June 1, 2016

To: Diane Carlton, NYSDEC Region 7 (1PDF)
    Holly Sammon, Onondaga County Public Library (1 bound)
    Samuel Sage, Atlantic States Legal Foundation (1 bound)
    Melissa Lewandowski, Solvay Public Library (1 bound)

Re: Letter of Transmittal - Wastebeds 1-8 Site Document Repository Addition

The below document has been approved by the New York State Department of Environmental Conservation (NYSDEC) and is enclosed for your document holdings:

- OU1 Phase 2 – 2016 Remedial Action Work Plan (RAWP), dated May 2016

Sincerely,

John P. McAuliffe, P.E.
Program Director, Syracuse

Enc.

cc: Tracy A. Smith – NYSDEC (ec)
    Chris Fitch, Communications (ec)
Health & Safety Plan
Wastebeds 1 – 8 Operable Unit 1 (OU-1)
Town of Geddes, Onondaga County, New York
Index No. R7-0849-15-02

May 2016
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1 INTRODUCTION

This Health & Safety Plan (HASP) has been developed to outline the requirements to be met by O’Brien & Gere (OBG) employees, subcontractors (if any), and visitors while performing activities outlined herein on the Wastebeds 1-8 OU-1 site during the second phase of cover placement. The HASP will be revised as required for future remedial efforts at the site, or as conditions change as discussed in Section 1.2. This HASP describes the responsibilities, training requirements, protective equipment, and safety procedures necessary to minimize the risk of injury, fires, explosion, chemical spills, and material damage incidents related to construction activities. This HASP incorporates by reference the Occupational Safety and Health Administration (OSHA) regulations contained in 29CFR1910 and 29CFR1926. Also, incorporated by reference are the EPA Standard Operating Safety Guides, Publication 9285.1-03, June 1992.

The requirements and guidelines in this HASP are based on a review of available information and data, and an evaluation of identified on-site hazards. This HASP will be reviewed with site personnel and will be available on-site. OBG employees, subcontractors, and visitors will report to the on-site OBG Site Safety & Health Coordinator (SSHC) in matters of health and safety. While the SSHC is responsible for overseeing compliance with this HASP and stopping work when necessary, the Project Field Supervisor (or equivalent) is responsible for implementation of this HASP into daily site activities. The SSHC may also serve as the Project Field Supervisor or Foreman depending on project size and work activities.

OBG employees and subcontractors (if any) must review this safety plan prior to beginning work and sign the Pre-Work Briefing / Safety Compliance form (Attachment 1).

1.1. COVERED PERSONNEL

This HASP is specifically intended for OBG employees, subcontractors, and visitors who will be conducting activities within the defined scope of work in specified areas of the site. OBG will inform site personnel of identified safety and health hazards as outlined in this HASP. OBG employees, subcontractors, and visitors are responsible for complying with government regulations, site owner policies, and this HASP as it relates to their scope of work. This HASP may be provided to interested third parties for informational purposes.

1.2. HASP REVIEW & MODIFICATION

Future actions that may be conducted at this site and unexpected conditions that may be encountered may require the modification of this HASP. The SSHC will recommend modifications to this HASP, and the OBG Corporate Safety Manager will have the responsibility of approving them. Modifications to this HASP shall be outlined on the Revision Summary page.

This HASP may be modified for new or additional scopes of work by directly revising this HASP and saving a revised copy or by developing supplemental Job Safety Analyses (JSAs) based on a template in Appendix A. JSAs may modify air sampling, personal protective equipment, and other safety precautions in this HASP as necessary to safely perform new work activities.

1.3. SITE DESCRIPTION

The Site is located on the southwestern shore of Onondaga Lake in Geddes, NY. In general, the Site consists of variable terrain with numerous topographic highs and lows that range from approximately 362.9 ft above mean sea level (MSL) at the shore of Onondaga Lake, to 430 ft above MSL, at the highest point. Transportation features bisect the Site and include Interstate 690 (I-690) (which runs between the lakeshore and State Fair Boulevard), New York State Fairgrounds parking lots, access roads for the parking lots, and foot bridges. The irregularly shaped beds extend roughly 2.1 miles along the shore, with a maximum width of 0.5 mile, and cover approximately 315 acres. The Site, in its entirety, and inclusive of the Solvay wastebeds, covers approximately
404 acres. The primary site entrance is the State Fair Orange Parking Lot Entrance. Strict traffic patterns including speed postings and traffic flow directions must be observed at all times.

1.4. SCOPE OF WORK

OBG is managing the construction of vegetated structural fill and enhanced vegetative covers to a required thickness over specified areas of the Waste Bed 1-8 work areas. This will require the regrading of a portion of the Orange Parking Lot and clearing of existing surface overgrowth. Clearing is anticipated to be performed with the use of mechanical means (Brush Hog) and some limited hand clearing. No Intrusive work is anticipated for this as the clearing will not include “grubbing” of stumps. Mechanized spreading equipment will be used to spread the both the vegetated structural fill and enhanced vegetative cover materials. In areas where the slope may limit the use of standard equipment for placement of enhanced vegetative cover material OBG plans to use a “Blower Truck” to place the material onto the slope safely. OBG’s scope of work is outlined below and includes activities:

- Mobilization/Demobilization
- Site preparation/clearing
- Site grading and storm water management
- Placement of vegetated structural fill
- Spreading enhanced vegetative cover
- Restoration

1.5. PROJECT PERSONNEL & ORGANIZATION

The following are key project personnel with respect to OBG’s scope of work.

<table>
<thead>
<tr>
<th>Project Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NYSDEC</strong></td>
</tr>
<tr>
<td>Tracy Smith</td>
</tr>
<tr>
<td><strong>HONEYWELL</strong></td>
</tr>
<tr>
<td>Steve Miller</td>
</tr>
<tr>
<td><strong>OBG</strong></td>
</tr>
<tr>
<td>Doug Crawford</td>
</tr>
<tr>
<td>Brad Kubiak</td>
</tr>
<tr>
<td>Chris Killoren</td>
</tr>
<tr>
<td>Steven Thompson</td>
</tr>
<tr>
<td>Jeffrey Parsons</td>
</tr>
</tbody>
</table>
1.6. PROJECT ORGANIZATION

The following organization chart outlines reporting and accountability relationships with respect to health and safety.
1.7. RESPONSIBILITIES

As directed in the HASP, compliance and HASP implementation will generally be addressed first by the OBG Site Safety & Health Coordinator (SSHC) with support from Project Officer. Subcontractors must identify qualified Safety Competent Persons who must be on site for field activities. All project personnel have the authority to stop work if a life-threatening condition or behavior is observed.

1.7.1. OBG Project Officers

The Project Officer is responsible for providing upper level management support for health and safety. He or she will provide sufficient authority and resources to the Construction Supervisor and SSHC to fully implement health and safety requirements as outlined in this HASP, contract documents, and regulatory requirements. The Project Officer will provide this support to the entire project while the Construction Project Officer will provide additional attention and support to site remediation activities.

1.7.2. OBG Project Coordinator

The Project Coordinator will have overall responsibility for implementing HASP requirements through the project. The Project Coordinator will be the primary liaison to and from the Client for health and safety.

1.7.3. OBG Construction Supervisor

The Construction Supervisor is qualified to serve as the OBG Site Safety & Health Coordinator (SSHC) when less than 25 tradespersons are on site and/or during a temporary absence of a full-time SSHC when more than 25 tradespersons are on site. Tradespersons do not include construction management staff, construction inspectors, quality inspectors, scientists, engineers and other professionals.

The Construction Supervisor is responsible for coordinating project requirements in the field. The Construction Supervisor oversees daily activities and is, therefore, responsible for implementing health and safety requirements on a daily basis in the field. The Construction Supervisor is also responsible for conducting daily safety inspections and coordinating timely correction of observed deficiencies with any sub-contractor. The Construction Supervisor shall be qualified to also serve as the OBG Site SSHC with respect to OBG’s scope of work.

1.7.4. OBG Project Engineer

The OBG Project Engineer is responsible to help resolve project design issues as well as provide general site information that may be requested for health and safety purposes. The Project Engineer is the main point of contact related to sampling and analytical protocol and design support during construction activities. In particular, the Project Engineer oversees and coordinates the development of the design documents including updates to design documents. The Project Engineer also reviews and comments on the site HASP.

1.7.5. OBG Site Safety & Health Coordinator (SSHC)

The SSHC advises project personnel on matters of health and safety on the site. The SSHC has the responsibility and authority to stop work if any operation threatens site workers, the public, or environment.

In general, responsibilities of the SSHC include, but are not limited to, the following:
Conducting and documenting safety inspections on a weekly basis and conducting daily safety walkthroughs

Conducting daily safety pre-work safety meetings and documenting meetings on a daily Pre-Task Planner (or equivalent)

Selection and inspection of PPE

Conducting periodic surveillance to evaluate effectiveness of the HASP

Monitoring on-site hazards and conditions and recommending modifications to the HASP when new hazards are observed

Informing the Construction Supervisor of observed safety deficiencies requiring corrective action

Having knowledge of emergency procedures, evacuation routes, and telephone numbers for emergency services

Posting directions to the hospital and telephone numbers for emergency services

Coordinating emergency medical care as necessary

Immediately notify the client representative of a safety related incident and submittal of written accident/emergency reports within 48 hours

Review JSAs for all high-risk construction activities

Reviewing and maintaining safety documentation and reports

1.7.6. **OBG Manager of Corporate Health & Safety**

The OBG Manager of Corporate Health & Safety will make safety-related recommendations regarding the work area to the SSHC and engage ongoing support from OBG Corporate Safety Department as necessary. Inspections will periodically be conducted to monitor worker health and safety and will address issues such as subcontractor pre-qualification, site safety orientation programs and documentation, implementation of permit programs (confined space, hot work, etc.) safety planning, accident investigations, meetings with client, adequacy of personal protective equipment (PPE), air monitoring needs, and general construction safety issues. The OBG Manager of Corporate Health & Safety will approve modifications to this HASP and will prepare a Monthly Safety Report.

1.7.7. **OBG Corporate Health & Safety Specialist**

The OBG Corporate Health & Safety Specialist (HSS) will assist the OBG Manager of Corporate Health & Safety in the implementation of the Corporate Health & Safety program. General support tasks related to the implementation of the OBG Corporate Health & Safety Program include safety audits, air monitoring, training, accident investigations, etc.

1.7.8. **Subcontractor Safety Competent Person**

All subcontractors under contract to OBG are covered by this HASP and will be required to designate a Safety Competent Person. The Safety Competent Person must be the Superintendent/Foreman unless the project is sufficiently large to require a full-time Safety Competent Person. A Safety Competent Person must be on site at all times when the subcontractor has employees performing work for OBG and will have the same responsibilities as the OBG SSHC within the subcontractor's scope of work. This individual must possess a sound working knowledge of pertinent OSHA regulations, this HASP, and other applicable safety requirements related to scope of work. The competent person will ensure timely correction of safety deficiencies identified by OBG. Subcontractors may request assistance from the OBG Corporate Health & Safety Department. An Alternate Safety Competent Person may also be designated as a backup.
Subcontractor must provide a full-time Safety Competent Person when 15 or more field workers are on-site. Subcontractor's Safety Competent Person must be acceptable to OBG.
2 SITE SAFETY & CONTROL PROCEDURES

This Health & Safety Plan (HASP) incorporates by reference the Occupational Safety and Health Administration (OSHA) requirements in 29 CFR Part 1910, 29 CFR Part 1926, and the OBG Corporate Health & Safety Manual (CHS Manual). A copy of the OBG CHS Manual will be maintained on site for reference. Subcontractors must review the OBG CHS Manual and/or site HASP to ensure they meet or exceed OBG corporate requirements as well as all regulations applicable to their scope of work. Key site safety procedures applicable to OBG employees and subcontractors are described in more detail in this section.

2.1. SITE SECURITY & CONTROL

The elements of site control include restricting access to the site to persons who have the proper safety training and have received a site safety orientation that reviews the information in this HASP at a minimum. OBG will oversee site security and control with specific site-entry requirements as follows:

2.1.1. Subcontractor Prequalification

Subcontractors must be prequalified annually and using the OBG Subcontractor Safety Prequalification Form (or approved alternate). Subcontractors must achieve a Pass (A, B, or C) rating or a “Conditional” rating. Subcontractors with a conditional rating must implement additional safety requirements outlined by the conditions specified by OBG Corporate Health & Safety Department and the Construction Project Officer.

2.1.2. Citizenship

All project personnel must be U.S. citizens or legally be authorized to work in the U.S. with the proper work visas.

2.1.3. Language

All project personnel must understand and speak English at a "conversational" level. Subcontractors are responsible for all costs or delays incurred if non-English speaking employees are banned from the site. OBG will make the final determination if a person is sufficiently fluent in English. Interpreters may be used if authorized by OBG. When authorized, a minimum of one interpreter will be required for every 10 non-English speaking personnel at all times while work is on site.

2.1.4. Drug & Alcohol Testing

The primary document outlining drug and alcohol testing requirements for union labor is described in Appendix C of the “Onondaga Lake and Subsites Environmental Remediation Labor Harmony Agreement,” May 2010. OBG non-union employees are specifically subject to OBG policies referenced below. Refusal to take a drug or alcohol test when directed in accordance with the LHA or OBG policies will be treated as a “positive” test and will result in immediate removal from site. All subcontractors must have submitted a signed copy of the Certificate of Compliance (RES-HS-09).

All project personnel are required to work in accordance with OBG’s policy for a Drug Free Workplace, as appropriate. Testing allowed under both policies is summarized below:
Pre-Access – Project personnel subject to the LHA must have testing performed per the LHA. Other project personnel must otherwise have pre-access testing performed within six months of site work and kept current with subsequent testing performed at least annually.

Reasonable Cause – Two supervisors must concur that the person is exhibits symptoms and behavior that “more probably than not” be the result of a controlled substance.

Post Accident – Similar to Reasonable Cause, testing may be performed following an accident if the accident may have been avoided by a “reasonably alert” action and substance abuse cannot be discounted as a contributing factor.

Random Testing – OBG may start and stop random testing at any time. Such testing will be non-discriminatory and be conducted at a rate up to 50% of employees on an annualized basis. OBG will coordinate random testing through Industrial Medical Associates (IMA) as a third party administrator.

Return to Work – This is additional “periodic” testing that is required for up to one year following return to work.

2.1.5. Safety Training & Competent Persons

Project personnel must be properly trained for the type of work being performed and consistent with OSHA Standards 29CFR1910 and 29CFR1926. Specialized training is required for (but not limited to) work with asbestos, lead, hazardous waste, confined space entry, fire prevention and control, lockout / tagout, hazard communication, fall protection, NFPA 70E (energized electrical), etc.

All project personnel will be trained per the OSHA Hazwoper Standard 29CFR1926.65 and 1910.120 as outlined below:

Visitors– No OSHA 24/40 Hour for Visitors, including delivery personnel, utility workers, vendor reps, inspectors, surveyors, site preparation personnel and others who will not enter exclusion or contamination reduction zones.

Workers/ Foremen/Superintendents – OSHA 8-hour Supervisor Project safety requires that only qualified persons operate heavy equipment including (but not limited to) the following:

» Forklift License – Required for operation of forklifts and lulls but NOT required for front loaders equipped with forks

» Crane Operation – Crane operator license (state-issued) or Certified Crane Operator (CCO) designation

» General Heavy Equipment – Subcontractors will designate in writing to OBG their employees who are trained and authorized to operate heavy equipment including manlifts, excavators, front loader, dozers, demolition hammers, shears, grapples, dump trucks, pulverizers, skid steer, and drill rigs

Although OBG and subcontractors must designate a general Safety Competent Person, other competent persons must also be designated in subcontractor safety plans or JSAs for the following activities and be on site as necessary to support activities performed under their oversight. In addition to written designation, the subcontractor must submit evidence of competency when requested by OBG. The general Safety Competent Person may also assume responsibility for other competent person roles if qualified and authorized.
2.1.6. **Client-Required Site Orientation**

The client’s safety requirements will be reviewed by OBG, which will include client site requirements as part of the Project Safety Orientation.

2.1.7. **Project Safety Orientation**

All project personnel must complete a Project Safety Orientation to ensure understanding of OBG and client safety requirements. Upon completing a Project Safety Orientation, project personnel will sign a Pre-Work Briefing form (Attachment 1 or equivalent). The Project Safety Orientation will focus on hazards and the required hazard controls as outlined in the HASP and/or Pre-Work JSA and will at a minimum include:

- Applicable Sections of the Project Safety Plan (HASP)
- Pre-Work JSAs (if any)
- Associated Exhibits, Permits, and Attachments identified on (and attached to) the Pre-Work JSA

2.1.8. **Entry/Exit Log**

The SSHC shall require that all employees, subcontractors, and visitors to sign in and out on an Entry/Exit Log (Attachment 2 or equivalent).

2.1.9. **Authorized Project Personnel**

At a minimum, authorized personnel who will be granted unescorted access to the project include employees from OBG and appropriately prequalified subcontractors that have successfully completed the following:

- **Excavation Competent Persons** – When excavations are being performed
- **Demolition Competent Persons** – Perform pre-demolition “engineering survey” in support of a demolition plan. During demolition, the competent person must perform regular inspections to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material
- **Scaffolding Competent Persons** – Supervise the erection and dismantling of scaffolds and perform daily inspections while scaffolds are in use
- **Fall Protection Competent Persons** – Oversee implementation of fall protection systems including anchoring personal arrest equipment
- **Welding & Cutting Competent Persons** – Must determine if coated surfaces are flammable. For this project, they must also assess combustibility of underlying surfaces and residual dust (especially grain or similar organic dusts)
- **Crane & Hoist Competent Persons** – Must inspect cranes and hoists prior to use
- **Rigging Equipment Competent Persons** – Inspect rigging equipment prior to use
- **Ladder Competent Persons** – Periodically inspect ladders
- **Powder Actuated Tools** – Training certification to safely use Hilti Guns, Ramset Guns, and similar powder actuated tools
Submitted Safety Training and Competent Person documentation to the OBG SSHC
- Negative 10-panel drug test
- Negative alcohol test
- Submitted medical surveillance documentation (for persons entering Exclusion and Decontamination Areas)
- Submitted respirator medical clearance (for persons who may use respirators)
- Attend an OBG Project Safety Orientation (applicable sections of this HASP)

2.1.10. Visitors
Visitors must be escorted by an Authorized Project Person

2.1.11. Pre-Work Safety Planning

Subcontractors may develop an alternate safety planning document in lieu of using the Pre-Work JSA Template (APPENDIX A) if approved in advance by the OBG SSHC. Submittal of general safety policies and procedures will not (by themselves) be acceptable.

Subcontractors are required to complete the OBG Pre-Work JSA Template (Appendix A) prior to mobilization and may complete additional Pre-Work JSAs as required for high-hazard tasks. The Pre-Work JSA should be completed in a collaborative effort between OBG and subcontractors and will help identify appropriate permits and notifications based on the specific means, methods, tools, and equipment used by subcontractors.

OBG may also use the Pre-Work JSA Template to identify hazards and controls associated with changes to OBG’s scope of work. JSAs will supplement information in this HASP.

2.1.12. Site Layout & Work Zones

The visible delineation of the Construction Area is required to prevent unauthorized persons from entering. Physical markings of the perimeter of the Construction Areas can be accomplished through the use of fencing, wood barricades, rope, barricade tape, etc. Existing structures or land features may also be utilized where appropriate.

The use of barricade tape for outdoor exclusion zones or work zones that will be setup for greater than 24 hours is not permitted.

Warning signs will be posted on at the perimeter of site to alert site personnel and the public. Signs shall be approximately 10 inches by 14 inches in size and of aluminum or steel construction for outdoor use. The site perimeter must be posted but with a sign that states “DANGER – CONSTRUCTION AREA – UNAUTHORIZED PERSONNEL KEEP OUT” (Emedco # 42525) or acceptable alternate.

2.1.13. Vapor & Odor Control

Vapors released during site activities represent a potential health hazard and odor problem. The following controls will be implemented to mitigate these issues:
- Controlling the amount of amended soils disturbed or placed concurrently.
- Air monitoring will be conducted per the Community Air Monitoring Program (CAMP)

2.1.14. Dust Control

Dust released during placement activities represents a nuisance and a potential health hazard.

The following controls will be implemented to mitigate dust issues:

- Water will be used to suppress dust during any activities which disturb existing soils as required by dust monitoring and visual observations
- A water truck will be on site to support dust control activities if dry, dusty conditions are encountered
- The site speed limit of 10 mph (or as otherwise posted) will be enforced. Slower vehicle speeds reduce road dust and minimize the potential for accidents and spills. Dust monitoring will be conducted per the Community Air Monitoring Program (CAMP).

2.2. DAILY SAFETY MEETINGS

Safety meetings must be held daily and documented using a Daily Pre-Task Planner (Attachment 3) or equivalent document approved by the OBG SSHC.

The intent of daily safety meetings is to encourage daily safety planning (top portion of the Daily Pre-Task Planner) by Supervisors and support communication between Supervisors and their respective field crews (bottom portion of the Daily Pre-Task Planner).

The use of Pre-Task Planners during daily safety meetings provides documentation about what “safety messages” site personnel are receiving on a daily basis. Pre-Task Planners also provide a checklist to monitor changes to site personnel, equipment, work methods, or conditions that may affect hazards and require different safety precautions. Pre-Tasks Planners are intended to supplement, but not replace, Pre-Work JSAs and safety plans. Pre-Task Planners will be retained on site for inspection during periodic safety audits.

The form will be completed as follows:

- Subcontractor Crew Foremen will prepare a Daily Pre-Task Planner for that day's activities or the next day's activities if the Daily Pre-Task Planner is prepared the prior afternoon
- The Supervisor/Superintendent/or Foreman will review the Pre-Task Planner with his respective crew
- Each site worker will then sign the Pre-Task Planner
- All Pre-Task Planners will be returned to OBG after the day's activities are complete
- Any significant changes to the scope of work or work methods during the work shift will require revising the Pre-Task Planner. Recognition of previously unidentified hazards will also require revising their safety plan or Pre-Work JSAs.

2.3. WEEKLY TOOLBOX SAFETY MEETINGS

A separate Weekly Toolbox Safety meeting (or “All-Hands” Safety meeting) is required on projects where separate Daily Safety meetings are held for different work crews. When all site personnel attend the same Daily Safety meeting, a separate Weekly Toolbox Safety meeting is
 Toolbox Safety meetings are held at a minimum of once per week. The SSHC on smaller projects with fewer site personnel may choose to assemble all site personnel during Daily Safety meetings and in so doing, may not hold separate Weekly Toolbox Safety Meeting. On projects where separate Daily Safety meetings are held for different field crews, the SSHC will assemble all site personnel at a Weekly Toolbox Safety meeting (“All-Hands” Safety meeting). The intent of the weekly toolbox meeting is to provide additional field safety training and review relevant safety topics for approximately 15 minutes, and ensure that a consistent safety message is delivered to all site personnel on larger projects. Attendance will be documented on the Safety Toolbox Meeting Forms (Attachment 4 or equivalent).

2.4. SAFETY AUDITS & INSPECTIONS

Although the OBG representatives and subcontractor Foremen/Superintendents must review work areas and work practices on a daily basis, OBG will conduct formal weekly safety audits that are documented using a safety audit checklist. Subcontractors may also participate in safety audits. A variety of checklists are available with one being the Safety Audit Checklist (Attachment 5).

2.5. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Specific PPE requirements are outlined below but a general dress code for any work areas includes long pants that must cover top of ANSI-approved protective toe leather work shoe, hard hat, and safety glasses with rigid side shields. Shirts must have at least 4 inches of sleeve. Long-sleeve shirts may be required at specific locations or for certain tasks. Gloves are required for all tasks unless glove use is exempted on an approved OBG Job Safety Analysis (JSA) or Daily Pre-Task Planner. Subcontractors must specify additional PPE as appropriate for specific work methods, tools, and equipment covered by their safety plans. Additional PPE that may be necessary is summarized in the following paragraphs.

2.5.1. High Visibility Clothing

All project personnel are required to wear high visibility clothing including a vest, shirt, or jacket. High visibility clothing must be predominantly safety yellow in color.

2.5.2. Head Protection

All project personnel are required to wear approved hard hats that meet ANSI Z89.1-2003. Hard hats must be in good condition and be worn with brim to the front unless the manufacturer certifies the hard hat to be worn reverse when the harness is oriented properly. Subcontractors will be required to submit manufacturer’s certification upon request from OBG.

2.5.3. Eye & Face Protection

Project personnel are required to wear approved ANSI Z87.1-2003 safety glasses with rigid side shields. Chemical goggles are required during equipment decontamination work or other activities with a potential for chemical splashes to the face. Face shields will be required when performing certain tasks (e.g. chipping, sawing, and handling chemicals or corrosive liquids) Face shield must be worn over safety glasses or chemical goggles.

2.5.4. Hearing Protection

Approved hearing protection must be worn as specified in all posted areas and while working with or around high noise level producing tools, machines or equipment.
2.5.5. **Fingers, Hand & Wrist**

Gloves suitable for the job being performed shall be worn unless the job cannot be done with gloves or wearing gloves increases the hazard. **Exceptions to mandatory glove use must be identified in approved safety plans or JSAs.** Tool holders should be used when driving stakes and wedges or when holding star drills, bull pins or similar tools. **Fixed blade knives (pocket knives, razor knives, and box cutters) are prohibited and safety knives or scissors must be substituted in their place.** Exceptions must be approved by OBG.

2.5.6. **Foot Protection**

All project personnel are required to wear safety footwear that is in accordance with ANSI Z41-1991. Rubber boots with safety toe protection are required on jobs subject to chemically hazardous conditions. Metatarsal protection should be worn when using jack hammers, tamps and similar equipment which has the potential for foot injury above the toes.

2.5.7. **Respiratory Protection**

Respirators (including SCBAs and airlines) used by project personnel must meet NIOSH/MSHA standards. Respirators must be inspected regularly and stored in a dust-free container. Employees required to wear a respirator must have a physician's approval and be fit tested within the last year. Employees must be clean shaven in the facial area to obtain an acceptable seal. Subcontractors must keep respirator training, fit testing, and medical clearance documentation on site for the duration of the project and available for OBG inspection. **The following table summarizes common respiratory hazards that may be encountered during remediation and demolition activities. Those that are present or are potentially present are marked (√). Additional (usually less common) respiratory hazards that may be present will be added to the table and also marked (√).**

<table>
<thead>
<tr>
<th>Respiratory Protection by Contaminant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Present (√)</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>PCBs</td>
</tr>
<tr>
<td>Silica</td>
</tr>
<tr>
<td>Lead dust or fume</td>
</tr>
<tr>
<td>Asbestos</td>
</tr>
<tr>
<td>Carbon monoxide</td>
</tr>
</tbody>
</table>
Respiratory Protection by Contaminant

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Respirator Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volatile Organic Compounds (VOCs)</td>
<td>Respirator with activated carbon</td>
<td>Vapors from subsurface soil or groundwater contamination or spilled fuel</td>
</tr>
<tr>
<td></td>
<td>cartridges</td>
<td></td>
</tr>
<tr>
<td>Metal dust</td>
<td>Respirator with N95 or P95 filters</td>
<td>Settled dusts getting airborne, grinding metals or painted surfaces, Welding, or torch cutting</td>
</tr>
<tr>
<td>Metal fumes</td>
<td>Respirator with N100 or P100 filters</td>
<td>Welding or torch cutting</td>
</tr>
</tbody>
</table>

*Respirator types have Assigned Protection Factors (APFs) that limit the maximum airborne concentration in which they may be used. Also, the APF for a full-face air purifying respirator is limited to 10x the exposure limit when qualitative (smoke) fit testing is used. Subcontractors must select respiratory protection requirements in accordance APFs and fit testing methods.*

2.5.8. Skin

If the possibility of skin contact with chemicals, lead, asbestos or other hazardous material exists, then protective clothing will be worn.

- **Tyvek®** (or equivalent) – asbestos, lead, or other dust exposures
- **Tychem QC®** (poly-coated Tyvek®) or **Tychem SL®** (Saranex®) or equivalent – for liquid chemical exposures including liquids contaminated with PCBs
- **Tychem SL®** (Saranex®) **with hood and boots** (or equivalent) – for use with SCBAs during emergency response involving chemical releases

2.5.9. PPE Summary

In general, PPE is divided into four broad categories as outlined below.

- **Level D PPE** – Minimum PPE for Level D includes hard Hat, safety glasses with side shield, safety shoes/boots, cut-resistant gloves, and high visibility vest. Additional PPE that may be required includes hearing protection, face shield, fall protection harness and lanyard, and Kevlar Chaps and Jacket (if using a chainsaw).
- **Modified Level D PPE** – Level D PPE plus protective clothing to prevent skin contact or contamination of support zone areas. Additional information on chemical protective clothing, chemical resistant gloves, and face shields is described in previous paragraphs of the PPE section of this HASP.
  - **Full Modified Level D PPE** consists of Level D PPE plus coveralls, nitrile gloves (or equivalent), and boots or shoe covers. Full Modified Level D PPE is necessary when extensive contact with contaminated materials is anticipated, such as the manual-excavation of contaminated soils. Full Modified Level D PPE is also required when handling corrosive chemicals.
  - **Lightweight Modified Level D PPE** consists of nitrile gloves (or equivalent) and boots or boot covers. Lightweight Modified level D is necessary when minimal contact with contaminated materials in anticipated and contamination control must be maintained. Appropriate tasks for Lightweight Modified
Level D PPE include equipment operators with minimal direct contact, surveyors, sampling technicians, inspectors, etc. The SSHC shall determine which is appropriate based on site conditions.

- **Level C PPE** – Modified Level D PPE plus air purifying respiratory protection. Additional information on respiratory protection is described in previous paragraphs of the PPE section of this HASP.

- **Level B PPE** – Modified Level D PPE plus supplied air respiratory protection. Level B PPE is not anticipated for this project.

The following table provides more specific initial PPE requirements for different tasks anticipated on this project based on HASP requirements. When work assignments involved mixed tasks, choose the most conservative PPE or change PPE as required between different tasks.

<table>
<thead>
<tr>
<th>PPE by Task</th>
<th>PPE level</th>
<th>— Level D —</th>
<th>Mod Level D</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>TASK</td>
<td>High Vis¹</td>
<td>Head</td>
<td>Eye an Face</td>
<td>Foot</td>
</tr>
<tr>
<td>All Site Prep Work</td>
<td>X</td>
<td>X</td>
<td>Glasses</td>
<td>X</td>
</tr>
<tr>
<td>Clearing with “Brushhog”</td>
<td>X</td>
<td>X</td>
<td>Glasses</td>
<td>X</td>
</tr>
<tr>
<td>Clearing by hand</td>
<td>X</td>
<td>X</td>
<td>Glasses</td>
<td>X</td>
</tr>
<tr>
<td>Chainsaw Use</td>
<td>X</td>
<td>X</td>
<td>Glasses and Face Shield</td>
<td>X</td>
</tr>
<tr>
<td>Haul Truck Drivers (when outside vehicle)</td>
<td>X</td>
<td>X</td>
<td>Glasses</td>
<td>X</td>
</tr>
<tr>
<td>Haul Truck Drivers (when inside vehicle)</td>
<td></td>
<td>X</td>
<td>Glasses</td>
<td>X</td>
</tr>
<tr>
<td>Heavy Equipment Operation (with Closed Cab)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy Equipment Operation (with Open Cab)</td>
<td>X</td>
<td>X</td>
<td>Glasses</td>
<td>X</td>
</tr>
<tr>
<td>Enhanced Vegetative Cover Placement</td>
<td>X</td>
<td>X</td>
<td>Glasses</td>
<td>X</td>
</tr>
</tbody>
</table>

**NOTES**

1. High visibility vests will not be required where persons are wearing Tyvek or Poly-Coated Tyvek
2. CR = cut resistant gloves, HR = heat resistant, nitrile = 3-5 mil nitrile gloves, nDex® = surgical nitrile
3. Tyvek and Poly Coat Tyvek include the use of boot covers or a boot wash to prevent the spread of contaminated materials to support zone areas and includes the use of nitrile surgical gloves (usually underneath cut-resistant gloves)
4. Energized electrical work required all PPE as required by NFPA 70E
2.6. TEMPORARY CORDS & HOSES

Proper management of temporary cords and hoses is required to minimize the potential for slips and trips. The following guidelines should be implemented to the extent feasible:

- Cords and hoses must be run out of aisles and sidewalks (e.g., within six inches of a wall or toe board).
- Cords and hoses must be buried or run overhead (7.5 feet) when crossing aisles or sidewalks whenever feasible unless doing so creates a potentially greater hazard.
- Cords and small diameter hoses that cannot be run overhead or buried must be marked with cones, protected by hose ramps, or equivalent whenever the cross aisles or sidewalks.
- Cords and hoses that cross roads must be protected from damage.
- All temporary cords and hoses must be removed to equipment laydown areas when not in use.

Cords also pose an electrical hazard if they are not protected from damage and inspected before each use. Cords may not be run through doors or windows without being protected. Cords must not be run across walkways and stairs. Cords may not be run through standing water. Ground Fault Circuit Interrupters (GFCIs) are required on all extension cords and 120v hand tools and equipment.

2.7. EXCAVATIONS

All excavations greater than five feet deep require sloping or shoring whenever persons enter excavations or adjacent structures may be affected by a cave-in. Subcontractors will identify in safety plans or JSAs specific shoring systems or sloping/benching that will be used in specific areas. Excavations greater than four feet in depth are classified as a non-permit confined space unless contamination is encountered. Refer to the “Confined Space” section of this HASP for more guidance on how excavations will be handled with respect to confined space entry requirements.

- Assume soil is Type C unless soil testing indicates otherwise and such testing is documented on an OBG Soil Analysis Checklist (Attachment 6) or approved alternate. Standard sloping and benching (per OSHA) will follow a 1:1.5 (V:H) cut-back associated with Type C soil.
- Shore excavations greater than five feet depth where personnel must enter and sloping is not feasible. Equipment used to shore excavations MUST follow OSHA shoring tables, or the subcontractor must have tabulated data from the manufacturer on site.
- If sections of trench are less than five feet and no cave-in hazard exists, then shoring is not required.
- No workers may enter excavations until the designated Excavation Competent Person has inspected the excavations using the Daily Excavation Checklist (Attachment 7). Excavation inspections must be documented with documentation remaining on site for the full project duration and made available for OBG review.
- Qualified engineers will evaluate excavations that could affect the stability of adjacent structures.
- A ladder or egress ramp will be provided within 25 feet of workers who must enter excavations.
- Water will not be allowed to accumulate in trenches in a manner that will affect the integrity of excavation walls and shoring systems.
- All spoils will be kept a minimum of two feet from the edge of the excavation.
- Fall Protection will be provided around excavations left open during off-hours. Fall protection will consist of solid barricades (saw horses or portable chain link) or soft barricades (safety fence) off-set 6’ from the edge.
### Pedestrian Barricades

- Portable chain link fence (48 inches) or equivalent will be used to protect pedestrians. If pedestrian traffic is re-routed to avoid excavations, pedestrian detours must be accessible to bicyclists, handicapped persons, and other pedestrian in the area who may have special needs.

### Traffic Barricades

- Any excavation activities that affect public or plant roads must be equipped with traffic safety devices as required by the Manual on Uniform Traffic Control Devices. If flaggers are used on public roads, they must receive DOT Flagger Training.

## 2.8. HOT WORK

*Hot work is not anticipated within this scope of work.*

Hot work includes any activities that generate an open flame, arc, or sparks and includes the use of temporary heaters (salamanders). Hot work is anticipated and will typically include welding, cutting, soldering, and grinding.

Specific hot work requirements will be identified on the Hot Work Permit (*Attachment 9*) but will generally include the following:

- Print the names of all persons performing hot work on the permit. Only persons listed may perform hot work as authorized by the permit.
- Print the name of the fire watch on the permit. Changes in fire watch persons must immediately be noted on the permit if authorized by OBG. Fire watches are responsible for inspecting the site for evidence of fire or fire hazards associated with hot work activities.
- Continue fire watch activities for 30 minutes after hot work activities have stopped if required on the OBG Hot Work Permit
- All combustible material must be removed from the hot work area when possible or protected from sparks and slag when located within 35 feet of hot work
- At least one 20lb Type ABC fire extinguisher must be in possession of each individual identified as a fire watch
- All heavy equipment must be equipped with at least a 5 lb fire extinguisher that is secured to prevent movement while equipment is in operation
- All hot work areas shall be specified on the Hot Work Permit. Hot work shall NOT be conducted in additional areas without first notifying OBG and the Hot Work Permit is modified or a new permit is issued
- Additional fire safety precautions may be specified on the permit and must also be implemented by site personnel

## 2.9. FIRE PROTECTION & PREVENTION

Hot Work Permits, subcontractor safety plans, and JSAs may supplement basic fire safety requirements outlined below by establishing specific requirements throughout the course of the project as needed to ensure that personnel and property are adequately protected from potential fires. Emergency response associated with fires is covered in the Emergency Response section of this HASP.

Basic fire protection requirements include:
Construction heaters or other forms of heat generating equipment may only be used by subcontractors with prior approval from OBG and a Hot Work Permit is obtained.

Fire protection water, pull stations, alarms, and strobes should be the last utilities and services to be shut down when complete isolation from utilities is necessary to support demolition, construction, or remediation activities.

Where applicable, fire protection systems must not be obstructed, shut-off nor left inactive at the end of a working day or shift without notification of and authorization from OBG or the site owner.

Where applicable, sprinkler systems must be kept at 41°F or higher.

Fire hydrants and standpipes may only be used for firefighting purposes unless other use is authorized by OBG or the site owner.

Fire hydrants and valves must not be obstructed or blocked. At least a 6-foot clearance must be maintained on all sides for emergency access.

Subcontractors must inspect extinguishers monthly in addition to annual service provided by an extinguisher service company. Inspections and testing must be documented on weather-resistant tags or labels attached to each fire extinguisher.

2.10. LOCK OUT/TAG OUT

Lockout/Tagout is not anticipated as a major part of this scope of work. However, all construction equipment for which service is required is expected to be placed in a safe condition as required by the manufacturer which may require lockout/tagout procedures as outlined herein.

All persons exposed to potential injury from the unexpected energization of system components must perform work under a lockout/tagout (LOTO) program with his or her own lock(s) in place. No individuals may work under another individual’s lock. Lockout/Tagout must be conducted in accordance with the OBG LOTO Procedure in the Corporate Health & Safety Manual. When required, OBG will follow the site owner’s LOTO program for equipment and systems under the site owner’s control.

General LOTO requirements include the following:

- OBG SSHC (with support from site owner if necessary) will identify lockout boundaries and operate necessary valves, breakers, etc. necessary to install injection tubing
- Ensure pumps, fans, and other equipment are in a safe condition and piping is purged and blanked when necessary
- OBG (or designated subcontractor) shall keep a list of locks and tags placed on each equipment or system that is locked out. An Equipment-Specific LOTO Form (Attachment 10) or equivalent
- OBG LOTO tags must show diagonal red and white stripes unless the site owner requires a different tag
- Keys to all locks will be placed in a lock box
- Each person working on a system or equipment that is locked out must place his or her lock and tag on the lock box
- Locks and tags must be removed from lock boxes at the end of each shift
2.11. OVERHEAD POWER LINES

All overhead power lines must be assumed energized. OBG has a 20-foot clearance policy to overhead power lines whenever feasible. If work must be conducted at less than 20 feet but NOT less than the OSHA minimum clearance of 10 feet, then additional safety requirements apply and will be identified in the Pre-Work JSA or BMS Safe Work Permit for that work. Additional precautions may include one or more of the following:

- Call the local utility to get the voltage and ask if lines can be de-energized or insulated/sleeved
- Dedicated spotter
- Non-conductive distance markers or devices to delineate the necessary clearances

2.12. HEAVY EQUIPMENT & TEMPORARY FUEL AREAS

Site Personnel working near heavy equipment will be exposed to “struck-by” injuries and “crush” injuries if caught between heavy equipment (or counterweights) and a fixed object.

All equipment must be secured after hours. Keys must be removed from equipment and secured away from the equipment. Mobile equipment that does not require an ignition key shall be disabled. All vehicles and heavy equipment must be turned off when left unattended.

Subcontractors shall submit a letter on company letterhead that designates which of their employees is competent and authorized to operate each type of equipment present on this project. Forklift and lull operators must have a license or certificate that indicates they have passed a written test and "road" test for the type of forklift they will be operating.

Operators will use seatbelts if so equipped. Heavy equipment will be equipped with overhead and rollover protection whenever feasible. Operators will inspect equipment daily for leaks, damage, and other necessary repairs.

Heavy equipment must be equipped with backup alarms, horns, and other safety devices installed by the manufacturer. Vehicles operated at night must have headlights, tail lamps, and reflectors. Safety devices must not be disabled.

Temporary fuel storage tanks will be labeled as to their content and be protected from collision by site vehicles using solid barricades including balusters, chain link fence, or equivalent. Spill kit (55 gallon sorbent capacity contained in an overpack) and one 20lb Type ABC fire extinguisher will be located within 45 feet of fueling areas. Tanks will be rated for above ground use and provided with secondary containment. Tanks and dispensing hose will be bonded and grounded. Temporary secondary containment must be provided in the refueling area that includes the storage tank and dispensing hoses.

2.13. LIFTING & RIGGING

Crane use is not anticipated.

The following equipment is covered by requirements in this section of the HASP and OBG’s Cranes and Rigging Safety Procedure in the Corporate Health & Safety Manual: cranes, hoists, lulls, and forklifts. Lulls and forklifts are only covered when they are used to lift materials using rigging equipment (chains, slings, wire rope, etc.) as opposed to lifting materials that are properly placed on the forks.
2.13.1. Critical Lifts

All critical lifts require a **Lifting & Rigging Plan** *(Appendix B)*.

Critical lifts include the following:

- Any lift that exceeds (or potentially exceed) 80% of the rated capacity of the equipment
- Any lifts near overhead power lines
- Any lifts over production/process equipment that could result in chemical spills, product contamination, or other major loss
- Any lifts over buildings that will be occupied or partially occupied
- Any lifts of custom or long-lead time equipment

OOG may request a Lifting & Rigging Plan for any lift when deemed necessary by the Construction Supervisor.

2.13.2. Rigging Safety

All rigging must meet the following requirements:

- Be inspected prior to each use by a competent, qualified, and designated employee.
- All rigging must have tags that are legible with the allowable load ratings listed.
- Rigging must be of the proper type and size for the load being moved.
- Straps etc. may not be attached directly to forks of a loader/forklift/ or Lull.

2.14. HAZARD COMMUNICATION & MSDS

**NOTE** – OBG does not anticipate mobilization of chemicals to the site beyond typical office and cleaning supplies in small, consumer-type containers. Subcontractors may mobilize limited quantities of “Bulk” chemicals that will primarily include oil, hydraulic fluid, lubricants and similar products necessary to maintain equipment. Bulk chemicals also include fuels stored within heavy equipment and (potentially) within a temporary fuel tank. MSDS will be retained in OBG’s field office.

Each subcontractor is responsible for having and administering a Hazard Communication Program that requires all employees to be informed about the hazards associated with chemicals used on the job and the location of the material safety data sheets (MSDSs) for all materials brought on site.

MSDSs shall be obtained from all suppliers of paints, coatings, adhesives, grout, caulk, lubricants, welding products, solvents, insulation, and similar products prior to being brought on-site. Subcontractors will submit MSDSs to OBG for review and upon request. OBG will provide the site owner with MSDSs for each chemical and (if required) sign an approval form prior to any chemicals being brought on site.

2.15. GENERAL WORKER SAFETY RULES

Workers follow the established safety practices for their respective tasks. The need to exercise caution in the performance of work is made more acute due to weather conditions and restrictions in mobility, peripheral vision, and communication caused by the personal protective equipment.

To enhance site safety, the following General Worker Safety procedures have been established:
Smoking is not permitted in work areas, or office trailers. Smoking is allowed in designated outdoor areas only.

No firearms may be brought on site

Employ the buddy system when appropriate. Be alert.

Hands must be washed before eating or drinking and after using toilets

Consumption of alcohol or intoxication (under the influence or impaired) during work hours or while on site is prohibited

Working when your health is compromised in such a way that it impairs your ability to perform your duties safely or may compromise your health or the health of others at the site (ie. Contagious) is prohibited.
3 CHEMICAL PARAMETERS OF CONCERN

The OSHA HAZWOPER standards (29CFR1910.120 and 1926.65) and OSHA Hazard Communication Standard require that site personnel, subcontractors, and visitors must be informed of chemical hazards associated with their work area. Health hazard information for site chemical hazards is summarized below and in Table 3.1 of this HASP. Health and safety information in this HASP is intended to supplement Hazard Com training previously provided to site workers by his or her employers.

3.1. EXPOSURE PATHWAYS

Possible exposure pathways are:
- Inhalation of vapors released from drums
- Contaminated soil and/or water
- Inhalation of contaminated dusts
- Accidental ingestion of contaminants
- Skin contact/absorption with contaminated soils and/or water
- Injection through punctures and lacerations

Based upon anticipated site activities and prudent safety and hygiene practices during site work, ingestion of site contaminants is unlikely. Hazardous skin contact or absorption by the various contaminants is also unlikely because of the low concentrations that are anticipated and/or the use of personal protective equipment (PPE). The primary route of exposure is inhalation of airborne contaminants and contaminated dusts. However, inhalation of airborne contaminants approaching the OSHA PELs is unlikely because of natural ventilation of the work area, safe work practices, PPE, and/or air monitoring.

3.2. CHEMICAL HAZARDS SUMMARY

Although previous site investigations indicate that soil and groundwater may contain solvents and oils which could contribute to airborne Volatile Organic Compounds (VOCs), the current scope of work does not include excavation into existing soils, but rather placement of amended soil cover over the existing potentially contaminated soils.

The following paragraphs summarize the health effects of site contaminants that are frequently of concern and other site chemicals (if any). Site chemicals are usually those chemicals used during water or wastewater treatment, petroleum products (fuel), and potentially lubricants such as hydraulic fluids. This HASP focuses on those which are believed to have the potential to pose a significant health hazard to site personnel based on their potential to become airborne, concentrations in soil and groundwater, and their toxicity and other hazardous characteristics. Table 3.1 – “Summary of Potential Health Effects” also includes information on exposure limits and key physical characteristics such as flammability. Chemical Constituents of Concern (COCs) are identified below as being applicable (APP). Chemicals hazards that are not present or do not otherwise represent a serious health risk based on historical site data are identified as not applicable (NOT APP).

- **Polychlorinated Biphenyls (PCBs)** – PCBs are considered a potential human carcinogen, especially with respect to the liver. PCBs can be inhaled or absorbed through the skin. Skin effects include lesions, rashes, and severe acne-like conditions for those who may be especially sensitive to contact with PCBs. PCBs are not volatile and potential exposure will consist of contaminated dust and contact with contaminated soil and groundwater.
Lead – Lead is a hazardous metal that was once common in paint, gasoline, and a variety of other uses. Lead is a solid material and may be inhaled as airborne dust or ingested if personal hygiene is poor. Lead can gradually accumulate in the body with frequent small exposures adding to a growing body burden. Lead is especially hazardous to young children and infants and every effort must be made to prevent site personnel from carrying lead home on contaminated clothing, tools, and equipment.

Asbestos – Asbestos is a material often used in insulation, transite panels, and roofing materials and the potential exists to encounter this material in buildings on the site. Asbestos is a naturally occurring mineral and is considered a potential occupational carcinogen by OSHA. Asbestos-related diseases such as lung cancer, mesothelioma and digestive system cancer may occur if over exposed to asbestos fibers. Asbestos and cigarette smoking interact with each other and will have an effect much greater than either one individually.

Silica – Crystalline silica has been classified as a human lung carcinogen. Additionally, breathing crystalline silica dust can cause silicosis, which in severe cases can be disabling, or even fatal. The respirable silica dust enters the lungs and causes the formation of scar tissue, thus reducing the lungs’ ability to take in oxygen. There is no cure for silicosis. Since silicosis affects lung function, it makes one more susceptible to lung infections like tuberculosis. In addition, smoking causes lung damage and adds to the damage caused by breathing silica dust. Exposure occurs during many different construction activities. The most severe exposures generally occur during abrasive blasting with sand to remove paint and rust from bridges, tanks, concrete structures, and other surfaces. Other construction activities that may result in severe exposure include: jack hammering, rock/well drilling, concrete mixing, concrete drilling, brick and concrete block cutting and sawing, tuck pointing, and tunneling operations.

Chromium & Hexavalent Chromium – Chromium metal and chromium salts (Cr II/III) are naturally occurring and generally less hazardous than hexavalent chromium (Cr VI). The risk is further reduced with exposure to chromium dust as opposed to chromium fume. All chromium can affect the liver, kidneys, respiratory system and many forms can cause skin sensitization. CrVI is clearly the more hazardous form of chromium. Workplace exposure to Chromium (Cr(VI)) may cause the following health effects: lung cancer in workers who breathe airborne Cr(VI); irritation or damage to the nose, throat and lungs (respiratory tract) if Cr(VI) is inhaled; and irritation or damage to the eyes and skin if Cr(VI) contacts these organs. Workers can inhale airborne Cr(VI) as a dust, fume or mist while, among other things, producing chromate pigments, dyes and powders (such as chromic acid and chromium catalysts); working near chrome electroplating; performing hot work and welding on stainless steel, high chrome alloys and chrome-coated metal; and applying and removing chromate-containing paints and other surface coatings. Skin exposure can occur while handling solutions, coatings and cements containing Cr(VI).

Mercury – The nervous system is very sensitive to all forms of mercury. Methyl mercury and metallic mercury vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems. Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation. Mercury is a naturally occurring metal which has several forms. Metallic mercury is a
shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas and small amounts (several milligrams) may be contained in fluorescent bulbs. Mercury may also be in switches and thermostats.

- **APP | NOT APP**

  - **Volatile Organic Compounds (VOCs)** – Several organic solvents may be encountered and are collectively referred to as VOCs. Residual quantities may be present in process piping and subsurface soils and groundwater and could be encountered during excavation work. Although the precise mixture is unknown, VOCs may include (but not necessarily be limited to) trichloroethylene, 1,2-dichloroethylene, vinyl chloride, and phenol (semi-volatile) from process operations and petroleum products such as gasoline and heating oil that may be associated with site vehicles or combustion equipment.

- **APP | NOT APP**

  - **Polycyclic Aromatic Hydrocarbons (PAHs)** – PAHs are semi-volatile organic compounds that do not readily evaporate. As a result of their low volatility, exposure to these compounds will result from airborne dusts contaminated with PAHs. Short-term (acute) effects of exposure to these compounds are the same as those associated with exposure to dusts in general and may include eye and upper respiratory tract irritation at high dust levels. High dust levels are characterized by dust levels where visible dust emissions are observed that typically obscure vision. The primary health effect associated with PAHs is cancer as a result of long-term (chronic) exposure. Several PAHs are suspected as being potential human carcinogens.

### Table 3.1 – Summary of Potential Health Effects

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Location</th>
<th>PEL</th>
<th>IDLH</th>
<th>Characteristics</th>
<th>Routes of Exposure</th>
<th>Symptoms of Exposure &amp; Health Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SEMI-VOLATILES</strong> – may include a mixture of the following</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>☒ NA</td>
<td>Polychlorinated Biphenyls (PCBs)</td>
<td>Soil and sediment</td>
<td>1 mg/m³ 1242 0.5 mg/m³ 1254/1260</td>
<td>5 mg/ m³ Oil liquids or solids that are colorless to light yellow</td>
<td>Inhalation Contact</td>
<td>PCBs are classified as probable human carcinogen by the EPA More common symptoms and health effects include skin lesions and rashes Although PCBs may create vapor, they do not evaporate easily and the most likely inhalation exposure is by dust contaminated with PCBs</td>
</tr>
<tr>
<td>☒ NA</td>
<td>Phenol</td>
<td>Soil and sediment</td>
<td>5 ppm TWA (skin)</td>
<td>250 ppm Colorless to light pink liquid with a sharp, medicinal, sweet, tarry odor Ionization potential = 8.5</td>
<td>Inhalation Absorption</td>
<td>Inhalation of vapors, dust, or mist contaminated with phenol may result in vomiting, difficulty in swallowing, diarrhea, loss of appetite High concentrations or chronic exposure may also cause burning in the eyes, nose and throat, dizziness, irregular breathing and abdominal pain Phenol is readily absorbed through the skin causing photodermatitis Skin contact must be avoided</td>
</tr>
<tr>
<td>☒ NA</td>
<td>Polycyclic Aromatic Hydrocarbons (PAH)</td>
<td>Excavations</td>
<td>0.2 mg/m³ (Coal tar pitch volatiles - benzene soluble fraction)</td>
<td>Not determined PAHs do not readily evaporate. Exposure from contaminated soil/dust created during remediation activities</td>
<td>Inhalation Contact</td>
<td>High exposures (≥PEL) may cause irritation of the respiratory system The skin and eyes are especially prone to irritation from contact with PAHs May cause photosensitization of the skin and eyes increasing the potential for sunburn and irritation Long-term exposure may cause skin, lung, and kidney cancer</td>
</tr>
<tr>
<td>Also known as: PNAH Polynuclear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3.1 – Summary of Potential Health Effects

<table>
<thead>
<tr>
<th>Chemicals</th>
<th>NA</th>
<th>Soluble fraction</th>
<th>Pure material is a brown/black tar-like substance</th>
<th>Inhalation</th>
<th>Ingestion</th>
<th>Action Level</th>
<th>Health Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aromatic hydrocarbons</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>No</td>
<td></td>
<td>Pure material is a heavy, ductile, soft, gray, solid</td>
<td>Inhalation</td>
<td>Ingestion</td>
<td>0.05 mg/m³ (TWA) 0.035 mg/m³ (Action Level)</td>
<td>Lassitude (weakness, exhaustion), insomnia, facial pallor, anorexia, weight loss, malnutrition; constipation, abdominal pain, colic, anemia, gingival lead line, tremor, paralysis of the wrist, ankles, encephalopathy, kidney disease, irritation eyes, hypotension</td>
</tr>
<tr>
<td>Asbestos</td>
<td>No</td>
<td></td>
<td>Commonly found in insulation, felt, mastic, transite panels, and a variety of other structural applications</td>
<td>Inhalation</td>
<td>Ingestion</td>
<td>NA</td>
<td>Contact</td>
</tr>
<tr>
<td>Silica</td>
<td>No</td>
<td></td>
<td>Colorless, odorless solid</td>
<td>Inhalation</td>
<td>Contact</td>
<td>0.05 mg/m³ (NIOSH) 50 mg/m³ (quartz)</td>
<td>Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function, progressive resp symptoms (silicosis), irritation to the eyes, potential occupational carcinogen</td>
</tr>
<tr>
<td>Hexavalent Chromium</td>
<td>No</td>
<td></td>
<td>Dark-red, odorless flakes or powder (pure form)</td>
<td>Inhalation</td>
<td>Contact</td>
<td>0.005 mg/m³ [skin] 15 mg/m³</td>
<td>Irritation to the respiratory system, nasal septum perforation, liver, kidney damage, leukocytosis (increased blood leukocytes), leukopenia (reduced blood leukocytes), eosinophilia, eye injury, conjunctivitis, skin ulcer, sensitization dermatitis, potential occupational carcinogen</td>
</tr>
<tr>
<td>Mercury</td>
<td>No</td>
<td></td>
<td>Metal: Silver-white, heavy, odorless liquid</td>
<td>Inhalation</td>
<td>Contact</td>
<td>0.1 mg/m³ [skin] 10 mg/m³</td>
<td>Irritation to the eyes and skin, cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis, tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion), stomatitis, salivation, gastrointestinal disturbance, anorexia, weight loss, proteinuria</td>
</tr>
</tbody>
</table>

**VOLATILE ORGANIC COMPOUNDS (VOCs)** – may include a mixture of the following

- Lassitude (weakness, exhaustion), insomnia
- Facial pallor
- Anorexia, weight loss, malnutrition; constipation, abdominal pain, colic
- Anemia
- Gingival lead line
- Tremor
- Paralysis of the wrist, ankles
- Encephalopathy
- Kidney disease
- Irritation eyes
- Hypotension
<table>
<thead>
<tr>
<th>Substance</th>
<th>Location</th>
<th>TWA/STEL/PPM</th>
<th>Concentration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trichloroethylene (TCE)</td>
<td>Soil, groundwater, residual in drums</td>
<td>100 ppm TWA</td>
<td>1000 ppm</td>
<td>Colorless liquid with a chloroform odor. UEL=10.5%, LEL=8.0%. Combustible Liquid. Ionization Potential = 9.45 eV. Inhalation Absorption Contact. Causes headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating. Large amounts of may cause impaired heart function, unconsciousness, and death. Breathing for long periods may cause nerve, kidney, and liver damage.</td>
</tr>
<tr>
<td>Tetrachloroethylene (Perchloroethylene)</td>
<td>Soil, groundwater, residual in drums</td>
<td>100 ppm TWA</td>
<td>150 ppm</td>
<td>Colorless liquid with a mild, chloroform-like odor. Noncombustible Liquid. Ionization Potential = 9.32 eV. Inhalation Absorption Contact. Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen].</td>
</tr>
<tr>
<td>1,2-Dichloroethylene</td>
<td>Soil, groundwater, residual in drums</td>
<td>200 ppm</td>
<td>1,000 ppm</td>
<td>Colorless liquid (usually a mixture of the cis and trans isomers) with a slightly acrid, chloroform-like odor. UEL=12.8%, LEL=5.6%. Flammable Liquid. Ionization Potential = 9.65 eV. Inhalation Contact. Irritation to the eyes and respiratory system. Central nervous system depression.</td>
</tr>
<tr>
<td>Benzene</td>
<td>Soils, groundwater, residual in drums</td>
<td>1 ppm TWA 5 ppm STEL</td>
<td>500 ppm</td>
<td>Colorless vapor released from contaminated soil or water that may have a strong, irritating, or otherwise characteristic odor generally detectable at 4-5 ppm. Ionization Potential = 9.24 eV. Inhalation Absorption Contact. Irritation to the eyes, nose, and throat. Dizziness. Dermatitis. Prolonged exposure to hazardous levels may damage blood-forming systems. Benzene is also a suspected human carcinogen (ACGIH 1996 Class A2).</td>
</tr>
<tr>
<td>Toluene</td>
<td>Soils, groundwater, residual in drums</td>
<td>200 ppm 300 ppm Ceiling</td>
<td>500 ppm</td>
<td>Colorless liquid with a sweet benzene-like odor. Inhalation Contact (dermatitis). Irritation to eyes and nose. May cause skin irritation/dermatitis and headaches.</td>
</tr>
</tbody>
</table>
### Table 3.1 – Summary of Potential Health Effects

<table>
<thead>
<tr>
<th>Compound</th>
<th>Source</th>
<th>Concentration</th>
<th>Exposure Medium</th>
<th>Health Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene (o,m,p)</td>
<td>Soils, groundwater, residuals in drums</td>
<td>100 ppm</td>
<td>Inhalation Contact</td>
<td>Irritation to eyes, nose, and throat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>900 ppm</td>
<td></td>
<td>May cause skin irritation/dermatitis and headaches</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inhalation Contact</td>
<td>Exposures at or above the OSHA PEL may cause fatigue, confusion, dizziness, nausea, vomiting, cornea (eye) damage, and overall depression of central nervous system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Class IC Flammable Liquid</td>
<td>Chronic exposure or high exposures approaching IDLH levels may cause liver and kidney damage</td>
</tr>
<tr>
<td>Solvay Waste</td>
<td>Soil</td>
<td>None</td>
<td>Inhalation Contact (residues)</td>
<td>Primary hazard is high pH (alkaline) material that may cause skin irritation with prolonged exposure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>None</td>
<td>Contact</td>
<td>Solvay waste is not classified as hazardous waste</td>
</tr>
</tbody>
</table>

**Footnotes:**

- All values are 8-hour time-weighted averages (TWAs) unless otherwise indicated
- PEL: Permissible Exposure Limit, the concentration an employee may be exposed to for an 8-hour work day for a 40 hour work week for which nearly all employees may be repeatedly exposed without adverse health effects
- REL: NIOSH recommended exposure limit for full-shift exposures
- STEL: Short-Term Exposure Limit as a 15 minute average
- CEILING: maximum concentration
- IDLH: IMMEDIATELY Dangerous to Life and Health, contaminant concentration which present the possibility for severe health consequences if exposed to the IDLH concentration without the appropriate personal protective equipment (PPE)
- LEL: Lower Explosive Limit

**Units:** mg / m³ = milligrams per cubic meter of air | f / cc = fibers per cubic centimeter of air
4 HAZARD EVALUATION

The OSHA safety regulations (29CFR1910 and 29CFR1926) require that site personnel, subcontractors, and visitors must be informed of the hazards associated with their work activities. Hazard identification and control begins during safety planning. Safety planning is required for work on this project and occurs at different times during the project. Each “level” of safety planning typically has differing degrees of detail and focus. However, the ultimate objective is that site management and crafts methodically evaluate hazards and implement safety controls to prevent the occurrence of an injury, fire, explosion, spill, or property damage incident and are able to manage changes as they occur. The following flow chart provides an overview of safety planning requirements and tools outlined in previous sections of this HASP.

Safety Plans, JSAs, and Safe Work Permits developed subsequent to this HASP by OBG or subcontractors (if any) will identify hazard controls that are consistent with this Health & Safety Plan. Subcontractors may use an OBG Pre-Work JSA template (Appendix A) or request approval from OBG to use an alternate JSA template. Submitting standard company policies or programs is not acceptable. Preliminary identification of hazards and their respective controls for major work tasks or phases are outlined in Table 4.1.
### Table 4.1 – Hazard Identification & Control

<table>
<thead>
<tr>
<th>Activities &amp; Tasks</th>
<th>Affected Personnel</th>
<th>Safety Hazards</th>
<th>Safety Hazard Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL SAFETY HAZARDS</strong></td>
<td>Generally applicable to all trades/crafts</td>
<td>Slip, trips, and falls</td>
<td>Safety controls for slips, trips, and falls include:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manual lifting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noise- during operation of heavy equipment and power tools or working adjacent to such equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electrical – shock hazards associated with the use of extension cords and power tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact with damaged cord</td>
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<tr>
<td></td>
<td></td>
<td>Overhead power lines</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact with sub-surface utilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hand &amp; power tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shock</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flying dust, cuttings, debris</td>
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<tr>
<td></td>
<td></td>
<td>Hand injuries from cutting blades/bits</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Ladder hazards</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ladders kicking out or tipping over during use</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Users fall from a ladder</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Falling objects strike workers or pedestrians on lower work surfaces</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Heavy equipment hazards – Working near heavy equipment requires that general safety precautions be considered. When tasks require the use of certain types of heavy equipment (e.g., manlifts, forklifts, and cranes), they will be covered in more detail with respect to those tasks.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Turnover due to the slope angle and/or stability</td>
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<tr>
<td></td>
<td></td>
<td>Struck by injuries (counterweight swing or run-over)</td>
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<tr>
<td></td>
<td></td>
<td>Dropped loads</td>
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<tr>
<td></td>
<td></td>
<td>Hydraulic fluid leaks</td>
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<tr>
<td></td>
<td></td>
<td>Equipment fire</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Following proper lifting technique. Review primary precautions below:</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Keep load in close to the body</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Keep hips and shoulders aligned (no twisting)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Maintain stability (keep a balanced position)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Think and plan difficult lifts (use two people when weight is &gt;55-75 lbs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wear hearing protection while operating heavy equipment (unless with enclosed cab) or noisy power tools. Wear hearing protection if you have to raise your voice talking to someone five feet away.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electrical safety controls when using extension cords and power tools include:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locate and verify all building utilities with owner representative</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inform all site personnel that overhead power lines are energized and a 20-foot clearance must be maintained</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>» A 10-foot clearance may be used for insulated secondary lines that distribute power within the site</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>» If the lines are &lt;300 volts and a safety spotter observes equipment while it’s moved, then a 3-foot clearance may be used</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use GFCIs on all power tools and extension cords</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inspect tools for visible damage on a daily basis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inspect all flexible extension cords and power tool cords daily prior to use</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discard all flexible cords without a ground plug or outer insulation this is cut through. Tool cords must be in similarly good condition.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do not repair flexible cords smaller than 12 gauge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All extension cords must be run overhead (&gt;7-foot) when crossing walkways or other areas of high travel or protected when run across the floor (in a manner that does not create an excessive trip hazard)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All extension cords must be protected when run across roadways</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Subsurface utilities must be located and marked prior to driving stakes, fence posts, or earthwork. Temporary utilities for construction may be shallower than expected.</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.1 – Hazard Identification & Control

Perform the following to ensure that tools are in good working order
- Inspect tools for visible damage prior to each use.
- Inspect all flexible extension cords and power tool cords. Discard all flexible cords without a ground plug or outer insulation that is cut through. Tool cords must be in similarly good condition. Do not repair flexible cords smaller than 12 gauge.
- Do not operate tools without guards and use only in accordance with manufacturer’s operating instructions
- Use GFIs on all extension cords and power tools

Ladders must be used in accordance with OSHA guidelines or fall protection must be implemented above six feet.
Ladder safe guidelines include, but are not limited to:
- Ensure all ladders are inspected and properly labeled
- Maintain 3-point contact while working on step ladders and extension ladders (work requiring the use of both hands when on a ladder will require the worker to tie-off)
- Keep your torso between the rails of the ladder
- Do not use a step ladder as a straight ladder
- Do not stand on the top two steps of a step ladder
- Extend extension ladders three feet above the upper level
- Secure the top and base of extension ladders
- Extension ladders should have a 4:1 height to base ratio
- Do not use metal ladders within 20 feet of exposed conductors or overhead power lines
- Ladders must be inspected prior to each use

Heavy equipment safety precautions include:
- Ensure slopes in designated work areas do not exceed slopes allowed by manufacturer’s safe operating guidelines
- Keep non-essential personnel out of areas in which heavy equipment will be operating. Portable chain link (or equivalent) will be used to secure the construction area
- Ensure all operators are qualified and familiar with the manufacturer’s safe operating guidelines for the equipment they are operating. Subcontractors must submit the following for specific types of equipment:
  - Forklift – Operators license
  - Crane – State License and/or CCO
- Inspect heavy equipment daily prior to use
  - Immediately repair any leaks
  - Operators must wear seatbelts at all times unless the manufacturer does not provide seat belts
  - Equipment operators must ensure workers are kept clear from crush points created by counterweight swings and for boom movement
  - Never lift or suspend a load over people
  - Inspect all rigging materials prior to use
  - Ensure that a fire extinguisher is mounted to the equipment
### Table 4.1 – Hazard Identification & Control

<table>
<thead>
<tr>
<th>Laborers Equipment Operators Surveyors Delivery Personnel Utility Installation Crews</th>
<th>General Hazards previously listed in the “General Safety Hazards” section of this table</th>
<th>General Hazards previously listed in the “General Safety Hazards” section of this table (liner may be installed and used on site and is extremely slippery when wet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure spill materials for oil/hydraulic fluid are located near the construction area</td>
<td>Safety controls for clearing  include:</td>
<td>Safety Controls for “Brush Hog” operation include:</td>
</tr>
<tr>
<td>Minimum PPE: Level D PPE (Refer to PPE section of HASP for specific components of Level D PPE based on the task being performed.)</td>
<td>Know how to recognize poison ivy. Maintain alcohol wipes or rubbing alcohol to wipe down exposed skin following contact with allergy-causing oils from poison ivy.</td>
<td>Do not operate “Brush Hog” while elevated from the ground.</td>
</tr>
<tr>
<td>Additional PPE: Hearing protection during operation of heavy equipment or other loud equipment</td>
<td>Syracuse is in a high Lyme disease area. Use 25%+ DEET on skin and permethrin on Tyvek when walking into, or working in, overgrown areas.</td>
<td>Do not allow pedestrians to approach the Bush Hog while in operation.</td>
</tr>
<tr>
<td>Kevlar Chaps &amp; Jacket: During operation of chainsaw that may be required to clear small trees and large shrubs</td>
<td>All personnel using chainsaws for clearing activities must wear <strong>Kevlar Chaps and Jacket</strong> and hard hat mounted face shield in addition to other safety gear</td>
<td>Do not intentionally run over excessively large stumps, stones, or debris.</td>
</tr>
<tr>
<td>Covered Tasks: Mobilization of equipment Site Survey Site security – perimeter safety fence installation Installation of silt fence, drainage swales, and other erosion controls Use of a “brush hog” either pulled behind a piece of heavy equipment, or on an arm that protrudes from the side of equipment.</td>
<td>Use heavy equipment to do as much of the vegetative clearing as possible.</td>
<td>Do not operate the Brush Hog while in a vertical position or while above knee level.</td>
</tr>
<tr>
<td>Vegetative Clearing</td>
<td>Roots and stumps will not be removed. Removing surface vegetation without disrupting contaminated soil is not considered “intrusive.&quot;</td>
<td>Leave all manufacturer guards in place and do not allow workers to be exposed to moving parts of the equipment.</td>
</tr>
<tr>
<td>Biological hazards - Poison Ivy and poisonous snakes and insects</td>
<td>Safety Controls for “Brush Hog” operation include:</td>
<td>Read the manufacturers recommendations in regards to safe operating slopes.</td>
</tr>
<tr>
<td>Ticks bites</td>
<td>Do not operate “Brush Hog” while elevated from the ground.</td>
<td>Use side arm brush hog while drive equipment can be safely operated from a stable, level surface.</td>
</tr>
<tr>
<td>Cuts/lacerations from chainsaws (if used)</td>
<td>Do not allow pedestrians to approach the Bush Hog while in operation.</td>
<td>Keep side arm brush hog lowered as close to the ground as possible and as near to the equipment as possible when operating.</td>
</tr>
<tr>
<td>Brush Hog Operation</td>
<td>Do not intentionally run over excessively large stumps, stones, or debris.</td>
<td></td>
</tr>
</tbody>
</table>
### Table 4.1 – Hazard Identification & Control

<table>
<thead>
<tr>
<th>Placement of soil cover</th>
<th>General Hazards previously listed in the “General Safety Hazards” section of this table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine operator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Contact with unprotected belts and or pulleys</td>
</tr>
<tr>
<td></td>
<td>- Heavy Equipment Operation</td>
</tr>
<tr>
<td></td>
<td>- Haul Truck Operation (inside cab/outside)</td>
</tr>
<tr>
<td></td>
<td>- Contact with unprotected belts and pulleys</td>
</tr>
<tr>
<td></td>
<td>- Being hit by Flying material</td>
</tr>
</tbody>
</table>

**Minimum PPE:**
- Level D PPE (refer to PPE section of HASP for specific components of Level D PPE based on the task being performed)

**Additional PPE:**
- Hearing protection during operation of heavy equipment or other loud equipment

**Covered Tasks:**
- use of manure spreader or CAS Slinger Truck to evenly place amended soils onto predetermined areas at specified application rates.

**General Hazards previously listed in the “General Safety Hazards” section of this table:**
- Contact with unprotected belts and or pulleys
- Heavy Equipment Operation
- Haul Truck Operation (inside cab/outside)
- Contact with unprotected belts and pulleys
- Being hit by Flying material
- Keep all guards in place when operating equipment.
- Release all stored energy prior to maintenance being performed.
- Do not operate with personnel in the spreader equipment.
- Do not operate when pedestrians or other worker are within the range of thrown material.
- Throw material only as far as you have to in order to achieve the desired spread.
**5 EMPLOYEE AIR MONITORING**

Air monitoring is to be performed in accordance with Program 2.1 of the OBG Corporate Health & Safety Manual, *Airborne Materials Exposure*, and Program 2.22 of the OBG CHS Manual, *Hazardous Waste Operations*. Presented below is the site-specific information. The purpose of air monitoring is to verify the adequacy of PPE being used and to evaluate new hazards or changing site conditions.

The “site” refers to the work area(s) designated for this project. The “fence line” refers to the site perimeter or 200’ downwind, whichever is closer, and includes areas where the general public may be present. Community action levels generally apply at the fence line or site perimeter. The “work area or zone” is the area immediately surrounding activities that disturb contaminated materials and is the area within which “work area action levels” apply. Exclusion Zones may be setup to coincide with the perimeter of individual work areas or encompass several work areas. Where Exclusion Zones are adjacent to the fence line, the most stringent of work area and community action levels shall apply.

**5.1. MONITORING EQUIPMENT**

Monitoring Instruments will be calibrated in accordance with manufacturers' recommendations. Air monitoring information from perimeter dust meters will be downloaded at the end day. Air monitoring results will be submitted to DEC.

<table>
<thead>
<tr>
<th>Required?</th>
<th>Contaminant</th>
<th>Location</th>
<th>Equipment</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>Volatile Organic Compounds (VOCs)</td>
<td>1 PID in each active excavation</td>
<td>Photoionization Detector (PID) with 10.6 eV lamp</td>
<td>Available from Pine Environmental 800-301-9663 (approx $200 a week)</td>
</tr>
<tr>
<td>NO</td>
<td>Oxygen and flammable vapors</td>
<td>Confined spaces</td>
<td>Gas Meter – Neotronics Minigas or equivalent</td>
<td>Available from Pine Environmental 800-301-9663 (approx $150 a week) For use if confined space entry Not to be used for ambient monitoring</td>
</tr>
<tr>
<td>YES</td>
<td>Dust / Particulate (PM-10)</td>
<td>1 upwind 2 downwind 1 &quot;roving&quot;</td>
<td>Dust Meter - TSI DustTrak Model 8520 (w/ PM-10)</td>
<td>Available from Pine Environmental 800-301-9663 (approx $300 a week) Rent the optional TSI Environmental Enclosure for stationary locations subject to rain and prolonged sun</td>
</tr>
<tr>
<td>NO</td>
<td>Hydrogen cyanide</td>
<td></td>
<td>ToxiRAE Plus or Industrial Scientific T82 single gas monitors with HCN sensor</td>
<td>Available from Pine Environmental 800-301-9663 (approx $75 a week)</td>
</tr>
<tr>
<td>NO</td>
<td>VOC -benzene (Drager tube)</td>
<td>At the discretion of the SSHC to supplement PID Readings</td>
<td>Drager Tube - Benzene 0.5/c (tube # 81 01841) 20 strokes, approx 20 minutes per test, uses scrubber tube to decrease interference from other VOCs</td>
<td>Benzene colorimetric tubes are subject to cross-sensitivity to a variety of aromatic compounds and will therefore be used only at the discretion of the SSHC or Manager of Corporate Health &amp; Safety</td>
</tr>
<tr>
<td>NO</td>
<td>VOC - benzene (exposure sampling badge)</td>
<td>Intrusive Work Activities at the discretion of the SSHC</td>
<td>3M 3520 Organic Vapor Badge for analysis by NIOSH 1500 (benzene)</td>
<td>Supplied by Galson Labs 888-432-5227 ($5.00 when analysis performed by Galson)</td>
</tr>
</tbody>
</table>
5.2. WIND DIRECTION

Wind direction will be monitored daily using visual observations with wind direction and velocity recorded in a field log.

5.3. WORK AREA (EMPLOYEE) MONITORING

The Work Area Monitoring approach will use “roving” (hand-held) equipment to periodically check breathing zone exposures in active work areas. One PID and one dust meter will be used to assess potential contamination hot spots, investigate odors, and monitor effectiveness of dust and vapor controls in the work area. Hand held meters may be used as backups to perimeter CAMP instruments if equipment fails.

Work area monitoring includes one or more of the following depending on site activities:

- **Periodic / Roving Monitoring** – The SSHC or designated alternates will conduct air monitoring using hand-held instruments within each intrusive work area when intrusive work is being conducted.

- **Confined Space Entry** – A combustible gas / oxygen meter will be required for entry into confined spaces, including excavations greater than four feet deep that are classified as a confined space. Action levels are provided in Section 5.3.1, below.

- **Hot Work** – A combustible gas / oxygen meter will be required to monitor areas where flammable vapors may accumulate prior to conducting hot work.

<table>
<thead>
<tr>
<th>Contaminant (equipment / method)</th>
<th>Frequency</th>
<th>Action Level</th>
<th>SSHC Action/Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volatile Organic Vapors (VOCs)</strong> (PID)</td>
<td>Continuously in work areas during intrusive activities (excavation work). When odors are encountered or changing site conditions affect hazards. Prior to and continuous during confined space entry (i.e., excavations &gt;4 feet and tanks). NOTE: a trench or pit with limited access over 4 feet may be considered a confined space if it is sloped steeper than 1.5H:1V and/or does not have access “ramps” or stairs.</td>
<td>1 ppm</td>
<td>Use Ultra-Rae 3000 with Benzene scrubber to determine the presence of Benzene. Increase to Level C PPE (half or full-face respirator) Move to the downwind perimeter of the work area conduct Community (fenceline) monitoring per the Vapor Emission Response Plan (VERP). Increase to Level B (supplied air) PPE or implement additional vapor controls outlined in this HASP to keep VOC levels below 50 ppm. Conduct Community air monitoring per the Vapor Emission Response Plan (VERP). Notify the OBG Manager of Corporate Health &amp; Safety and the Project Manager. STOP work and use ventilation, covers, vapor suppressants or other controls to reduce VOC levels below 250 ppm. Conduct Community (fenceline) monitoring. Immediately notify the OBG Manager of Corporate Health &amp; Safety, OBG Project Manager and Honeywell Representative.</td>
</tr>
<tr>
<td></td>
<td>*5 ppm</td>
<td>*50 ppm</td>
<td>*250 ppm</td>
</tr>
</tbody>
</table>
## Work Area (Employee) Air Monitoring Action Levels

| DUST / PARTICULATE nuisance dust, PAHs, chromium, concrete dust/silica (Dust Meter) | **1 mg/m³** Increase to Level C PPE (half or full-face respirator). Implement additional controls outlined in the Employee and Community Protection Plan (ECPP) to keep dust levels below 1 mg/m³. Move to the downwind perimeter of the work area and conduct Community (fenceline) monitoring per the Particulate Emission Response Plan (PERP). **1.5 mg/m³** Full-Face Level C PPE or implement additional controls outlined in the Employee and Community Protection Plan (ECPP) to keep dust levels below 1.5 mg/m³. Move to the downwind perimeter of the work area and conduct Community (fenceline) monitoring per the Particulate Emission Response Plan (PERP). Work may proceed only if perimeter dust/particulate levels are below PERP action levels. **5.0 mg/m³** Notify the OBG Manager of Corporate Health & Safety and the Project Officer. STOP work and use investigate additional dust controls to reduce dust levels below 5 mg/m³ (or lower). Conduct Community (fenceline) monitoring per the Particulate Emission Response Plan (PERP). Immediately notify the OBG Manager of Corporate Health & Safety, OBG Project Officer. |
| --- | --- | --- | --- |
| Periodically in work areas when dusty conditions are observed. NOTE: Visible dust generated by site activities that migrates past the Work Area perimeter must be controlled regardless of dust meter readings in the work area. | **1.5 mg/m³** Full-Face Level C PPE or implement additional controls outlined in the Employee and Community Protection Plan (ECPP) to keep dust levels below 1.5 mg/m³. Move to the downwind perimeter of the work area and conduct Community (fenceline) monitoring per the Particulate Emission Response Plan (PERP). Work may proceed only if perimeter dust/particulate levels are below PERP action levels. **5.0 mg/m³** Notify the OBG Manager of Corporate Health & Safety and the Project Officer. STOP work and use investigate additional dust controls to reduce dust levels below 5 mg/m³ (or lower). Conduct Community (fenceline) monitoring per the Particulate Emission Response Plan (PERP). Immediately notify the OBG Manager of Corporate Health & Safety, OBG Project Officer. |

* **VOCs** - Sustained readings for 5 minutes above background. Background readings are taken at upwind locations relative to Work Areas. **DUST/PARTICULATE** - 15 minute time-weighted average above upwind background readings.

### 5.3.1. Confined Space Entry Monitoring

Respiratory protection and/or mechanical ventilation must be provided where hazardous atmospheres are identified or may develop during work activities. Action levels for oxygen, combustible vapors, hydrogen sulfide and carbon monoxide are outlined below and on the Confined Space Entry Permit.

- Oxygen – 19.5% to 23.5%
- LEL – 10%
- Carbon Monoxide – 35 ppm
- Hydrogen Sulfide – 10 ppm
6 MEDICAL MONITORING

Medical surveillance requirements are required by OSHA for persons who are exposed to lead (above OSHA action levels), perform asbestos abatement, wear respirators, perform hazardous waste work, and other activities. Subcontractors are required to have medical surveillance that complies with OSHA regulations.

6.1. FITNESS FOR RESPIRATOR USE

Persons who may wear respiratory protection must be provided respirators as regulated by 29 CFR 1926.103 and 29 CFR 1910.134. This Standard requires that an individual’s ability to wear respiratory protection be medically certified before he / she performs designated duties. Where medical requirements of 29 CFR 1926.65 overlap those of 29 CFR 1910.134, the more stringent of the two will be enforced.

6.2. EXPOSURE MEDICAL EXAMINATIONS

Medical examinations for persons conducting hazardous waste work, asbestos abatement, and lead work are administered on a pre-employment and annual basis and as warranted by symptoms of exposure or specialized activities. Medical exams must be administered by a board-certified (or one who is eligible for board certification) physician in Occupational Medicine. The examining physician is required to make a report to the employer of any medical condition which would place employees at risk when wearing a respirator, wearing other personnel protective equipment, or working with hazardous materials. Subcontractors must maintain medical records in accordance with OSHA regulations.

6.3. HEAT & COLD STRESS

The timing and location of this project may be such that heat / cold stress could pose a threat to the health and safety of site personnel. Work / rest regimens will be employed as deemed necessary by the Safety Manager (Field Operations). However, subcontractor Safety Competent Persons may initiate heat/cold stress monitoring at any time as necessary to protect their employees. Special clothing and an appropriate diet and fluid intake will be recommended to all on-site personnel to further reduce these temperature-related hazards. Site workers should stop work, and notify the project Safety Manager (Field Operations) when they observe symptoms of heat / cold stress in themselves or co-workers.

6.3.1. Heat Stress Monitoring

Heat stress monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70°F or above. To monitor the worker, one of the following methods should be employed:

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

- Oral temperature should be measured at the end of the work period (before drinking). If oral temperature exceeds 99.6°F, shorten the next work cycle by one-third without changing the rest period. If the oral temperature still exceeds 99.6°F at the beginning of the next rest period, shorten the next work cycle by one-
third. Do not permit a worker to wear a semi-permeable or impermeable garment when his / her oral temperature exceeds 100.6°F.

- **Heat Stress Index**

<table>
<thead>
<tr>
<th>Heat Index (°F) vs. Relative Humidity</th>
<th>10%</th>
<th>15%</th>
<th>20%</th>
<th>25%</th>
<th>30%</th>
<th>35%</th>
<th>40%</th>
<th>45%</th>
<th>50%</th>
<th>55%</th>
<th>60%</th>
<th>65%</th>
<th>70%</th>
<th>75%</th>
<th>80%</th>
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<tr>
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<td>78</td>
</tr>
</tbody>
</table>

**Heat Index/Heat Disorders**

<table>
<thead>
<tr>
<th>Heat Index</th>
<th>Possible heat disorders for people in higher risk groups</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DANGER</strong></td>
<td>Heatstroke/sunstroke highly likely with continued exposure.</td>
</tr>
<tr>
<td>130 or higher</td>
<td>• Moderate and strenuous outdoor activity prohibited</td>
</tr>
<tr>
<td><strong>WARNING</strong></td>
<td>Sunstroke, heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.</td>
</tr>
<tr>
<td>105-130</td>
<td>• Strenuous outdoor activity while wearing Tyvek is prohibited without the use of personal cooling devices.</td>
</tr>
<tr>
<td></td>
<td>• Workers must drink every 15 minutes or more frequently at their discretion</td>
</tr>
<tr>
<td></td>
<td>• Air conditioned break areas must be available.</td>
</tr>
<tr>
<td><strong>CAUTION</strong></td>
<td>Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.</td>
</tr>
<tr>
<td>90-105</td>
<td>• Strenuous outdoor activity while wearing Tyvek is prohibited above a HSI of 99 without the use of personal cooling devices and is recommended for lower HSI.</td>
</tr>
<tr>
<td></td>
<td>• SSHC to monitor employees for symptoms of heat stress.</td>
</tr>
<tr>
<td></td>
<td>• Workers must drink every 30 minutes or more frequently at their discretion.</td>
</tr>
<tr>
<td></td>
<td>• Air conditioned break areas must be made available for morning, lunch, and afternoon breaks.</td>
</tr>
<tr>
<td><strong>CONCERN</strong></td>
<td>Fatigue possible with prolonged exposure and/or physical activity.</td>
</tr>
<tr>
<td>75-90</td>
<td>• SSHC to monitor employees for symptoms of heat stress.</td>
</tr>
<tr>
<td></td>
<td>• Workers must drink every 60 minutes or more frequently at their discretion.</td>
</tr>
<tr>
<td></td>
<td>• Shaded break areas must be made available for morning, lunch, and afternoon breaks. Air conditioning is recommended.</td>
</tr>
</tbody>
</table>

Source: National Weather Service [Modified – The initial HSI for the lowest (“CONCERN”) heat stress category was reduced from 80 to 75 because of the potential for increased heat stress when wearing Tyvek.]

### 6.3.2. Cold Stress Monitoring

Work / rest schedules must be altered to minimize the potential for cold stress. Cold stress is defined as a decrease in core body temperature to 96.8°F and / or cold injury to body extremities. Decreases in core body
temperature are associated with reduced mental alertness, reduction in rational decision making, or loss of consciousness in severe cases. Symptoms of cold stress include pain in extremities (i.e. hands and feet) and severe shivering. If workers experience these symptoms, then stop work and implement the following controls.

- Workers must don adequate dry insulating clothing; and
- Adjust the work/rest schedule to increase the amount of rest/rewarming time.
- Toolbox safety meetings discussing symptoms of cold stress, clothing requirements, and work breaks must be held when the wind chill temperature (see Appendix A) drops below 0°F and EACH DAY the wind chill temperature is below 25°F.

The wind chill index provided below shows the effective cooling on exposed skin. When the wind blows across the skin, it removes the insulating layer of warm air adjacent to the skin. When all factors are the same, the faster the wind blows, the greater the heat loss, which results in a colder feeling. Wind chill temperatures that are 25°F below zero or are extremely dangerous. Workers must protect any exposed skin, especially the face, ears, and fingers.

<table>
<thead>
<tr>
<th>Wind Speed-mph</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (Degrees F)</td>
<td>Wind Chill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>43</td>
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<td>-65</td>
<td>-74</td>
<td>-81</td>
<td>-86</td>
<td>-89</td>
</tr>
</tbody>
</table>

If you would like to calculate the wind chill index for combinations of temperature and wind other than those given in the table above, you can use the formula:

\[ WC = 91.4 - (0.474677 - 0.020425 * V + 0.303107 * \text{SQRT}(V)) * (91.4 - T) \]

where: WC = wind chill index; V = wind speed (mph); T = temperature (° F)
7  EMERGENCY RESPONSE PLAN

This emergency response section details actions to be taken in the event of site emergencies. The SSHC is responsible for implementation of emergency response procedures and will ensure that a First Aid/CPR trained person is on site at all times when work activities are in progress.

7.1.  EMERGENCY PHONE NUMBERS

To be posted or provided on site. Emergencies encountered on this site will be responded to by a combination of off-site emergency services and site personnel.

<table>
<thead>
<tr>
<th>Site Address</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honeywell Work Area 3</td>
<td>LEVEL 3 – ONSITE CREW RESPONSE</td>
</tr>
<tr>
<td>Waste Beds 1-8</td>
<td>LEVEL 2- ERT RESPONSE 315-715-1800</td>
</tr>
<tr>
<td>Staging area: Honeywell Orange Parking Lot Gate</td>
<td>LEVEL 1- OFF SITE RESPONSE 911</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire, Explosion, Emergency Medical</td>
</tr>
<tr>
<td>OSHA-Recordable Injuries, Unexpected Structural Collapse, Petroleum Spills</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Honeywell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager – Steve Miller</td>
</tr>
<tr>
<td>Project Officer</td>
</tr>
<tr>
<td>Project Manager</td>
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<tr>
<td>Project Engineer</td>
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<tr>
<td>Manager of Corporate Health &amp; Safety</td>
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<tr>
<td>Corporate Health &amp; Safety Specialist</td>
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<tr>
<td>WorkCare Incident Intervention</td>
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<table>
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<th>MUNICIPAL OR LOCAL RESOURCES</th>
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<tr>
<td>HOSPITAL</td>
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<tr>
<td>OCCUPATIONAL CLINIC</td>
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</tbody>
</table>
### 7.2. EMERGENCY ROUTE

Refer to attached *Figure 1* for Hospital Route Map.

### 7.3. EMERGENCY INVENTORY

In addition to those items specified elsewhere, OBG will maintain the following equipment:

- **First aid / Bloodborne pathogens kit** – The *minimum size is a 25-person first aid kit* (Radnor RAD64058004 or larger available from Airgas)
- **Fire extinguishers** – located within 25’ of hot work
- **Spill Control Kit(s)** – Provide all applicable spill control supplies to contain spills of at least 55 gallons including overpacks for 55 gallon drums
7.4. GENERAL EMERGENCY RESPONSE PLAN

7.4.1. Evacuation Signal

In addition to the site specific alarms, verbal/radio communications directing project personnel to evacuate or a building fire alarm will also be used. Do NOT leave site vehicles or equipment on access roads and emergency exits such that emergency response vehicles or personnel may be obstructed.

7.4.2. Muster Point

The muster point in event of an emergency that requires evacuation of the work area is the OBG's field office. The muster point will be reviewed with all personnel. SSHC or designee will account for all personnel.

7.5. CALL FOR EMERGENCY SUPPORT

In the event of a site emergency, the OBG SSHC or designee will call 911. When necessary, the SSHC will coordinate the arrival of on-site emergency personnel with the site owner's security, safety, and/or emergency response employees.

The SSHC or designee will briefly explain the nature of the emergency and site conditions as follows:

- Indicate his/her name
- Location of emergency (site address, support zone or exclusion zone)
- Description of emergency conditions that may require special rescue equipment, such as confined spaces; excavations, and elevated work platforms
- Potential chemical hazards and recommended PPE
- Emergency decontamination procedures
- Incident Command System (ICS)

7.5.1. Incident Command System (ICS)

The OBG SSHC or designated alternate shall function as the initial Incident Commander when the emergency plan is initiated by calling 911. The SSHC will decide whether site personnel will evacuate to the Muster Point or divert site resources (personnel and equipment) to provide initial response actions in accordance with this HASP until emergency responders arrive on site. When emergency responders arrive, the SSHC will identify himself or herself as “in charge” and transfer authority to the arriving Incident Commander.

7.6. FIRE & EXPLOSION RESPONSE PLAN

*NOTE – Site personnel will respond to incipient stage fires using 20 lb Type ABC dry chemical fire extinguishers. Heavy water spray is best for larger fires which will be applied by the fire department responding to our “911” call.*

All fires or explosions must be reported to the OBG Site/Project Manager. A fire that CANNOT be readily extinguished with a fire extinguisher will be considered major and will require evacuation of the work area personnel to Muster Point areas per this HASP. However, the SSHC or designee may only approach fires/explosions to the extent that fire safety considerations allow. If personal injuries result from any fire or explosion, the procedures outlined in the Personal Injury Response Plan will also be followed.
7.7. PERSONAL INJURY RESPONSE PLAN

Treatment for minor injuries will be provided on site using available first aid supplies and personnel trained in first aid. For minor injuries that are not life-threatening but require further medical attention, all OBG subcontractors must agree to have their employees treated by occupational physicians at occupational clinics whenever possible. Subcontractors are expected to accommodate this objective whenever feasible.

WorkCare Incident Intervention – WorkCare is a service available to OBG employees for non-emergency injuries as outlined below. Subcontractors are not able to utilize OBG’s subscription to this service but are encouraged to setup a WorkCare account for their own employees.

- All OBG employees will call WorkCare for minor injuries that include any strains, cuts for which an employee is not confident that a band aid is sufficient, tick/insect bites for which the employee is concerned about infection or Lyme, any other work-related injury for which the employee would like to talk to a WorkCare medical professional regarding proper treatment or follow-up.

- WorkCare posters must be posted at each job site with a field office or trailer.

- Minor (not life threatening) injuries that require medical attention will be treated at the “Non-Emergency Med Treatment” clinic identified above unless an alternate clinic is recommended by WorkCare. If no clinic is available or identified, then default to the “Emergency Medical Treatment” facility.

The preferred occupational clinic for non-emergency medical treatment during normal business hours is Industrial Medical Associates (IMA) 961 Canal Street Syracuse. Emergency rooms may be used to treat minor injuries that require further medical treatment after normal business hours.

Emergency or life-threatening injuries, including puncture wounds to the head, chest, and abdomen, serious head and spinal cord injuries, and loss of consciousness must be treated at the hospital emergency room.

Route maps to the hospital (Figure 1) must be posted in the OBG on-site office trailer and all subcontractor office trailers (if any).

7.8. SPILL RESPONSE

Site personnel will be properly trained and equipped to handle small spills. Spill sorbents will be staged onsite in readily visible locations for emergencies. The minimum size spill kit should have the capacity to cleanup and containerize spills of 55 gallons. Potential spills include leaking gasoline, diesel, antifreeze, hydraulic fluid, or oil from heavy equipment. If a spill of any type should occur, the SSHC or designee should report the spill immediately to a site owner representative and implement procedures in this Spill Response Plan. Site personnel will generally respond to spills as follows:

- Stop the leak immediately if it can be done without directly contacting the leaking material. Generally, this will consist of turning heavy equipment off to remove pressure on various fluid systems.

- Remove or stop all ignition sources (hot work, generators, etc.) that are within 25’ of any part of the spill.

- On-site personnel should immediately secure the area to prevent unauthorized entry into the spill area.

- Although not likely given the anticipated types of spills, the SSHC or designee should initiate the General Emergency Response Plan in this HASP if a spill may cause an explosion, death, or serious injury.

- Site personnel may only respond to incipient stage fires regardless if such fires are associated with a spill.

- Confined Space Issue – If the leak occurs in an excavation where natural ventilation is limited, air monitoring will be required prior to entering the spill area. This is primarily an issue for fuel (gasoline, diesel, and kerosene) spills. The SSHC will determine if a fuel spill requires air monitoring.
7.9. EMERGENCY REPORTING

Any emergency or accident will be reported to OBG Manager of Corporate H&S and the Site/Project Manager. The OBG Corporate Manager of Corporate H&S will review all emergency or accident reports and may further investigate any such report if necessary. The OBG Manager of Corporate H&S will see that the area officer of OSHA is notified within 8 hours should the emergency cause three (3) or more personnel to be injured and transported to the hospital, or if there is a fatality. If the Corporate Safety Manager cannot be located, then the SSHC will make such notification.

An Incident Investigation Form (Attachment 11) must be completed for all injuries, illnesses, spills, fire, explosion, or property damage greater than $1,000. The absence of an injury does not preclude the need to complete an Accident Investigation Form as such incidents will be classified as “near miss” or “other.” The form must be completed or reviewed by the SSHC or designee. It will include, but is not limited to, the nature of the problem, time, location, and corrective actions taken to prevent recurrence. This report must be completed and sent to the OBG Corporate Safety Manager and site owner’s representative within 24 hours. If all the “facts” cannot be determined in that period of time, then draft report will be submitted and a final report will be submitted immediately upon completing the investigation.
Community Health & Safety Plan
Wastebeds 1 – 8 Operable Unit 1 (OU-1)
Town of Geddes, Onondaga County, New York
Index No. R7-0849-15-02

May 2016
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# FIGURES / TABLES

- Figure 1 – Perimeter Air Quality Monitoring Boundary
- Figure 2 – Route to Hospital
- Table 5.1 – Emergency Phone Numbers

# EXHIBITS

- Exhibit 1 – Generic Community Air Monitoring Plan
1 INTRODUCTION

The planning and design effort for the Wastebeds 1-8 (Site) remedy involved extensive planning and coordination with state and local agencies, resulting in a project designed with health and safety as its first and most fundamental goal. This includes not only the health and safety of all project employees, but also the local communities in which the remedial activities will occur. Honeywell, Honeywell’s Contractors, and regulatory agencies, including New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and the United States Environmental Protection Agency (EPA) are committed to protecting human health and the environment during the remediation of the Site.

1.1. PURPOSE OF THE COMMUNITY HEALTH & SAFETY PLAN

The purpose of this Community Health and Safety Plan (CHASP) is to communicate to the public the planned activities required to complete the remedy and the measures and the steps that Honeywell and its contractors will take to ensure protection of the local community and environment.

1.2. SITE DESCRIPTION

The Site is located on the southwestern shore of Onondaga Lake in Geddes, NY. In general, the Site consists of variable terrain with numerous topographic highs and lows that range from approximately 362.9 ft above mean sea level (MSL) at the shore of Onondaga Lake, to 430 ft above MSL, at the highest point. Transportation features bisect the Site and include Interstate 690 (I-690) (which runs between the lakeshore and State Fair Boulevard), New York State Fairgrounds parking lots, access roads for the parking lots, and foot bridges. The irregularly shaped beds extend roughly 2.1 miles along the shore, with a maximum width of 0.5 mile, and cover approximately 315 acres. The Site, in its entirety, and inclusive of the Solvay wastebeds, covers approximately 404 acres. In general, the eastern shore of Onondaga Lake is urban and residential, and the northern shore is dominated by parkland, wooded areas, and wetlands.

1.3. SCOPE OF WORK

The project consists of the application of a vegetated structural fill cover over specified areas of the Wastebeds 1-8 Site. This will require grading of existing parking areas to enhance drainage, installation of storm water collection and conveyance piping, application and compaction of structural fill, and seeding/mulching. The scope of work includes the following activities:

- Mobilization/Demobilization
- Site preparation
- Construction of Vegetated Structural Fill Cover
- Construction of Vegetative Enhancement Cover

Additional details pertaining to the scope of work being performed at the site are available in the Wastebeds 1-8 OU-1 Remedial Design/Remedial Action Work Plan (OBG, 2015).
1.4. PROJECT PERSONNEL & ORGANIZATION

The following are key project personnel with respect to O’Brien & Gere’s scope of work.

<table>
<thead>
<tr>
<th>Project Personnel</th>
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<tbody>
<tr>
<td><strong>NYSDEC</strong></td>
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<tr>
<td>Tracy Smith, Project Manager</td>
</tr>
<tr>
<td><strong>NYSDOH</strong></td>
</tr>
<tr>
<td>Mark Sergott, Project Manager</td>
</tr>
<tr>
<td><strong>HONEYWELL</strong></td>
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<tr>
<td>Steve Miller, Project Manager</td>
</tr>
<tr>
<td><strong>O’BRIEN &amp; GERE</strong></td>
</tr>
<tr>
<td>Doug Crawford, Project Officer</td>
</tr>
<tr>
<td>Brad Kubiak, Project Manager</td>
</tr>
<tr>
<td>Chris Killoren, Construction Manager</td>
</tr>
</tbody>
</table>

2. COMMUNITY AIR MONITORING PLAN

The objective of this Community Air Monitoring Plan (CAMP) is to describe air monitoring during the project’s field construction activities including the on-site processing and placement of cover materials, including topsoil and Type 3A stone. During placement of cover materials there is a potential for dust to be generated. Odor issues are not anticipated during material placement.

Perimeter air monitoring will be conducted to evaluate potential air quality impacts during the site construction activities. The air monitoring program described herein has been designed using the New York State Department of Health (NYSDOH) *Generic Community Air Monitoring Plan (gCAMP)* (Exhibit 1) guidance for evaluation of potential airborne contaminant releases as a direct result of investigative and remedial work activities.

2.1. COMMUNITY RECEPTORS

The project site is bordered to the north and east by Onondaga Lake, and to the south and west by Interstate 690 (I-690). Based on review of aerial photographs, the nearest non-commercial public and/or recreational areas to the project site consist of:

1) Onondaga Bike Trail located adjacent to portions of the project site and continuing off the site to the northwest
2) The Onondaga County Amphitheater located adjacent to the project site to the north
3) New York State Fairgrounds approximately 1000 feet south of the site

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4) Private residences approximately 2,000 feet west of the northwest portion of the site. Additional residences are located approximately one mile south and southeast, one mile north and two miles east of the site.

2.2. MONITORING LOCATIONS

Air monitoring will be conducted along or within the perimeter boundary line around the overall project site shown on Figure 1. The perimeter boundary follows the limits of the Orange Parking Lot north and west of the work site. On the south side of the site, the air monitoring perimeter boundary is located on the south edge of Wastebed 1-8, north of I-690. On the east the perimeter boundary is located approximately 500 feet east of the limits of the project boundary. In general for each work area within the project site, air monitoring stations will be placed within the site perimeter boundary such that the downwind station will be between the work area and the nearest downwind receptor.

Air monitoring locations will be selected at the beginning of each work day based on the predicted predominant wind direction for the day. There will be one upwind and two downwind monitoring stations. In cases where there are two spatially separated work areas, the two downwind stations will be separated so one is downwind of each work area. The upwind dust monitor will be used to evaluate ambient background dust for both downwind locations.

Air monitoring station locations may be moved during the day if the predominant wind direction shifts into a new quadrant or if the work area changes. Site wind conditions will be monitored each day by either a portable on-site weather station or the Honeywell 10-meter weather station located along the east edge of the Semet Ponds.

2.3. QUALITY CONTROL AND QUALITY ASSURANCE

Calibration checks and daily routine maintenance of real-time dust analyzers will be conducted at the beginning of each day following applicable manufacturer’s guidelines. Records of daily field activities, instrument field checks and daily calibrations will be documented in a field site log or on pre-printed field forms.

2.4. DATA MANAGEMENT AND REPORTING

Data will be manually or automatically saved to a PC computer each day. Data will be reviewed to evaluate periods of valid and invalid data, and results summarized in daily reports, which will include the following:

- daily construction activities and air monitoring period,
- air monitoring station locations,
- summary of air monitoring results,
- meteorological summary including shifts in wind direction requiring station re-location, and
- summary of any action level or work perimeter limit exceedances, and corrective response.

NYSDEC and NYSDOH will be notified of exceedances of the action levels pursuant to the requirements in NYSDEC's DER-10 guidance (Section 5.4(a)3).

At the conclusion of the air monitoring program, final results will be presented, as part of the project construction completion report that will include:

- air monitoring methodologies,
- a tabulated summary of the results,
- assessment of air quality levels versus action criteria,
3 PROJECT SAFETY MANAGEMENT & MONITORING

The Wastebeds 1-8 project will involve work activities adjacent to publically accessible areas, including portions of the New York State Fairgrounds Orange Lot parking area. Site security at the established work areas and traffic management have been carefully evaluated to make sure that appropriate controls and monitoring programs are in place during the implementation of the project. These controls and monitoring programs are described in this section.


3.1 SITE SECURITY & CONTROL

The majority of the work activities will take place on the NYS Fairgrounds property. Public access to these areas will be restricted for the safety of both the public and the site workers. With large equipment in constant operation, these type of construction sites have inherent risks. Work activities are carefully planned, and site workers are required to go through extensive site- and activity-specific training to minimize potential risks associated with the work they will be completing. Properly planned site security is vital for the protection of the public, who may be unaware of site conditions or may not understand the risks associated with project operations.

3.1.1 Site Layout & Work Zones

Work areas are being established to support the project and include equipment and material staging areas and areas where capping will take place. Access to these areas will be restricted. Site workers will also provide security surveillance. Site related activities are anticipated to take place 8 hours a day, Monday through Friday. General security measures at all work areas will include clearly identifying each area as needed (e.g., with flagging tape, construction fencing, etc.) and restricting access where work is taking place. Additional measures may be taken to secure equipment left unattended. For example, portable equipment will be secured in designated areas, heavy equipment will be relocated to a safe location, and work areas will be properly barricaded. Temporary fencing and signage will be installed as required in places where work activities may be taking place. The site perimeter will be posted with signs stating "DANGER – CONSTRUCTION AREA – UNAUTHORIZED PERSONNEL KEEP OUT" or acceptable alternate.

The overflow portion of the NYS Fairgrounds Orange Parking Lot is not normally accessible to the public from the I690 Exit 7 or State Fair Boulevard during non-event time periods. However, public access is afforded during daylight hours to the Onondaga County West Shore Recreational Trail. Throughout construction Honeywell will delineate the active work zone with highly visible barriers and signs. Honeywell will coordinate any changes to access with the NYS Fair and Onondaga County. Construction activities will be sequenced to allow public access to the site to the extent possible during events. However, sometimes the nature and extent of construction activities will require that access to this area be restricted or closed.

3.1.2 Vapor & Odor Control

Vapors are not anticipated to be an issue during the execution of this project. If vapors do become a problem, the following controls will be implemented to mitigate these issues:
3.1.3. **Dust Control**

Dust released during remedial activities represents a nuisance and a potential health hazard.

The following controls will be implemented to mitigate dust issues:

- Water will be used to suppress dust on haul roads and access ways as required by dust monitoring and visual observations.
- A water truck will be on site to support dust control activities if dry, dusty conditions are encountered.
- The site speed limit of 10 mph (or as otherwise posted) will be enforced. Slower vehicle speeds reduce road dust and minimize the potential for accidents and spills. Dust monitoring will be conducted per the Community Air Monitoring Program (CAMP).

3.2. **TRAFFIC MANAGEMENT**

Truck and heavy equipment traffic represents the most frequent point of interaction between the Wastebeds 1-8 project and members of the local community and is therefore one of the most critical elements of community health and safety planning. A driver safety program has been established and serves to communicate project requirements to truck drivers and equipment operators and monitors compliance with project traffic rules. This program also prescribes measures for addressing out-of-compliance operators, up to removal of non-compliant operators from the project.

In addition to the safety program, heavy equipment operators must have a license or certificate that indicates they have passed a written test and "road" test for the type of equipment they will be operating. Heavy equipment will be equipped with backup alarms, horns, and other safety devices.

Temporary fuel storage tanks will be labeled as to their content and be protected from collision by site vehicles using solid barricades including balusters, chain link fence, or equivalent. Spill kit (55 gallon sorbent capacity contained in an overpack) and one 20lb Type ABC fire extinguisher will be located within 45 feet of fueling areas. Tanks will be rated for above ground use and provided with secondary containment. Tanks and dispensing hose will be bonded and grounded. Temporary secondary containment must be provided in the refueling area that includes the storage tank and dispensing hoses.

Honeywell will coordinate with Onondaga County and NYS Fair representatives to maintain access to the Orange Parking Lot and the Onondaga County Amphitheater throughout construction. Documentation of the correct cover thickness, including pre- and post-construction survey data for respective areas of the parking lot and a plan drawing depicting the extent of completed area(s), will be provided to NYSDEC for approval as the areas are completed. Upon receipt of NYSDEC approval, portions of the parking lot that have been completed may then be opened for use by members of the public attending events at the Amphitheater. Upon completion of the project, the cover thickness will be documented in the annual Construction Completion Report (CCR) and the Final Engineering Report (FER) for the Site.

4. **CHEMICAL PARAMETERS OF CONCERN**

The OSHA HAZWOPER standards (29CFR1910.120 and 1926.65) and OSHA Hazard Communication Standard require that site personnel, subcontractors, and visitors must be informed of chemical hazards associated with their work area. Exposure to surficial Solvay waste, a non-hazardous white to gray material present at the site as a result of historical industrial activities and land uses, is the primary concern for site workers and visitors. Potential exposure pathways to this material include:
Contaminated soil and/or water
- Inhalation of contaminated dusts
- Skin contact/absorption with contaminated soils and/or water

The primary route of exposure is inhalation of airborne contaminants and contaminated dusts. However, inhalation of airborne contaminants approaching the OSHA PELs is unlikely because of natural ventilation of the work area, safe work practices, PPE, and/or air monitoring. Additional information pertaining to the site environmental conditions can be found in the *Revised Remedial Investigation Report* (OBG, 2014A) and the *Revised Final Feasibility Study Report* (OBG, 2014).

## 5 EMERGENCY RESPONSE PLAN

This emergency response section provides contact information for resources to be contacted in the event of a site emergency.

### 5.1. EMERGENCY PHONE NUMBERS

Emergency phone numbers will be posted or provided on site. Emergencies encountered on this site will be responded to by a combination of off-site emergency services and site personnel.

| TABLE 5.1 - EMERGENCY NUMBERS |
| Fire, Explosion, Emergency Medical |
| OSHA-Recordable Injuries, Unexpected Structural Collapse, Petroleum Spills |

**Honeywell**

| Project Manager | Steve Miller | (315) 741-3723 |

**State or Local Resources**

| Hospital | Upstate Medical University |
| 750 East Adams Street |
| Syracuse, NY 13210-2375 |
| (315) 464-5611 |

| Occupational Clinic | Industrial Medical Associates |
| 961 Canal St, Syracuse |
| (315) 478-1977 |

| Police | Town of Geddes Police Department |
| 1000 Woods Road |
| Syracuse, NY 13209 |
| 911 |
| (315) 468-3283 |

| Fire Department | Solvay Fire Department |
| 1925 Milton Ave |
| Solvay NY 13209 |
| 911 |
| (315) 468-1710 |

| NYS DEC | To be notified by O’Brien & Gere upon major vapor or dust release |
| (845) 561-4400 (main number) |

| NYS DEC | Region 7 – Syracuse |
| 615 Erie Blvd West |
| Syracuse, NY |
| (315) 426-7200 |

| NYSDOH | NYSDOH Corning Tower |
| Empire State Plaza |
| Albany, NY 12237 |
| (866) 881-2809 |
Refer to attached Figure 2 for Hospital Route Map.

5.2. GENERAL EMERGENCY RESPONSE PLAN

In the event of a site emergency, O’Brien & Gere will call the site Honeywell Emergency Response Team and/or 911. When necessary, an O’Brien & Gere representative will coordinate the arrival of on-site emergency personnel and Honeywell emergency response employees.

6 REFERENCES


May 20, 2016

Mr. John P. McAuliffe, P.E.
Honeywell International, Inc.
301 Plainfield Road
Suite 330
Syracuse, NY 13212

Re: Wastebeds 1-8 OU1, Phase 2 – 2016 Remedial Action Work Plan

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation (NYSDEC) has completed its review of the “Phase 2 – 2016 Remedial Action Work Plan, Wastebeds 1-8 Operable Unit (OU1)” (RAWP) dated May 2016 and submitted with your letter dated May 18, 2016. Based on our review, the RAWP is approved. If you have any questions, please contact me at 518-402-9796.

Sincerely,

Tracy A. Smith
Project Manager

ecc: D. Witt, NYSDEC  R. Nunes, USEPA  M. Sergott, NYTDOH
D. Hesler, NYSDEC  H. Warner, NYSDEC  J. Shenandoah
J. Heath, Esq.  T. Joyal, Esq.  A. Lowry
C. Waterman  M. Broschart, OBG  R. Quail, NYSDEC
C. Calkins, OBG  S. Miller, Parsons  T. Glazier, O.C.
B. Kubiak, OBG  T. Conklin, OBG  D. Crawford, OBG
May 18, 2016

Mr. Tracy Smith, P.E.
Project Manager
NYSDEC Div. of Environmental Remediation
Remedial Bureau D - 12th Floor
625 Broadway
Albany, NY 12233-7016

RE: Phase 2 - 2016 Remedial Action Work Plan
Wastebeds 1-8 Operable Unit 1 (OU-1)
Town of Geddes, Onondaga County, New York
Index No. R7-0849-15-02

Dear Mr. Smith:

Attached please find one electronic copy of the Phase 2 - 2016 Remedial Action Work Plan (RAWP) - Wastebeds 1-8, Operable Unit 1. The RAWP was prepared by OBG.

Please contact Michael Broschart of OBG (315-956-6585) or myself if you have any questions.

Sincerely,  

John P. McAuliffe, PE  
Program Director, Syracuse

Enc. 1 copy, 1 CD

cc: Robert Nunes, USEPA (1 copy, 2 CDs)  
Harry Warner, NYSDEC Reg 7 (1 copy, 1 CD)  
Mark Sergott, NYSDOH (1 copy, 1 CD)  
Margaret A. Sheen, Esq., NYSDEC, Reg 7 (ec)  
Argie Cirillo, Esq., USEPA (ec)  
Brian D. Israel, Esq., Arnold & Porter (ec)  
Travis Glazier, O.C. Office of the Environment (1 copy, 1 CD)  
Joseph Heath, Esq., (ec)  
Thane Joyal, Esq., (1 copy, 1 CD)  
Jeanne Shenandoah, Onondaga Nation (1 copy)  
Curtis Waterman, HETF (ec)  
Alma Lowry, (ec)  
Michael Spera, AECOM (1 copy, 1 CD)  
William Hague, Honeywell (ec)  
Steve Miller, Parsons (ec)  
Thomas Conklin, O’Brien & Gere (1 copy)  
Bradley Kubiak, O’Brien & Gere (ec)  
Douglas M. Crawford, O’Brien & Gere (ec)  
Christopher C. Calkins, O’Brien & Gere (ec)  
Michael B. Broschart, O’Brien & Gere (ec)
Phase 2 – 2016 Remedial Action Work Plan
Wastebeds 1 – 8 Operable Unit 1 (OU-1)
Town of Geddes, Onondaga County, New York
Index No. R7-0849-15-02

May 2016
I, Douglas M. Crawford, certify that I am currently a NYS-registered Professional Engineer and that this Remedial Action Work Plan was prepared in accordance with applicable statues and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

This Work Plan was developed pursuant to the Order on Consent (Index R7-0849-15-02) between Honeywell and the New York State Department of Environmental Conservation (NYSDEC).

066649                                       May 18, 2016
NYS Professional Engineer #                     Date

Signature                                  

Douglas M. Crawford
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1. INTRODUCTION

This Remedial Action Work Plan (RAWP) presents the scope of work associated with Operable Unit (OU)-1 Phase 2 at the Wastebeds 1-8 Site (Site) (Figure 1). This RAWP has been prepared in accordance with the Remedial Design/Remedial Action (RD/RA) Work Plan (OBG, 2015a) in order to address the Wastebeds 1-8 OU-1 selected remedy, and meet the Remedial Action Objectives (RAOs) as outlined in the New York State Department of Environmental Conservation’s (NYSDEC) and U.S. Environmental Protection Agency’s (USEPA) Record of Decision (ROD) dated December 2, 2014 (ROD; NYSDEC and USEPA 2014) and prepared pursuant to the Administrative Consent Order (ACO) (R7-0849-15-02) entered into by Honeywell International, Inc. (Honeywell), and the NYSDEC dated May 8, 2015.

Phase 2 of the OU-1 selected remedy includes installation of a vegetated structural fill cover over a portion of the Orange Parking Lot area and installation of a vegetative enhanced cover over a portion of the site adjacent to Ninemile Creek. The areas proposed to receive cover systems in 2016 are located on the upper portion of the Wastebeds 1-8 complex (Figure 2). The scope of work for the respective areas consists of the following:

- Approximately 8.4 acres of one-foot thick vegetated structural fill cover will be applied to areas of the New York State Fairgrounds overflow parking (passive recreational use) as shown on Figure 2. The structural fill cover will consist of a compacted mixture of aggregate and soil. This cover will be applied directly over existing soil/fill to support vehicle traffic and provide water holding capacity, rooting volume and growing conditions to support vegetation; and

- Approximately 5.6 acres of upland area with limited anticipated recreational use will receive a vegetated enhancement cover. This type of cover was selected because of the existing density of vegetation and limited accessibility.

- Collection of 5 shallow soil samples in the vicinity of sample location WB18-SS-141 (Figure 3) to further delineate the extent of contamination. Samples will be analyzed by USEPA SW-846 method 6010C (TAL metals). Additional details of the proposed sampling are provided in Section 5.1.1.

A detailed description of the elements of the Phase 2 scope of work is provided in Section 5, below and on the Design Drawings, which are provided in Appendix D.

In addition to the elements of the remedy described above, a cover system pilot test will be implemented on a portion of the site where cemented waste material is exposed on steep surfaces adjacent to the Onondaga County West Shore Trail and NY State Fair Orange Parking Lot to verify that the proposed approach is appropriate for full-scale application in this area. The pilot test will consist of the planting of trumpeter vines along the top of the slope to stabilize and cover the exposed waste material. Additional details of the pilot test are provided in Section 5.1.1.

This RAWP is organized in seven sections and five appendices. Background information is presented in Section 1. Section 2 presents the project organization. Section 3 outlines the Health & Safety program for the project. Storm water management requirements are described in Section 4. Cover system design and construction details are presented in Section 5. Construction Quality Assurance/Construction Quality Control (CQA/CQC) procedures are provided in Section 6, and schedule considerations are described in Section 7.

1.1 BACKGROUND

1.1.1 Project Description

As presented in the ROD, the remedy for OU-1 includes the placement of several types of vegetated cover systems in discrete areas of the Site. The specific cover type for a given area is based on remediation goals in surface soil, and current and reasonably anticipated future land use uses at the given Site area. A detailed description of the various cover types identified for the Site are provided in the ROD and the RD/RA Work Plan (OBG, 2015).
As discussed in the RD/RA Work Plan, the Site remedy is being implemented in multiple phases due to cover material availability, material placement productivity rates, planting seasons for the optimal establishment of vegetative enhancements, and site usage by the property owners. In 2015, vegetation enhancement and vegetative soil covers were applied to approximately 24.55-acres of the Site, including steeply sloped berms and areas adjacent to the Lakeview Amphitheatre and Onondaga County West Shore Trail.

1.1.2 Summary of Remedial Design Investigation Shallow Soil Sampling and Test Pit Results

Shallow soil samples were collected in December 2015 from 21 locations, as shown on Figures 3 and 4. Samples were collected from a depth of 0-6 inches below ground surface (bgs) in accordance with the NYSDEC-approved Sampling and Analysis Plan (OGB, 2015b) to evaluate potential exposure scenarios to site constituents for human receptors for the areas being addressed under Phase 2 of the Site remedy where limited historical data was available. Test pitting to a depth of 2 feet bgs was also conducted at ten locations, as shown on Figure 5. Test pitting was completed to verify the thickness of existing cover materials in areas of the New York State Fair Orange and Brown parking lots where limited historical data was available. Analytical data from the samples were compared to NYSDEC Part 375.6 Commercial Soil Cleanup Objectives (SCOs).

Following analysis, the analytical data and test pitting results were reviewed with NYSDEC to confirm the selected remedial approach, as described below in Section 5. A summary of detections above Commercial Use Soil Cleanup Objectives (SCOs) are described below and are provided in Table 1.1 and on Figure 3 and Figure 4. The full analytical data set from this sampling event is provided as Tables 1-2 through 1-7.

Concentrations of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and PCBs were all below Commercial SCOs in samples collected from the Orange parking lot. VOCs, pesticides, and PCBs were all below Commercial SCOs in samples collected from the Brown parking lot.

Inorganics were detected above the Commercial Use SCOs at three locations (WB18-SS-137, WB18-SS-139, and WB18-SS-141) in the Orange parking lot and at two locations (WB18-SS-153 and WB18-SS-154) in the Brown parking lot. SVOCs were detected above the Commercial Use SCOs at 1 location (WB18-SS-152) in the Brown parking lot.

The results of test pitting indicated that sufficient cover thickness (minimum thickness of 1 foot) is present throughout and adjacent to the Orange and Brown parking lots, therefore no additional cover will be required in these areas.
2. PROJECT MANAGEMENT

2.1 PROJECT MANAGEMENT STAFFING

**NYSDEC Project Manager – Tracy Smith**

As the lead regulatory agency, the NYSDEC Project Manager’s functions shall include the following functions:

- Review and approve designs
- Review project submittals for compliance with regulations
- Issue approval to construct the project once design has been approved
- Review and approve major design modifications or requests for variances from the regulatory conditions during construction.

**Honeywell Design / Construction Manager – Steve Miller, P.E.**

The Honeywell Design/Construction Manager will provide technical input and attend meetings with project staff and the NYSDEC.

**Project Officer – Brian White, P.E.**

The Project Officer will oversee project quality, safety, schedule, and overall project performance and will periodically attend construction review meetings, and will be available on an as-needed basis to the project team.

**Project Manager – Christopher Killoren**

The Project Manager will manage the procurement and construction phases of the project on a day-to-day basis, monitor and evaluate project controls throughout the project, and see that the technical and quality objectives are achieved.

**Engineering Manager – Michael Broschart**

The Engineering Manager will lead engineering activities during the construction phase of this project. The Engineering Manager will attend weekly construction progress update meetings at the request of the Project Manager, and provide shop drawing reviews, respond to requests for information, and provide input to value engineering alternatives identified during the construction phase of the project.

**Health and Safety Manager – Steven Thompson, CHST**

The Health and Safety Manager developed, and will support implementation and enforcement of the Site Specific Health and Safety Plan for the project.
3. HEALTH AND SAFETY, AIR QUALITY MONITORING AND DECONTAMINATION

3.1 HEALTH AND SAFETY

3.1.1 Project Health and Safety Plan
The project-specific Health and Safety Plan (HASP) which was developed for Phase 1 of the project has been updated for Phase 2 and is included as Appendix A. The HASP details practices that will be implemented for the safe execution of the project and the safety of workers involved with the project.

Training and planning tools, which will be utilized by the project team will include the following:

- **Project Job Safety Analysis:**
  - Job safety analyses (JSA) will be developed for the scope of work associated with this project. The JSA will be reviewed as part of the site orientation training and all direct hire personnel/subcontractors will be required to follow the requirements of the JSA.

- **Pre-Work Health and Safety Kickoff Meeting:**
  - A pre-work Health and Safety kickoff meeting will be scheduled with the project team prior to the start of the project.

- **Site Orientation Training:**
  - Personnel working on this project will be required to attend a site orientation training session prior to engaging in any work activities and/or entering the work zone.

- **Daily Pre-Task Planners and Weekly Toolbox Safety Meetings:**
  - Pre-Task Planners are prepared on a daily basis and will be reviewed with the work crew focusing on any changes in equipment, tools, work methods or site conditions as well as key hazards and safety controls.
  - Project personnel must attend a project Weekly Toolbox Safety Meeting. These meetings are an opportunity to conduct field safety training, distribute key safety information, reinforce safety as a priority and/or review recent inspection results directly to all project personnel.

3.1.2 Community Health and Safety Plan (CHASP)
The CHASP has been developed to address health and safety procedures that will be implemented to address the protection of the community during the implementation of the Site remedy. The CHASP includes a Community Air Monitoring Plan (CAMP) that addresses potential project air emissions into the off-site community. Community air monitoring will be performed throughout the project in accordance with the requirements of the CAMP. The CHASP and CAMP are provided as Appendix B.

3.2 AIR QUALITY MONITORING

O’Brien & Gere (OBG) will implement a work zone air monitoring program during intrusive activities. This program will be detailed in the site specific JSA.

3.2.1 Work Zone Air Monitoring
If and when intrusive work is being performed, work zone air monitoring will be conducted. Section 5 in the HASP outlines how and when work zone air monitoring will be conducted.
3.3 DECONTAMINATION

Decontamination of equipment will be conducted, as necessary, during the installation of storm water piping, catch basins, and manholes within the NY State Fair overflow parking area as well as if Solvay waste adheres to equipment during the construction of the cover systems. A lined decontamination pad with a low-point collection sump will be constructed onsite for equipment decontamination. Collected decontamination water will be pumped to a storage vessel for fines settling prior to discharging it to the Eastern Lakeshore Pump Station that will convey the water to the Willis Avenue Groundwater Treatment Plant for treatment.

Clean material will be removed, as required, from trucks and heavy equipment prior to leaving the site to prevent tracking of mud and dirt onto roadways. Removal of clean material will be performed in Staging Area C.
4. EROSION AND SEDIMENT CONTROL

The project will be completed in substantive compliance with NYSDEC SPDES General Permit No. GP-0-15-002 per the Stormwater Pollution Prevention Plan (SWPPP) prepared for Phase 1 of the project, which has been updated for Phase 2 and is included as Appendix C. The updated SWPPP provides details of the erosion and sediment control measures that will be implemented and maintained throughout the project.
5. **PHASE 2 COVER SYSTEMS DESIGN AND CONSTRUCTION**

The cover system design, as described below, incorporates green remediation concepts in accordance with DER-31 (NYSDEC, 2010) and USEPA’s Superfund Green Remediation Strategy (September 2010). Specifically, the cover systems have been designed to require minimal maintenance, enhance evapotranspiration, and be integrated with the long-term use of the site. In addition, the following green techniques will be implemented during construction:

- Local sourcing of cover materials;
- Use of local labor resources;
- Use of B-20 biodiesel in heavy equipment; and
- Minimization of equipment idling, consistent with 6 NYCRR Part 217-3 – Idling Prohibition for Heavy Duty Vehicles.

5.1 **PHASE 2 COVER SYSTEMS DESIGN**

The areas proposed to receive cover systems in 2016 are located on the upper portion of the Wastebeds 1-8 complex, as shown on Figure 2. Cover systems were selected based on the existing land use, contaminant levels present, and the current and reasonably anticipated future land use category (active or passive recreational use) for these portions of the Site. The scope of work for 2016 include the following:

- Approximately 8.4 acres of vegetated structural fill cover will be constructed in the overflow parking portion of the Orange Parking Lot. Construction of the vegetated structural fill cover system will include placement and compaction of a one-foot mixture of aggregate and topsoil and associated ecological restoration.
- Approximately 5.6 acres of vegetative enhancement cover will be installed in area indicated on the design drawings. Construction of the vegetative enhancement cover will include the placement of a mulch/compost cover and associated ecological restoration.
- Additional areas may be covered in 2016 if schedule permits. Any additional areas proposed to be covered will be submitted to NYSDEC for approval.

5.1.1 **Vegetated Structural Fill Cover Design**

- Approximately 8.4 acres of vegetated structural fill cover will be constructed within a portion of the Site currently utilized by the New York State Fair and Onondaga County Amphitheater for parking. The structural fill will consist of a blended mixture of narrowly graded crushed stone and clay-loam topsoil. Following compaction of this material, a structural framework is formed by the angular stone. This framework provides water holding capacity, rooting volume and growing conditions to support vegetation, while providing the structure to support vehicle parking.
- A parking-lot pilot study utilizing structural fill was conducted by OBG in the fall of 2013. This pilot test was conducted in the northwestern corner of the parking area to evaluate the effectiveness of this cover type. The results of this pilot study showed that the optimal depth of structural fill material for both parking purposes and vegetation structure was one-foot depth. Additional results of the pilot study are presented in Appendix A of the RD/RA Work Plan (OBG, 2015a).
- The vegetated structural fill will be placed on a woven geotextile fabric over the existing soil/fill material. Existing utility poles located within the workzone, as indicated on the drawings, will be protected throughout the project, including coordination with the local utility to provide bracing of poles, if required. Prior to placement of the vegetated structural fill, a network of swales with underdrain piping will be installed to collect storm water. Stormwater will be conveyed from the swales to an area north of the parking area when stormwater volumes exceed the holding capacity of the structural fill. The existing parking surface will be graded prior to material placement to establish the subgrade for the structural fill. Travel lanes constructed of compacted gravel will be provided as shown on the Design Drawings (see Appendix D). Following material placement, fescue grasses and mulch/compost to enhance the evapotranspiration (ET) properties of
the cover will be added. The grass species were selected based on trampling tolerance, high rate of productivity, and amenability to periodic mowing and use as a public space.

Five additional shallow soil samples will be collected from the vicinity of sample location WB18-SS-141 (Figure 3) to further delineate the extent of contamination. Shallow soil samples will be collected and analyzed in accordance with the requirements of the NYSDEC-approved Honeywell Syracuse Portfolio Site Investigations Quality Assurance Project Plan (QAPP) (O'Brien & Gere, 2011) and USEPA Uniform Federal Policy (UFP) QAPP (USEPA, 2005) requirements. Samples will be collected from the 0-6 inch interval. The actual sampling locations will be finalized in the field in concurrence with the NYSDEC, based on site conditions.

Samples will be collected using a decontaminated stainless steel shovel, trowel, or hand auger. The samples will be homogenized and transferred to sample containers provided by the laboratory. Non-dedicated sample equipment will be decontaminated between locations in accordance with the QAPP. An equipment blank will be collected by running distilled water through the decontaminated sample apparatus, and collecting it in appropriate laboratory provided containers. The sample containers will be placed in a cooler containing ice and submitted with appropriate chain of custody documentation to a New York State-certified laboratory for analysis by USEPA SW-846 method 6010C (TAL metals). Analytical data from samples collected will be used to determine the extent of structural fill cover that will be required in this area.

The construction means and methods for the installation of underdrains and placement of structural fill are discussed in Sections 5.1.1.1 and 5.1.1.2 Sampling and analysis of clean fill materials will be conducted prior to placement in accordance with the requirements of Section 6 (Construction Quality Assurance/Construction Quality Control) and managed on-site in accordance with the requirements in Section 5.3.

Honeywell will coordinate with Onondaga County and NYS Fair representatives to maintain access to the Orange Parking Lot and the Onondaga County Amphitheater throughout construction. Documentation of the correct cover thickness, including pre- and post-construction survey data for respective areas of the parking lot and a plan drawing depicting the extent of completed area(s), will be provided to NYSDEC for approval as the areas are completed. Upon receipt of NYSDEC approval, portions of the parking lot that have been completed may then be opened for use by members of the public attending events at the Amphitheater. Upon completion of the project, the cover thickness will be documented in the annual Construction Completion Report (CCR) and the Final Engineering Report (FER) for the Site.

5.1.1.1 Storm Water Management

A network of slotted 6-inch diameter underdrains will be installed throughout the overflow portion of the Orange parking lot, as shown on the Design Drawings, to convey storm water in excess of the water holding capacity of the structural fill to a series of swales located throughout the parking lot. The vegetated swales will provide additional storm water holding capacity and will include low point inlet structures and conveyance piping to convey storm water away from the parking area during periods when the storm water volume exceeds the capacity of the structural fill and vegetated swales.

5.1.1.2 Vegetated Structural Fill

Vegetated structural fill, as shown on the Design Drawings, will be installed over existing soil/fill within the overflow portion of the Orange parking lot. The structural fill cover will consist of a compacted mixture of crushed stone and topsoil meeting the requirements outlined within Section 6. The final blended mixture shall consist of approximately a 4:1 ratio of stone to topsoil by volume. Crushed stone and topsoil will be placed within the designated mixing area using a front-end loader and mixed with an excavator until a uniform mixture is achieved. Water will be added to the materials during the mixing process, as required, to achieve an appropriate moisture content for compaction. The blended material will be loaded out of the mixing area using a front end loader into an off-road dump and transported to the designated area where it is to be placed and compacted. Material will be spread using a bulldozer and compacted in 6-inch lifts with a vibratory roller. Material compaction will be achieved by making a minimum of six passes with a vibratory roller.
5.1.2 Vegetation Enhancement

Vegetation enhancement, as shown on the Design Drawings, will be completed in areas with existing vegetation through broadcast spreading of the specified seed mixes over mulch/compost. This method will be applied in areas with steep terrain, dense woody vegetation, and non-public accessible areas. Approximately 300 cubic yards of mulch/compost that is consistent with Type C compost (NYSDOT, 2008) for erosion and sediment control compost blankets will be applied per acre. This application rate of 300 cy/acre was established based on the results of the cover system pilot study, which was conducted at the site between 2011 and 2014. Details of the pilot study are presented in Appendix A of the RD/RA Work Plan (OBG, 2015a). Vegetation enhancements will be conducted with minimal clearing to minimize disturbance of established vegetation. Clearing efforts will target the removal/control of invasive species prior to placement of vegetative enhancement cover.

Sampling and analysis of mulch/compost will be conducted prior to placement in accordance with the requirements of Section 6 (Construction Quality Assurance/Construction Quality Control). Prior to placement, mulch/compost will be screened to remove coarse woody debris and other deleterious material, as necessary. The vegetation enhancement cover will be placed in one of two ways. In areas that are easily accessible, a spreader is expected to be used to place the mulch/compost at the desired rate. In areas with steep slopes, the material is expected to be placed using a blower truck or other technology. In both cases, the material will be hauled to the work areas via a dump truck where it will be loaded directly onto the respective spreading equipment or staged and loaded onto the equipment using a wheel loader.

5.2 VEGETATED COVER PILOT TEST

A vegetative cover pilot test will be conducted on the steep slopes adjacent to the Onondaga County West Shore Trail parking area and the NY State Fair Orange Parking Lot. The objective of the pilot test is to verify that the steep slopes can be effectively covered and stabilized through the use of a vegetative cover. The pilot test will include light clearing of the area along the top of the slopes to afford access for the placement of topsoil and plantings. Once clearing is completed, topsoil will be placed in a windrow at the top of the slope approximately 2 feet deep and 4 feet wide. Erosion control fabric will be installed over the topsoil to minimize erosion while vegetative cover is established. Vegetation enhancement cover, as described above in Section 5.1.2, will be applied where feasible to promote establishment of vegetation on the slopes. Trumpet vines (Campsis radicans), Virginia Creeper (Parthenocissus quinquefolia), wild grape (Vitis spp.), and American Bittersweet (Celastrus scandens) will be planted on 4 foot centers along the length of the topsoil windrow. As the vines grow over the exposed slopes, their aerial rooting, cover and associated accumulation of organic matter will aid in stabilization of the slopes while enhancing the habitat in the area. Following completion of plantings, the topsoil windrow will be seeded with the successional old-field seed mix, as described in Section 5.5. The results of the pilot test plantings will be evaluated at the end of the first growing season and a determination will be made if additional plantings at the base of the exposed slope is warranted to establish an effective vegetative cover.

5.3 MATERIALS MANAGEMENT

Imported fill and mulch/compost will be staged in the clean fill staging area adjacent to the Orange Lot (Figure 2). Structural fill materials will be blended on-site prior to placement and compaction. If precipitation is anticipated the blended material will be covered to prevent topsoil from washing out of the mixture. A mixing pad will be constructed within the clean fill staging area to provide a clean surface for mixing the structural fill materials.

In the event that spoils are generated, they will be hauled to Staging Area C where they can be characterized accordingly. If required, Staging Area C will be expanded to the North to allow for the additional spoil material. Some clearing will be needed for the expansion. If spoils are generated, waste characterization samples will be collected at a frequency of one composite sample per 1,000 CY of material. Samples will be analyzed for the following:

- Total and TCLP VOCs by EPA Methods 8260B and 1311/8260B, respectively
- Total and TCLP SVOCs by EPA Methods 8270C and 1311/8270C, respectively
Total and TCLP Mercury by EPA Methods 7471A and 1311/7470A, respectively
Total and TCLP Metals by EPA Methods 6010A and 1311/6010A, respectively
Ignitability by EPA Method 1010
Reactivity (Cyanide and Sulfide) by EPA Methods 7.3.3.2 and 7.3.4.1
Corrosivity by EPA Method 9045C, and
Percent Moisture by EPA Method D2216

In addition, one discrete sample will be collected for VOC analysis per composite sample, at a depth below 6-inches.

If the soils are characterized as non-hazardous, with NYSDEC approval they will remain within the staging area and be managed on site. Material remaining on the site after completion of construction will be consolidated, graded, and restored. The final grading plan will be coordinated with Honeywell, NYSDEC, and Onondaga County.

If the soils are characterized as hazardous, they will be shipped off site and disposed of at a licensed disposal facility. Additional details for hazardous material disposal will be provided during construction, if warranted. Hazardous waste shipping manifest and details of the disposal will be documented in the Construction Completion Report.

5.4 CLEARING AND INVASIVE SPECIES MANAGEMENT

Areas to receive the vegetation enhancement cover system will be cleared of invasive species (e.g., European buckthorn, honeysuckle, etc.) to facilitate cover system installation and promote the establishment of native vegetation. Targeted vegetation will be cut in a manner that allows for subsequent application of herbicide as necessary. Vegetation removed from the area will be staged in a designated location for re-use on site or disposal. Prior to re-use of vegetative material on site, the material will be evaluated by a biologist for seed content to minimize potential for re-establishment of invasive species in covered areas. Vegetation removed by hand clearing methods may be utilized on site as brush piles for habitat enhancement. Chipped vegetation may be re-used on-site as a temporary storm water controls.

5.5 ECOLOGICAL RESTORATION

The restoration approach for the pilot test area and vegetative enhancement cover system described below was developed in consultation with the State University of New York College of Environmental Science and Forestry (SUNY ESF) and has been selected based on land use and land form for the purposes of mitigating potentially unacceptable exposure risks and surface erosion. In addition to minimizing erosion and potential exposure of human and ecological receptors to contaminants in soil/fill materials, restoration will serve to enhance vegetation structure and ecological function by restoring native plant species in support of both natural and novel plant communities.

Community types planned for each of the vegetated cover systems are described below. The Topsoil and Seeding technical specification (located in Appendix E) identifies plant species proposed for installation in each of the upland community types.

The successional old-field community is intended for sparsely vegetated areas of the Site which have naturally developed towards an early successional community on existing soil/fill material but lack a closed canopy. Several species have already successfully established throughout these sparsely vegetated areas of the Site, including scotch pine, juniper (Juniperus sp.) and European birch (Betula pendula). To the extent possible, these species will be preserved, as they are considered non-problematic and provide habitat value for wildlife and soil stabilization. Invasive shrubs present on Site such as honeysuckle (Lonicera sp) and European buckthorn (Rhamnus cathartica) will be targeted for treatment/removal. Following invasive species treatment (detailed in
Section 5.4) mulch/compost will be applied to these areas. To further facilitate the establishment of scrub shrub/old-field conditions in these areas, a successional old-field seed mix will be broadcast over the installed mulch/compost. The species included in this seed mix, including a variety of grasses and forbs native to Central New York, exhibit a wide ranging tolerance to environmental conditions. In general, these species are capable of establishing quickly, enhancing soil stability, and providing wildlife with a valuable source of forage and cover.

The restoration approach for the structural fill cover system is to hand broadcast a tall fescue seed mix over the one-foot structural fill cover system. These species typically establish easily by seed, tolerate parking area stresses, and take well to mowing. Fescues are relatively robust cool-season grasses that will likely increase the evapotranspiration currently occurring at the parking area. Seed will be broadcast following compaction of the structural fill and covered with approximately one-inch of mulch/compost to protect seed prior to germination. Seeding and mulching shall be completed prior to using the area for event parking in order to minimize compaction and degradation of the soil structure. Additional seed/mulch will be applied after the concert season in areas where vegetation has not been established.

5.6 CONSTRUCTION COMPLETION REPORT

Following completion of Phase 2 of the Site remedy, a CCR will be prepared to document the implementation of the remedial action. The CCR will be prepared in accordance with the requirements of DER-10. The CCR will be incorporated into the FER for the Site upon completion of the Site remedy. The FER will be consistent with the requirements of a Remedial Action Report (RAR) as per USEPAs Closeout Procedures for National Priorities List Sites (USEPA, 2011). The CCR will include the following:

- A description of the remedy, as constructed, pursuant to the RAWP;
- A summary of the remedial action completed, including:
  - A description of problems encountered and a description of their resolution;
  - A description of changes to the design documents and the reason for the change(s);
  - Quantities/concentrations of contaminants removed or treated (if any);
  - A listing of waste streams, quantities of materials disposed, and disposal location(s) (if any);
  - Boundaries of the real property subject to the environmental easement, deed restriction, or other institutional controls; and
  - Restoration actions.
- A listing of remedial action objectives applied to the remedial action;
- A description of applicable areas of remedial action compliance; and
- “As-built” drawings for this phase of the Site remedy.
6. CONSTRUCTION QUALITY ASSURANCE/CONSTRUCTION QUALITY CONTROL

6.1 MATERIAL IMPORTATION

Prior to the installation of earthen materials, the supplier will be required to provide the following:

- Name and location of the material source
- Affidavit from the owner of the source for each type of borrow material to be imported to the site
- Laboratory analytic data for each material

The Affidavit from the owner of the source of each type of borrow material shall state that, to the best of his knowledge, the site of the source material was never used as a dump site for chemical, toxic, hazardous or radioactive materials and it is not now, or ever has been, listed as a suspected depository for chemical, toxic, hazardous, or radioactive materials by any federal, state, or other governmental agency, department, or bureau.

Laboratory analytic data (or documentation of such data no older than one year from submittal) will be provided for these soils for the compounds in Table 375-6.8(a) “Unrestricted Use Soil Cleanup Objectives” in NYSDEC Subpart 375. Failure of a single compound test result will mean that the entire material batch will be rejected unless specifically accepted on a test-by-test basis by OBG and approved by NYSDEC.

In addition, the supplier will be required to collect samples of the proposed topsoil and submit, to OBG for review, geotechnical testing results as follows:

| Table 6-1   Topsoil Analysis |
|-------------|-----------------------------|
| Parameter   | Standard        | Criteria                                      |
| Grain Size  | ASTM D422       | Monitor consistency of borrow source          |
| pH          | ASTM D4972      | pH in the range of 5.5 to 7.6                 |
| Organic Content | ASTM D2974   | Organic concentration of 5% to 15% in wetland areas (deep emergent, shallow emergent and wet meadow zones) Organic concentration of 3% to 15% in other areas |
| Liquid Limit, Plastic Limit and Plasticity Index | ASTM D4318 | Silty Loam, Loam, Sandy Loam |

Notes:
1. ASTM D422 – Method for Particle-Size Analysis of Soil
3. ASTM D4972 – Method for pH of Soils
4. ASTM D4318 – Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
### Table 6-2 Crushed Gravel

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradation</td>
<td>NYSDOT Section 703-02 Coarse Aggregate&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>Monitor consistency of source</td>
</tr>
</tbody>
</table>

### Notes:
1. Table 703-4 – Size Designation 3A

### 6.2 MATERIAL PLACEMENT

This section provides the basis for CQA/CQC activities associated with the implementation of Phase 2 of the Site remedy.

#### 6.2.1 1 Foot Vegetated Structural Fill

In areas where a one foot vegetated structural fill cover will be applied within the New York State Fairgrounds parking lot, the areal extent of the cover will consist of a one foot thick layer of structural fill within the extents shown on the Design Drawings. A 50-foot grid system will be implemented and verified by topographic survey both pre-construction and post-material compaction. Following survey of compacted finished grade, survey logs will be compared to subgrade elevations to confirm that one foot of structural fill is present.

An OBG representative will be on-site to monitor the mixing and compaction of structural fill. As discussed in Section 5.1.2 the moisture content of blended materials will be monitored in order to achieve the optimal conditions for material compaction. During the mixing process materials will be mixed until there is uniform coverage of topsoil on the aggregate. The compacted material will be monitored to identify ‘voids’ between compacted aggregate or ‘matting’ of topsoil over compacted aggregate. Both of these scenarios would indicate either improper mixing, moisture content, or material quantities.

#### 6.2.2 Vegetation Enhancement

As discussed in Section 5.2.1.1, the vegetation enhancement cover will be applied at a rate of 300 cy/acre. Prior to the start of placement, the mulch/compost spreader(s) will be calibrated to establish consistent application across the areas to be covered. The spreader(s) will be calibrated by adjusting the delivery of mulch/compost to match the specified application rate. This will be based on the capacity of the spreader, speed of application, and width of spreader swath.

Throughout the implementation of the vegetation enhancement cover, the construction management team will monitor and document application rates in the project field log book/daily field reports. In addition to calibration and monitoring of application rates by the construction management team, application rates will be verified on a daily basis by dividing the total daily quantity of mulch/compost applied by the total daily acreage covered. Application rates will be documented in the CCR.

A stockpile of mulch that will be used for the vegetated enhancement cover is currently staged in the clean fill staging area. As additional mulch is delivered to the site, samples will be collected at a frequency of 1 sample/5,000 cy.. Samples will be analyzed for the constituents listed in Appendix 5, Subdivision 5.4(e) in NYSDECs DER-10. If a constituent exceeds the unrestricted use levels for imported fill or soil as listed in Appendix 5, NYSDEC will be contacted to discuss the intended mulch use and if additional sampling is appropriate.

Mulch sampling will be conducted by dividing the stockpile via a grid pattern based on estimated volume. VOC samples will be collected as grab samples. All other samples will be a composite sample of the grid area, which will be prepared by collecting and mixing up to five random discrete samples. If additional sources of mulch are identified, the proposed sampling frequency will be reviewed with NYSDEC.
6.3 RESTORATION

This section provides the CQA/CQC procedures for site restoration including seeding application rates and performance criteria. In this document performance criteria are presented for restoration of the structural fill parking cover.

The success criteria will be monitored in two stages. In Stage 1, data will be collected to evaluate whether the vegetation zone has been constructed as designed. The Stage 1 criteria focus on the physical parameters of each zone including cover system material application rates or thicknesses and seeding rates. QA/QC procedures for assessing material rates and thicknesses are discussed in Section 6.2. Seed application will be monitored in the field by a biologist to evaluate whether appropriate rates are being applied per the Topsoil, Seeding, and Planting Specification (Appendix E). A 50-foot grid system will be implemented in order to monitor the rate at which seed is being broadcast and to achieve a more even coverage. Plant species composition will also be evaluated by reviewing nursery submittals (e.g. seed tags, bills of lading for seed shipments, etc) throughout the Stage 1 monitoring effort.

Following construction of the cover systems, success criteria will be used to evaluate vegetation establishment. After the first full growing season, an evaluation of percent cover of vegetation will be performed to evaluate the establishment success of vegetation. The Stage 2 criteria for vegetation restored during OU-1 Phase 2 will not include evaluation of plant species structure and composition or wildlife observations for the areas where vegetated structural fill are applied. Given the anticipated frequency that these areas will be mowed and used for event parking, it is unlikely that these areas will provide valuable habitat for wildlife.
7. SCHEDULE

The project schedule for Phase 2 of the Site remedy is provided as Figure 6.
REFERENCES


