn during all site activities)

Cartridges will be disposed at the end of each day’s use.

3.4.3 Level B (Retreat)

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

3.4.4 OSHA Requirements for Personal Protective Equipment

All personal protective equipment used during the course of this field investigation must meet the following OSHA standards:

<table>
<thead>
<tr>
<th>Type of Protection</th>
<th>Regulation</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>29 CFR 1926.102</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29 CFR 1926.103</td>
<td></td>
</tr>
<tr>
<td>Head</td>
<td>29 CFR 1910.135</td>
<td>ANSI Z89.1-1969</td>
</tr>
<tr>
<td></td>
<td>29 CFR 1926.100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29 CFR 1926.96</td>
<td></td>
</tr>
</tbody>
</table>

ANSI = American National Standards Institute


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

- Oxygen deficiency;
- IDLH concentrations;
- High relative humidity; and
- If contaminant levels exceed designated use concentrations.
4.0 WORK ZONES AND DECONTAMINATION

4.1 Site Work Zones

Work zones will be established if hazardous materials are encountered.

4.1.1 Hot Zone

Hot zones will be established within a 25 foot radius around each boring and test pit, where possible. Barriers will be established at the perimeter of the boring and test pit area where the perimeter is shared with an area accessible to the public. Unprotected onlookers should be located 25 feet upwind of the activities. All personnel within the hot zone must don the appropriate levels of personal protection as set forth by the FSO. It is not anticipated that Level C or higher will be required for this site.

All personnel within the hot zone will be required to use the specified level of protection. No food, drink, or smoking will be allowed in the hot or warm zones.

4.1.2 Warm Zone

A warm zone will be established and utilized during the field activities. This zone will be established between the hot zone and the cold zone (discussed below), and will include the personnel and equipment necessary for decontamination of equipment and personnel exiting the hot zone. Personnel and equipment in the hot zone must pass through this zone before entering the cold zone. This zone should always be located upwind of the hot zone.

4.1.3 Cold Zone

The cold zone will include the remaining areas of the job site. Break areas and support facilities (include equipment storage and maintenance areas) will be located in this zone. No equipment or personnel will be permitted to enter the cold zone from the hot zone without passing through the decontamination station in the warm zone. Eating, smoking, and drinking will be allowed only in this area.

4.2 Decontamination

Generally, any water used in decontamination procedures will be placed in containers, temporarily stored on-site, and properly characterized and disposed.

4.2.1 Decontamination of Personnel

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

4.2.2 Decontamination of Field Equipment

Decontamination of field equipment will be necessary for all equipment in contact with contaminated materials. Decontamination activities shall be performed in a designated area lined with polyethylene sheeting that is designed to collect the decontamination rinsate.

4.3 Remedial Activity-Derived Waste

All PPE-related remedial activity-derived waste materials (PPE, decontamination waste) will be placed in labeled containers and appropriately disposed. Stockpiling of contaminated soil is not anticipated.
5.0 SAMPLE SHIPMENT

5.1 Non-Hazardous Samples

Samples collected in this study will be classified as environmental samples.

5.1.1 Environmental Samples

In general, environmental samples that are collected from soils or wells are not expected to contain high (hazardous) levels of constituents of concern.

Sample containers must have a completed sample identification tag and the outside container must be marked "Environmental Sample". The sample tag will be legibly written and completed with an indelible pencil or waterproof ink. The information will also be recorded in a log book. At a minimum, it will include:

- Exact location of sample;
- Time and date sample was collected;
- Name of sampler witnesses (if necessary);
- Project codes, sample station number, and identifying code (if applicable);
- Type of sample (if known);
- Laboratory number (if applicable); and
- Any other pertinent information.

Environmental samples will be packaged and shipped according to the following procedure:

1. Place sample container, properly identified and with a sealed lid, in a polyethylene bag, and seal bag;
2. Place sample in a fiberboard container or metal picnic cooler which has been lined with a large polyethylene bag;
3. Pack cooler with ice to maintain temperature of 4 degrees C;
4. Pack with enough noncombustible, absorbent, cushioning material to minimize the possibility of the container breaking;
5. Seal large bag; and
6. Seal or close outside container.

The appropriate side of the container must be marked "This End Up" and arrows should be drawn accordingly. No DOT marking labeling is required. No DOT shipping papers are required. There are no DOT restrictions on mode of transportation.
5.2 Hazardous Samples

Hazardous materials are not anticipated at the Site and samples are anticipated to be transported to the analytical laboratory via courier service. However, should hazardous materials be encountered or samples at the Site, the following procedures will be implemented. Personnel who must complete a Hazardous Goods Airway Bill must first be DOT trained and certified every two years. Drummed waste samples, tank samples, sludge samples, and grossly contaminated soil samples will be shipped as DOT Hazardous Materials. The designation “Flammable Liquid” or “Flammable Solid” will be used. The samples will be transported as follows:

1. Collect sample in a 16 ounce or smaller glass or polyethylene container with nonmetallic Teflon-lined screw cap. Allow sufficient air space (approximately 10% by volume) so container is not liquid full at 54 °C (130 °F). If collecting a solid material, the container plus contents should not exceed 1 pound net weight. If sampling for volatile organic analysis, fill VOA container to septum but place the VOA container inside a 16 ounce or smaller container so the required air space may be provided. Large quantities, up to 3.786 liters (1 gallon), may be collected if the sample’s flash point is 23 °C (75 °F) or higher. In this case, the flash point must be marked on the outside container (e.g., carton, cooler), and shipping papers should state that “Flash point is 73 °F or higher.”

2. Seal sample and place in a 4-mil thick polyethylene bag, one sample per bag.

3. Place sealed bag inside a metal can with noncombustible, absorbent cushioning material (e.g., vermiculite or earth) to prevent breakage, one bag per can. Pressure-close the can and use clips, tape or other positive means to hold the lid securely.

4. Mark the can with:
   - Name and address of originator
   - “Flammable Liquid N.O.S. UN 1993”
   - (or “Flammable Solid N.O.S. UN 1325)
   - NOTE: UN numbers are now required in proper shipping names.

5. Place one or more metal cans in a strong outside container such as a picnic cooler or fiberboard box. Preservatives are not used for hazardous waste site samples.
6. Prepare for shipping:

“Flammable Liquid, N.O.S. UN 1993” or “Flammable Solid, N.O.S. UN 1325”; “Cargo Aircraft Only” (if more than 1 quart net per outside package); “Limited Quantity” or “Ltd. Qty.”; “Laboratory Samples”; “Net Weight ___” or “Net Volume ___” (of hazardous contents) should be indicated on shipping papers and on outside of shipping container. “This Side Up” or “This End Up” should also be on container. Sign shipper certification.

7. Stand by for possible carrier requests to open outside containers for inspection or modify packaging. It is wise to contact carrier before packing to ascertain local packaging requirements and not to leave area before the carrier vehicle (aircraft, truck) is on its way. The International Air Transport Association’s Dangerous Goods regulations will need to be followed for using FedEx for the shipment of hazardous samples.

5.2.1 Shipping Papers

A blank Langan shipping paper should be filled out and maintained within the driver’s reach, whenever a Langan employee carries hazardous materials in a vehicle in quantities above those allowed for Materials of Trade (MOTs). Such materials may include more than 8 gallons of the following:

- Gasoline (for use in a generator) UN 1203, Guide #27;
- Methanol (for use in decontamination procedures) UN 1230, Guide #28;
- Nitric Acid (for use in decontamination procedures) UN 1760, Guide #60; and
- Hydrochloric Acid (for use in decontamination procedures) UN 1789, Guide #60.

Other materials may include the following:

- > 220 pounds of compressed Gas [Air, Compressed] (calibration gas for the PID, or Grade D breathing air for Level B work) UN 1002, Class 2.2; and
- Other hazardous materials as defined by the DOT.

Appropriate MSDSs should be maintained with the shipping papers and/or the pocket DOT Emergency Response Guidebook.


6.0 ACCIDENT PREVENTION AND CONTINGENCY PLAN

6.1 Accident Prevention

6.1.1 Site-Specific Training

All field personnel will receive health and safety training prior to the initiation of any site activities. The site-specific training form provided in Attachment B must be signed, dated, and returned to the Langan Field Safety Officer. On a day-to-day basis, individual personnel should be constantly alert for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. Rapid recognition of dangerous situations can avert an emergency. Before daily work assignments, a regular safety meeting should be held. Discussion should include:

- Tasks to be performed;
- Time constraints (e.g., rest breaks, cartridge changes);
- Hazards that may be encountered, including their effects, how to recognize symptoms or monitor them, concentration limits, or other danger signals; and
- Emergency procedures.

6.1.2 Vehicles and Heavy Equipment

Working with large motor vehicles and heavy equipment could be a major hazard at this site. Injuries can result from equipment hitting or running over personnel, impacts from flying objects, or overturning of vehicles. Vehicle and heavy equipment design and operation will be in accordance with 29 CFR, Subpart O, 1926.600 through 1926.602. In particular, the following precautions will be utilized to help prevent injuries/accidents.

- Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be checked at the beginning of each shift.
- Large construction motor vehicles will not be backed up unless:
  - The vehicle has a reverse signal alarm audible above the surrounding noise level; or
  - The vehicle is backed up only when an observer signals that it is safe to do so.
- Heavy equipment or motor vehicle cable will be kept free of all nonessential items, and all loose items will be secured.
- Large construction motor vehicles and heavy equipment will be provided with necessary safety equipment (such as seat belts, roll-over protection, emergency shut-off in case of roll-over, backup warning lights and audible alarms).
• Blades and buckets will be lowered to the ground and parking brakes will be set before shutting off any heavy equipment or vehicles.

6.2 Spill Control Plan

All personnel must take every precaution to minimize the potential for spills during site operations. Any spill shall be reported immediately to the FSO. Spill control apparatus (sorbent materials) will be located on-site. All materials used for the cleanup of spills will be containerized and labeled separately from other wastes.

6.3 Contingency Plan

6.3.1 Emergency Procedures

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

• Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure while on site.

• A condition is discovered that suggests the existence of a situation more hazardous than anticipated.

General emergency procedures, and specific procedures for personal injury, chemical exposure and radiation exposure, are described below.

6.3.2 Chemical Exposure

If a member of the field crew demonstrates symptoms of chemical exposure the procedures outlined below should be followed:

• Another team member (buddy) should remove the individual from the immediate area of contamination. The buddy should communicate to the Field Team Leader (via voice and hand signals) of the chemical exposure. The Field Team Leader should contact the appropriate emergency response agency.

• Precautions should be taken to avoid exposure of other individuals to the chemical.

• If the chemical is on the individual's clothing, the chemical should be neutralized or removed if it is safe to do so.

• If the chemical has contacted the skin, the skin should be washed with copious amounts of water.

• In case of eye contact, an emergency eye wash should be used. Eyes should be washed for at least 15 minutes.
• All chemical exposure incidents must be reported in writing to the Langan Health and Safety Officer. The Field Safety Officer or Field Team Leader is responsible for completing the accident report.

6.3.3 Personal Injury

In case of personal injury at the site, the following procedures should be followed:

• Another team member (buddy) should signal the Field Team Leader that an injury has occurred.
• A field team member trained in first aid can administer treatment to an injured worker.
• The victim should then be transported to the nearest hospital or medical center. If necessary, an ambulance should be called to transport the victim.
• For less severe cases, the individual can be taken to the site dispensary.
• The Field Team Leader or Field Safety Officer is responsible for making certain that an Accident Report Form is completed. This form is to be submitted to the Langan Health and Safety Officer. Follow-up action should be taken to correct the situation that caused the accident.
• Any incident (near miss, property damage, first aid, medical treatment, etc.) must be reported.

A first-aid kit and blood-borne pathogens kit will be kept on-site during the field activities.

6.3.4 Evacuation Procedures

• The Field Team Leader will initiate evacuation procedures by signaling to leave the site.
• All personnel in the work area should evacuate the area and meet in the common designated area.
• All personnel suspected to be in or near the contract work area should be accounted for and the whereabouts or missing persons determined immediately.
• The Field Team Leader will then give further instruction.

6.3.5 Procedures Implemented in the Event of a Major Fire, Explosion, or Emergency

• Notify the paramedics and/or fire department, as necessary;
• Signal the evacuation procedure previously outlined and implement the entire procedure;
• Isolate the area;
• Stay upwind of any fire;
• Keep the area surrounding the problem source clear after the incident occurs;
• Complete accident report for and distribute to appropriate personnel.

6.4 Community Air Monitoring Plan

Community air monitoring will be conducted in compliance with the Community Air Monitoring Plan (CAMP) outlined below.

Monitoring for total organic vapors (TOVs) and particulate will be conducted during all ground intrusive activities (i.e., soil excavation and stockpiling, and utility installation). Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background concentrations. TOVs and particulates will be monitored within the work zone and at the downwind perimeter of the hot zone with a PID equipped with a 10.6 eV lamp and a DusTrak or DataRAM, respectively. Monitoring equipment will be capable of calculating 15-minute running average concentrations.

The following actions will be taken based on TOV levels measured:

• If total organic vapor levels exceed 5 ppm above background for the 15-minute average at the perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.

• If total organic vapor levels at the downwind perimeter of the hot zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps work activities will resume provided that the total organic vapor level 200 feet downwind of the hot zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm above background for the 15-minute average.

• If the total organic vapor level is above 25 ppm at the perimeter of the hot zone, activities will be shutdown.

The following actions will be taken based on particulate concentrations measured (the maximum detected Site mercury concentration of 766 mg/kg has been factored into the particulate concentration level):
• If the downwind particulate level is 100 micrograms per cubic meter (ug/m³) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind particulate levels do not exceed 150 ug/m³ above the upwind level and provided that no visible dust is migrating from the work area.

• If, after implementation of dust suppression techniques, downwind particulate levels are greater than 150 ug/m³ above the background level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind particulate concentration to within 150 ug/m³ of the upwind level and in preventing visible dust migration.

• In order to minimize the generation of dust, water will be sprayed on soils to be excavated, as needed. Water will also be sprayed on any areas of the Site where dust could be generated. A suitable dust control material, such as calcium chloride, will be used, as necessary, in high-traffic areas in order to minimize dust caused by vehicular traffic.

6.4.1 Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the hot zone, boring, well installation, and test pit activities will be halted or vapor suppression controls will be employed, and monitoring continued. When work shut-down occurs, downwind air monitoring as directed by the Field Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

If the organic vapor level decreases below 5 ppm above background, sampling and boring and well installation can resume, provided:

• The organic vapor level 200 ft. downwind of the hot zone or half the distance to the nearest residential or commercial structure, whichever is less, is below 1 ppm over background, and

• More frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.
6.4.2 Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work site, or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted or odor controls must be implemented.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the hot zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If either of the following criteria is exceeded in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be implemented.

- Sustained organic vapor levels approaching 5 ppm above background for a period of more than 30 minutes, or
- Organic vapor levels greater than 5 ppm above background for any time period.

6.4.3 Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

1. The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation;
2. Frequent air monitoring will be conducted at 30-minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer; and

All Emergency contacts will go into effect as appropriate.

6.5 Documentation

For emergencies involving personnel injury and/or exposure, the FSO will complete and submit the Accident Report Form within 48 hours of the incident. The form is attached in Attachment B.
All monitoring instruments must be calibrated and maintained periodically. Calibration and on-site maintenance records will be kept in the field log book. The operator must understand the limitations and possible sources of errors for each instrument. It is important that the operator checks that the instrument responds properly to the substances it was designed to monitor. Air quality monitoring equipment, including photoionization detectors (PIPs) and DusTraks or DataRAMs must be calibrated at least once each day. The specific instructions for calibration and maintenance provided for each instrument should be followed.
INSTRUMENT CALIBRATION LOG

LANGAN

<table>
<thead>
<tr>
<th>PROJECT No.</th>
<th>140091401</th>
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<tr>
<td>PROJECT</td>
<td>FONF /Sabre Park</td>
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<tr>
<td>LOCATION</td>
<td>Niagara, NY</td>
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<tr>
<td>CLIENT:</td>
<td>Fashion Outlets II, LLC and Macerich-Niagara, LLC</td>
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<tr>
<th>DATE</th>
<th>TIME</th>
<th>UltraRAE SERIAL #</th>
<th>FRESH AIR (PPM)</th>
<th>ISOButylene (100 PPM) LOT #</th>
<th>CAL.VALUE</th>
<th>COMMENTS</th>
<th>INITIALS</th>
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<tr>
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<td>TIME</td>
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<td>PPM</td>
<td>TSI Dust TRAK READING</td>
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### Summary of Monitoring Equipment

**FONF/Sabre Park, Niagara, NY**  
**Langan Project NO. 140091401**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Operation Parameters</th>
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</table>
| **Combustible Gas Indicator (CGI)** | **Hazard Monitored:** Combustible gases and vapors.  
**Application:** Measures the concentration of combustible gas or vapor.  
**Detection Method:** A filament, usually made of platinum, is heated by burning the combustible gas or vapor. The increase in heat is measured. Gases and vapors are ionized in a flame. A current is produced in proportion to the number of carbon atoms present.  
**General Care/Maintenance:** Recharge or replace battery. Calibrate immediately before use.  
**Typical Operating Time:** Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less. |
| **Flame Ionization Detector (FID) with Gas Chromatography Option (i.e., Foxboro Organic Vapor Analyzer (OVA))** | **Hazard Monitored:** Many organic gases and vapors (approved areas only).  
**Application:** In survey mode, detects the concentration of many organic gases and vapors. In gas chromatography (GC) mode, identifies and measures specific compounds. In survey mode, all the organic compounds are ionized and detected at the same time. In GC mode, volatile species are separated.  
**General Care/Maintenance:** Recharge or replace battery. Monitor fuel and/or combustion air supply gauges. Perform routine maintenance as described in the manual. Check for leaks.  
**Typical Operating Time:** 8 hours; 3 hours with strip chart recorder. |
| **Oxygen Meter** | **Hazard Monitored:** Oxygen (O₂).  
**Application:** Measures the percentage of O₂ in the air.  
**Detection Method:** Uses an electrochemical sensor to measure the partial pressure of O₂ in the air, and converts the reading to O₂ concentration.  
**General Care/Maintenance:** Replace detector cell according to manufacturer’s recommendations. Recharge or replace batteries prior to explanation of the specified interval. If the ambient air is less than 0.5% C O₂, replace the detector cell frequently.  
**Typical Operating Time:** 8 – 12 hours. |
| **Photoionization Detector (PID)** | **Hazard Monitored:** Many organic and some inorganic gases and vapors.  
**Application:** Detects total concentration of many organic and some inorganic gases and vapors. Some identification of compounds are possible if more than one probe is measured.  
**Detection Method:** Ionizes molecules using UV radiation; produces a current that is proportional to the number of ions.  
**General Care/Maintenance:** Recharge or replace battery. Regularly clean lamp window. Regularly clean and maintain the instrument and accessories.  
**Typical Operating Time:** 10 hours. 5 hours with strip chart recorder. |
ATTACHMENT B

Forms for Health and Safety Related Activity

Note: The OSHA Job Safety and Health Protection Poster must be posted prominently during field activities. The following page is an example of the poster to be used in the field. The actual poster must be an 11 inch by 17 inch size version of this page. The OSHA 300 Log of injuries and illnesses is maintained in the home office of each Langan employee.
You Have a Right to a Safe and Healthful Workplace.

IT’S THE LAW!

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in the inspection.
- You can file a complaint with OSHA within 30 days of discrimination by your employer for making safety and health complaints or for exercising your rights under the OSH Act.
- You have the right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violation.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records or records of your exposure to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.

The Occupational Safety and Health Act of 1970 (OSHA Act), P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the OSH Act. The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9869 • Chicago (312) 353-2220 • Dallas (214) 676-4735 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 397-2578 • Philadelphia (215) 861-4960 • San Francisco (415) 975-4310 • Seattle (206) 553-5030. TTY/TDD number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA’s website at www.osha.gov. If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

1-800-321-OSHA
www.osha.gov

U.S. Department of Labor • Occupational Safety and Health Administration • OSHA 3145
Project Name: ___________________________________

**Injured or Ill Employee**

1. Name __________________________ Social Security # ________________  
   (First) (Middle) (Last)
2. Home Address _________________________________________________  
   (No. and Street) (City or Town) (State and Zip)
3. Age _______ 4. Sex: Male (    ) Female (    )
5. Occupation ________________________________________________  
   (Specific job title, not the specific activity employee was performing at  
   time of injury)
6. Department ________________________________________________  
   (Enter name of department in which injured person is employed, even  
   though they may have been temporarily working in another department at the time of injury)

**Employer**

7. Name _______________________________________________________
8. Mailing Address _____________________________________________  
   (No. and Street) (City or Town) (State and Zip)
9. Location (if different from mailing address): _______________________

**The Accident or Exposure to Occupational Illness**

10. Place of accident or exposure _____________________________  
    (No. and Street) (City or Town) (State and Zip)
11. Was place of accident or exposure on employer’s premises? ______(Yes/No)
12. What was the employee doing when injured? _______________________  
    (Be specific - was employee using tools or equipment or handling material?)
13. How did the accident occur? __________________________________  
    (Describe fully the events that resulted in the injury or  
    occupational illness. Tell what happened and how. Name objects and substances involved.  
    Give details on all factors that led to accident. Use separate sheet if needed)
14. Time of accident: ___________________
15. Date of injury or initial diagnosis of occupational illness ____________  
   (Page 2 of 2)
16. WITNESS TO ACCIDENT
   (Name)          (Affiliation)          (Phone No.)
   (Name)          (Affiliation)          (Phone No.)
   (Name)          (Affiliation)          (Phone No.)

Occupational Injury or Occupational Illness

17. Describe the injury or illness in detail; indicate part of body affected.

________________________________________________________________________

18. Name the object or substance that directly injured the employee. (For example, object that struck employee; the vapor or poison inhaled or swallowed; the chemical or radiation that irritated the skin; or in cases of strains, hernias, etc., the object the employee was lifting, pulling, etc.)

________________________________________________________________________

19. Did the accident result in employee fatality? _______ (Yes or No)
20. Number of lost workdays ____/restricted workdays ____ resulting from injury or illness?

Other

21. Did you see a physician for treatment? _______ (Yes or No) _______ (Date)
22. Name and address of physician ________________________________
   (No. and Street)          (City or Town)          (State and Zip)

23. If hospitalized, name and address of hospital ________________________________
   (No. and Street)          (City or Town)          (State and Zip)

Date of report ___________________         Prepared by ___________________________

Official position ___________________________
Project Health and Safety Plan and Work plan Acceptance Form

(For Langan employees only)

I have read and agree to abide by the contents of the Work Plan and Health and Safety Plan for the following project:

_________________________  ___________________________
(Project Title)          (Project Number)

Furthermore, I have read and am familiar with the work plan or proposal that describes the field work to be conducted and the procedures to be utilized in the conduct of this work.

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Place in project Health and Safety File as soon as possible
Date: _______
Time: _______
Leader: ______________ Location: _________________________

Work Task: __________________________________________________________________________

SAFETY TOPICS (provide some detail of discussion points)

Chemical Exposure Hazards and Control______________________________________________________________

Physical Hazards and Control________________________________________________________________________

Air Monitoring ____________________________________________________________________________________

PPE _______________________________________________ ______________________________________________

Communications __________________________________________________________________________________

Safe Work Practices _________________________________________________________________________________

Emergency Response ________________________________ _____________________________________________

Hospital/Medical Center Location ___________________________________________________________________

Phone Nos. ______________________________________________________________________________________

Other ___________________________________________________________________________________________

FOR FOLLOW-UP (issue, responsibility, due date)
_________________________________________________________________________________________________
_________________________________________________________________________________________________
_________________________________________________________________________________________________

ATTENDEES

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Briefing Conducted By: __________________________________________

Q:\Other\Health&Safety\GenericAppendixG-SafetyBriefingForm
Site-Specific Health and Safety Training
(For all Langan and subcontract employees on site)

I hereby confirm that site-specific health and safety training has been conducted by the site health and safety officer that included:

- Names of personnel responsible for site safety and health
- Safety, health, and other hazards at the site
- Proper use of personal protective equipment
- Work practices by which the employee can minimize risk from hazards
- Safe use of engineering controls and equipment on the site
- Acute effects of compounds at the site
- Decontamination procedures

For the following project:

______________________________  ________________________________
(Project Title)                  (Project Number)

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Place in project Health and Safety File as soon as possible
ATTACHMENT C
Material Safety Data Sheets
(Provided on CD)

- Acenaphthene
- Acenaphthylene
- Acetone
- Alpha-BHC
- Anthracene
- Arsenic
- Barium
- Benzene
- Benzo(a)anthracene
- Benzo(alpyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Beryllium
- Beta-BHC
- 1,3-Butadiene
- sec-Butylbenzene
- Cadmium
- Carbon Disulfide
- Chlorobenzene
- Chloroform
- Chloromethane
- Chromium III
- Chromium IV
- Chromium (total)
- Chrysene
- Copper
- Cyanide
- Cyclohexane
- DDD
- DDE
- DDT
- Delta-BHC
- Dibenz(a,h)anthracene
- Dibenzo(furan
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- Dichlorodifluoromethane
- 1,1-Dichloroethane (1,1-DCA)
- 1,1-Dichloroethylene (1,1-DCE)
- cis-1,2-Dichloroethylene (cis-1,2-DCE)
- trans-1,2-Dichloroethylene (trans-1,2-DCE)
- Dieldrin
- Ethylbenzene
- Fluoranthene
- Fluorene
- Gamma-BHC
- Heptachlor Epoxide
- n-Heptane
- Hexachlorobenzene
- 2-Hexanone
- n-Hexane
- Indeno(1,2,3-c,d)pyrene
- Isopropanol
- Iron
- Lead
- Manganese
- Magnesium
- 2-mercaptobenzothiazole
- Mercury
- Methyl Ethyl Ketone (2-Butanone)
- Methyl Isobutyl Ketone
- Methyl Tert-butyl Ether (MTBE)
- Methylene Chloride
- Naphthalene
- n-Nitrosodiphenylamine
- Nickel
- PCBs
- Phenanthrene
- Pyrene
- Tetrachloroethylene (PCE)
- Toluene
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane (1,1-TCA)
- Trichloroethylene (TCE)
- Trichlorofluoromethane
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- Vinyl Chloride
- Xylenes
- Zinc
- Unleaded Gasoline
- Diesel Fuel
- Motor Oil, 10W-40
- Isobutylene Gas in Air, 100 ppm
ATTACHMENT D

Standard Safe Work Practices

GENERAL

1. Eating, drinking, chewing tobacco, smoking and carrying matches or lighters is prohibited in a contaminated or potentially contaminated area or where the possibility for the transfer of contamination exists.

2. Upon leaving the work zone, personnel will thoroughly wash their hands and face.

3. Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling on the ground, leaning or sitting on equipment or ground. Do not place monitoring equipment on potentially contaminated surfaces (i.e., ground, etc.).

4. All field crew members should make use of their senses to alert them to potentially dangerous situations in which they should not become involved; i.e., presence of strong and irritating or nauseating odors.

5. Prevent, to the extent possible, spills. In the event that a spillage occurs, contain liquid if possible.

6. Field crew members shall be familiar with the physical characteristics of investigations, including:
   - Wind direction
   - Accessibility to associates, equipment, vehicles
   - Communication
   - Hot zone (areas of known or suspected contamination)
   - Site access
   - Nearest water sources

7. All wastes generated during activities on-site should be disposed of as directed by the project manager or his on-site representative.

8. Protective equipment as specified in the section on personnel protection will be utilized by workers during the initial site reconnaissance, and other activities.

TOOLS AND HEAVY EQUIPMENT

1. Do not, under any circumstances, enter or ride in or on any backhoe bucket, materials hoist, or any other device not specifically designed to carrying passengers.

2. Loose-fitting clothing or loose long hair is prohibited around moving machinery.

3. Ensure that heavy equipment operators and all other personnel in the work zone are using the same hand signals to communicate.

4. Drilling/excavating within 20 feet in any direction of overhead power lines is prohibited.
5. The locations of all underground utilities must be identified and marked out prior to initiating any subsurface activities.

6. Check to insure that the equipment operator has lowered all blades and buckets to the ground before shutting off the vehicle.

7. If the equipment has an emergency stop device, have the operator show all personnel its location and how to activate it.

8. Help the operator ensure adequate clearances when the equipment must negotiate in tight quarters; serve as a signalman to direct backing as necessary.

9. Ensure that all heavy equipment that is used in the Exclusion Zone is kept in that zone until the job is done, and that such equipment is completely decontaminated before moving it into the clean area of the work zone.

10. Samplers must not reach into or get near rotating equipment such as the drill rig. If personnel must work near any tools that could rotate, the equipment operator must completely shut down the rig prior to initiating such work. It may be necessary to use a remote sampling device.
JOBSITE SAFETY INSPECTION CHECKLIST

Client: _____________________________  Inspection Date: _______________________
Site: _______________________________ Inspector: _____________________________
Project Number: _____________________

Check one of the following:  A: Acceptable  NA: Not Applicable  D: Deficiency

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<th></th>
<th>A</th>
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<td>28.</td>
<td>Ladders in trench (25-foot spacing)?</td>
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<td>29.</td>
<td>Excavated material placed more than 2 feet away from excavation edge?</td>
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<td>Public protected from exposure to open excavation?</td>
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<td>31.</td>
<td>People entering the excavation regarding it as a permit-required confined space and following appropriate procedures?</td>
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<td>32.</td>
<td>Confined space entry permit is completed and posted?</td>
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<td>33.</td>
<td>All persons knowledgeable about the conditions and characteristics of the confined space?</td>
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<td>34.</td>
<td>All persons engaged in confined space operations have been trained in safe entry and rescue (non-entry)?</td>
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<td>35.</td>
<td>Full body harnesses, lifelines, and hoisting apparatus available for rescue needs?</td>
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<td>36.</td>
<td>Attendant and/or supervisor certified in basic first aid and CPR?</td>
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<td>37.</td>
<td>Confined space atmosphere checked before entry and continuously while the work is going on?</td>
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<td>38.</td>
<td>Results of confined space atmosphere testing recorded?</td>
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<td>39.</td>
<td>Evidence of coordination with off-site rescue services to perform entry rescue, if needed?</td>
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<td>40.</td>
<td>Are extension cords rated for this work being used and are they properly maintained?</td>
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<td>41.</td>
<td>Are GFCIs provided and being used?</td>
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**Unsafe acts observed?**

________________________________________________________________________________________
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**Additional remarks**

________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

**Distribution:** Project Manager (for information and follow-up) Name: ___________________________

Health & Safety Officer (for corrective action) Name: ___________________________
APPENDIX B

DECONTAMINATION PROCEDURES
LEVEL A DECONTAMINATION

Station 1: Equipment Drop
1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.

Station 2: Outer Garment, Boots, and Gloves Wash and Rinse
2. Scrub outer boots, outer gloves and fully-encapsulating suit with decon solution or detergent and water. Rinse off using copious amounts of water.

Station 3: Outer Boot and Glove Removal
3. Remove outer boots and gloves. Deposit in container with plastic liner.

Station 4: Tank Change
4. If worker leaves Exclusion Zone to change air tank, this is the last step in the decontamination procedure. Worker’s air tank is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.

Station 5: Boot, Gloves and Outer Garment Removal
5. Boots, fully-encapsulating suit, inner gloves removed and deposited in separate containers lined with plastic.

Station 6: SCBA Removal
6. SCBA backpack and facepiece is removed (avoid touching face with fingers). SCBA deposited on plastic sheets.

Station 7: Field Wash
7. Hands and face are thoroughly washed. Shower as soon as possible.

LEVEL B DECONTAMINATION

Station 1: Equipment Drop
1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.

Station 2: Outer Garment, Boots, and Gloves Wash and Rinse
2. Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent and water. Rinse off using copious amounts of water.

Station 3: Outer Boot and Glove Removal
3. Remove outer boots and gloves. Deposit in container with plastic liner.

Station 4: Tank Change
4. If worker leaves Exclusion Zone to change air tank, this is the last step in the decontamination procedure. Worker’s air tank is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.
Station 5: Boot, Gloves and Outer Garment Removal
5. Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic.

Station 6: SCBA Removal
6. SCBA backpack and facepiece is removed (avoid touching face with fingers). SCBA deposited on plastic sheets.

Station 7: Field Wash
7. Hands and face are thoroughly washed. Shower as soon as possible.

---

**LEVEL C DECONTAMINATION**

Station 1: Equipment Drop
1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.

Station 2: Outer Garment, Boots, and Gloves Wash and Rinse
2. Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent and water. Rinse off using copious amounts of water.

Station 3: Outer Boot and Glove Removal
3. Remove outer boots and gloves. Deposit in container with plastic liner.

Station 4: Canister or Mask Change
4. If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker’s canister is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.

Station 5: Boot, Gloves and Outer Garment Removal
5. Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic.

Station 6: Facepiece Removal
6. Facepiece is removed (avoid touching face with fingers). Facepiece deposited on plastic sheets.

Station 7: Field Wash
7. Hands and face are thoroughly washed. Shower as soon as possible.
### LEVEL D DECONTAMINATION

<table>
<thead>
<tr>
<th>Station 1: Equipment Drop</th>
<th>1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.</th>
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<tr>
<td>Station 2: Outer Garment, Boots, and Gloves Wash and Rinse</td>
<td>2. Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent and water. Rinse off using copious amounts of water.</td>
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<tr>
<td>Station 3: Outer Boot and Glove Removal</td>
<td>3. Remove outer boots and gloves. Deposit in container with plastic liner.</td>
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<tr>
<td>Station 4: Boot, Gloves and Outer Garment Removal</td>
<td>4. Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic.</td>
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<tr>
<td>Station 5: Field Wash</td>
<td>5. Hands and face are thoroughly washed. Shower as soon as possible.</td>
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EQUIPMENT DECONTAMINATION

GENERAL:

Equipment to be decontaminated during the project may include tools, monitoring equipment, respirators, sampling containers, laboratory equipment and drilling equipment.

All decontamination will be done by personnel in protective gear, appropriate for the level of decontamination, as determined by the site HSO. The decontamination work tasks will be split or rotated among support and work crews.

Depending on site conditions, backhoe and pumps may be decontaminated over a portable decontamination pad to contain wash water; or, wash water may be allowed to run off into a storm sewer system. Equipment needed may include a steam generator with high-pressure water, empty drums, screens, screen support structures, and shovels. Drums will be used to hold contaminated wash water pumped from the lined pit. These drums will be labeled as such.

Miscellaneous tools and equipment will be dropped into a plastic pail, tub, or other container. They will be brushed off and rinsed with a detergent solution, and finally rinsed with clean water.

MONITORING EQUIPMENT:

Monitoring equipment will be protected as much as possible from contamination by draping, masking, or otherwise covering as much of the instruments as possible with plastic without hindering the operation of the unit. The HNu or OVA meter, for example, can be placed in a clear plastic bag, which allows reading of the scale and operation of knobs. The probes can be partially wrapped keeping the sensor tip and discharge port clear.

The contaminated equipment will be taken from the drop area and the protective coverings removed and disposed in the appropriate containers. Any dirt or obvious contamination will be brushed or wiped with a disposable paper wipe.

RESPIRATORS:

Respirators will be cleaned and disinfected after every use. Taken from the drop area, the masks (with the cartridges removed and disposed of with other used disposable gear) will be immersed in a cleaning solution and scrubbed gently with a soft brush, followed by a rinse in plain warm water, and then allowed to air dry. In the morning, new cartridges will be installed. Personnel will inspect their own masks for serviceability prior to donning them. And, once the mask is on, the wearer will check the respirator for leakage using the negative and positive pressure fit check techniques.