January 14, 2013

Mr. Edward Hampston.
Environmental Engineer
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway – 12th Floor
Albany, New York 12233-7017

Re: Remedial Action Work Plan
Former Rochester Metal Etching Company
100 Lake Avenue
Rochester, NY
Site No. 828100

Dear Mr. Hampston

Groundwater & Environmental Services, Inc. (GES) is pleased to submit to you the attached Remedial Action Work Plan (RAWP) for the former Rochester Metal Etching Site (No. 828100) located at 100 Lake Avenue in Rochester, New York. This work is being done in accordance with Call Out ID 121213.

GES performed a pilot test with Mitigation Technologies (MT) on November 30, 2012, and came up with a design for a SSD/SVE. The design is included in the RAWP.

Estimates for the installation of the system were provided by both MT and GES. GES' estimate was compiled using the rates in our NYSDEC Standby Remedial Services Contract. A comparison of the estimates indicated that MT's price was approximately 18% lower than GES'. Based on this comparison, GES recommends that MT be awarded the work based on their lower cost estimate.

GES appreciates the opportunity to provide the above services to the NYSDEC. If you have any questions or comments, please contact us (800) 220-3069 ext. (4065).

Sincerely,
GROUNDWATER & ENVIRONMENTAL SERVICES, INC.

Mark Boorady
Senior Engineer

Attachment:
Remedial Action Work Plan

REMEDIAL ACTION WORK PLAN

Former Rochester Metal Etching Company
100 Lake Avenue
Rochester, New York (Monroe County)
Site #828100

Prepared For:

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation
625 Broadway- 12th Floor
Albany, New York 12233-7017

Report Date
January 14, 2013

Prepared by: _____
Jason Sgarlata
Environmental Engineering Technician

Prepared/Reviewed by: _____
Mark Boorady
Senior Engineer

GROUNDWATER & ENVIRONMENTAL SERVICES, INC.
300 Gateway Park Drive
North Syracuse, New York 13212
(800) 220-3069

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Drawings and Figures

Appendices

1) Introduction

Groundwater & Environmental Services, Inc., (GES) of North Syracuse, New York, has prepared this Remedial Action Work Plan (RAWP) for the New York State Department of Environmental Conservation (NYSDEC) for the former Rochester Metals Etching Company (site #828100) located at 100 Lake Avenue, Rochester, Monroe County, New York. This RAWP is written in accordance with DER-10 and is based on the Record of Decision dated March 2011.

2) Description

The Rochester Metal Etching Company (RME) site is located at 100 Lake Avenue in Rochester, Monroe County, New York. The main feature of the 0.22 acre site is a two story building surrounded by paved parking areas and walkways. The site, located within the Community Center zoning district, is near the intersection of Lake Avenue and Spencer Street within a developed urban area of downtown Rochester. The site property, currently used for commercial purposes, is generally flat with the exception of the of the east corner of the property, which dips to the east. Based on the monitoring wells and site topography, the groundwater flows to the east/northeast towards the Genesee River, located approximately 500 ft to the east of the RME site. At this location, the Genesee River is located within a gorge which is 100 feet below the elevation of the RME site.

The surrounding properties include commercial and industrial parcels which are covered by buildings and pavement (paved parking or roads). The site is bounded to the north by a mixed use building (commercial first floor/apartments upper floors) and a vehicle rental location across Spencer Street, to the west across Lake Avenue by parking lots, to the east by a frozen food facility, and to the south by a diner.

From 1998 to 1999, the NYSDEC conducted a preliminary investigation of the RME facility. The investigation data led to the listing of the Rochester Metal Etching (RME) Company site as a Class 2 Inactive Hazardous Waste Disposal Site in 2001 and the subsequent completion of the RME site remedial investigation/feasibility study (RI/FS) in 2007.

In order to address conditions at the site associated with potential environmental contamination, the Brotherhood, MC Inc. (the current site property owner) conducted the following work:

- Concrete Filling of Basement Sumps and Collection Trenches:

  The sumps and the trench associated with the RME site facility were identified as the primary preferential pathways identified for the transport and migration of site constituents to subsurface soil and groundwater. In 2005, the owners of the RME site filled in the sumps and the trench with concrete, eliminating these structures as potential pathways for the transport of materials from inside the facility to subsurface media.

- Site Cover:

  In 2009, the owners of the RME site paved the entire site with asphalt, including the previously exposed surface soil area located in the southeast corner of the site. The boundaries of the site are either covered by asphalt paving or the site building, thus eliminating the potential of direct contact with contaminated soils on site. The cover will be maintained under the SMP as one of the components of the selected remedy.

A site location map is attached as **Figure 1.**

3) Objectives

The primary components of the remedial action, as selected in the Record of Decision, include:

A. Remedial Response Action

A soil vapor intrusion mitigation system (sub-slab depressurization system) will be installed within the site building located at 100 Lake Avenue. The guidelines for soil vapor intrusion mitigation can be found in NYSDOH's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York."

B. Engineering Controls

1. Maintain the cover over the limits of the site property which includes asphalt paving, concrete paving, sidewalks, and the building footprint.
2. Maintain a soil vapor intrusion mitigation system (sub-slab depressurization) that mitigates the current exposure of vapor intrusion within the on-site building.
3. The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

C. Institutional Controls

1. Imposition of an institutional control in the form of an environmental easement for the controlled property that would include:
   - (a) limit the use and development of the controlled property to: commercial and/or industrial use;
   - (b) restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH or County DOH;
   - (c) prohibit agriculture or vegetable gardens on the controlled property;
   - (d) require compliance to the Department approved Site Management Plan;
   - (e) require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3).

2. The remedy would require the development, Department approval, and implementation of a Site Management Plan for the site which would include the following:
    (a) an Institutional and Engineering Control Plan that identifies all use restrictions and engineering systems for the site and manages future development of the site including:
        (i) provisions for management of future excavations in area of residual contamination,
        (ii) groundwater restrictions,
        (iii)management and inspection of the final engineering cover system,
        (iv)and maintaining site access controls and Department notification
    (b) an Operation and Maintenance Plan to assure continued operation, maintenance, monitoring, inspection, and reporting of the active components of the remedy.
        (i) provision to maintain all active components of the operation, maintenance, monitoring plan.
        (ii) maintain site access controls and Department notification;
        (iii)providing the Department access to the site and O&M records.

4) Health and Safety Plan

A Health and Safety Plan (H&SP) has been developed for the site and for the proposed work that is to take place. This is included in **Appendix A**. The H&SP does not include a community air monitoring plan (CAMP) because the work will be completed inside the structure and engineering controls will be used to eliminate any air particulates caused during construction. If remedial activities occur outside the building with the potential to generate particulates or other contamination, the generic CAMP included in DER-10 will be implemented to monitor conditions. Included in the H&SP will be exposure monitoring of the work space, specific job safety analysis, incident reporting and directions to the hospital.

5) Detailed Scope of Work

Mitigation Technologies has been selected to install the SSD/SVE system at the facility. **Appendix B** has a copy of the cost estimate and scope of work from Mitigation Tech. Based on the communication testing that was performed on November 30, 2012, it was determined that two separate systems (fans) will be used for the SSDS/SVE. The elements of the systems are described below and shown in **Figure 2**.

System 1 (North Room):

- System configuration - (1) RADONAWAY RP-145 (80 watts)in-line fan, sidewall exterior mount at east side, to provide sub-slab depressurization via 4" schedule 40 PVC pipe to roof exhaust

- Electrical weatherproof conduit from fan housing to electrical junction box; interior MC wiring and electrical connection to existing panel

- (2) Suction points (**Figure 3**) as follows: connection via 3" Schedule 40 PVC pipe, surface mount at designated side wall, to cavity in sub-slab, with urethane and/or masonry seal; access hole to suction cavity by 5"core drill; suction cavity to consist of approximately 1 cu. ft. excavated material in sub-slab

- (1) U-tube vacuum indicator on vertical pipe run

System 2 (Main System):

- System configuration - (1) OBAR GBR 76 Radial Blower (250 watts), sidewall exterior mount at east side, to provide sub-slab depressurization via 4 and 3" schedule 40 PVC pipe to roof exhaust

- Electrical weatherproof conduit from fan housing to electrical junction box; interior MC wiring and electrical connection to existing panel

- (12) Suction points (**Figure 3**) as follows: connection via 3" Schedule 40 PVC pipe, surface mount at designated side wall, to cavity in sub-slab, with urethane and/or masonry seal; access hole to suction cavity by 5"core drill; suction cavity to consist of approximately 1 cu. ft. excavated material in sub-slab; (4) main room; (4) storage room; (1) Meter room; (1) Former plate cleaning room; (2) rooms adjacent to former oil tank room; adjust quantity and locations as necessary to achieve performance objective

- (1) U-tube vacuum indicator or Magnahelic dial gauge on vertical pipe run

Common Elements:

- Urethane sealant at slab joints, cracks and penetrations to prevent "short circuiting" of pressure field

- Horizontal pipe at ceiling with metal Autogrip hangers, on 6' spacing, sloped as required, with valves or restrictor plates as required; all pipe runs for minimum intrusion on occupied space as practicable

- At completion, perform backdraft testing, measure pressure differentials and document; label components and provide system description and operational instructions

- Consult with client engineering representatives to develop operation, maintenance and periodic inspection plan

- Two year warranty; labor and installed components; although system design is informed by field air communication testing and is based on achieving a sufficient pressure differential, no specific warranty of effectiveness is provided – effectiveness shall be determined by continuing field measurement provided by others

Post Installation Pressure Field Extension Testing:

- A digital micromanometer will be used to measure pressure differentials and values will be recorded on a floor plan. All test holes will be repaired with urethane caulk (MSDS available) applied over a closed cell backer rod. Smoke tubes will be used to identify floor cracks and other openings to the sub-slab that could "short circuit" the pressure field. Backdrafting testing will also be performed.

6) Schedule

Upon approval by the NYSDEC Project Manager, we will schedule the work with the property owners and the contractor. The NYSDEC Project Manager will be notified when that date is established.

7) Institutional Controls

As covered in Section 3 C, the institutional controls will include an environmental easement as well as a Site Management Plan (SMP). The Department is working with the property owners and will complete the required site control (environmental easement or other approved alternative) outside the scope of this RAWP.

8) Site Management plan

GES will prepare a Site Management Plan (SMP) utilizing the DER SMP template. It will include future O&M requirements for the system. GES will provide a final PDF copy once it is approved by the NYSDEC Project Manager. The SMP will be placed in the Division of Environmental Remediation's (DER's) Electronic Document Management System (EDMS) e-Docs system with a hard copy provided to the current site owner.

9) Final Engineering Report

GES will prepare a Final Engineering Report (FER) utilizing the DER FER template. It will include as-built drawings and final vacuum measurements for the system. The Final version of the FER will be certified as required in DER 10-1.5. GES will provide a final PDF once it is approved by the NYSDEC Project Manager.

Drawings & Figures

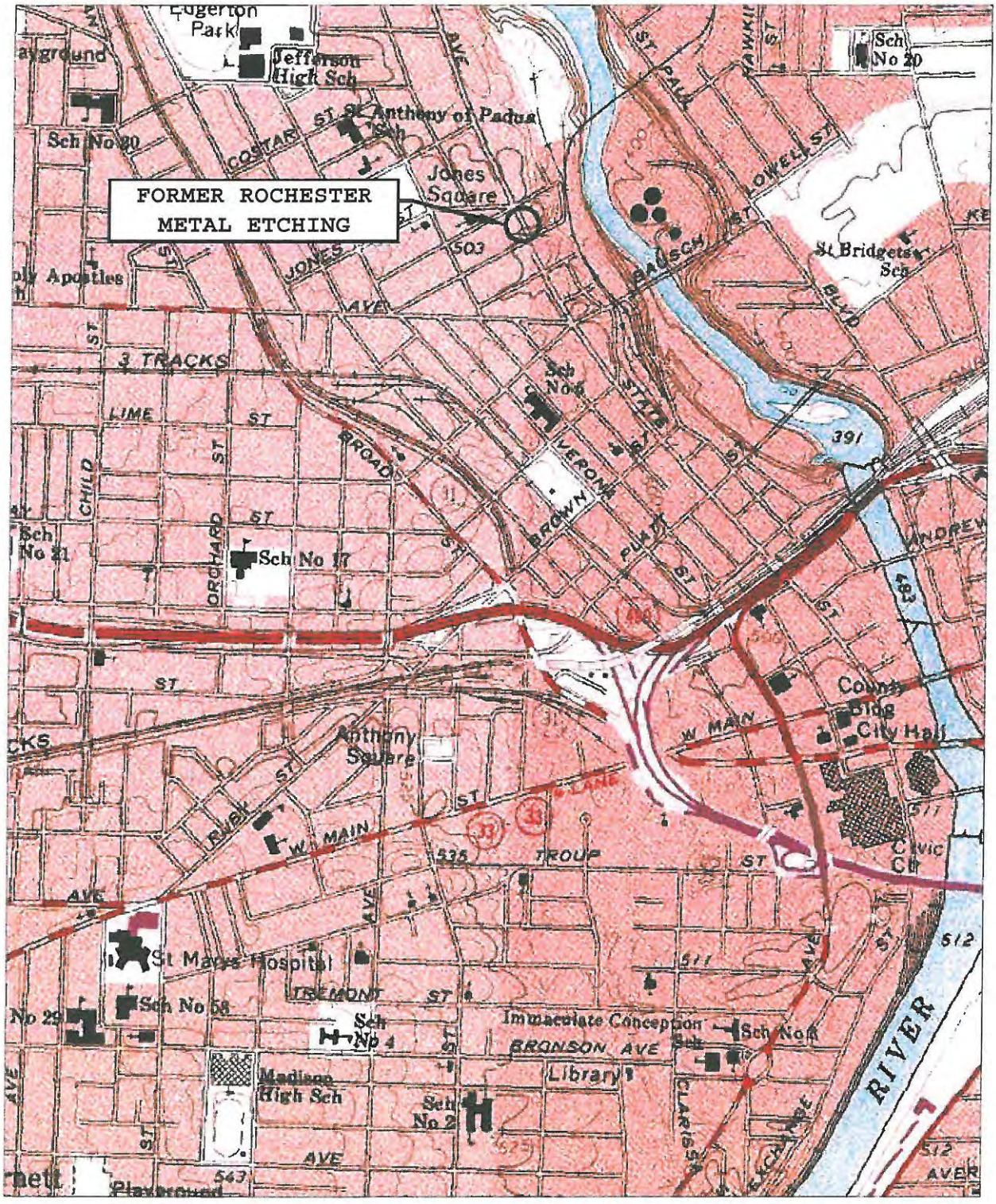
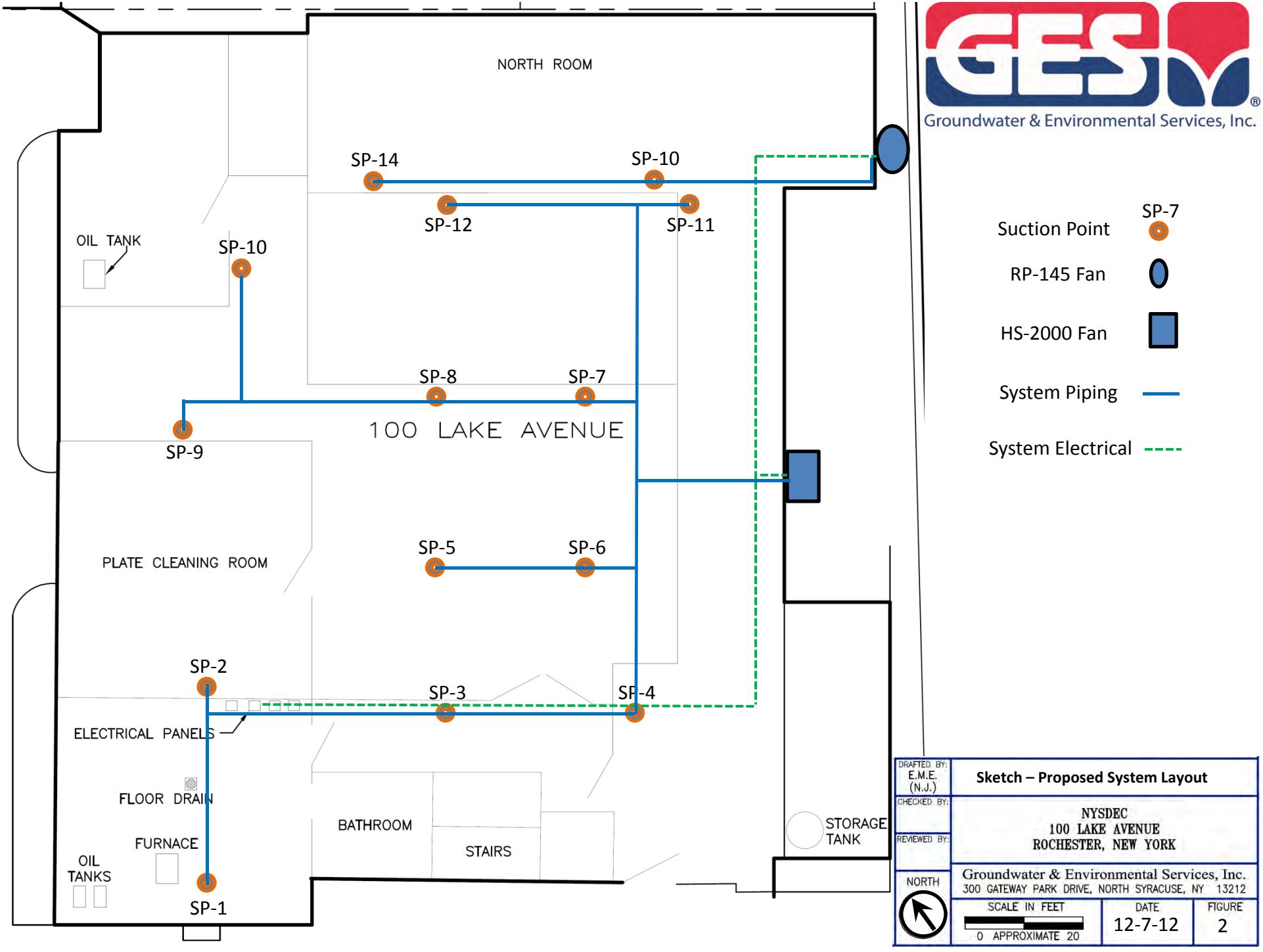


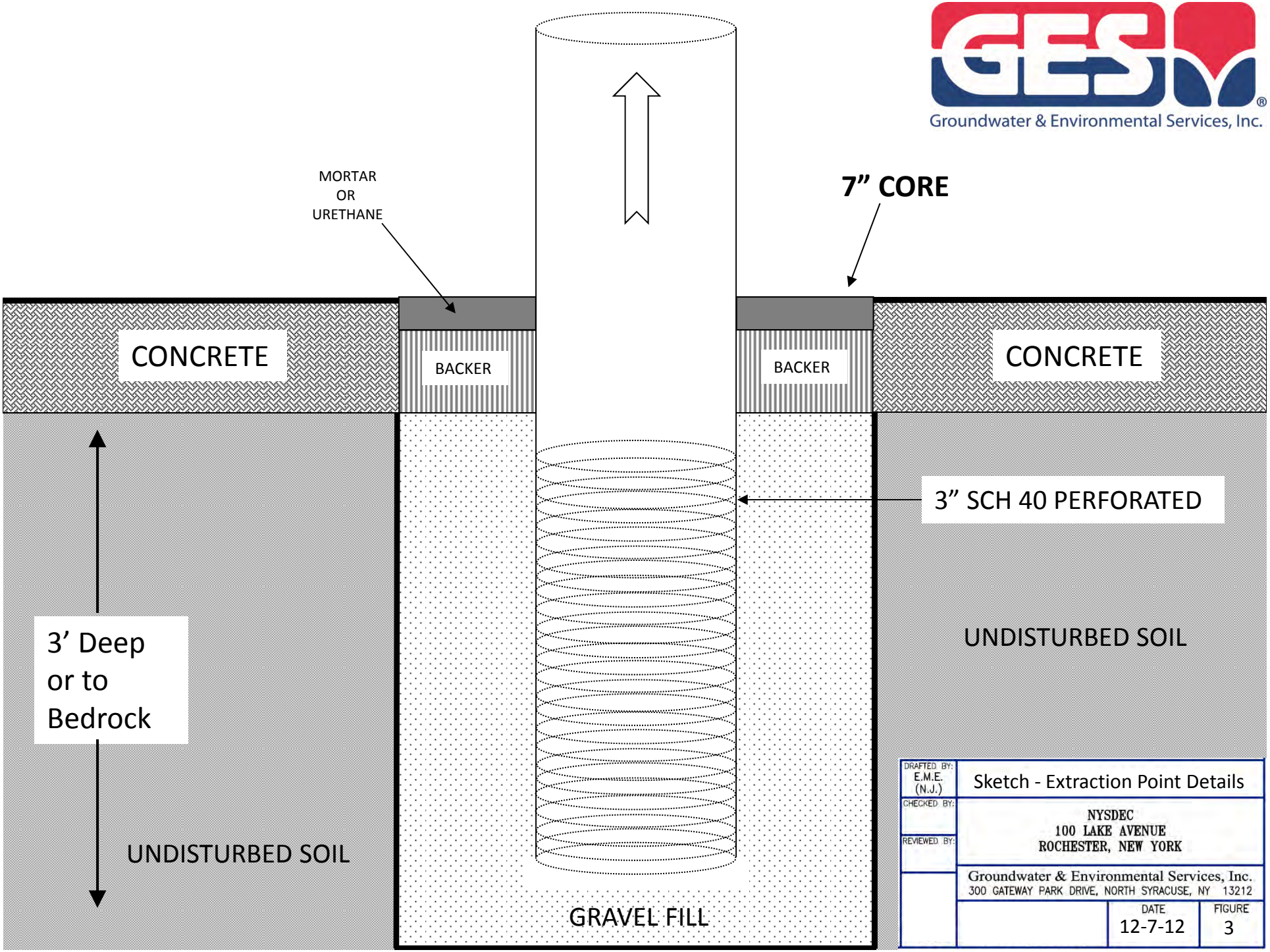
FIGURE 1

NYSDEC
FORMER ROCHESTER METAL ETCHING FACILITY
ROCHESTER, NEW YORK

SITE LOCATION MAP

NOT TO SCALE


NORTH ROOM
SP-14
SP-10
SP-12
SP-11
OIL TANK
SP-10
SP-8
SP-7
SP-9
100 LAKE AVENUE
PLATE CLEANING ROOM
SP-5
SP-6
SP-2
SP-3
SP-4
ELECTRICAL PANELS
FLOOR DRAIN
BATHROOM
STAIRS
STORAGE TANK
FURNACE
OIL TANKS
SP-1
Groundwater & Environmental Services, Inc.
Suction Point
SP-7
RP-145 Fan
HS-2000 Fan
System Piping
System Electrical
DRAFTED BY: E.M.E. (N.J.)
CHECKED BY:
REVIEWED BY:
NORTH
Sketch – Proposed System Layout
NYSDEC
100 LAKE AVENUE
ROCHESTER, NEW YORK
Groundwater & Environmental Services, Inc.
300 GATEWAY PARK DRIVE, NORTH SYRACUSE, NY 13212
SCALE IN FEET
0 APPROXIMATE 20
DATE
12-7-12
FIGURE
2


MORTAR
OR
URETHANE
7” CORE
CONCRETE
BACKER
BACKER
CONCRETE
3” SCH 40 PERFORATED
3’ Deep
or to
Bedrock
UNDISTURBED SOIL
UNDISTURBED SOIL
GRAVEL FILL
DRAFTED BY:
E.M.E.
(N.J.)
CHECKED BY:
REVIEWED BY:
Sketch - Extraction Point Details
NYSDEC
100 LAKE AVENUE
ROCHESTER, NEW YORK
Groundwater & Environmental Services, Inc.
300 GATEWAY PARK DRIVE, NORTH SYRACUSE, NY 13212
DATE
12-7-12
FIGURE
3

Appendix A- Health & Safety Plan

GROUNDWATER & ENVIRONMENTAL SERVICES, INC.

NYSDEC
100 Lake Avenue
Rochester, NY 14613

EMERGENCY PHONE NUMBERS

Local Police **911**

Local Fire **911**

Local Rescue **911**

Local Hospital: Name, Telephone Number & Address:

ROCHESTER GENERAL HOSPITAL *(585) 922-4000*

1425 PORTLAND AVE.

ROCHESTER, NY 14621

Directions to Hospital: **See Attached Map and Directions**

National Response Center (NRC): **1-800-424-8802**
The NRC should be contacted in the event of a significant chemical release. Once notified, the NRC will activate a federal response to the spill. *Please confirm with the client and project manager to determine if the spill should be reported.*

Poison Control Center: **1-800-222-1222**
The Poison Control Center should be contacted in the event of accidental poisoning. They will provide information on immediate treatment for the poisoning.

Nearest Telephone: **Company Cell Phone With Staff**

Groundwater & Environmental Services, Inc. Contacts:

Vin Maresco
Site Operations Manager
Office: **800.220.3069 x 4050**
Cell Phone: **315.374.6319**

Tom Baylis
Corporate Health & Safety Director
Office: **800.426.9871**
Cell Phone: **610.587.1124**

Wendy Smith
Local Health & Safety Officer
Office: **800.220.3069 x 4053**
Cell Phone: **315.374.6316**

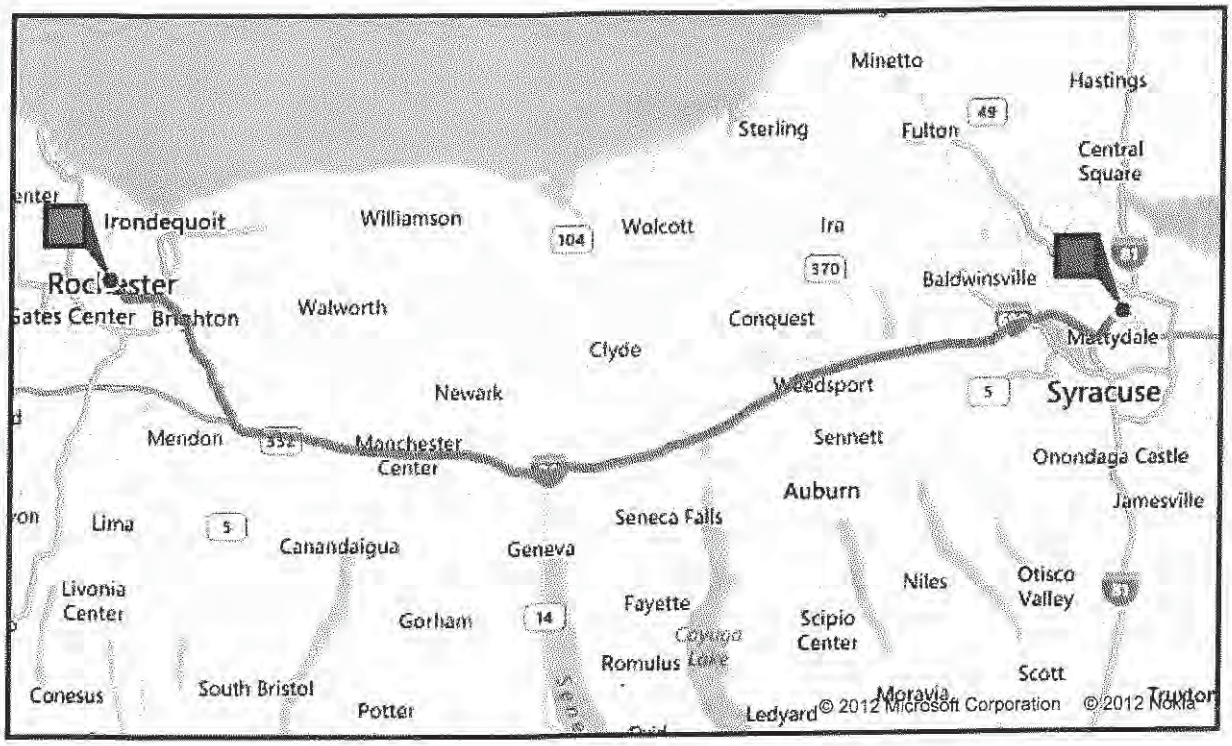
Client Representative:
Edward Hampston
Office: ~~(585)~~ 518 **505-6991**

State Agency Representative:
Region 8
Office (518) 357-2234

DO NOT TRANSPORT SERIOUSLY INJURED
CALL LOCAL RESCUE

DIRECTIONS TO SITE FROM OFFICE

Print this page in a more readable format: Click **Print** next to the upper-right corner of the map.



A **300 Gateway Park Dr, Syracuse, NY 13212**

Depart Gateway Park Dr toward E Taft Rd / CR-19

0.3 mi

Turn left onto E Taft Rd / CR-19

0.1 mi

Take ramp right for I-81 South toward Thruway / Syracuse

2.5 mi

At exit 25A, take ramp right for I-90 West toward Buffalo

Toll road

68.2 mi

At exit 45, take ramp right for I-490 toward Rochester

Stop for toll booth

At exit 14, take ramp right toward Plymouth Ave / Broad St

0.1 mi
Keep straight onto S Washington St

0.1 mi
Turn right onto RT-33 / W Main St

348 ft
Turn left onto N Plymouth Ave

0.4 mi
Turn right onto Morrie Silver Way

491 ft
Turn left onto State St

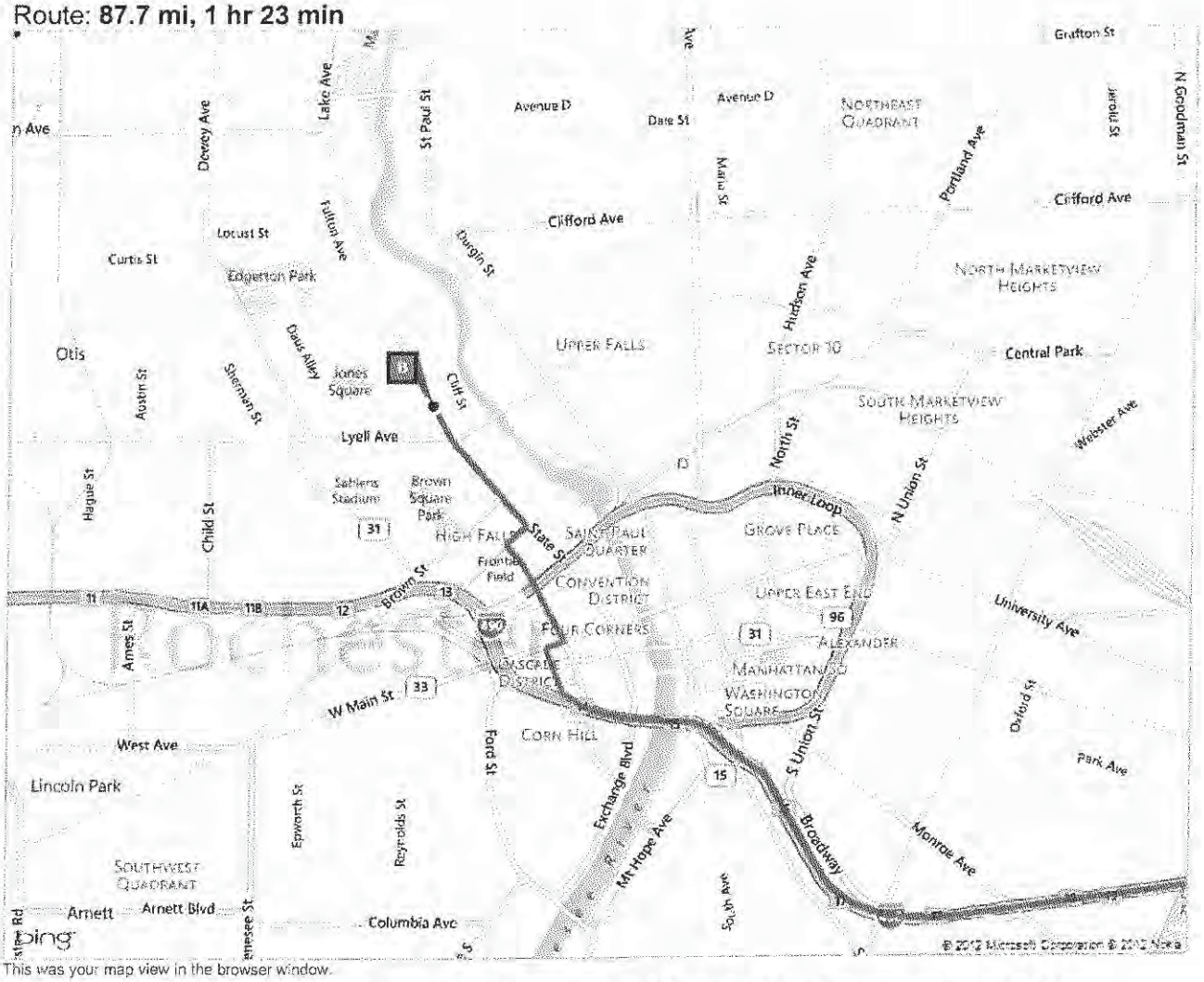
0.4 mi
Keep straight onto Lake Ave

0.1 mi
Arrive at 100 Lake Ave, Rochester, NY 14613

The last intersection is White St
If you reach Spencer St, you've gone too far

B **100 Lake Ave, Rochester, NY 14613**

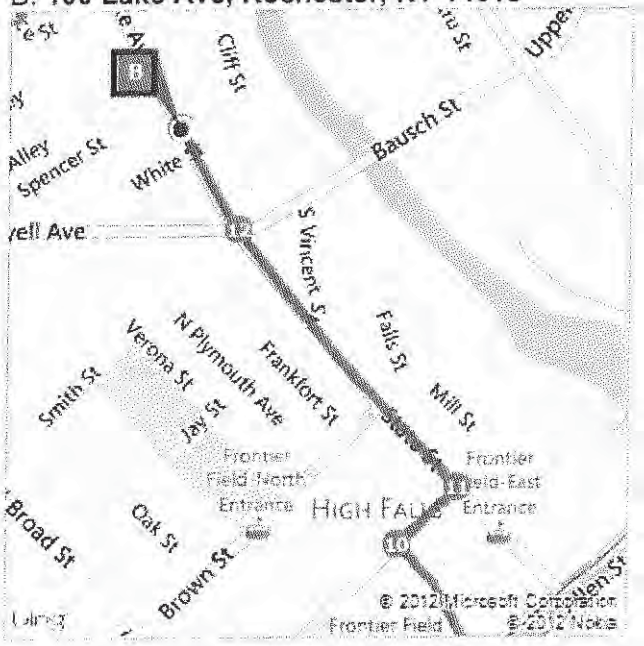
Route: **87.7 mi, 1 hr 23 min**



This was your map view in the browser window.

A: **300 Gateway Park Dr, Syracuse, NY 13212**

B: **100 Lake Ave, Rochester, NY 14613**



HOSPITAL ROUTE MAPS

Guset Valentin G, MD
Guzman Jeanette, MD
Habbu Amit A, MD
Heinig Robert E, MD
Henderson C Michael, MD
Hollander Joshua, MD
Huiatt Kelly R, MD
Ifthikharuddin Sarah, MD
Imran Farhan S, MD
Jaffe Edith, MD
Job Anil V, MD
Jones Denis M, MD
Kadam Sarika R, MD
Kanaparthy Kalyana, MD
Kenjarski Brian M, MD
Kerley Deborah Lyn, MD
Kilbury Taylor Laurie, DO
Kothari Nirmit D, MD
Kovachev Georgi A, MD
Krishnamurthy Pramod B, MD
Landstrom Linda, MD
Lanni Alan F, MD
Liu Linda, MD

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FIGURES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

1.1 APPROVALS

Prepared By: Wendy Smith – Local HSSE Officer (Employee - title) Date: 8-October-2012

Reviewed by: _____ (Employee - Project Manager) Date: _____

Approved By: _____ (Employee - Local Health and Safety Officer) Date: _____

1.2 SITE BACKGROUND

Project Name: NYSDEC Rochester

Site Address: 100 Lake Ave, Rochester, NY 14613

Nearest Intersection: Lake Ave and Spencer Street

Township/Municipality: Rochester

County: Monroe

Additional Site Information: Former Rochester Metal Etching Company

1.3 SCOPE OF WORK

Task 1 - General Site Activities

Task 2 - Consultant Oversight

Task 3 -

Task 4 -

Task 5 -

Task 6

Task 7

Task 8

Task 9

Task 10

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

Responsibility	Name	Task Description
Project Manager	Justin Domago	Oversee and coordinate all budget and technical aspects for the project
Local Health & Safety Officer	Wendy Smith	Coordinate all health and safety operations for the project site
Site Supervisor	GES Personnel	Oversee and coordinate all health and safety aspects from the project site

3.0 OSHA TRAINING REQUIREMENTS

3.1 GENERAL TRAINING REQUIREMENTS

All personnel performing activities covered by this plan must be trained in accordance with the requirements of 29 CFR 1910.120(e). The Project Manager will verify and document that all GES personnel meet the applicable training requirements prior to the start of site work, including:

- OSHA 1910.120 initial 40-hour training
- OSHA annual eight-hour refresher training within the last year
- OSHA eight-hour supervisory training for on-site managers and supervisors and GES requirements
- At least one GES employee will have American Red Cross (or equivalent) first aid and CPR training, and will be present on-site at all times

Documentation for training certification will be maintained by the Local HSO.

Subcontractors chosen to perform well drilling, excavation, materials disposal, utility installation in trenches, and any other site activities where the potential exists for contact with contaminants must provide written documentation of HAZWOPER training, for each of his employees who will be involved in activities at this site, before the start of work.

3.2 PRE-ENTRY MEETING

A Pre-entry meeting reviewing the Site Specific Health and Safety Plan for all proposed work location personnel shall be held and documented in this HASP and in the site log. This meeting shall be prior to the commencement of any on-site work activities.

A site-specific briefing is provided to all site visitors who enter this site beyond the site entry point. For visitors, the site-specific briefing provides information about site hazards, the site lay-out including work zones and places of refuge, the emergency alarm system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

3.3 FIRST AID/CPR TRAINING

At least one member of the GES staff assigned to the project will have American Red Cross (or equivalent) First Aid and cardiopulmonary resuscitation (CPR) training. At least one trained individual will be present on-site at all times. The Local HSO will maintain all training documentation.

4.0 MEDICAL SURVEILLANCE REQUIREMENTS

4.1 GENERAL MEDICAL SURVEILLANCE REQUIREMENTS

All personnel performing activities requiring the use of an air-purifying respirator covered by this plan must be active participants in an ongoing medical monitoring program in accordance with the requirements of 29 CFR 1910.120(f). Subcontractors chosen to perform selected site activities must provide written documentation of such, for each employee who will be involved in activities at this site, before the start of work.

4.2 DRUG AND ALCOHOL COMPLIANCE

All personnel performing activities covered by this plan must have had a negative drug and alcohol screen performed within the last 12 months.

4.3 ACCIDENT / INCIDENT MEDICAL SURVEILLANCE

As a follow-up to a work-related injury, all employees are entitled and encouraged to seek medical attention. All accidents and potential exposures must be reported **immediately** to the Local HSO, who will coordinate with CHSSE to arrange for appropriate medical attention. Depending on the type of incident, it may be critical to perform tests within 24 to 48 hours. *Failure to report an injury or incident immediately will result in disciplinary action.* The *GES Incident/Injury Case Management Procedure* can be found in **Attachment G**.

Events surrounding near-miss accidents/injuries will be recorded in the daily log and documented in accordance with the GES Incident Reporting Procedures.

site by GES personnel or its subcontractors will be managed in accordance with 29 CFR 1910.1200 and the GES Hazard Communication Program. This will include: proper labeling, an inventory list of all hazardous materials brought onsite, and a copy of each chemical's Material Safety Data Sheet (MSDS) will be maintained on-site. **Attachment C** contains MSDSs of hazardous substances generally used by GES personnel.

5.2 PHYSICAL HAZARDS

A variety of physical hazards may be present, but these hazards are similar to those associated with any field project.

5.2.1 Slips/Trips/Falls/Cuts

* Utilize proper housekeeping practices, such as removal of debris and tools from the work area to keep the area clear of trip hazards.
* Use caution tape or barricade fencing where warranted to keep unauthorized personnel from entering the work area.
* Replace manhole covers securely to prevent tripping and vehicle accidents.
* Use hose cutters when cutting piping.
* Walkways and work spaces will be kept clear of cords, hoses, pipes, etc. that cause trip hazards.
* If trip hazards cannot be removed from the work area, they shall be taped down and cones shall be placed to identify the hazard.

5.2.2 Excessive Noise

* Use hearing protection during loud mechanical operations such as drilling, Geoprobing and excavating operations, inside a remedial shed when equipment is operating loudly or in other high decibel situations in accordance with the *GES Hearing Protection Policy*.

5.2.3 Airborne Particulate (ears, eyes, nose, mouth, inhalation)

* Eye protection is to be worn at all times on site.
* Respiratory protection is to be worn when site activities cause excessive particulates, such as performing carbon change-outs.

5.2.4 On-site Traffic

* Safety vest shall be worn and safety cones placed around the worksite as specified in the GES *Traffic Control Procedures*.
* Use caution tape or barricade fencing where warranted to keep unauthorized personnel from entering the work area.

5.2.9 Back Strain

* Utilize proper lifting procedures when loading and unloading heavy equipment.
* Bend down at the knees rather than bending the back.
* Use a mechanical lifting device or a lifting aid such as hand carts, drum dollies or lift gates when lifting heavy objects.

5.2.10 Site Security

* Do not permit anyone who is not properly trained and outfitted with the appropriate PPE to enter the Exclusion or Contamination Reduction Zones (this includes GES personnel, clients, etc.)
* Use caution tape or barricade fencing where warranted to keep unauthorized personnel from entering the work area.
* On sites where it is believed that security is an issue, two employees will be used for all field work. The "buddy-system" will be in place and the two employees will be in constant communication and within each others line of sight. There will be a cellular phone available to call 911 if a violent condition presents itself.
* When acts of violence occur or when an employee(s) feels that they are being placed in a threatening position they must immediately leave the site.
* All potential acts of violence or threats by non-GES personnel must be immediately reported to the Site Operations Manager and the Local Health and Safety Officer. The situation will be discussed to determine future action on the site in question.
* If any GES employee notices suspicious persons or activities in a GES office or in the vicinity of a work area, he or she should immediately report the observation to his or her supervisor or Site Operations Manager.

5.2.11 Biological Hazards (insects, snakes, poisonous plants and animals)

* Do not touch or contact poisonous plants, such as poison ivy/poison oak.
* If available, apply an over-the-counter barrier cream, such as Ivy Block® to prevent contact with plant oils.
* Wash hands and arms immediately with soap and water if skin contacts the plants.
* Wear long pants with socks pulled over legs to prevent skin contact with plants and insects.
* Inspect yourself carefully for insects or ticks after being outdoors.
* Spray any wasp/hornet nests with an insect repellant from a safe distance recommended by the product's manufacturer.

5.2.15 Fall Hazards

* OSHA-approved man-lifts and ladders will be used for access to elevated locations.
* Employees must wear a safety belt with a lanyard attached to the boom or basket when working from a man-lift.
* If the elevated location is inaccessible by a man-lift, CHSSE shall be contacted to determine the appropriate fall protection.
* Complete details are found in the *GES Fall Protection* Program.

5.2.16 Hot Work

* A hot work permit will be completed prior to the start of the work.
* The Site Supervisor will conduct a safety briefing on hot work rules and procedures, and all hot work participants will sign the permit.
* Hot work will not be performed if there is a possibility of an explosive atmosphere or an oxygen-enriched atmosphere.
* The Site Supervisor will designate a person for fire watch duty, who will have access to a properly rated fire extinguisher and will remain on-duty for one-half hour after the hot work is complete.
* All hot work equipment will be inspected daily, prior to use. If the equipment is found to be defective, it will be removed from the site, or tagged with a "Do Not Use" sign until it is repaired.
* All welding and cutting personnel will be trained in the safe operation of their equipment.
* Refer to the GES *Hot Work Requirement Policy* for complete details.

5.3 RADIOLOGICAL HAZARDS

If site-specific potential radiological information becomes available, the hazards will be addressed in an addendum to the HASP. Ionizing Radiation action levels can be found in Attachment B, Table 2.

6.0 SITE CONTROL MEASURES

6.1 SITE ZONES

A controlled work area should be established in the immediate vicinity of the site activities covered by this plan. Only those persons who can comply with the requirements of this plan should be allowed into this area during any work activities,

clerical, and other support functions are based in the Support Zone.

Air and surface monitoring are conducted in the Support Zone as needed to ensure that it remains uncontaminated. If contamination is detected, zone boundaries are adjusted until corrective action is taken and monitoring results indicate that this zone is again uncontaminated.

6.2 COMMUNICATIONS

Emergency numbers are listed on the cover of this HASP. Work will not be conducted on-site without access to a telephone, and site personnel will be informed of its location. If a telephone is not available on site, a cell phone will be made available for emergency use.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 GENERAL

Site safety and health hazards are eliminated or reduced to the greatest extent possible through engineering controls and work practices. Where hazards are still present, a combination of engineering controls, work practices, and PPE are used to protect employees.

The level of protection worn by site personnel will be enforced by the Site Supervisor. Levels of protection may be upgraded or downgraded at the discretion of the Local HSO, or CHS, based on real-time air monitoring data and prior site experience. Any changes in the level of protection will be documented. Levels of protection less than those designated in this HASP must first be approved by the CHS.

7.2 LEVEL D PROTECTION

Level D PPE provides minimal protection against chemical hazards. A respirator is not required. Level D PPE includes:

- Cotton coveralls or long pants and a shirt with sleeves
- Reflective safety vest or hi-visibility shirt.
- Safety glasses
- Steel-toe/steel-shank work boots
- Work gloves
- Hearing protection (as required by task)
- Hard Hat (as required by task)
- Chemical resistant gloves (as required by task)

- Remove gross contamination from tools, respirator, monitoring equipment, boots, etc., prior to leaving the "exclusion zone", using paper towels, handi-wipes, etc.
- Completely decontaminate soiled equipment in the Contamination Reduction Zone using detergent and water and dispose of all cleaning materials as follows.

1. Due to the small quantity of waste generated during decontamination, it is allowable in most states to dispose of lightly contaminated materials in the site dumpster. It is important, however, to ensure that there is no chance of vapor generation or fluid leaking from the dumpster. At no time are materials containing free product to be disposed of in this manner. In this case, arrangements must be made for use of labeled drums and proper disposal.

2. All decontamination materials including protective sheeting, rags, sorbents, disposable personal protective equipment, and decontamination fluids should be carefully screened with a Photo-ionization Detector (PID) prior to disposal to determine relative levels of contamination.

3. Lightly contaminated decontamination fluids should either be treated via the site treatment system prior to discharge or disposed of via the sanitary sewer system. Highly contaminated decontamination fluids must be stored in labeled drums and proper disposal arrangements must be made.

Note: All Federal, State, County and/or City requirements regarding disposal must be complied with.

- Dispose of contaminated gloves, Tyvek suits, used cartridges, paper towels, etc., by placing in a plastic bag and discarding in accordance with applicable standards.
- Wash hands and face thoroughly with soap and water before lunch or coffee breaks, and as soon as practical after finishing work for the day.
- Particular care should be taken to protect any skin injuries. If open wounds exist on hands or forearms, handling chemicals should be restricted or eliminated.
- Shower as soon as possible.
- A site-specific decontamination plan (if required) is located in **Attachment H**.

9.0 EMERGENCY ACTION PLAN

operations. If the injury will not affect the safety or performance of other site workers, operations may continue, with the person certified in first aid initiating the appropriate first aid and necessary follow up as stated above.

If the injury increases risk to other site workers, all site personnel shall move to the Contamination Reduction Zone and site activities will stop until the risks can be assessed and either removed or minimized.

9.4 FIRE/EXPLOSION

If a fire is observed in the incipient phase (i.e., when it begins) and if the site personnel witnessing the fire feel secure in attempting to control the fire, the individual can attempt to extinguish the fire by using the onsite fire extinguisher. The fire extinguisher should be a 10 or 20 pound (lb) dry chemical, Class A, B, and C extinguisher and is adequate for paper and wood based products (A), flammable and combustible liquids (B), and electrical (C) type fires.

If there is no fire extinguisher available or if site personnel do not feel secure in attempting to extinguish the fire, site personnel shall perform the following:

- Secure the site, if possible.
- Evacuate the area using the nearest safe pathway from the area.
- Proceed to the nearest phone and call 911 and provide the emergency operator all required information. This will activate the emergency response system.

If more than one individual is on the site team, the individual activating the evacuation plan shall verbally communicate to the other site personnel that there is an emergency condition and that they should evacuate from the work area. If contact cannot be made verbally with the other site personnel, any of the following systems can be used as long as the system is audible above background noise. The system can be the site vehicle horn, a whistle, an air horn, or other acceptable device. The system used for initiating an evacuation from the site shall be discussed during the tailgate meeting with the other site personnel prior to beginning the workday. The system that is decided upon shall be documented in the site logbook.

- One site worker will be assigned to keep the daily log for all health and safety-specific site activities, unless otherwise specified.

- All personnel will wear steel-toe safety boots. Hard hats will be worn when working near heavy equipment (drill rigs, excavating equipment, etc.), when individuals are working overhead, when required in the Job Safety Analysis (JSA), or when required by the client.

- Eye protection and high visibility clothing/reflective safety vests will be worn at all times while on site.

- Possession of alcohol or illegal substances on the job site or consumption during hours of site operations is strictly prohibited.

- Food and/or beverages are not permitted in the site's Exclusion or Contamination Reduction Zones. Food and/or beverages will be permitted in the Support Zone, if proper decontamination procedures are being followed.

- Smoking is not permitted on site. Chewing tobacco, snuff, application of cosmetics and/or lip balm are not permitted in the site's Exclusion or Contamination Reduction Zones.

- A change in level of protection will be based on air monitoring equipment readings taken in the breathing zone.

- Field personnel will use air monitoring equipment and not their nose to determine site contamination (i.e., sniffing sampled soils or water in jars, confined spaces, open bore holes or trenches, etc.). Odors detected during the course of standard operating procedures, however, should be noted in the daily log.

- Field personnel should not stand with their head directly over a well when it is being opened.

- First Aid Kit(s) and Fire Extinguisher(s) will be available in all company vehicles and/or within 50 feet of the working area.

TRAFFIC CONTROL PROCEDURES

HSSE Policy, Procedure & Guidance

Policies and Procedures

Policy #: 0038
Revision #: 1
Date: 03-25-10

FOR DOCUMENT: TRAFFIC CONTROL PROCEDURES

The following have reviewed and authorized the issuance of the Policy, Procedure, & Guidance.

	Name and Title	Date
Initiator:	*Thomas Baylis, Director HSSE*	
Guidance Committee:	*Ken Smith, Sr. Regional VP of Operations*	
Guidance Committee:	*Jeffrey Gaal, Sr. Vice President Petroleum Services*	
President:	*Edward Van Woudenberg*	

General Definitions

Policies prescribe certain behaviors or courses of action deemed expedient, prudent, and advantageous to the function of GES ("Policy"). As such, Policies are non-discretionary, the violation of which may result in severe consequences including, without limitation, termination of employment. As an analogy, Policies are to GES, as statutes are to a governed body.

Procedures prescribe certain behavior or courses of action deemed expedient, prudent, and advantageous to achieve compliance with Policy ("Procedures"). As such, Procedures are non-discretionary, the violation of which may result in severe consequences including, without limitation, termination of employment. As an analogy once again, Procedures are to GES, as regulations are to a governed body, meaning they describe how to comply with statutory requirements.

Guidance provides suggested methodologies to achieve compliance with Policies and Procedures that are non-mandatory, or discretionary, in the reasonable judgment of the actor. The use of Guidance is designed to create efficiencies where the relevant circumstances may require a more flexible approach to compliance, allowing the actor to use his/her reasonable judgment.

Procedure for policy approval

1. Policy Recommendations shall be submitted via electronic mail to the Company's General Counsel ("Counsel").
2. Counsel shall, thereafter, upon gathering any other information required, if any, present the Recommendation to a Policy, Procedure and Guidance Committee ("Committee") for consideration.
3. The Committee's members shall be chosen by the President of the Company or his/her designee, with the roles and responsibilities of the same established collectively.
4. The Committee shall be empowered, as required, to take all necessary action to either draft such Recommendation for presentation and approval, or recommend rejection of such Recommendation, to the President who shall either approve the newly created Policy, Procedure, or Guidance, or reject the Recommendation.
5. Initiator records approval date and revision number in version identification block on document and signature page (revision number and date must match on both documents).

GES performs many tasks on site (e.g., groundwater sampling, gauging and bailing monitoring wells, drilling, etc.) that place employees at increased risk of injury from vehicular traffic, particularly on retail service station sites (active or abandoned), and in, or along the shoulder of, active roadways. Each site and well location must be assessed individually, and the appropriate traffic control measures must be implemented, in accordance with the following guidelines:

1.0 **Retail Service Stations (and other "on-site" locations)**

As there are no lanes marked out for traffic flow through these sites, and numerous entry points onto them, employees are vulnerable to traffic from all sides. In order to minimize the risk of being struck by a vehicle while performing tasks on site, it is imperative that employees strictly adhere to the following procedures:

1.1 Review the site-specific HASP for additional details for the site you will be working on and the tasks you will be performing.

1.2 Verify that all necessary traffic-control devices are in the vehicle assigned for the day.

1.3 Don the appropriate PPE for the work to be performed, including reflective safety vests. Employees are required to wear their reflective safety vests at all times on site, this includes during set-up, work activities, and clean-up prior to leaving the site. T-shirts, sweatshirts, jackets, coveralls, etc., that are "safety orange" will be considered an acceptable alternative to wearing a safety vest as long as: (1) the safety orange is the outermost layer of clothing and (2) they are only worn during daylight/afternoon hours when there is sufficient light and good visibility. When low visibility conditions exist such as during all dusk and dawn hours, and during snowy, rainy, or foggy weather, a safety vest with reflective strips must be worn.

1.4 Assess the work location for potential traffic exposure. Stay alert at all times because vehicle traffic is often continuous and uncontrolled on standard GES sites. Be sure to look at all possible directions from which traffic may approach. **Never assume any potential pathway to be "safe". Attempt to set up the work area on site with the employee facing/looking toward the highest potential for traffic.**

1.5 Conduct the site pre-entry meeting, complete the Daily Site Checklist included in the HASP and sign-off on both the checklist and the HASP.

1.6 Using the traffic control devices assigned, establish your work zone as per the specifications detailed within this plan.

1.7 Perform all work to be completed within the work zone before breaking down the traffic control system.

1.8 Clear the work area and break down the traffic control devices.

2.0 **Traffic Control Devices/Use**

Each GES vehicle will be equipped with an amber flashing light that plugs into the cigarette lighter, 2-32" high "Work Area" signs, 6-28" high orange traffic cones with 36" high attachable orange vinyl flags, and a 150-foot roll of 2" wide, reusable barricade webbing (caution tape.) The cones and flags must be assembled so that the combined height of each cone/flag assembly used to delineate the work zone will be at least 50", and barricade webbing must be used to connect the cones placed around the work zone. For each well location, a minimum of four (4) cones with flags must be placed at the corners of the work zone and be connected with barricade webbing. The area encompassed by the barrier must provide sufficient space for the employee to complete the assigned task entirely within the perimeter. The section of the perimeter that poses the lowest risk for traffic, as determined by on-site personnel, will be left "open" (not

connected with barricade webbing) to allow for quick egress from the work zone if necessary. The "Work Area" signs must be placed at the site entrance closest to the work area to provide warning to oncoming traffic before they approach the established work zone. If there is enough space, the vehicle will be placed along the perimeter of the work zone with the amber flashing light on.
Alternate work zone configurations will be evaluated and must be approved by the Local Site Operations Manager prior to implementation on site. In all cases a minimum 50" flag height must be maintained as well as a minimum of 4 corners and 3 enclosed sides. If you are unsure of the proper set up for a specific site, call your local health and safety officer to work with you in establishing a safe work zone.

Note: If work is being performed at a location that is not a retail gas station (i.e. private residence, wooded area, adjacent building) the work area signs should be placed at a location that is appropriate for alerting both pedestrian and vehicular traffic that work is being performed in that area.

3.0 Work in or along the shoulder of Active Roadways

If traffic can be successfully redirected around the work zone without interfering with the flow of traffic (such as work along the curb within the shoulder of the road) one employee is permitted on-site. If only one employee is on-site, the employee must, in addition to the traffic control procedures and work zone set up detailed above, place the company vehicle in such a manner that the vehicle will protect the employee from oncoming traffic, without interfering with the flow of traffic. Each GES vehicle will be equipped with a flashing amber light that will also be utilized during work activities to further alert the general public to use caution in the area.

In addition to the above procedures, a two-person crew, at a minimum, is required when the location of the well to be sampled:

3.1 Requires traffic to be redirected into another lane, a traffic lane to be temporarily closed, or work to be done along the shoulder of a heavily trafficked roadway, or

3.2 Is deemed, by GES on-site personnel, in conjunction with management and client review of the site, to be necessary for their safety.

3.3 Safety Vests with reflective stripes must be worn by all staff.

In this case, one employee will perform the specific task, while the other employee directs traffic away from the work area with the use of additional traffic-control devices such as orange flags and additional cones. A traffic control plan specific to the site and/or well must be developed, approved by the Site Operations Manager, local Health and Safety Officer, or Corporate Health and Safety. This plan must be included in the site-specific HASP, prior to performing the task. Local and state requirements should also be consulted for possible permitting or additional traffic control requirements. Alternative means may be elected, such as hiring a traffic detail through a subcontractor or local police.

If there are any questions about the number of personnel required, a two-person crew must be dispatched for the first site visit. Subsequent review with these employees will determine if the site remains a two-person job.

Traffic control set-up while working with a construction vehicle and large traffic control areas (i.e. drill rigs, excavators, vac trucks, DAPL, bioremediation vehicles and during trenching/excavation, etc.) Wheel chocks should be used when vehicles are parked on uneven or sloped terrain. This is especially important when vehicles are left unattended.

When a vehicle of construction is used and/or if a large area of traffic control is required, the amount of traffic control items should increase appropriately to define the work area. A "large traffic control area" is defined as an area greater than 5 feet square (5' x 5'). In addition to the above requirements:

3.4 The maximum distance allowed between flags is 5 feet. Additional cones should be placed between the flags to increase visibility.

3.5 Caution tape or reusable webbing should be strung between the cones to increase visibility and to function as a barrier to pedestrians.

If a vehicle or pedestrian violates the established traffic control setup, then additional traffic control devices and/or a traffic detail should be considered prior to continuing work.

4.0 Traffic Control Setup for Private Utility Locate Services and other Mobile Work Tasks

Effective traffic control is essential during mobile work tasks (e.g. Private Utility Locate) when the task dictates that the employee must move across large areas of the site. In order to minimize the risk of being struck by a vehicle while performing mobile tasks on site, it is imperative that employees strictly adhere to the following procedures:

4.1 Assess the work site prior to beginning work to define the work scope. Work "zones" must be established to break the site into manageable areas for the purpose of completely surrounding the "zone" with traffic control devices. Each "zone" designed must include allowances for 3rd party traffic if the site has the potential for vehicle travel. The purpose of this step is to ensure that employees are able to protect themselves from contact with vehicles and pedestrians.

Note: This approach is recommended because it may be impractical to construct smaller traffic controlled zones which need to constantly move to protect the employee.

4.2 "Zones" must be protected using the Traffic Control Procedure for Construction Vehicles and Large Work Areas (as defined above) if the "zone" defined by the employee is larger than 5' x 5'.

"Inactive" sites require the same level of traffic control if the potential exists for vehicle or pedestrian traffic. ***In the case that no vehicular or pedestrian traffic is possible (e.g. a work location surrounded with fence), alternate traffic control methods may be used following approval from the Office Site Manager or Corporate HSSE Officer.***

ATTACHMENT A

SITE MAPS

ATTACHMENT B

EXPOSURE MONITORING PROGRAM FOR THE CONTAMINATES OF CONCERN

EXPOSURE MONITORING PROGRAM

REAL-TIME MONITORING

Photo-ionization Detector (PID): Real-time monitoring for volatile organic compounds (VOCs) will be conducted using a photo-ionization detector (PID). The PID will be used to monitor employee breathing zones during all invasive activities. **Table 1** lists PID action levels and response requirements

Combustible Gas Indicator/Oxygen Level Meter: Real-time monitoring for combustible gases and oxygen levels will be conducted using a Combustible Gas Indicator (CGI)/Oxygen Level Meter. The CGI will test for the presence of combustible gases by continuously monitoring the lower explosive limit (LEL) of organic vapors. The CGI will be used to monitor the LEL prior to, and during, Confined Space (CS) entries and during work near an excavation in contaminated soil. The Oxygen Level Meter will detect an oxygen-deficient or oxygen-enriched atmosphere, and will be used prior to, and during, all CS entry activities. If ionizing radiation is suspected at a site, a Geiger counter will be used to measure exposure under guidance of a Health Physicist. **Table 2** lists CGI, Oxygen Level Meter, and ionizing radiation action levels and response requirements.

Depending on the Contaminants of Concern, other forms of real-time monitoring equipment may be required to quantify chemical hazards and protect workers from exposure. These may include, but are not limited to bio-aerosol monitors, detector tubes, dust monitors, etc.

- Calibration of Real-Time Monitoring Equipment: Monitoring and calibration protocols will be performed in accordance with the manufacturer's guidelines. Calibration will be performed, at a minimum, prior to each day's use.

- Calibration logs will be maintained by the Local HSO.

ACTION LEVELS

Tables 1 and 2 list the action levels and response requirements for a PID and CGI/Oxygen Level Meter. Changing levels of protection, upgrading respiratory protection, or changing work practices is based on maintaining the upper limit of the action level for approximately 10 minutes sustained in the breathing zone (i.e., a non-transient reading) or at the discretion of the Site Supervisor. If changes in protection levels are required, the Site Supervisor will first notify the Local HSO or the CHS to determine if administrative or engineering controls can be implemented to mitigate or eliminate the hazard.

Table 1 provides action levels that must be complied with when petroleum products such as gasoline are the known site contaminants. If the site contains other potential site contaminants, appropriate action levels must be determined based on established chemical exposure limits and monitoring instrument response factors.

TABLE 2
CGI/O2/RADIATION LEVEL ACTION LEVELS

Meter Response	**Action**
CGI response < 10 % LEL	Continue normal operations.
CGI response > 10 % and <20 % LEL	Eliminate all sources of ignition from the work area; implement continuous monitoring. However if work is being done in a confined space, retreat from work area.*
CGI response > 20 % LEL	Discontinue operations; allow to vent; retreat from work area.*
Oxygen level < 19.5%	Retreat from work area.*
Oxygen level > 23.5%	Retreat from work area.*
3X background to <2 mR/hr	Radiation above background levels (normally 0.01-0.02 mR/hr) signifies possible source(s) radiation present. Continue investigation with caution. Perform thorough monitoring. **Consult with a health physicist.**
>2mR/hr	Potential radiation hazard. Evacuate site. Continue investigation only upon the advice of a health physicist

ATTACHMENT C

SITE MATERIAL SAFETY DATA SHEETS (MSDS)

ATTACHMENT D

JOB SAFETY ANALYSIS SHEETS AND DAILY SITE SAFETY CHECKLISTS

GES DAILY SITE SAFETY CHECKLIST

Site Name: _____
Address: _____

Individual's Name: _____ Date: _____

Task and date of entry: _____ _____

This checklist is to be completed on a daily basis. The date should be noted in the space provided. The employee completing the checklist should verify that each item is correct and initial in the last space provided.

Date:	10/9/12	11/21/2012	11/30/12			
1. Proper training certificates have been obtained from subcontractors.	✓	✓	✓			
2. The site-specific HASP has been reviewed and signed by GES employees and GES-hired subcontractors.	✓	✓	✓			
3. The daily site-safety meeting has been conducted.	✓	✓	✓			
4. Applicable JSAs are onsite, reviewed by Staff to ensure all tasks/jobs are covered, and site specific JSA modifications occur when needed.	✓	✓	✓			
5. Fire extinguishers are available for use and are fully charged.	✓	✓	✓			
6. A fully-stocked first aid kit and eye wash bottle are readily available.	✓	✓	✓			
7. Any potential tripping hazards have been removed from site.	✓	✓	✓			
8. All vessels containing flammable or corrosive material are properly labeled.	NA	NA	✓			
9. Proper personal protective equipment is being used for present conditions.	✓	✓	✓			
10. Equipment on-site is checked and in safe working order.	✓	✓	✓			
11. Safety cones and flags or barricades have been utilized to mark out work area.	✓	✓	✓			
12. No person on-site has the appearance of being under the influence of motor skill altering substances.	✓	✓	✓			
13. All workers on-site are clothed in an appropriate manner (highly visible clothing, no tank tops, muscle shirts or shorts).	✓	✓	✓			
14. Electrical power operated tools shall be properly grounded and used with a Ground-Fault Circuit Interrupter (GFCI).	NA	NA	✓			
15. All required Permits (GES and/or client) are completed by an authorized individual.	✓	✓	✓			
16. When working alone, has a phone call been placed to the PM to discuss site conditions, review the Scope of Work, LPS requirements, and coordinate communications for the day. Note: The frequency/ amount of additional calls from the field should be established during the PM's discussion with the individual. A call must always occur prior to leaving the site. **Security concerns** should be reviewed during each call	NA	NA	✓			
17. Prior to leaving the site for the day, the GES site supervisor has conducted a meeting with onsite staff to review worker condition (possible injuries), JSA revisions, discuss possible Near Losses/ Losses, and activities scheduled for the next day.	✓	✓	✓			
18. All health and safety concerns have been communicated to the Local Health and Safety Officer and Project Manager	✓	✓	✓			
I verify and initial that the above information is correct by initialing in the boxes to the right:						

ATTACHMENT E

PRE-ENTRY MEETING NOTES

Groundwater
& Environmental Services, Inc.®

300 Gateway Park Drive • North Syracuse, New York 13212 • (315) 452-5700 • Fax (315) 452-3237

PRE-ENTRY MEETING NOTES/ATTENDANCE (Include date, length of meeting, names of personnel in attendance, topics of discussion, comments and concerns, etc.)

10/9/2012 Reviewed HASP & JSA Performed SPSA
11/21/2012 Reviewed HASP & JSA's Performed SPSA
11/26/2012 Reviewed HASP & JSA's Performed SPSA

ATTACHMENT F

SIGN OFF SHEET

Groundwater
& Environmental Services, Inc.

300 Gateway Park Drive • North Syracuse, New York 13212 • 800-220-3069 • Fax 315-452-3237

SITE SAFETY AND HEALTH PLAN COMPLIANCE AGREEMENT

All project personnel, including visitors, must follow the requirements of this Site Safety Plan. In order to document individual agreement with this requirement, all personnel must complete this "Site Safety and Health Plan Compliance Agreement." These agreements will be kept in this Site Safety Plan and will become part of the permanent project record upon completion of site activities.

By signing below, I have read the Site Health and Safety Plan (HASP), or I have been verbally advised of its contents. I understand, and I agree to comply with all of its provisions. I understand that I could be prohibited from working on the project, and I may be subject to disciplinary actions for violating any of the health and safety requirements specified in the HASP.

	NAME	SIGNATURE	DATE	(TIME IN/OUT)
1.	JASON SGARLATA		10/9/2012	
2.	MARK BOORADY		10/9/2012	
3.	JASON SGARLATA		11/21/2012	
4.	JASON SGARLATA		11/30/2012	
5.	VICK MOUGANIS		11/30/2012	
6.	AARON HUBERT		11/30/12	
7.	Bob Beck		11-30-12	
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				

ATTACHMENT G

INCIDENT/INJURY CASE MANAGEMENT

ALL accidents, injuries, property damages, or releases (Loss or Near Loss) shall be reported to GES' on-site supervisor *ASAP but no later than the end of the shift.*

Injury Case Management is a collaborative process which:

- Helps ensure prompt, adequate, and appropriate medical care is provided
- Assesses, plans, implements, coordinates, monitors, and evaluates options
- Can minimize the impact of an impairment (resulting from potentially work-related injury or illness)
- Preserves as much as practicable the individual's functional capacity.

Medical injuries or emergencies within each field location will be managed by the following method:

- If an injury or medical condition occurs that cannot be treated by providing basic first aid to the individual, the GES PM and Site Operations Manager are notified by the GES Oversight person.
- Onsite, individuals who are certified in cardiopulmonary resuscitation (CPR)/First Aid will be requested to respond to the individual's location.
- Following this evaluation the GES VP, HSSE and client program manager, must be contacted regarding the individual's condition and injury management approach onsite and offsite.

Following an assessment of the individual's condition, if responding GES personnel feel that outside medical response personnel (emergency care) are necessary:

- The 911 emergency response system will be activated, if necessary.
- Provide the 911 emergency operator all of the information that is requested.
- The injured individual (GES or subcontractor employee) will be accompanied by other GES staff (i.e., PM, LHSO, Site Supervisor) so that desired injury management information will be communicated to the attending physician.

If an individual requires medical treatment *beyond basic first aid*, but the initial assessment determines that the individual does not require emergency care, then:

- The PM, Site Operations Manager, and CHSSE will be contacted PRIOR to leaving the site.
- The individual will be scheduled for an appointment at the occupational clinic near each office.
- If the injured individual is a subcontractor, then the individual will be directed to visit an occupational clinic established by the subcontracting company.
- If there is no clinic established, the individual will be scheduled at a GES clinic.

The individual will be accompanied to their examination by the GES LHSO or other GES or subcontractor management staff. Desired injury management information will be communicated to the attending physician that will include but not be limited to:

- Any required or alternative medication (over the counter medication)
- Any workplace restrictions versus lost time are discussed with the attending physician.
- The GES VP, HSSE will also contact the attending physician regarding the examination, diagnosis and the GES injury management approach.

ATTACHMENT H

SITE-SPECIFIC DECONTAMINATION PLAN

DECONTAMINATION PLAN

1. Personnel Decontamination

   Section 7 lists the specific levels of protection required. Consistent with the levels of protection required, step by step procedures for personnel decontamination for each Level of Protection are attached.

2. Levels of Protection Required for Decontamination Personnel

   The levels of protection required for personnel assisting with decontamination will be:
   ☐ Level B ☐ Level C ☐ Level D

   Modifications include:

3. Disposition of Decontamination Wastes

   (Provide a description of daily, weekly, and end of project waste disposition including identification of storage area, hauler, and final disposal site if applicable.)

4. Equipment Decontamination

   A procedure for decontamination steps required for non-sampling equipment and heavy machinery follows:

5. Sampling Equipment Decontamination

   Sampling equipment will be decontaminated in accordance with the following procedure:

LEVEL C DECONTAMINATION PROCEDURES (if required)

[Check indicated Functions or add steps as necessary]:

STEP	FUNCTION	DESCRIPTION OF PROCESS, SOLUTION AND CONTAINER
☐	Segregated equipment drop	_____
☐	Boot cover and glove wash	_____
☐	Boot cover and glove rinse	_____
☐	Tape removal - outer glove/boot	_____
☐	Boot cover removal	_____
☐	Outer glove removal	_____
	----------HOT-LINE----------	
☐	Suit/safety boot wash	_____
☐	Suit/boot/glove rinse	_____
☐	Safety boot removal	_____
☐	Suit Removal	_____
☐	Inner glove wash	_____
☐	Inner glove rinse	_____
☐	Face piece removal	_____
☐	Inner glove removal	_____
☐	Inner clothing removal	_____
	----------CRC/SAFE ZONE BOUNDARY----------	
☐	Field wash	_____
☐	Redress	_____

Appendix B- Mitigation Tech Estimate (12/3/2012)

December 3, 2012

Jason M. Sgarlata
Remediation Scientist
Groundwater & Environmental Services, Inc.
300 Gateway Park Drive
North Syracuse, NY 13212
Via email: JSgarlata@gesonline.com

Re: 100 Lake Ave., Rochester, NY 14608
Sub-slab air communication testing report
Sub-**slab Depressurization System Proposal**

Dear Jason,

For you review and comment, we submit the following work plan:

1.0 Introduction

Soil vapor containing chlorinated volatile organic compounds has been detected at this site. This document presents a Work Plan that consists of the installation and operation of a sub-slab depressurization system (SSDS) that is designed to mitigate the migration or potential migration of sub surface vapors into the building interiors. The SSDS is intended to protect the occupants of the building and is not intended to remove or diminish the source of the contamination. After start-up, demonstration of SSDS effectiveness will be confirmed and thereafter, periodic maintenance and monitoring will be performed.

2.0 Objectives

This work plan was developed in general accordance with the NYS DOH document, "Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006".

The objective of each SSDS is to achieve and maintain a minimum negative pressure differential of .004 inches of water column (wci) below all concrete slabs which function as boundaries between sub-slab space and occupied interior space. Once the SSDS have been installed, testing will be performed to determine the extent of the pressure field and results will be presented for review. Post installation air sampling will be conducted by others in a manner and frequency to be determined.

3.0 Work Plan Design and Specifications

3.1 Overview

Work descriptions are based on certain assumptions identified herein and are subject to modification based on further field observations and measurements before and during construction. In the interest of achieving efficiency of design and optimized cost, this Work Plan is presented on a Design/Build basis which allows for adjustment to quantity and type of system components. This provides optimal cost and design efficiency, informed by predictive analysis of data continuously obtained and easily modifiable in the field, so that the owner's value is maximized as objectives are being met. The subject area is a the entire footprint of the building excluding the elevator shaft and the annex storage take building.

3.2 Predesign Communication Testing

On November 30, 2012, we performed sub-slab air communication testing to inform system design. The objective was to assess consistency of sub-slab material, footer placement, and to determine expected areas of vacuum influence that could be created from given suction points. We obtained the following data.

Vacuum point	Test point	Value in –wci
1	2	.002
1	3	.009
3	4	0
4	3	0
2	5	.002
5	6	.300
9	5	.075
10	11	0
A	9	0
A	2	0
A	3	.060
A	1	.019

3.3 Scope of Work

The Scope of Work is to furnish and install multi-point active sub-slab depressurization systems at designated locations in the existing building on a design/build basis. The Scope of Work is based on the minimum construction necessary to achieve the design objective of furnishing a minimum .004 wci pressure differential at all areas of the sub -slab.

Furnish and Install:

- Professional design and supervision
- Final placements of all components subject to approval by client
- Final quantities of all components subject to continuing field measurements during construction – although design is informed by air communication testing and site assessment, final configuration subject to modification

System 1 (North Room):

- System configuration - (1) RADONAWAY RP-145 (80 watts)in-line fan, sidewall exterior mount at east side, to provide sub-slab depressurization via 4" schedule 40 PVC pipe to roof exhaust
- Electrical weatherproof conduit from fan housing to electrical junction box; interior MC wiring and electrical connection to existing panel
- (2) Suction points as follows: connection via 3" Schedule 40 PVC pipe, surface mount at designated side wall, to cavity in sub-slab, with urethane and/or masonry seal; access hole to suction cavity by 5"core drill; suction cavity to consist of approximately 1 cu. ft. excavated material in sub-slab
- (1) U-tube vacuum indicator on vertical pipe run

System 2 (Main System):

- System configuration - (1) OBAR SOE 79 Radial Blower (250 watts), sidewall exterior mount at east side, to provide sub-slab depressurization via 4 and 3" schedule 40 PVC pipe to roof exhaust
- Electrical weatherproof conduit from fan housing to electrical junction box; interior MC wiring and electrical connection to existing panel
- (12) Suction points as follows: connection via 3" Schedule 40 PVC pipe, surface mount at designated side wall, to cavity in sub-slab, with urethane and/or masonry seal; access hole to suction cavity by 5"core drill; suction cavity to consist of approximately 1 cu. ft. excavated material in sub-slab; (4) main room; (4) storage room; (1) Meter room; (1) Former plate cleaning room; (2) rooms adjacent to former oil tank room; adjust quantity and locations as necessary to achieve performance objective
- (1) U-tube vacuum indicator or Magnahelic dial gauge on vertical pipe run

Common Elements:

- Urethane sealant at slab joints, cracks and penetrations to prevent "short circuiting" of pressure field
- Horizontal pipe at ceiling with metal *Autogrip* hangers, on 6' spacing, sloped as required, with valves or restrictor plates as required; all pipe runs for minimum intrusion on occupied space as practicable
- At completion, perform backdraft testing, measure pressure differentials and document; label components and provide system description and operational instructions
- Consult with client engineering representatives to develop operation, maintenance and periodic inspection plan
- Two year warranty; labor and installed components; although system design is informed by field air communication testing and is based on achieving a sufficient pressure differential, no specific warranty of effectiveness is provided – effectiveness shall be determined by continuing field measurement provided by others

3.4 Post Installation Pressure Field Extension Testing

A digital micromanometer will be used to measure pressure differentials and values will be recorded on a floor plan. All test holes will be repaired with urethane caulk (MSDS available) applied over a closed cell backer rod. Smoke tubes will be used to identify floor cracks and other openings to the sub-slab that could "short circuit" the pressure field. Backdrafting testing will be performed.

3.5 System Operation Following Power Loss

The systems will restart automatically after power restoration.

3.6 General Work Plan Provisions

- Daily tailgate meeting for safety review
- Hazwoper trained personnel to perform drilling operations
- PID monitoring during drilling by supervising engineer, if required
- Level 4 PPE for on site personnel
- Procedures to follow site specific HASP

3.7 IRM Construction Completion Report

At conclusion of construction, a Construction Completion Report (CCR) will be submitted. This report will include an as-built drawing, showing SSDS locations and components. The CCR will include measurements of created sub-slab to ambient air static pressure differentials, detailed descriptions of SSDS components, and post-installation sampling results.

An Operations, Maintenance, and Monitoring (OM&M) Plan will be submitted with the CCR. The OM&M Plan will be provided to the owner and occupants to facilitate their understanding of the system's operation, maintenance and monitoring. The OM&M Plan will include the following:

- a description of the SSDS Installed and its basic operating principles, with diagram;
- how the owner or tenant can check that the SSDS is operating properly;
- how the SSDS will be maintained and monitored and by whom;
- a description of long-term reporting and annual SSDS certification requirements;
- a list of appropriate actions for the owner or tenant to take if a SSDS warning device (manometer) indicates system degradation or failure;
- a description of the proper operating procedures for the SSDS, including manufacturer's operation and maintenance instructions and warrantees; and
- contact information if the owner or tenant has questions, comments, or concerns.

3.8 Maintenance and Monitoring

Future monitoring will be proposed to monitor system communication via differential pressure measurements. The monitoring will be performed annually until a less-frequent monitoring frequency is approved. This routine monitoring will include:

- visual inspection of the equipment and piping;
- inspection of exhaust points to verify that no air intakes have been located nearby;
- identification and subsequent repair of any leaks;
- audible operational status check of vent fans;
- damper adjustments as required to balance parallel branches of system;

- measurement of differential pressure between the indoor air and the sub-slab to ensure a lower pressure is being maintained in the sub-slab relative to indoor ambient, as indicated by the pressure gauge on the fan suction pipe.

In addition, non-routine maintenance may be conducted should it appear that the SSDS has reduced its effectiveness due to malfunction, renovation, or other unplanned circumstance. Examples of such circumstances include the following:

- the building's owner or tenants report that a warning device indicates that the SSDS is not operating properly;

- the system is accidentally damaged;

- the building has undergone renovations that may reduce the effectiveness of the system.

The SSDS will be operated until such time as permission in writing is received from NYSDEC to terminate operation of the system and remove the equipment.

3.9 Schedule

It is anticipated that work can be completed within thirty days of receipt of order.

3.10 Discharge Permitting

It is understood that an air discharge permit to discharge treated vapors will not be required. It is further understood that all discharges will be direct to the atmosphere and that a Community Air Monitoring Plan is not required.

3.11 Health and Safety Plan

Mitigation Tech has prepared a Health and Safety Plan (HASP) for personnel who will be involved with the construction at this Site.

Labor and material……$12,400.00

MITIGATION TECH, INC.

Qualifications
NEHA NRPP ID certification #100722 RMT (mitigation)
NYS Listed for Radon Mitigation
AARST Membership
Installers are HAZWOPER and OSHA trained
20 years direct experience in Soil Vapor Intrusion Mitigation

Over 8,000,000 square feet accumulated depressurized sub-slabs
Over 4,000 completed work sites since 1991
Extensive experience with high suction fans (to 50 wci) and manifolded SSD systems
Expertise in ASTM E-2121-03 and NYS DOH VI Guidance
Comprehensive Insurance

- $5,000,000 General Liability
- $2,000,000 Pollution Liability
- $2,000,000 Professional Liability
- $1,000,000 Automobile Liability
- Statutory Worker's Comp

If you have any questions, please contact me.

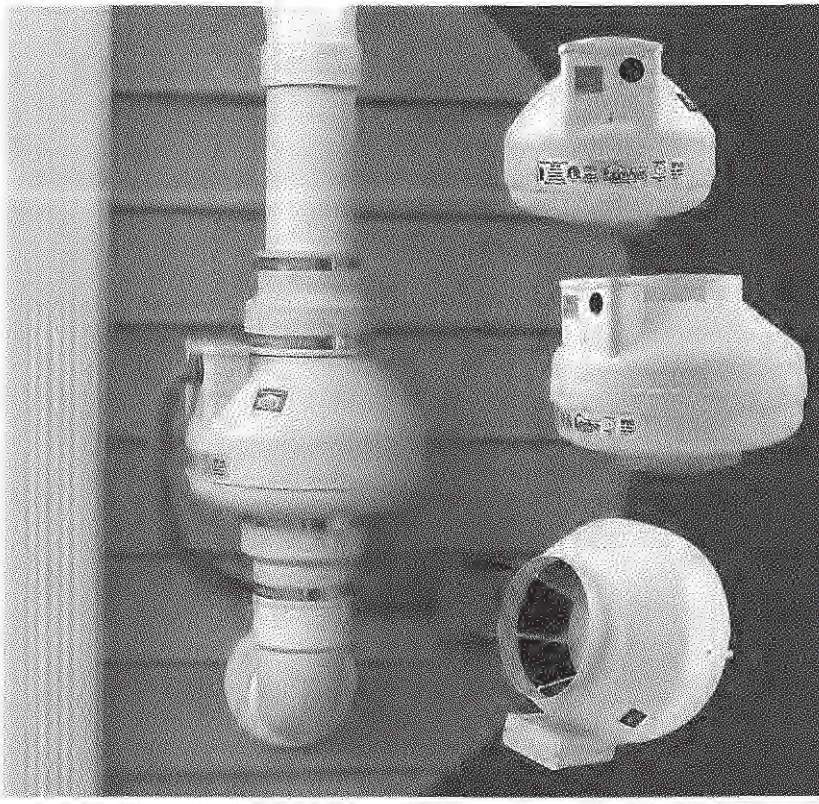
Thank you.

Nicholas E. Mouganis EPA listing # 15415-I; NEHA ID# 100722

55 SHUMWAY ROAD, BROCKPORT, NEW YORK, 14420 * OFFICE/FAX 585-637-7430

RadonAway™
The world's leading radon fan manufacturer

RP Series



Radon Mitigation Fan

All RadonAway™ fans are specifically designed for radon mitigation. RP Series Fans provide superb performance, run ultra-quiet and are attractive. They are ideal for most sub-slab radon mitigation systems.

Features

- Energy efficient
- Ultra-quiet operation
- Meets all electrical code requirements
- Water-hardened motorized impeller
- Seams sealed to inhibit radon leakage (RP140 & RP145 double snap sealed)
- RP140 and RP260 Energy Star® Rated
- ETL Listed - for indoor or outdoor use
- Thermally protected motor
- Rated for commercial and residential use

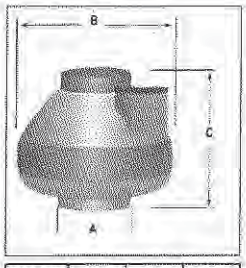
MODEL	P/N	FAN DUCT DIAMETER	WATTS	MAX. PRESSURE"WC	TYPICAL CFM vs. STATIC PRESSURE WC				
					0"	.5"	1.0"	1.5"	2.0"
RP140*	23029-1	4"	15-21	0.8	135	70	-	-	-
RP145	23030-1	4"	41-72	2.1	166	126	82	41	3
RP260*	23032-1	6"	50-75	1.6	272	176	89	13	-
RP265	23033-1	6"	91-129	2.3	334	247	176	116	52
RP380*	28208	8"	95-152	2.3	497	353	220	130	38

*Energy Star® Rated

Made in USA with US and imported parts

ETL Listed

All RadonAway inline radon fans are covered by our 5-year, hassle-free warranty



Model	A	B	C
RP140	4.5"	9.7"	8.5"
RP145	4.5"	9.7"	8.5"
RP260	6"	11.75"	8.6"
RP265	6"	11.75"	8.6"
RP380	8"	13.41"	10.53"

For Further Information Contact

9/12
P/N 02008

RP145 Radon Fan

Item # 23030-1

Description - The RadonAway RP145 is RadonAway's most popular radon fan, offering high air flow, energy efficiency, quiet operation and effective radon reduction.

Quantity Price Discounts apply at 4, 8 and 20. Pricing will update when added to Shopping Cart.

RadonAway is a B2B business only. You must be an approved RadonAway customer to purchase products through this website. If you are an existing RadonAway customer and need a website login, click here. If you are a professional and would like to become a RadonAway customer, click here.

Technical Specifications:

Radon Fan Features:

- Five-year limited warranty
- Quiet and attractive
- Thermally protected
- Water-hardened motorized impeller
- **RP140 and RP260 Energy Star® Qualified**
- ETL Listed - for indoor or outdoor use
- Meets all electrical code requirements
- Rated for commercial and residential use

Additional Radon Fan Information:

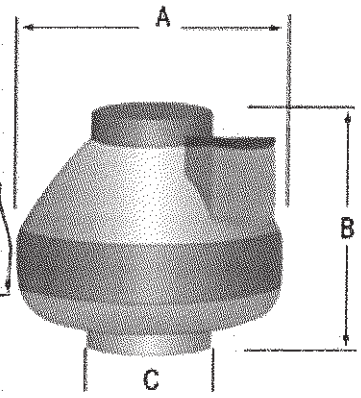
- Downloadable Fan Specifications/Sales Sheet (PDF format)
- Downloadable Fan Installation Instructions (PDF format)
- Calculate your estimated annual electrical cost.

Model	P/N	Energy Star® Rated	Fan Duct Diameter	Watts	Max Pressure "WC	Typical CFM vs. Static Pressure WC					R T
						0"	.5"	1.0"	1.5"	2.0"	
RP140	23029 -1	Yes	4"	15-21	0.8	135	70	-	-	-	
RP145	23030 -1	-	4"	41-72	2.1	166	126	82	41	3	
RP260	23032 -1	Yes	6"	50-75	1.6	272	176	89	13	-	
RP265	23033 -1	-	6"	91-129	2.3	334	247	176	116	52	
RP380	28208	-	8"	95-152	2.3	497	353	220	130	38	

[1] *Suitable as designated by the new Reducing Radon in New Construction Standard, RRNC 2.0. Click here for details.*

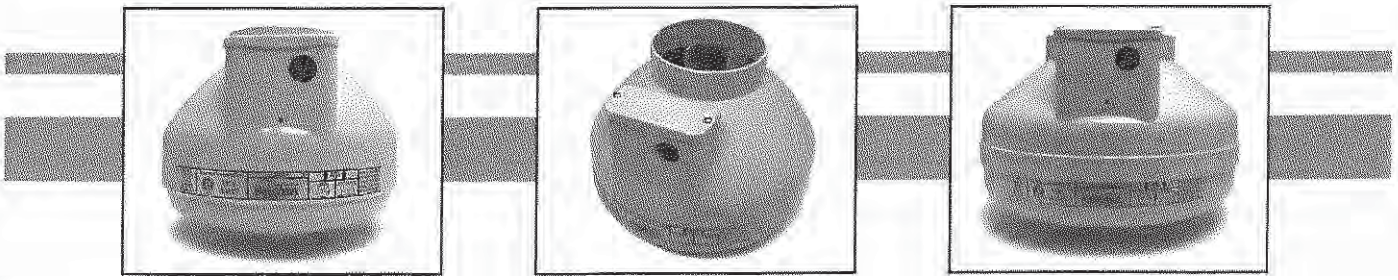
Dimensions

Model	A	B	C Duct Size
RP140	9.7"	8.5"	4"
RP145	9.7"	8.5"	4"
RP260	11.75"	8.6"	6"
RP265	11.75"	8.6"	6"
RP380	13.41"	10.53"	8"



RadonAway™

The World's Leading
Radon Fan Manufaturer



RP Series
Installation Instructions

RadonAway
3 Saber Way | Ward Hill, MA 01835
www.radonaway.com

P/N IN020-REV K

4/11

RadonAway™

Series Fan Installation Instructions

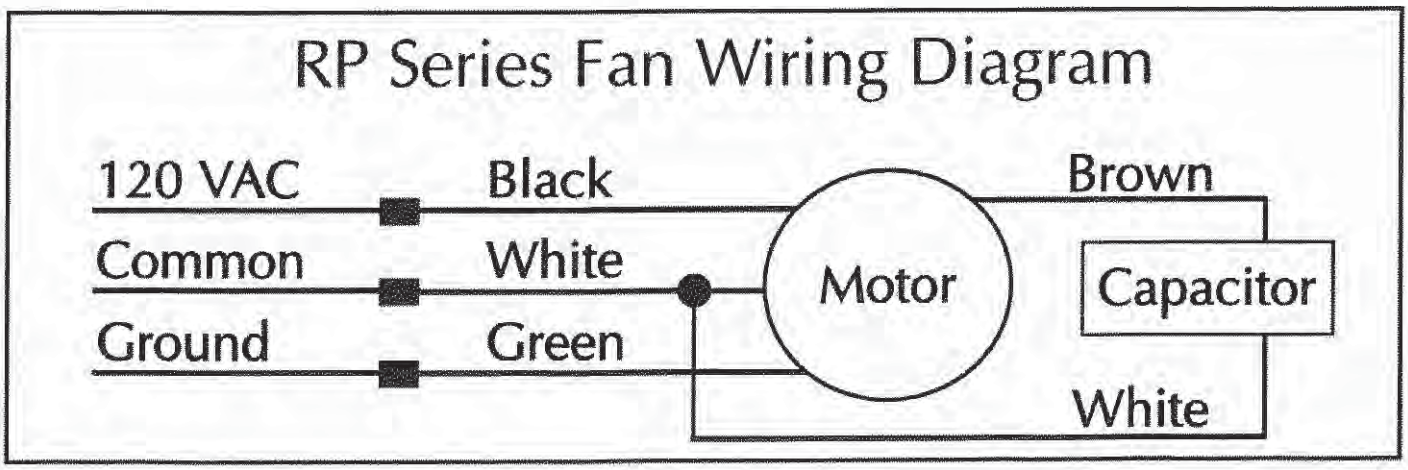
Please Read and Save These Instructions.

DO NOT CONNECT POWER SUPPLY UNTIL FAN IS COMPLETELY INSTALLED. MAKE SURE ELECTRICAL SERVICE TO FAN IS LOCKED IN "OFF" POSITION. DISCONNECT POWER BEFORE SERVICING FAN.

1. **WARNING!** Do not use fan in hazardous environments where fan electrical system could provide ignition to combustible or flammable materials.
2. **WARNING!** Do not use fan to pump explosive or corrosive gases.
3. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.
4. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.
5. **NOTICE!** There are no user serviceable parts located inside the fan unit. **Do NOT attempt to open.** Return unit to the factory for service.
6. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician
7. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.
8. **WARNING!** TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

   a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.

   b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.



1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

The RP Series Radon Fans are intended for use by trained, professional Radon mitigators. The purpose of this instruction is to provide additional guidance for the most effective use of an RP Series Fan. This instruction should be considered as a supplement to EPA standard practices, state and local building codes and state regulations. In the event of a conflict, those codes, practices and regulations take precedence over this instruction.

1.2 ENVIRONMENTALS

The RP Series Fans are designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, please contact RadonAway for assistance. When not in operation, the fan should be stored in an area where the temperature is never less than 32 degrees F. or more than 100 degrees F.

1.3 ACOUSTICS

The RP Series Fan, when installed properly, operates with little or no noticeable noise to the building occupants. The velocity of the outgoing air should be considered in the overall system design. In some cases the "rushing" sound of the outlet air may be disturbing. In these instances, the use of a RadonAway Exhaust Muffler is recommended.

(To ensure quiet operation of ENERGY STAR qualified in-line and remote fans, each fan shall be installed using sound attenuation techniques appropriate for the installation. For bathroom and general ventilation applications, at least 8 feet of insulated flexible duct shall be installed between the exhaust or supply grille(s) and the fan).

1.4 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes thus blocking air flow to the RP Series Fan. The lack of cooling air may result in the fan cycling on and off as the internal temperature rises above the thermal cutoff and falls upon shutoff. Should this condition arise, it is recommended that the fan be turned off until the water recedes allowing for return to normal operation.

1.5 SLAB COVERAGE

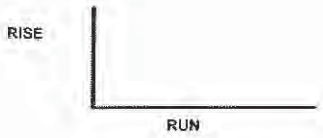
The RP Series Fan can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the RP Series Fan best suited for the sub-slab material can improve the slab coverage. The RP140/145/155 are best suited for general purpose use. The RP260 can be used where additional airflow is required and the RP265/380 is best suited for large slab, high airflow applications. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

1.6 CONDENSATION & DRAINAGE

Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a slab hole to remove the condensation. The RP Series Fan **MUST** be mounted vertically plumb and level, with the outlet pointing up for proper drainage through the fan. Avoid mounting the fan in any orientation that will allow water to accumulate inside the fan housing. The RP Series Fans are **NOT** suitable for underground burial.

For RP Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

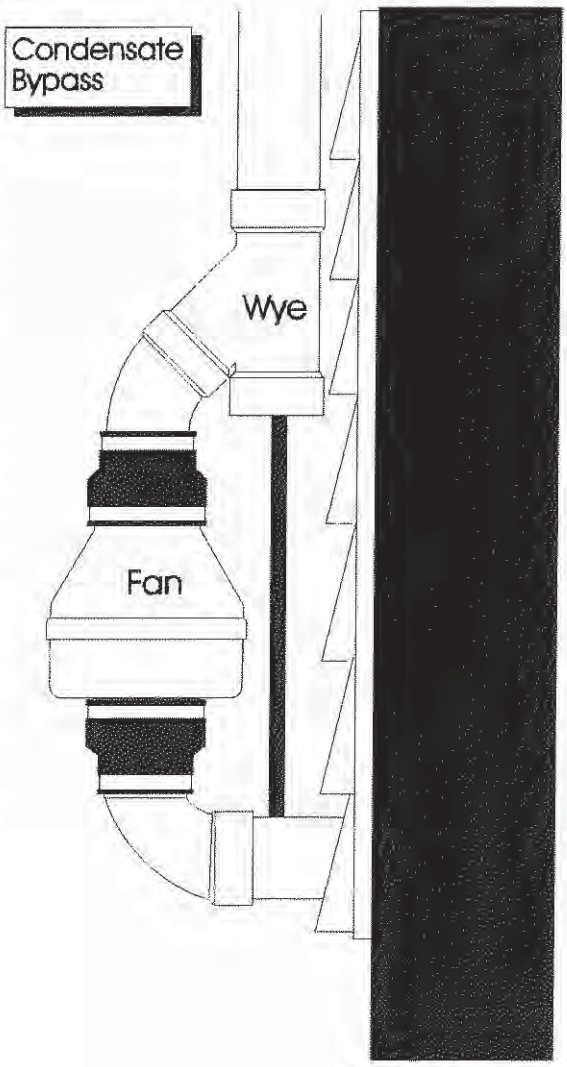
Pipe Dia.	Minimum Rise per Ft of Run*				
	@25 CFM	@50 CFM	@100 CFM	@200 CFM	@300 CFM
6"	-	3/16	1/4	3/8	3/4
4"	1/8	1/4	3/8	2 3/8	-
3"	1/4	3/8	1 1/2	-	-



*Typical RP1xx/2xx Series Fan operational flow rate is 25 - 90 CFM 0n 3" and 4" pipe. (For more precision, determine flow rate by measuring Static Pressure, in WC, and correlate pressure to flow in the performance chart in the addendum.)

Under some circumstances in an outdoor installation a condensate bypass should be installed in the outlet ducting as shown. This may be particularly true in cold climate installations which require long lengths of outlet ducting or where the outlet ducting is likely to produce large amounts of condensation because of high soil moisture or outlet duct material. Schedule 20 piping and other thin-walled plastic ducting and Aluminum downspout will normally produce much more condensation than Schedule 40 piping.

The bypass is constructed with a 45 degree Wye fitting at the bottom of the outlet stack. The bottom of the Wye is capped and fitted with a tube that connects to the inlet piping or other drain. The condensation produced in the outlet stack is collected in the Wye fitting and drained through the bypass tube. The bypass tubing may be insulated to prevent freezing.



1.7 "SYSTEM ON" INDICATOR

A properly designed system should incorporate a "System On" Indicator for affirmation of system operation. A manometer, such as a U-Tube, or a vacuum alarm is recommended for this purpose.

1.8 ELECTRICAL WIRING

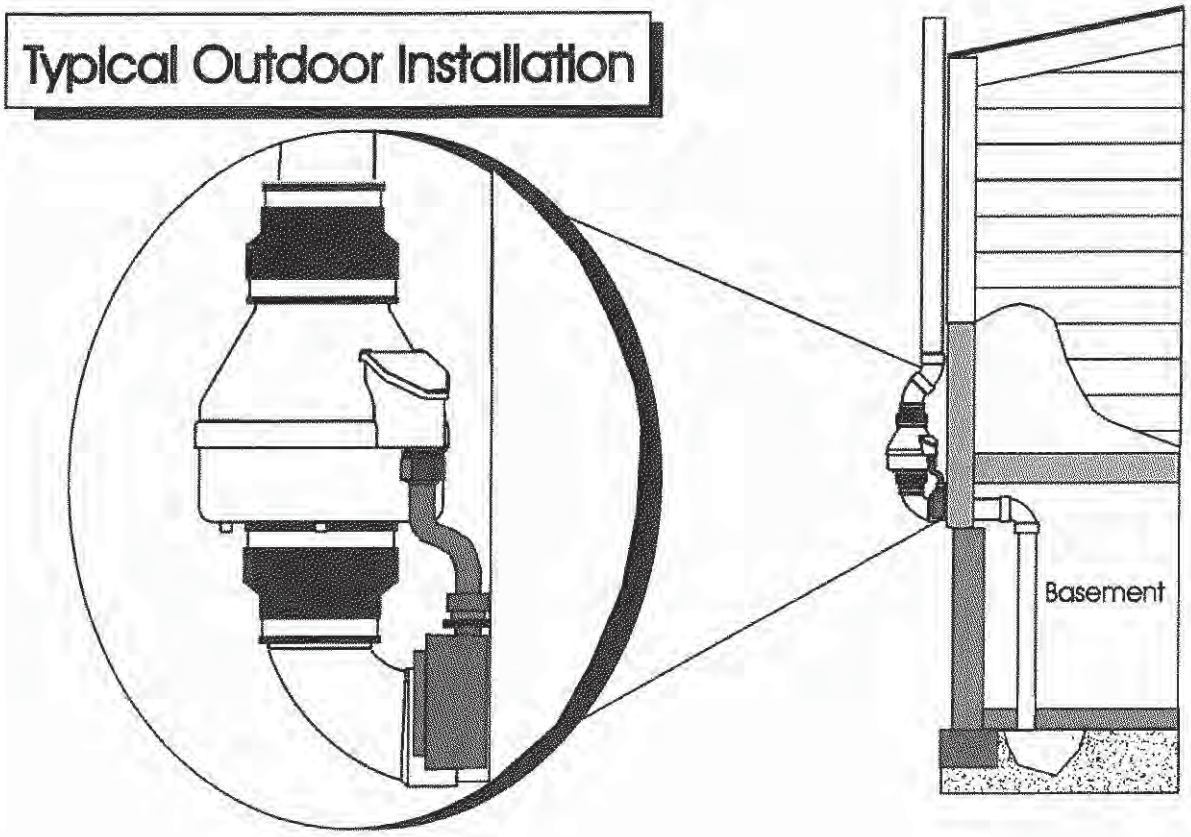
The RP Series Fans operate on standard 120V 60 Hz. AC. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician. Outdoor installations require the use of a U.L. listed watertight conduit. Ensure that all exterior electrical boxes are outdoor rated and properly sealed to prevent water penetration into the box. A means, such as a weep hole, is recommended to drain the box.

1.9 SPEED CONTROLS

The RP Series Fans are rated for use with electronic speed controls, however, they are generally not recommended. If used, the recommended speed control is Pass & Seymour Solid State Speed Control Cat. No. 94601-I.

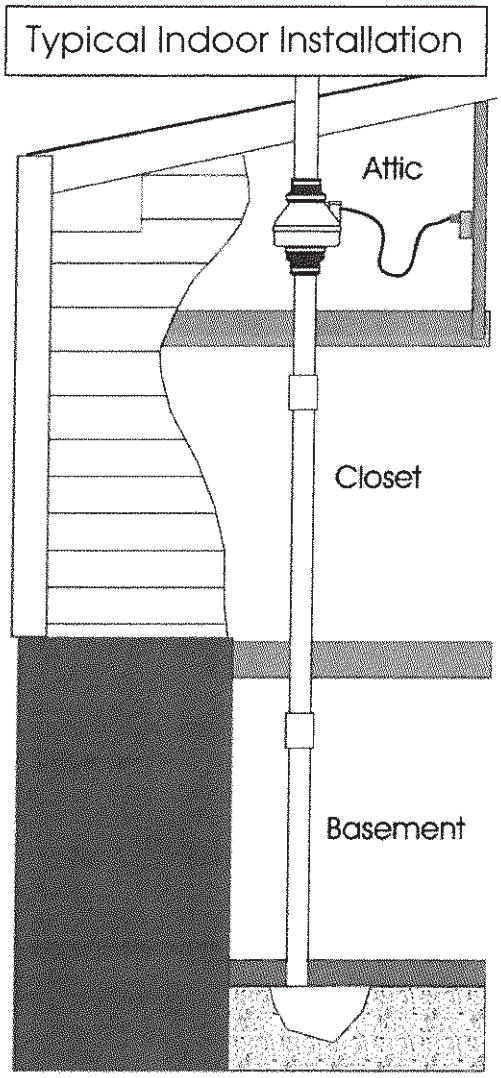
2.0 INSTALLATION

The RP Series Fan can be mounted indoors or outdoors. (It is suggested that EPA recommendations be followed in choosing the fan location.) The RP Series Fan may be mounted directly on the system piping or fastened to a supporting structure by means of optional mounting bracket.



2.1 MOUNTING

Mount the RP Series Fan vertically with outlet up. Insure the unit is plumb and level. When mounting directly on the system piping assure that the fan does not contact any building surface to avoid vibration noise.



2.2 MOUNTING BRACKET (optional)

The RP Series Fan may be optionally secured with the RadonAway P/N 25007-2 (25033 for RP385) mounting bracket. Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

2.3 SYSTEM PIPING

Complete piping run, using flexible couplings as means of disconnect for servicing the unit and vibration isolation.

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections (See Section 1.8):

Fan Wire	Connection
Green	Ground
Black	AC Hot
White	AC Common

2.5 VENT MUFFLER (optional)

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed at the end of the vent pipe.

2.6 OPERATION CHECKS

_____ **Verify** all connections are tight and **leak-free**.

_____ **Insure** the RP Series Fan and all ducting is secure and vibration-free.

_____ **Verify** system vacuum pressure with manometer. **Insure** vacuum pressure is **less than** maximum recommended operating pressure

(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 Feet.)
(Further reduce Maximum Operating Pressure by 10% for High Temperature environments)
See Product Specifications. If this is exceeded, increase the number of suction points.

_____ **Verify Radon levels by testing to EPA protocol.**

RP SERIES PRODUCT SPECIFICATIONS

The following chart shows fan performance for the RP Series Fan:

Typical CFM Vs Static Pressure "WC									
	0"	.25"	.5"	.75"	1.0"	1.25"	1.5"	1.75"	2.0"
RP140	135	103	70	14	-	-	-	-	-
RP145	166	146	126	104	82	61	41	21	3
RP260	272	220	176	138	103	57	13	-	-
RP265	334	291	247	210	176	142	116	87	52
RP380*	497	401	353	281	220	176	130	80	38

* Tested with 6" inlet and discharge pipe.

Power Consumption 120 VAC, 60Hz 1.5 Amp Maximum		Maximum Recommended Operating Pressure* (Sea Level Operation)**	
RP140	17 - 21 watts	RP140	0.8" W.C.
RP145	41 - 72 watts	RP145	1.7" W.C.
RP260	52 - 72 watts	RP260	1.5" W.C.
RP265	91 - 129 watts	RP265	2.2" W.C.
RP380	95 - 152 watts	RP380	2.0" W.C.

Reduce by 10% for High Temperature Operation

***Reduce by 4% per 1000 feet of altitude*

	Size	Weight	Inlet/Outlet
RP140	8.5H" x 9.7" Dia.	5.5 lbs.	4.5" OD (4.0" PVC Sched 40 size compatible)
RP145	8.5H" x 9.7" Dia.	5.5 lbs.	4.5" OD (4.0" PVC Sched 40 size compatible)
RP260	8.6H" x 11.75" Dia.	5.5 lbs.	6.0" OD
RP265	8.6H" x 11.75" Dia.	6.5 lbs.	6.0" OD
RP380	10.53H" x 13.41" Dia.	11.5 lbs.	8.0" OD

Recommended ducting: 3" or 4" RP1xx/2xx, 6" RP380, Schedule 20/40 PVC Pipe

Mounting: Mount on the duct pipe or with optional mounting bracket.

Storage temperature range: 32 - 100 degrees F.

Normal operating temperature range: -20 - 120 degrees F.

Maximum inlet air temperature: 80 degrees F.

Continuous Duty

Class B Insulation

Thermally Protected

3000 RPM

Rated for Indoor or Outdoor Use

LISTED Electric Fan ETL 77728 Tested to UL Std. 507

ENERGY STAR **RP140 and RP260 Only.**

TESTED/CERTIFIED HOME VENTILATING INSTITUTE DIVISION OF AMCA

IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the GP/XP/XR/RP Series Fan for shipping damage within 15 days of receipt. Notify **RadonAway of any damages immediately**. Radonaway is not responsible for damages incurred during shipping. However, for your benefit, Radonaway does insure shipments.

There are no user serviceable parts inside the fan. **Do not attempt to open.** Return unit to factory for service.

Install the GP/XP/XR/RP Series Fan in accordance with all EPA standard practices, and state and local building codes and state regulations.

WARRANTY

Subject to any applicable consumer protection legislation, RadonAway warrants that the GPX01/XP/XR/RP Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of 90 days from the date of purchase (the "Warranty Term").

RadonAway will replace any Fan which fails due to defects in materials or workmanship. The Fan must be returned (at Owner's cost) to the RadonAway factory. Any Fan returned to the factory will be discarded unless the Owner provides specific instructions along with the Fan when it is returned regardless of whether or not the Fan is actually replaced under this warranty. Proof of purchase must be supplied upon request for service under this Warranty.

This Warranty is contingent on installation of the Fan in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not cover damage in shipment unless the damage is due to the negligence of RadonAway.

5 YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

RadonAway will extend the Warranty Term of the fan to 5 years from date of manufacture if the Fan is installed in a professionally designed and professionally installed radon system or installed as a replacement fan in a professionally designed and professionally installed radon system. Proof of purchase and/or proof of professional installation may be required for service under this warranty. Outside the Continental United States and Canada the extended Warranty Term is limited to one (1) year from the date of manufacture.

RadonAway is not responsible for installation, removal or delivery costs associated with this Warranty.

EXCEPT AS STATED ABOVE, THE GPx01/XP/XR/RP SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL RADONAWAY BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE FAN OR THE PERFORMANCE THEREOF. RADONAWAY'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH RADONAWAY'S WARRANTY AS PROVIDED ABOVE.

For service under this Warranty, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping cost to and from factory.

RadonAway
3 Saber Way
Ward Hill, MA 01835
TEL. (978) 521-3703
FAX (978) 521-3964

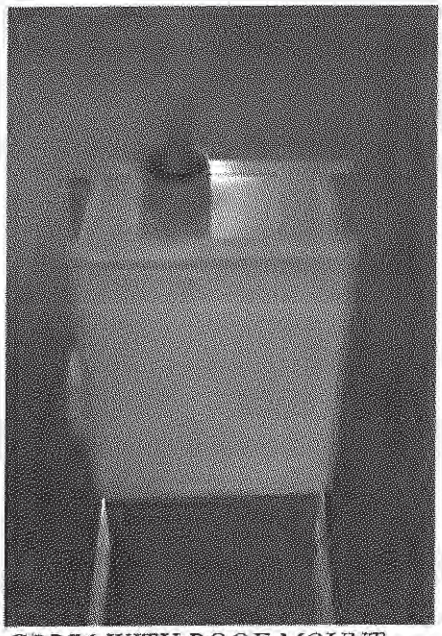
Record the following information for your records:

Serial No._____
Purchase Date_____

THE OBAR GBR76

COMPACT RADIAL BLOWER

Based on 25 years of experience and 2 years of research and development, the patent pending GBR series of compact radial blowers provide the perfect combination of performance and design.



GBR76 WITH ROOF MOUNT

PERFORMANCE

- GBR76 SOE 16" WC @ 0 Max flow 155 cfm.
- GBR76 HO 41" WC @ 0 Max flow 160 cfm.
- Built in speed control to customize performance.
- Condensate bypass built in.
- 18 month warranty 40,000 hr sealed bearings.

DESIGN

- Our modular design means the blower and manifold assembly can be removed and replaced as a unit. This makes repairs cost effective and easy and allows contractors to upgrade systems simply by swapping assemblies.
- The GBR series is based on a bypass blower designed to handle combustible materials.
- The housing is not required to be air tight so you can add gauges and alarms without compromising the system.
- Built in condensate bypass.
- Built in speed control.
- Quick disconnect electrical harness.
- All UL listed components including UL listed enclosure for outside use.
- Wall fastening lugs included.
- GBR series roof and wall mounts available to quickly configure the blowers for your installation while providing a custom built look.
- Compact design 16"x 14"x 8" weighing only 18 lbs.

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GBR76 SOE	0"	2"	4"	6"	8"	10"	12"	16"	Wattage
SOE 16	150	140	129	118	105	90	75	35	150-320
SOE 12	125	115	100	83	62	39	0		110-200
SOE 8	105	90	70	42	0				60-120
SOE 4	75	50	0						37-50

GBR SOE performance using built in potentiometer set at sealed vacuums of 16, 12, 8, and 4" WC

GBR76 HO	0"	10"	20"	30"	40"	Wattage
HO 40	155	110	72	40	10	400-575
HO 30	150	108	70	22	0	375-415
HO 20	141	99	20	0		200-350

GBR76 HO performance using built in potentiometer set at sealed vacuums of 40, 30, and 20" WC

Blower Specifications

Notes:

- **Input Voltage Range:** 108-132 Volts AC RMS, 50/60 Hz, single phase.
- **Input Current:** 6 amps AC RMS
- **Operating Temperature (Ambient Air and Working Air):** 0°C to 50°C
- **Storage Temperature:** -40°C to 85°C
- **Dielectric Testing:** 1500 Volts AC RMS 60 Hz applied for one second between input pins and ground. 3mA leakage maximum.
- **Speed Control Methods:** PWM (Pulse Width Modulation) (1 kHz to 10 kHz)
  0 to 10 VDC speed control.
  Mechanical: A potentiometer is available for speed control of the blower. The potentiometer can be preset for a specific speed. Access for speed adjustment located in motor housing.
- **Approximate Weight:** 4.8 Lbs. / 2.2 Kg
- **Regulatory Agency Certification:** Underwriters Laboratories Inc. UL507 Recognized under File E94403 and compliant under the CE Low Voltage Directive 2006/95/EC.
- **Design Features:** Designed to provide variable airflow for low NO_x & CO emission in high efficiency gas fired combustion systems. Built with non-sparking materials. Blower housing assembly constructed of die cast aluminum. Impeller constructed from hardened aluminum. Rubber isolation mounts built into blower construction to dampen vibration within the motor. Two piece blower housing assembly sealed with O-ring gasket for combustion applications. Customer is responsible to check for any leakage once the blower is installed into the final application.
- **Miscellaneous:** Blower inlet, discharge, and all motor cooling inlet and discharge vents must not be obstructed. Motor ventilation air to be free of oils and other foreign particles, (i.e: breathing quality air). Blower is to be mounted so ventilation air cannot be re-circulated.
  POWER CONNECTION: Blower connector, AMP Universal MATE-N-LOK, part no. 1-350043-0.
  SPEED CONNECTION: Blower connector, Molex Mini-Fit Jr., part no. 39-30-3056.
  Mating harnesses available upon request.

Enclosure Specifications

Rating:

Ingress Protection (EN 60529): 66/67

Electrical insulation: Totally insulated

Halogen free (DIN/VDE 0472, Part 815): yes

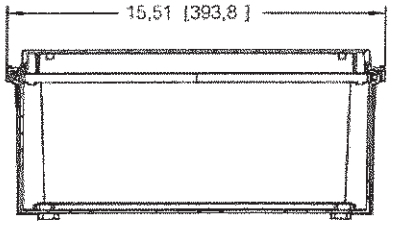
UV resistance: UL 508

Flammability Rating (UL 746 C 5): complies with UL 508

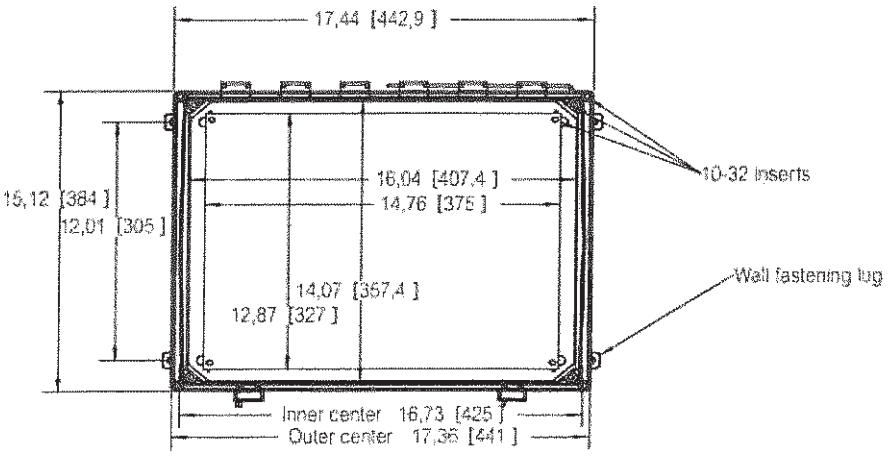
Glow Wire Test (IEC 695-2-1) °C: 960

NEMA Class: UL Type 4, 4X, 6, 6P, 12 and 13

Certificates: Underwriters Laboratories



Screw cover



Top View - cover removed

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