# Site Management Plan

## Brownfield Cleanup Program
## Seneca Market I, LLC Site

*Watkins Glen, New York*
*Site No. C849004*

December 2008 | 0092-002-200

Prepared For:

*Seneca Market I, LLC*

Prepared By:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

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# BROWNFIELD CLEANUP PROGRAM

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**SITE NO. C849004**
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# SITE MANAGEMENT PLAN

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# 1.0 INTRODUCTION

Benchmark Environmental Engineering and Science, PLLC (Benchmark) has prepared this Site Management Plan (SMP) on behalf of Seneca Market I, LLC (Seneca Market) for the Seneca Market I, LLC site (Site) in the Village of Watkins Glen, Schuyler County, New York (see Figure 1).

In June 2005, Seneca Market submitted a New York State Brownfield Cleanup Program (BCP) application to remediate and redevelop the Site as a hotel complex. Seneca Market was accepted into the BCP and executed a Brownfield Cleanup Agreement (BCA) on November 7, 2005 (Index No. B8-0699-05-08) as a non-responsible party (volunteer) per ECL§27-1405. The Site was remediated under the BCP as site number C849004. On March 31, 2006, the New York State Department of Environmental Conservation (NYSDEC) approved the Remedial Design (RD) Work Plan Remedial measures were implemented in fall 2006 through fall 2008. Site redevelopment and hotel construction commenced in winter 2006 and was completed in August 2008.

## 1.1 Purpose

The site contains remaining contamination after completion of the remedial action. Engineering Controls (ECs) and Institutional Controls (ICs) have been incorporated into the site remedy to provide proper management of remaining contamination in the future to ensure protection of public health and the environment. An Environmental Easement will be granted to the NYSDEC, and recorded with the Schuyler County Clerk, that provides an enforceable legal instrument to ensure compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1)

implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; and (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports.

To address these needs, this SMP includes the following plans: (1) an Operation, Monitoring, & Maintenance Plan (includes a Sub-Slab Depressurization Operations Manual and a Long-Term Groundwater Monitoring Plan) for implementation and management of EC/ICs, which includes a reporting plan for the submittal of data, information, recommendations, and certifications to NYSDEC; and (2) a Soil/Fill Management Plan for the management of soil/fill material excavated after Site development.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of Environmental Conservation Law and the environmental easement, which is grounds for revocation of the COC;

- Failure to comply with this SMP is also a violation of, 6NYCRR Part 375 and the B8-0699-05-08 for the site, and thereby subject to applicable penalties.

At the time the SMP was prepared, the SMP and all site documents related to Remedial Investigation and Remedial Action were maintained at the NYSDEC Regional Office located at 6274 East Avon-Lima Road, Avon, New York 14414.

## 1.2 Site Background

The BCP Site is an approximate 2.27-acre property comprised of four tax parcels, including Tax ID nos. 65.09-2-56, 65.09-2-58, 65.09-2-59.1 and 65.09-2-61.2. The Site is bounded by Franklin, First, and Decatur Streets, and the Finger Lakes Railway right-of-way in the Village of Watkins Glen, New York (see Figure 2).

The parcels have a history of use that dates back to the 1860s. The Site was historically used as a dry cleaning facility, a bus garage, an automobile museum, a grape processing facility, and an asphalt company. The portion of the Site addressed at 20 North

Franklin Street was historically occupied by a dry cleaning facility and identified as an inactive Class 2 hazardous waste site by the NYSDEC. That portion of the Site was investigated and partially remediated by the NYSDEC under the NYSDEC Superfund program (i.e., "the North Franklin Street Site" NYSDEC Registry No. 8-49-002). Due the presence of contaminated soil within the footprint of the former dry cleaning building, soil contaminated with chlorinated solvents was left in-place, with a stipulation that such soil would be excavated following building demolition. The boundary of each historical building is shown on Figure 2.

On January 26, 1994, the NYSDEC signed a Record of Decision (ROD) that selected a remedy to clean up the North Franklin Street Class 2 inactive hazardous waste disposal site involving active soil vapor extraction (SVE) and groundwater extraction and treatment technologies. Construction of the treatment systems was completed and operations began in the Fall of 1996. Confirmatory soil samples collected during remediation indicated that SVE had effectively cleaned up the soil near the extraction wells, underneath the former auto museum, and to the rear of the former dry cleaning building. However, it was discovered that the contaminant concentrations in the immediate vicinity of the dry cleaning building were much higher and extended deeper into clay than previously thought. SVE did not clean up this area of highly contaminated soil despite subsequent modifications to and extended operation of the SVE system. Operation of the SVE system was suspended in March 1998 and operation of the groundwater treatment system was suspended at the end of April 1998, pending the results of further investigations. Additional investigations and a chemical oxidation pilot study were performed through 1999 into May 2000 on the remaining soil contamination. In November 2001, URS's final report on the additional investigations and the pilot study concluded that the chemical oxidation pilot study program significantly reduced the mass of chlorinated contaminants in on-site soils. Despite the reduction, however, localized areas with residual contaminant concentrations exceeding remedial action objectives for soils remained concentrated within the deeper clay, approximately 4 to 6 feet below ground surface.

The May 2003 Explanation of Significant Difference (ESD) describes how the residual contaminated soil and groundwater at the 16 North Franklin Street site was to be addressed. The change to the remedy included placement of deed restrictions to prevent usage of groundwater and contact with residual soil contamination in addition to the installation of an active venting system within the former dry cleaner building to control the potential indoor migration of vapors. Due the presence of contaminated soil within the footprint of the former dry cleaning building, soil contaminated with chlorinated solvents was left in-place, with a stipulation that such soil would be excavated following building demolition.

In accordance with the NYSDEC-approved Remedial Design Work Plan under the BCA, the following remedial work was completed:

- The former dry cleaning building was demolished and chlorinated VOC-impacted soil was excavated and disposed of at a permitted hazardous waste landfill. Approximately 5,000 gallons of groundwater was extracted from the excavation, treated with granular activated carbon and discharged to the Village of Watkins Glen publically operated treatment works (POTW). Residual contaminants remaining above site-specific action levels in this area include acetone, cis-1,2-dichloroethene, ethylbenzene, tetrachloroethene, trichloroethene and xylene (see Table 1 and Figure 2).
- An abandoned underground storage tank (UST) located in the area of the former dry-cleaner was encountered and removed. Residual contaminants remaining above site-specific action levels in the former tank area include ethylbenzene, tetrachloroethene, trichloroethene and xylene (see Table 1 and Figure 2).
- Two in-ground hydraulic lifts, an abandoned UST and petroleum-impacted soil in the area of a former bus garage were removed. Petroleum-impacted soil was disposed of at a permitted solid waste landfill. Residual contaminants remaining above site-specific action levels in these areas include chlorobenzene (Hydraulic Lift #1 area) and cyclohexane, isopropylbenzene, methylcyclohexane and xylene (Bus Garage UST area) (see Tables 2 and 4 and Figure 2).
- An Active Sub-slab Depressurization (ASD) System was installed in the new hotel building to mitigate potential intrusion of vapors from residual VOCs in soil and groundwater.
- Soil cover was placed over areas of the Site that were not covered with building or pavement.

The Final Engineering Report documents the details of the remedial activities completed. The remedial activities completed, together with implementation of institutional and engineering controls as summarized in this SMP, constitutes the final remedy. It should be noted that because of the historic inactive Class 2 hazardous waste site designation, the Site's owner(s) must satisfy the requirements of 6 NYCRR Part 375-1 and 375-2 and Environmental Conservation Law Article 27 Title 13.

## 1.3 Site Geology/Hydrogeology

Mostly based upon information collected during the Remedial Investigation (RI) and partly based upon field observations of open excavations during the BCP remediation as well as final cover material placement during redevelopment, site geology generally consist of the following units, described from youngest to oldest (i.e., shallowest to deepest).

- Cover Soils: Through Site redevelopment, approximately 1.95-acres (i.e., approximately 86%) of the Site was covered with the building floors and foundations; asphalt pavement or reinforced concrete parking, drives or sidewalks. The select gravel fill placed beneath concrete building slabs and asphalt paving will serve as the demarcation layer for those areas. With NYSDEC's permission, concrete from the bus garage was crushed on-site and used as subgrade backfill for the parking lot. The remaining property, which encompasses approximately 0.3 acres, was enhanced with landscaping and lawn area. Landscaping and lawn areas include a minimum of 12 inches of topsoil placed over subgrade backfill or native soil/fill. An orange mesh material was placed above the native subgrade as a demarcation layer. Non-grassed areas (e.g., landscape shrubs/beds) were also covered with chip mulch to mitigate erosion around planting.
- Fill: This unit is an unconsolidated regraded gravel, sand, and silt with trace amounts of brick, asphalt, wood, and cement/mortar was observed across the entire Site. The fill ranges in thickness from 2 to 6 feet. The fill unit is generally unsaturated with seasonal perched conditions at observed at some locations dictated by the climate (i.e., rain and snowmelt).
- Upper Clayey Silt: This unit was described during the RI as a brownish grey, moist to wet, soft to stiff, slightly plastic clayey silt with trace amounts of fine sand and/or gravel. This unit varies in thickness from non-existent in the central and northern portions of the Site to 9.5 feet thick in the vicinity of the former dry cleaner building. Where present, depth to this unit varied from 3.5 to 6 feet and graded laterally into a sandy silt/silty sand lithology. The localized perched condition at the Site has been attributed to the low permeability soils comprising this unit and was subsequently classified as a discontinuous aquitard. RI groundwater results in the vicinity of the former dry cleaner building suggest a secondary downward migration pathway created through this aquitard by man-made disturbances (i.e., local excavation). Based on slug testing conducted during

the RI, the calculated horizontal hydraulic conductivity of this unit is 4.0 x $10^{-5}$ cm/sec.

- Silty Sand and Gravel: Shallow groundwater exists at the Site within this unit which was described as brown, wet, loose to very dense, silty sand and gravel and locally stratified. Well sorted sand and gravel seams generally free of silt were commonly observed within this unit. Across the Site, this unit was observed at depths ranging from 2 to 13 feet. The base of this unit is relatively flat at an approximate depth of 18 to 23 feet. Based on slug testing conducted during the RI, the calculated horizontal hydraulic conductivity of this unit ranged from 1.6 x $10^{-1}$ to 2.6 x $10^{-3}$ cm/sec.
- Sandy Silt/Silty Sand: Deep groundwater exists at the Site within this unit which was described as a laminated, grey, wet, very loose to medium dense, silt and sand with trace amounts of clay and wood. Texture of this unit is variable ranging from fine sandy silt to silty fine sand. This unit has a sharp contact with the overlying silty sand and gravel at a depth of 18 to 23 feet grading into the underlying clayey silt at depths ranging from 22 to 30 feet. This unit was observed underlying the entire Site and has a relatively low permeability, but does not transmit groundwater. As such, this unit is considered to be part of the confining aquitard underlying the entire Site (see lower clayey silt below). Based on slug testing conducted during the RI, the calculated horizontal hydraulic conductivity of this unit ranged from 2.3 x $10^{-3}$ to 1.5 x $10^{-4}$ cm/sec. Based on laboratory testing of undisturbed soils (i.e., Shelby tubes), the vertical hydraulic conductivity was determined to be 1.4 x $10^{-6}$ cm/sec.
- Lower Clayey Silt: This unit is composed of laminated grey, wet, medium stiff to stiff clayey silt interbedded with some fine sandy silt. Small (<5 mm) mollusk shells and shell fragments were also observed within this unit. The cohesive and plastic characteristics of this unit reflect an increase in clay content, which distinguishes it from the overlying sandy silt/silty sand unit. This unit is aerially extensive creating a confining aquitard across the entire Site. Sloping gently to the east, this unit ranged in depth from 22 feet near the western side to 30 feet in the central portion of the Site. This unit ranges in thickness from 4 feet along the western side to 8 feet beneath the Site, comprising part of a lacustrine sedimentary sequence which may continue to a depth of up to 60 feet below grade according to the RI. Based on laboratory testing of undisturbed soils (i.e., Shelby tubes) conducted during the RI, the calculated vertical hydraulic conductivity of this unit ranged from 1.7 x $10^{-6}$ to 1.1 x $10^{-7}$ cm/sec.
- Bedrock: Bedrock was encountered during the RI at only one location, well/boring MW-17D, which was located near the western margin of the Seneca Lake valley where shale and siltstone were encountered at a depth of 26 feet. Although not confirmed, the RI states that the bedrock was expected to increase sharply from west to east within the Seneca Lake valley and based on the

anticipated extreme depths, the character of the bedrock was considered not to be significant to the RI and was therefore not investigated further.

During the RI, groundwater at the site was observed in two water-bearing zones: the shallow silty sand and gravel unit and the deep sandy silt/silty sand unit. Both water-bearing units are hydraulically connected and flow northward ultimately discharging to Seneca Lake. However, a reversal in groundwater flow direction near the Lake was observed during the RI due to seasonal fluctuations in lake levels, although this reversal was not observed beyond the Conrail tracks located immediately north of the Site. Isopotential maps prepared during the RI for the shallow and deep water-bearing zones are presented as Figure 4 and 5.

### 1.4 Current Owner

The current owner of the Site is Seneca Market I, LLC located at 4 Centre Drive, Orchard Park, New York 14127. Peter Krog is the Seneca Market contact, (plkrog@krogcorp.com) and (716)667-1234.

## 2.0 SMP COMPONENTS

This SMP consists of the following three parts:

| PART | TITLE |
|---|---|
| I | Operation, Monitoring, & Maintenance Plan |
| II | Soil/Fill Management Plan |
| III | Environmental Easements |

## 3.0 CONTINGENCY PLAN

Contingency actions required in the event of an emergency for the Seneca Market I, LLC site are presented in the Emergency Response Plan (ERP), which is an attachment to the Health and Safety Plan (HASP) (Appendix D) of this SMP. The ERP details emergency response actions to be taken as well as contact information in the event of an emergency. The current emergency contact list as well as directions to the local hospital included in the ERP is also presented in this section for quick reference.

Emergency Telephone Numbers:

**Benchmark Project Manager:** ***Michael Lesakowski***
Work: (716) 856-0599
Mobile: (716) 818-3954

**Benchmark Corporate Health and Safety Director:** ***Thomas H. Forbes***
Work: (716) 856-0599
Mobile: (716) 864-1730

**Benchmark Site Safety and Health Officer (SSHO):** ***Bryan C. Hann***
Work: (716) 856-0635
Home: (716) 870-1165

**Benchmark Alternate SSHO:** ***Richard L. Dubisz***
Work: (716) 856-0635
Home: (716) 655-7406

**Seneca Market I, LLC Representative:** Wayne Mosher (Maintenance Supervisor)
Work: (607) 535-6116

| | |
|---|---|
| **SCHUYLER HOSPITAL:** | (607) 535-7121 |
| **FIRE:** | 911 |
| **AMBULANCE:** | 911 |
| **VILLAGE OF WATKINS GLEN POLICE DEPARTMENT:** | (607) 535-7883 OR 911 |
| **STATE EMERGENCY RESPONSE HOTLINE:** | (800) 457-7362 |
| **NATIONAL RESPONSE HOTLINE:** | (800) 424-8802 |
| **NYSDOH (MARK SERGOTT):** | (800) 458-1158 EXT. 27860 |
| **NYSDEC (CHARLOTTE THEOBALD):** | (585) 226-5354 |
| **NYSDEC 24-HOUR SPILL HOTLINE:** | (800) 457-7252 |
| **FINGER LAKES REG. POISON & DRUG INFORMATION CENTER** | (800) 222-1222 |

The Site location is:

16 North Franklin Street
Watkins Glen, New York 14891-1221
Site Phone Number: (607) 535-6116
Alternate Phone number (Cell Phone or Field Trailer): (to be determined)

Directions to Schuyler Hospital (see Figure 3):

The following directions describe the best route to Schuyler Hospital, 220 Steuben Street, Montour Falls, New York (total distance approximately 3 miles south of the Site):

- Turn left (southeast) on North Franklin Street (NY-14) toward 1st Street.
- Continue to follow NY-14 South.
- Turn right (east) onto North Genesee Street.
- Turn right (west) onto Steuben Street (CR-16).
- Schuyler Hospital is <0.1 miles along Steuben Street.

# TABLES

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# TABLE 1

## cVOC-IMPACTED SOIL/FILL EXCAVATION
## VERIFICATION SAMPLING ANALYTICAL DATA SUMMARY (OCTOBER & NOVEMBER 2006)

### Site Management Plan
### Seneca Market I Site
### Watkins Glen, New York

| PARAMETER[1] | SAMPLE LOCATION AND DATE | | | | | | | | | | | | | Site Specific Action Levels [2] (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NORTH SIDEWALL #1 (10/27/06) | NORTH SIDEWALL #2 (Resample after add'l excavation) (11/3/06) | NORTH SIDEWALL #3 (Former UST) (11/3/06) | SOUTH SIDEWALL (10/25/06) | SOUTH SIDEWALL #2 (Former UST) (11/3/06) | EAST SIDEWALL (10/26/06) | BLIND DUPLICATE (East Sidewall) (10/26/06) | WEST SIDEWALL (10/27/06) | WEST SIDEWALL #2 (Resample after add'l excavation) (11/3/06) | FLOOR BOTTOM [3] (10/25/06) | FLOOR BOTTOM [3] (Former Dry Well Area) (10/26/06) | FLOOR BOTTOM [3] (North) (10/27/06) | FLOOR BOTTOM #3[3] (Former UST) (11/3/06) | |
| ***TCL VOCs (mg/Kg)*** | | | | | | | | | | | | | | |
| Acetone | ND | ND | ND | **1.7** | ND | **1.3 J** | UJ | UJ | ND | ND | UJ | ND | ND | **1** |
| cis-1,2-Dichloroethene | **6.3** | 0.11 J | ND | ND | ND | ND | 0.41 J | **1.5** | ND | **3.4 J** | ND | **2.9 J** | ND | **1** |
| Ethylbenzene | ND | ND | ND | ND | **1.4 J** | ND | ND | ND | 0.88 J | ND | ND | ND | ND | **1** |
| Methylene Chloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | **1** |
| Tetrachloroethene | **56** | **3.7** | 0.2 J | 0.22 J | 0.86 J | 0.76 J | **2.1 J** | **6.1 J** | 0.39 J | UJ | UJ | **19** | **18** | **1** |
| Trichloroethene | **2.8 J** | 0.26 J | ND | ND | ND | ND | 0.094 J | 0.49 J | ND | ND | ND | 0.81 | **1.5 J** | **1** |
| m,p- Xylene | ND | ND | ND | ND | **4.6** | ND | ND | ND | **3.9 NJ** | ND | ND | ND | **1.2 J** | **1** |
| ***Total VOCs (mg/kg)*** | ***65.1*** | ***4.1*** | ***0.2*** | ***1.9*** | ***6.9*** | ***2.1*** | ***2.6*** | ***8.1*** | ***1.3*** | ***3.4*** | ***0.0*** | ***22.7*** | ***20.7*** | **10** |
| ***TCL SVOCs (mg/Kg)*** | | | | | | | | | | | | | | |
| Acenaphthylene | UJ | UJ | UJ | ND | UJ | ND | 0.046 J | UJ | UJ | ND | UJ | UJ | UJ | **50** |
| Acenaphthene | UJ | UJ | UJ | UJ | UJ | 0.081 J | 0.042 J | UJ | UJ | UJ | UJ | UJ | UJ | **50** |
| Anthracene | 0.11 J | UJ | UJ | ND | UJ | 0.21 J | 0.14 J | 0.049 J | UJ | ND | UJ | UJ | UJ | **50** |
| Benz(a)anthracene | 0.5 J | UJ | 0.085 J | ND | UJ | 0.5 | 0.35 J | 0.11 J | UJ | ND | UJ | UJ | UJ | **50** |
| Benzo(b)flouranthene | 0.44 J | UJ | 0.17 J | ND | UJ | 0.4 J | 0.26 J | 0.079 J | 0.43 J | ND | UJ | UJ | UJ | **50** |
| Benzo(k)flouranthene | 0.19 J | UJ | 0.069 J | ND | UJ | 0.15 J | 0.13 J | UJ | UJ | ND | UJ | UJ | UJ | **50** |
| Benzo(a)pyrene | 0.42 J | UJ | 0.11 J | ND | UJ | 0.3 J | 0.25 J | 0.073 J | 0.29 J | ND | UJ | UJ | UJ | **50** |
| Benzo(g,h,i)perylene | 0.86 J | UJ | UJ | ND | UJ | 0.53 | 0.57 J | 0.13 J | UJ | ND | UJ | UJ | UJ | **50** |
| Bis(2-ethylhexyl)phthalate | UJ | UJ | UJ | ND | UJ | UJ | UJ | UJ | UJ | ND | UJ | UJ | UJ | **50** |
| Carbazole | 0.07 J | UJ | UJ | ND | UJ | 0.21 J | 0.12 J | UJ | UJ | ND | UJ | UJ | UJ | **50** |
| Chrysene | 0.53 J | UJ | UJ | ND | UJ | 0.53 | 0.41 J | 0.1 J | UJ | ND | UJ | UJ | UJ | **50** |
| Dibenzo(a,h)anthracene | 0.19 J | UJ | UJ | ND | UJ | ND | UJ | UJ | UJ | ND | UJ | UJ | UJ | **50** |
| Dibenzofuran | UJ | UJ | UJ | ND | UJ | 0.11 J | UJ | UJ | UJ | ND | UJ | UJ | UJ | **50** |
| Di-n-butylphthalate | 0.049 J | UJ | UJ | ND | UJ | ND | UJ | UJ | UJ | ND | UJ | UJ | UJ | **50** |
| Fluoranthene | 1.1 J | UJ | 0.16 J | 0.072 J | UJ | 1.3 | 1.2 J | 0.27 J | 0.48 J | ND | UJ | UJ | UJ | **50** |
| Flourene | UJ | UJ | UJ | ND | UJ | 0.1 J | 0.066 J | UJ | UJ | ND | UJ | UJ | UJ | **50** |
| Indeno(1,2,3-cd)pyrene | 0.68 J | UJ | 0.062 J | ND | UJ | 0.48 | 0.51 J | 0.099 J | UJ | ND | UJ | UJ | UJ | **50** |
| 2-Methylnapthalene | UJ | UJ | 0.37 J | ND | UJ | 0.06 J | UJ | UJ | 2.6 J | ND | 0.06 J | UJ | 0.31 J | **50** |
| Napthalene | UJ | UJ | 0.18 J | ND | UJ | 0.094 J | UJ | UJ | 2.2 J | ND | UJ | 0.069 J | 0.31 J | **50** |
| Phenanthrene | 0.45 J | UJ | 0.072 J | 0.052 J | UJ | 1.2 J | 0.78 J | 0.2 J | UJ | ND | UJ | UJ | UJ | **50** |
| Pyrene | 0.95 J | UJ | 0.23 J | 0.086 J | UJ | 1.3 J | 0.66 J | 0.23 J | 0.45 J | ND | UJ | UJ | UJ | **50** |
| ***Total SVOCs (mg/kg)*** | *6.5* | *0.00* | *1.5* | *0.21* | *0* | *7.6* | *5.5* | *1.3* | *6.5* | *0.00* | *0.06* | *0.07* | *0.62* | **500** |

**Notes:**

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Site Specific Action Levels from the RD Work Plan.
3. Sample collected from saturated zone of excavation.
4. Exceedance of the SSALs are highlighted yellow and bolded.

**Definitions:**

ND = Parameter not detected above laboratory detection limit.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
NJ = The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.
UJ = The analyte was detected above the reported sample quantitation limit. The reported quantitation limit is approximate and may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

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# TABLE 2

## REMOVAL OF HYDRAULIC LIFT #1
## VERIFICATION SAMPLING ANALYTICAL DATA SUMMARY (OCTOBER 22, 2007)

### Site Management Plan
### Seneca Market I Site
### Watkins Glen, New York

| PARAMETER[1] | Sample Location | | | | | | |
|---|---|---|---|---|---|---|---|
| | NORTH WALL | SOUTH WALL | EAST WALL | WEST WALL | BOTTOM | BOTTOM (Res Tank) | Site Specific Action Levels (SSALs) (ppm) |
| ***TCL VOCs (mg/kg)*** | | | | | | | |
| Acetone | 0.36 | 0.53 D | 0.21 | 0.28 | 0.45 D | 0.13 | **1** |
| 2-Butanone (MEK) | 0.099 | 0.24 | 0.057 | 0.077 | 0.12 | 0.036 | **1** |
| Chlorobenzene | 0.017 | ND | ND | ND | 0.086 | 1.2 D | **1** |
| 1,3-Dichlorobenzene | ND | ND | ND | ND | ND | 0.028 | **1** |
| 1,4-Dichlorobenzene | ND | ND | ND | ND | ND | 0.18 | **1** |
| Methylcyclohexane | ND | ND | ND | ND | 0.017 | ND | **1** |
| m,p- Xylene | ND | ND | ND | ND | ND | 0.018 | **1** |
| ***Total VOCs (mg/kg)*** | ***0.48*** | ***0.77*** | ***0.27*** | ***0.36*** | ***0.67*** | ***1.57*** | **10** |
| ***TCL SVOCs (mg/kg)*** | | | | | | | |
| Total SVOCs | ND | ND | ND | ND | ND | ND | **500** |
| ***PCBs (mg/kg)*** | | | | | | | |
| Total PCBs | ND | ND | ND | ND | ND | ND | - |

**Notes:**

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.

**Definitions:**

ND = Parameter not detected above laboratory detection limit.
D = Compound was identified in an analyisis at the secondary dilution factor.

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# TABLE 3

## REMOVAL OF HYDRAULIC LIFT #2
## VERIFICATION SAMPLING ANALYTICAL DATA SUMMARY (NOVEMBER 16, 2007)

**Site Management Plan**
**Seneca Market I Site**
**Watkins Glen, New York**

| PARAMETER[1] | SAMPLE LOCATION | | | | | Site Specific Action Levels[2] (ppm) |
|---|---|---|---|---|---|---|
| | NORTH WALL | SOUTH WALL | EAST WALL | WEST WALL | BOTTOM | |
| ***TCL VOCs (mg/kg)*** | | | | | | |
| Acetone | 0.37 | 0.64 D | 0.033 | 0.081 | 0.031 | **1** |
| Benzene | ND | ND | 0.00047 J | 0.00057 J | 0.00055 J | **1** |
| 2-Butanone (MEK) | 0.059 | 0.17 | 0.0067 J | 0.018 | 0.0071 J | **1** |
| Carbon Disulfide | 0.01 J | 0.0033 J | ND | 0.00077 J | ND | **1** |
| cis-1,2-Dichloroethene | ND | ND | ND | 0.00082 NJ | ND | **1** |
| Cyclohexane | 0.0048 J | 0.0066 J | 0.0058 | 0.031 | 0.00095 J | **1** |
| Methylcyclohexane | 0.003 J | 0.007 J | 0.0092 | 0.025 | ND | **1** |
| 4-Methyl-2-Pentanone (MIBK) | 0.00094 J | ND | ND | ND | ND | **1** |
| Toluene | 0.0025 J | 0.001 J | ND | ND | 0.0004 J | **1** |
| o-Xylene | 0.0012 J | ND | 0.0008 J | ND | ND | **1** |
| m,p- Xylene | 0.0011 J | 0.00081 J | 0.0014 J | 0.00079 J | ND | **1** |
| ***Total VOCs (mg/kg)*** | ***0.45*** | ***0.83*** | ***0.057*** | ***0.16*** | ***0.040*** | **10** |
| ***TCL SVOCs (mg/kg)*** | | | | | | |
| Acenaphthene | ND | ND | ND | 0.026 J | ND | **50** |
| Acenaphthylene | ND | ND | ND | 0.073 J | ND | **50** |
| Anthracene | ND | ND | ND | 0.12 J | ND | **50** |
| Benzaldehyde | ND | 0.2 J | ND | ND | ND | **50** |
| Benzo(a)anthracene | ND | ND | 0.016 J | 0.49 | ND | **50** |
| Benzo(b)flouranthene | ND | ND | ND | 0.52 | ND | **50** |
| Benzo(k)flouranthene | ND | ND | ND | 0.45 | ND | **50** |
| Benzo(a)pyrene | ND | ND | ND | 0.56 | ND | **50** |
| Benzo(g,h,i)perylene | ND | ND | ND | 0.42 J | ND | **50** |
| Carbazole | ND | ND | ND | 0.11 J | ND | **50** |
| Chrysene | ND | ND | 0.016 J | 0.66 | ND | **50** |
| Dibenzo(a,h)anthracene | ND | ND | ND | 0.11 J | ND | **50** |
| Fluoranthene | ND | ND | 0.031 J | 1.3 | ND | **50** |
| Flourene | ND | ND | ND | 0.051 J | ND | **50** |
| Indeno(1,2,3-cd)pyrene | ND | ND | ND | 0.37 J | ND | **50** |
| 2-Methylnaphthalene | ND | ND | ND | 0.051 J | ND | **50** |
| Naphthalene | ND | ND | ND | 0.047 J | ND | **50** |
| Phenanthrene | ND | ND | 0.035 J | 0.74 | ND | **50** |
| Pyrene | ND | ND | 0.03 J | 1.0 | ND | **50** |
| ***Total SVOCs (mg/kg)*** | ***0*** | ***0.20*** | ***0.13*** | ***7.1*** | ***0*** | **500** |

**Notes:**
1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Site Specific Action Levels from the RD Work Plan.
3. West Wall sample was analyzed on 11/27/07 for VOCs - internal standards were outside limits. Sample re-analyzed on 11/28/07 - internal standards were outside limits.

**Definitions:**

ND = Parameter not detected above laboratory detection limit.
D = Compound was identified in an analyisis at the secondary dilution factor.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
NJ = The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

## TABLE 4

## BUS GARAGE UST EXCAVATION
## VERIFICATION SAMPLING ANALYTICAL DATA SUMMARY (DECEMBER 2007)

### Site Management Plan
### Seneca Market I Site
### Watkins Glen, New York

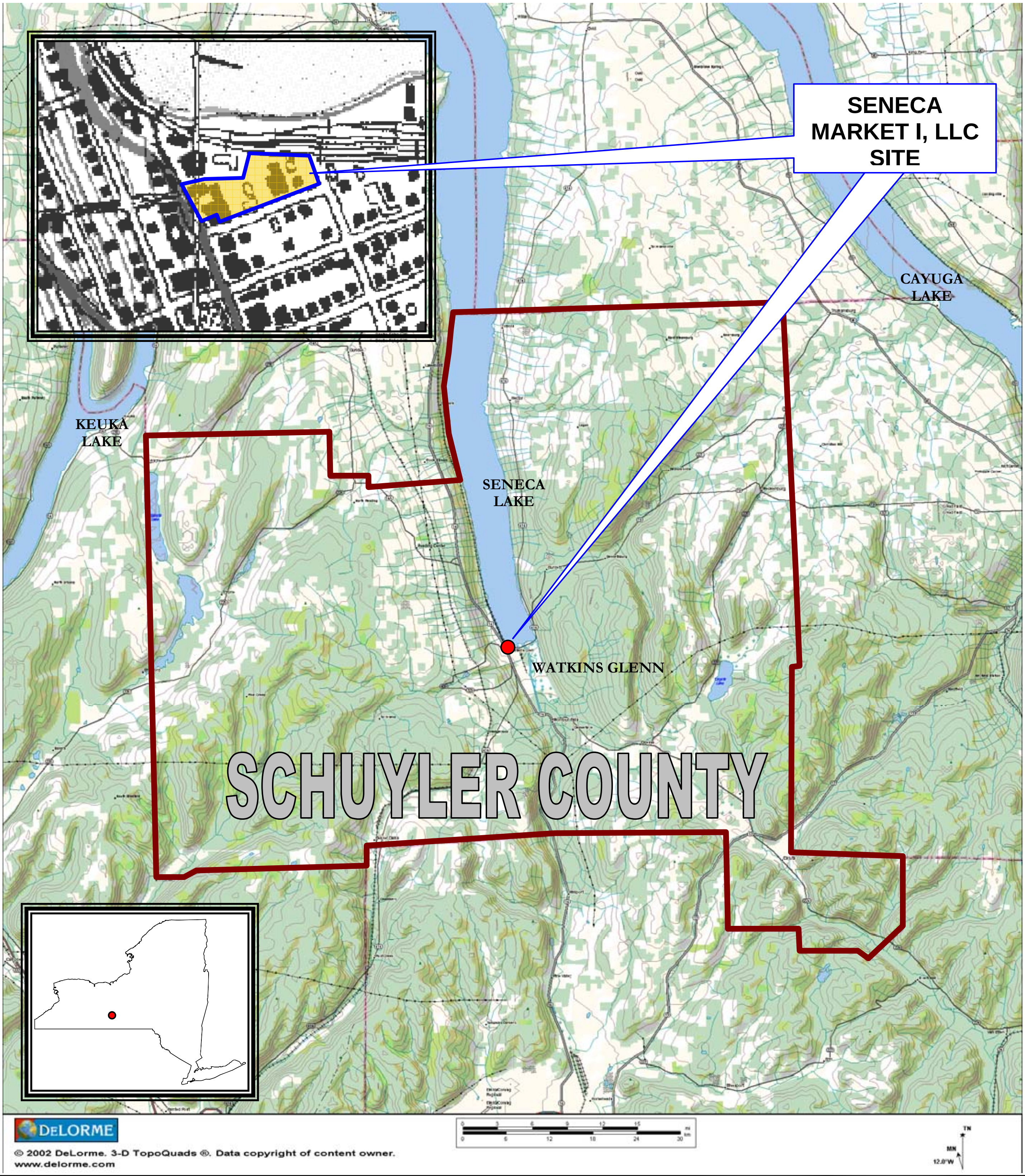
| PARAMETER[1] | SAMPLE LOCATION | | | | | |
|---|---|---|---|---|---|---|
| | NORTH WALL | SOUTH WALL | EAST WALL | WEST WALL | BOTTOM | Site Specific Action Levels[2] (ppm) |
| ***TCL VOCs (mg/kg)*** | | | | | | |
| Acetone | 0.39 D | 0.042 | 0.12 J | 0.034 | ND | **1** |
| Benzene | 0.011 | ND | ND | 0.00047 J | ND | **1** |
| 2-Butanone (MEK) | 0.071 | 0.0095 J | ND | 0.0059 J | ND | **1** |
| Carbon Disulfide | 0.0012 J | ND | ND | ND | ND | **1** |
| Cyclohexane | 0.018 | 0.0013 J | 1.3 NJ | 0.0013 J | 0.26 J | **1** |
| 1,2-Dichlorobenzene | 0.0015 J | ND | ND | ND | ND | **1** |
| Ethylbenzene | 0.011 | ND | 0.17 NJ | ND | ND | **1** |
| Isopropylbenzene | 0.032 | ND | 1.8 | 0.0011 NJ | 0.25 J | **1** |
| Methylcyclohexane | 0.05 | ND | 3.7 | 0.0071 | 1.0 | **1** |
| Toluene | ND | ND | 0.076 J | 0.0005 J | ND | **1** |
| o-Xylene | 0.056 | ND | 3.8 | 0.00099 NJ | 0.5 J | **1** |
| m,p- Xylene | 0.34 | ND | 13 | 0.0022 J | 1.1 | **1** |
| ***Total VOCs (mg/kg)*** | ***0.982*** | ***0.053*** | ***23.97*** | ***0.054*** | ***3.1*** | **10** |

**Notes:**
1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Site Specific Action Levels from the RD Work Plan.

**Definitions:**
ND = Parameter not detected above laboratory detection limit.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Analyte was detected in the associated blank as well as in the sample.
D = Compound identified in analysis at secondary dilution factor.
NJ = The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

# FIGURES

FIGURE 1





BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599


PROJECT NO.: 0092-002-200

DATE: DECEMBER 2008

DRAFTED BY: BCH

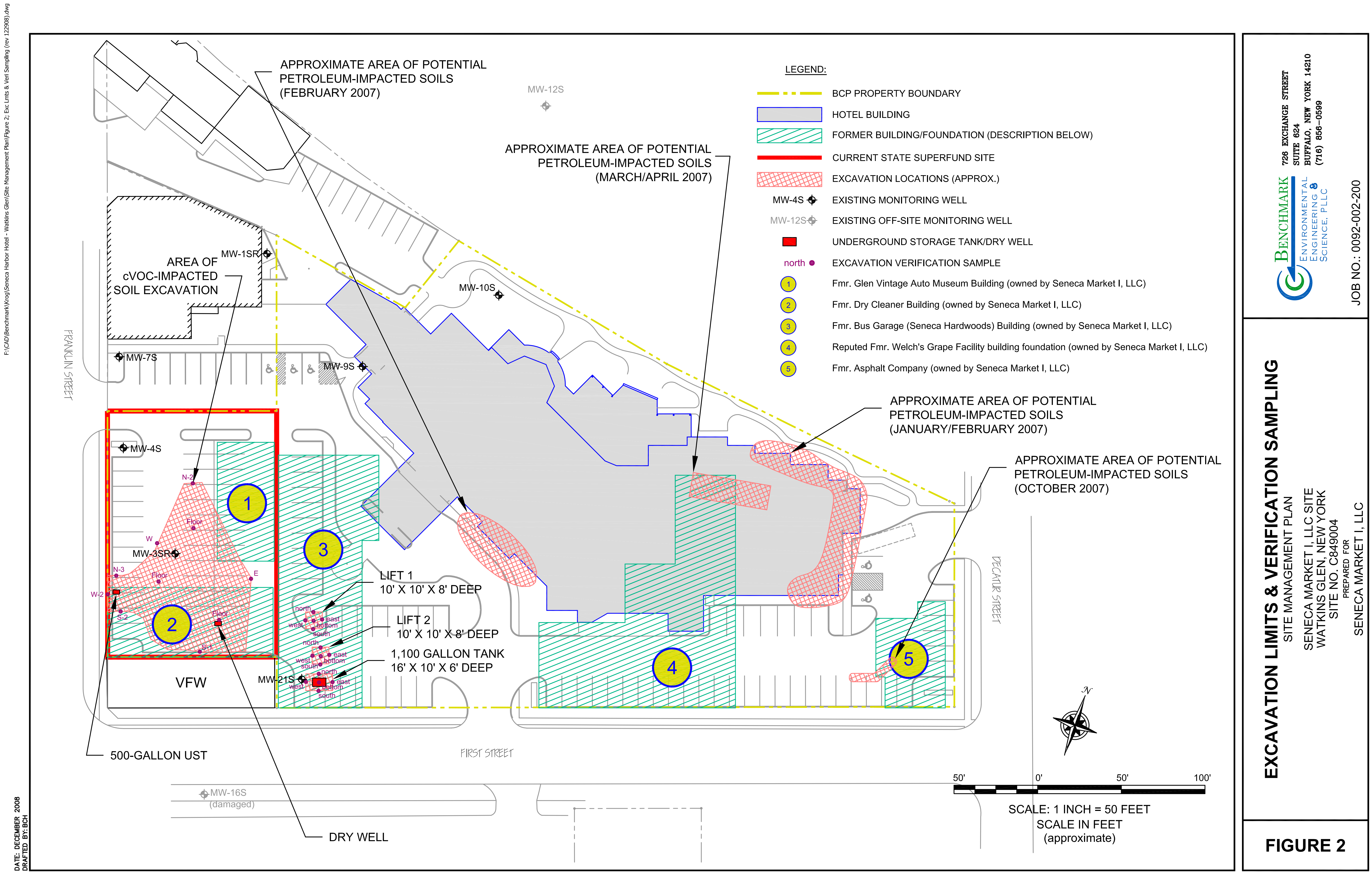
## SITE LOCATION AND VICINITY MAP

SITE MANAGEMENT PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR

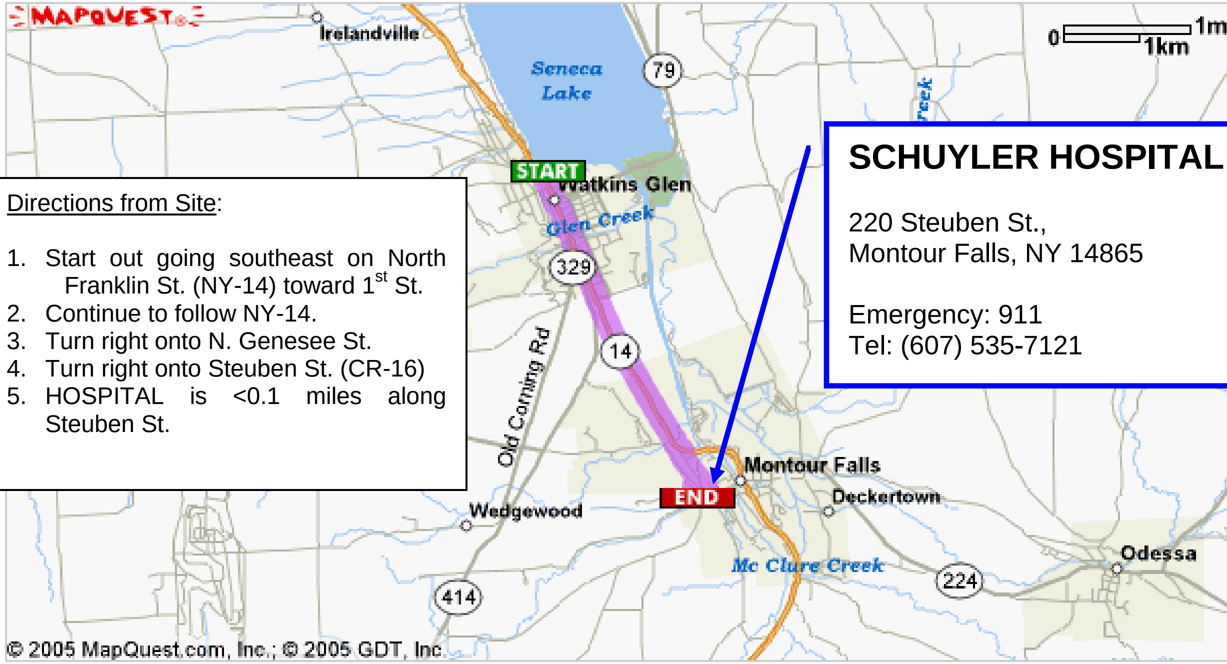
SENECA MARKET I, LLC



APPROXIMATE AREA OF POTENTIAL PETROLEUM-IMPACTED SOILS (FEBRUARY 2007)
MW-12S
APPROXIMATE AREA OF POTENTIAL PETROLEUM-IMPACTED SOILS (MARCH/APRIL 2007)
LEGEND:
BCP PROPERTY BOUNDARY
HOTEL BUILDING
FORMER BUILDING/FOUNDATION (DESCRIPTION BELOW)
CURRENT STATE SUPERFUND SITE
EXCAVATION LOCATIONS (APPROX.)
MW-4S
EXISTING MONITORING WELL
MW-12S
EXISTING OFF-SITE MONITORING WELL
UNDERGROUND STORAGE TANK/DRY WELL
north
EXCAVATION VERIFICATION SAMPLE
1 Fmr. Glen Vintage Auto Museum Building (owned by Seneca Market I, LLC)
2 Fmr. Dry Cleaner Building (owned by Seneca Market I, LLC)
3 Fmr. Bus Garage (Seneca Hardwoods) Building (owned by Seneca Market I, LLC)
4 Reputed Fmr. Welch's Grape Facility building foundation (owned by Seneca Market I, LLC)
5 Fmr. Asphalt Company (owned by Seneca Market I, LLC)
AREA OF cVOC-IMPACTED SOIL EXCAVATION
MW-1SR
MW-10S
FRANKLIN STREET
MW-7S
MW-9S
APPROXIMATE AREA OF POTENTIAL PETROLEUM-IMPACTED SOILS (JANUARY/FEBRUARY 2007)
APPROXIMATE AREA OF POTENTIAL PETROLEUM-IMPACTED SOILS (OCTOBER 2007)
MW-4S
N-2
Floor
W
MW-3SR
N-3
Floor
E
W-2
S-2
Floor
S-1
LIFT 1
10' X 10' X 8' DEEP
LIFT 2
10' X 10' X 8' DEEP
1,100 GALLON TANK
16' X 10' X 6' DEEP
north
west
east
bottom
south
VFW
MW-21S
DECATUR STREET
FIRST STREET
500-GALLON UST
MW-16S
(damaged)
DRY WELL
N
50'
0'
50'
100'
SCALE: 1 INCH = 50 FEET
SCALE IN FEET
(approximate)
BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599
JOB NO.: 0092-002-200
EXCAVATION LIMITS & VERIFICATION SAMPLING
SITE MANAGEMENT PLAN
SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004
PREPARED FOR
SENECA MARKET I, LLC
FIGURE 2
DATE: DECEMBER 2008
DRAFTED BY: BCH

# FIGURE 3

Total Est. Time: 6 minutes     Total Est. Distance: 2.95 miles




Directions from Site:

1. Start out going southeast on North Franklin St. (NY-14) toward 1st St.
2. Continue to follow NY-14.
3. Turn right onto N. Genesee St.
4. Turn right onto Steuben St. (CR-16)
5. HOSPITAL is <0.1 miles along Steuben St.

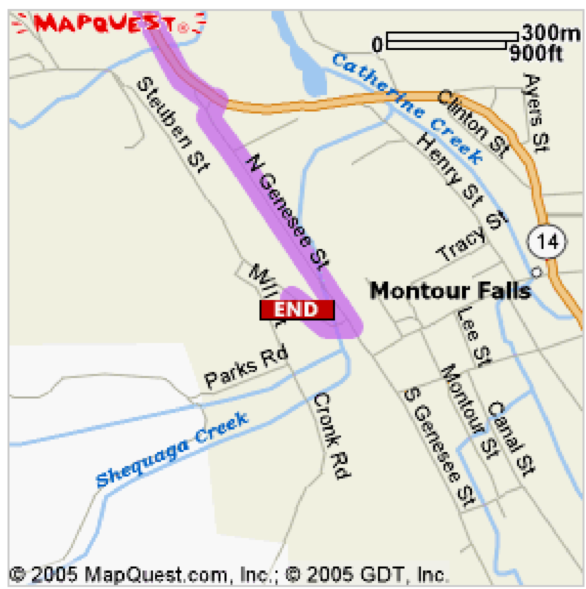
**SCHUYLER HOSPITAL**

220 Steuben St.,
Montour Falls, NY 14865

Emergency: 911
Tel: (607) 535-7121

**Start:**
**20 N Franklin St**
Watkins Glen, NY 14891-1221, US

**End:**
**220 Steuben St**
Montour Falls, NY 14865-9740, US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PROJECT NO.: 0092-002-200

DATE: DECEMBER 2008

DRAFTED BY: BCH

**HOSPITAL ROUTE MAP**

SITE MANAGEMENT PLAN

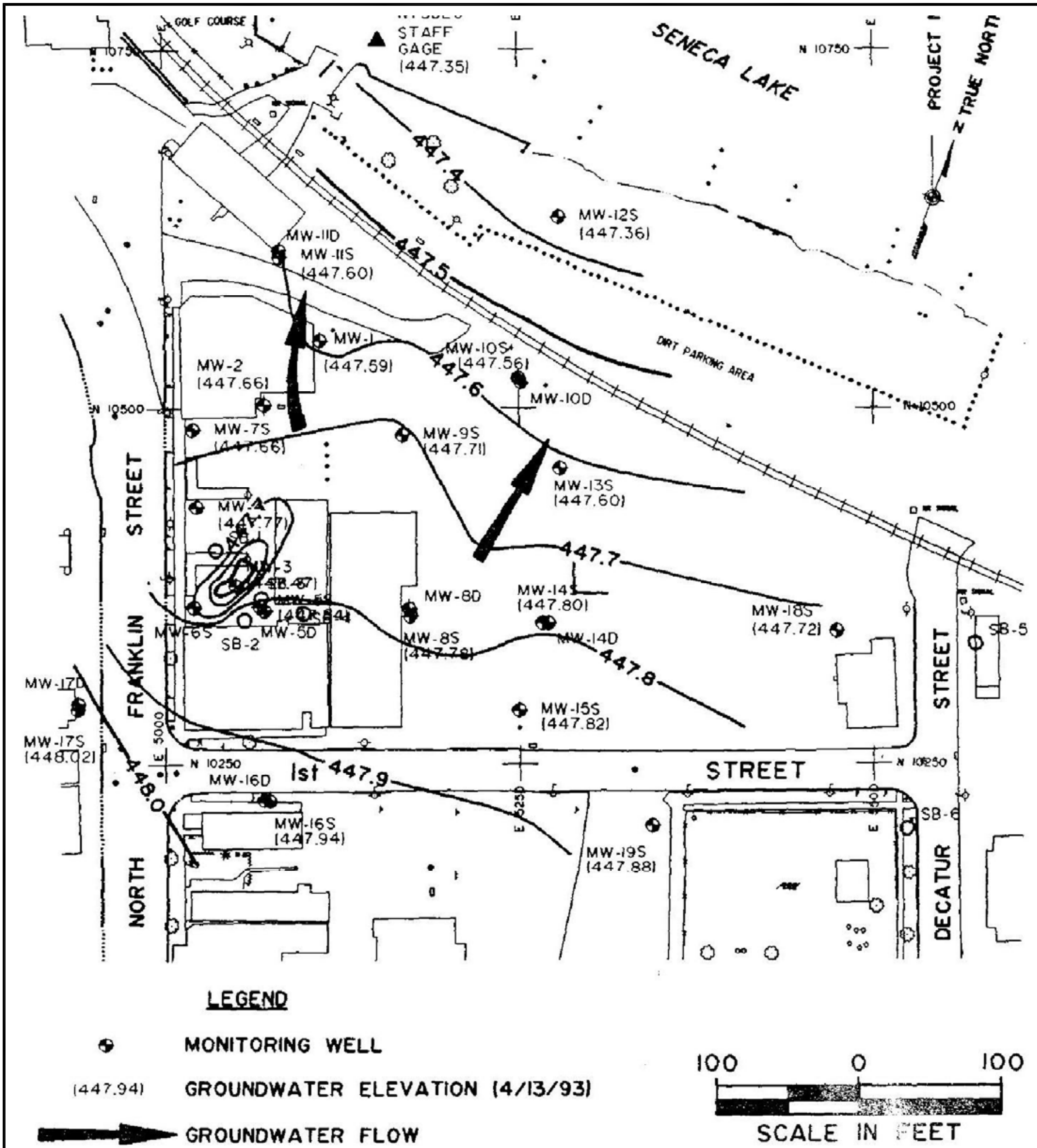
SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR

SENECA MARKET I, LLC

F:\CAD\Benchmark\Krog\Seneca Harbor Hotel - Watkins Glen\Site Management Plan\Figure 4; Shallow GW Isopotential Map.dwg

FIGURE 4




Note: Drawing taken from Figure 3-11 of the Remedial Investigation Report, URS Consultants, Inc., August 1993.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PROJECT NO.: 0092-002-200

DATE: DECEMBER 2008

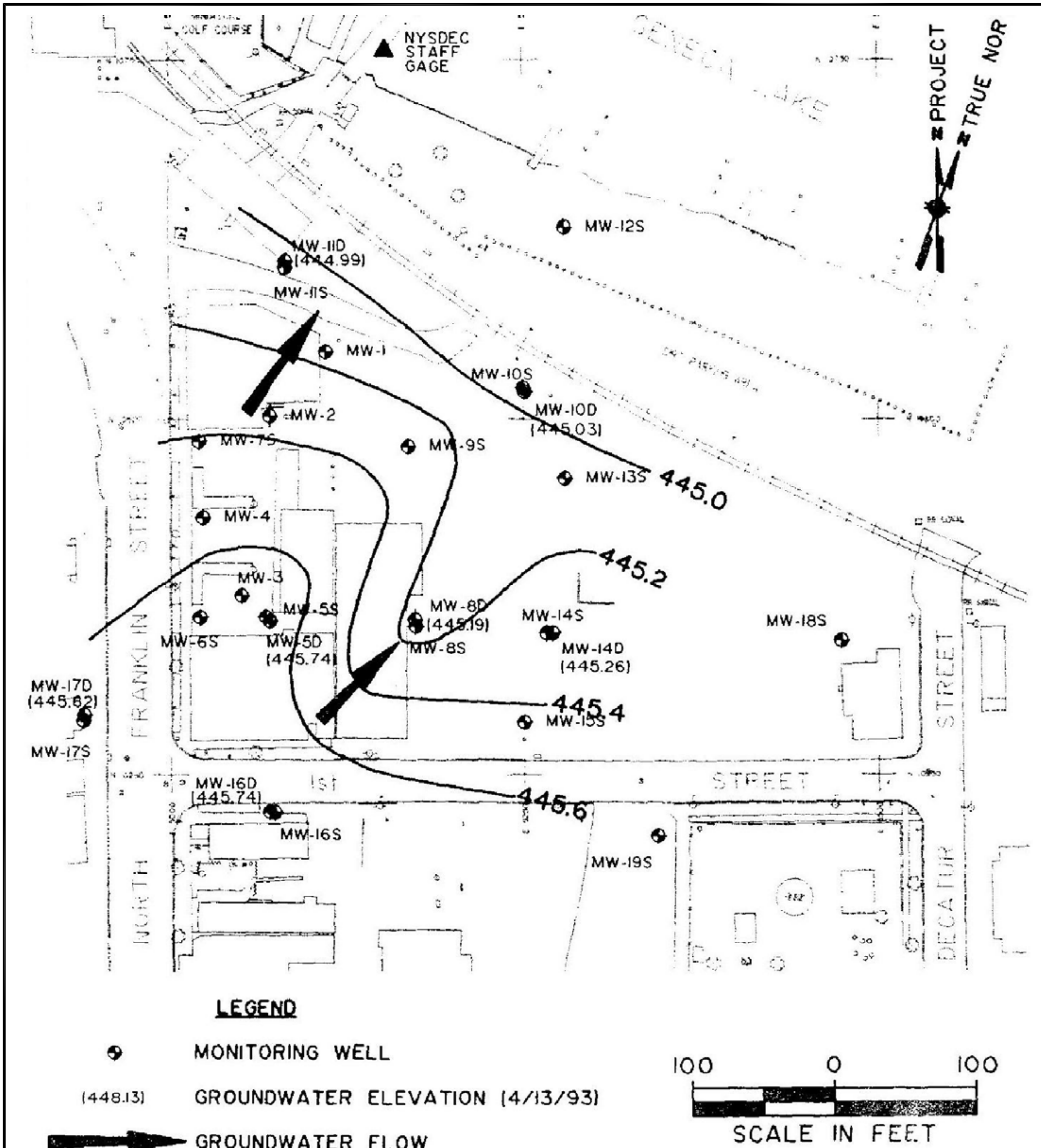
DRAFTED BY: BCH

# SHALLOW GROUNDWATER ISOPOTENTIAL MAP (APRIL 13, 1993)

SITE MANAGEMENT PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004
PREPARED FOR
SENECA MARKET I, LLC

# FIGURE 5




Note: Drawing taken from Figure 3-13 of the Remedial Investigation Report, URS Consultants, Inc., August 1993.

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SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599

PROJECT NO.: 0092-002-200

DATE: DECEMBER 2008

DRAFTED BY: BCH

## DEEP GROUNDWATER ISOPOTENTIAL MAP (APRIL 13, 1993)

SITE MANAGEMENT PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004
PREPARED FOR
SENECA MARKET I, LLC

# PART I

## OPERATION, MONITORING, & MAINTENANCE PLAN

# SITE MANAGEMENT PLAN
# PART I

# OPERATION, MONITORING, & MAINTENANCE PLAN

**SENECA MARKET I, LLC SITE**
**SITE NO. C849004**
**WATKINS GLEN, NEW YORK**

September 2008 | 0092-002-200
Revised December 2008

Prepared for:

**Seneca Market I, LLC**
**Watkins Glen, New York**

Prepared by:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

# OPERATION, MONITORING & MAINTENANCE PLAN

## TABLE OF CONTENTS



## LIST OF FIGURES



## LIST OF ATTACHMENTS

# 1.0 INTRODUCTION

## 1.1 Purpose and Scope

This Operation, Monitoring, & Maintenance Plan (OM&M Plan) has been prepared for inclusion in the Site Management Plan (SMP) for the Seneca Market I, LLC site (Site) (refer to Figures 1 and 2). The sole purpose of this Plan, and that of the Soil/Fill Management Plan (SFMP), is to ensure protection of both the environment and human health during post-development use of the Site, subsequent to completion of Brownfield cleanup activities. Following completion of the Brownfield cleanup activities, post-remediation requirements will need to be implemented by subsequent owners or developers of the Site to comply with the Brownfield Cleanup Agreement terms and conditions. This Plan summarizes the tasks and obligations required by those parties.

## 1.2 Operation, Monitoring, and Maintenance Program Responsibility

The owner/developer, Seneca Market I, LLC (Seneca Market), will be responsible for all monitoring, implementation, and reporting as required by the OM&M Plan. The New York State Department of Environmental Conservation (NYSDEC) will be informed of any change in ownership, redevelopment, site configuration, or subdivision of the property and the "Responsible Party" information below will be revised and resubmitted. The implementation of the OM&M Plan will continue until such time as the NYSDEC determines the long-term obligations and implementation of the Plan have been fulfilled.

The property owner/owner's representative will verify that persons involved in subsurface intrusive work on-site have a Health and Safety Plan (HASP) as or more stringent than Benchmark's HASP prepared for the Remedial Design work. Additionally, contact information for the party responsible for implementation of the OM&M program will be supplied to the NYSDEC for their files. The owner currently on file for the Seneca Market I, LLC Site is:

Seneca Market I, LLC
4 Centre Drive
Orchard Park, NY 14127
Attn: Peter Krog

# 2.0 OM&M PLAN COMPONENTS

The Operation, Maintenance, & Monitoring (OM&M) Plan for the Site consists of three major components that are described in the following sections:

- Active Sub-slab Depressurization System
- Long-Term Groundwater Monitoring (LTGWM) Plan
- Annual Inspection & Certification Program

## 2.1 Active Sub-slab Depressurization System OM & M Program

An Active Sub-slab Depressurization (ASD) system was installed within the hotel complex and is registered as an engineering control for this Site. The following text explains the general workings of the ASD system, and the required operation, maintenance, and monitoring. Certification and inspection forms referenced in this section are included in Attachment A1.

### 2.1.1 General

An ASD system creates a negative pressure zone beneath a building slab using a powered fan connected via piping. The low-pressure field protects the building from entry of soil gas into the occupied air space within building. Components of the Seneca Market ASD include:

- A clean layer of coarse aggregate beneath the slab.
- Two suction pits beneath the slab.
- Two vent stacks from the suction pits under the slab to the exterior of the building.
- Continuous operation fans equipped with a pressure gauge to verify the system is under negative pressure.

The ASD system used for this project was designed in general accordance with the EPA design document entitled "Radon Prevention in the Design and Construction of Schools and Other Large Buildings" Third Printing with Addendum (June 1994), and the

NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (October 2006). The designed system consists of a polyethylene vapor barrier; two suction pits; two vertical piping vent stacks and associated materials; two exhaust fans; two magnehelic pressure gauges; and two system warning devices.

### 2.1.2 ASD System Operation, Maintenance, & Monitoring

#### 2.1.2.1 ASD System Operation

The ASD system was designed for continuous operation with minimal maintenance and/or operational oversight. It is imperative, however, that the system be inspected periodically to document operation. It is imperative however, that the system is inspected monthly and annually to ensure consistent and optimal operation. The hotel maintenance supervisor is responsible for documenting the ASD system operation.

Near the suction point, a magnehelic gauge (refer to Attachment A1 for specifications) was mounted to the column where the vent stack is attached, approximately 5 feet above the finished floor elevation. When the ASD system is operational, the magnehelic gauge displays the effective sub-slab (negative) pressure.

A "normal" operating pressure was established by recording the displayed pressure approximately four hours after initial system start-up. Another reading was taken and recorded after approximately one week of operation to check if significant change in pressure readings were observed relative to the initial "normal" operating pressure. Since there were no significant pressure differences from the "normal" operating pressure, no additional weekly inspections are required. The ASD system will be inspected on a monthly basis as described below.

#### 2.1.2.2 Monthly ASD System Visual Inspection

On a monthly basis, the pressure at the suction point will be read and recorded to document that the fan is maintaining negative pressure and the system components will be visually inspected. Any large fluctuations (i.e., beyond the range of normal operating pressures by 25%) or trends in pressure will be documented and brought to the attention of the owner/responsible party. Visible leaks in piping and/or cracks in the concrete slab will be identified and noted for repair. Changes in use of the space, modifications to the system, building renovations, and/or any non-running time will be documented on the Inspection Log included as Appendix 1 of Attachment A1.

#### 2.1.2.3 Annual ASD System Certification/Inspection

An annual system certification/inspection report, documenting that the system is performing properly and remains effective, will be submitted to the NYSDEC by a Professional Engineer or Qualified Environmental Professional (QEP) as defined in 6 NYCRR Part 375-1.2(ak). A QEP is defined as a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding the presence of releases or threatened releases to the surface or subsurface of a property or off-site areas, sufficient to meet the objectives and performance factors for the areas of practice identified by 6NYCRR Part 375.

The certification/inspection report will contain the monthly logs, an annual inspection checklist (refer to Attachments A3-A5), and the qualifications of the QEP. The annual inspection of all system components must be conducted by a QEP and includes inspection of:

- The exhaust fan for signs of abnormal operation or bearing failure (service and/or replacement if necessary).
- The discharge location to verify no air intake near the vent pipe.
- The HVAC system to determine if it is being maintained and operated as designed.
- The floor, wall, and slab for cracks (resealing if necessary); smoke tubes may be used to check for leaks through floor joints and at suction points while the depressurization system is running. In areas of the building where carpeting and tile are present, large cracks in the slab would be visually evident via cracking or buckled tiles, and ridges in carpet.

## 2.2 Long-Term Groundwater Monitoring (LTGWM) Plan

Attachment A2 includes the LTGWM Plan that is required at the Site. Groundwater quality trends shall continue to be monitored in accordance with the LTGWM Plan.

## 2.3 Groundwater Management

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, but will be managed off-site. Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, stream or river) will be performed under a SPDES permit.

As an alternative to off-site disposal and with NYSDEC approval, a temporary pretreatment system may be utilized to handle development and purged groundwater from network monitoring wells. The temporary pretreatment system would be comprised of a receiving drum and an appropriately sized granular activated carbon (GAC) treatment vessel. Groundwater monitoring well purge and development waters would then be directed to the receiving drum for processing through the GAC vessel prior to discharge to the Village of Watkins Glen sanitary sewer. Prior to discharge, effluent samples would be collected and analyzed for Target Compound List Volatile Organic Compounds (TCL VOCs) via Method 8260B to demonstrate treatment efficiency and the results provided to the Department. Development and purged groundwater would be temporarily stored in drums until discharge to the sewer is approved by the Department and the Village of Watkins Glen Publically Operated Treatment Works (POTW). If effluent concentrations exceed applicable NYSDEC effluent limitations, then off-site disposal of these fluids would be required.

## 2.4 Annual Inspection & Certification Program

The Seneca Market Site will be inspected annually by a QEP representing the owner or responsible party. This QEP will, at a minimum, hold a 4-year college degree in environmental sciences or engineering, and be supervised by a New York State Licensed Professional Engineer.

The Annual Certification will be stamped and signed by a New York State Licensed Professional Engineer and certify and attest that the institutional controls and/or engineering controls employed at the Site are unchanged from the previous certification and:

- Are in place and effective.
- Are performing as designed.
- That nothing has occurred that would impair the ability of the controls to protect the public health and environment.
- That nothing has occurred that would constitute a violation or failure to comply with any operation and maintenance plan for such controls.
- Access is available to the Site to evaluate continued maintenance of such controls.

The Annual Certification will primarily consist of a completed NYSDEC Institutional and Engineering Controls Certification Form stamped and signed by a New York State Licensed Professional Engineer (Attachment A5). In addition to this certification, the completed Environmental Inspection Form (Attachment A3) and associated supporting documents (e.g., ASD annual certification form, etc.) will be required. The Corrective Action Certification (Attachment A4) will be required to document any inconsistencies or malfunctions of the engineering and/or institutional controls for the Site (e.g., ASD System malfunction). If maintenance, repair, or corrective action is required, the owner/owner's representative shall notify the NYSDEC, schedule repairs, and subsequently notify the NYSDEC when repairs have been completed.

The property owner/owner's representative shall also certify on an annual basis that no new information regarding environmental conditions the Site has come to the owner's attention. Furthermore, every five years a Qualified Environmental Professional representing the property owner shall certify that assumptions made in the qualitative exposure assessment remain valid. This information will be included in the Annual Certification Report. The qualitative exposure assessment is included as Attachment A6.

An Annual Certification Report will be submitted every year, beginning one year after the Certificate of Completion is issued. The report will be submitted within 45 days of the end of each certification period. Other reports such as, but not limited to, validated groundwater will be submitted quarterly for the first year, and as determined by NYSDEC thereafter. All media sampling results will also be incorporated into the Annual Certification Report. The report will include:

- EC/IC certification.
- All applicable inspection forms and other records (e.g., PID readings, site photographs, disposal records, documentation of soil/fill material brought on-site) generated for the Site during the reporting period.
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (e.g., soil, groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data sufficient for the NYSDEC to evaluate contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, chains of custody, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format.
- A performance summary for all treatment systems at the site during the calendar year, including information such as but not limited to:
  - The number of days the system was running for the reporting period.
  - The average, high, and low flows per day.
  - The contaminant mass removed.
  - A description of breakdowns and/or repairs along with an explanation for any significant downtime.
  - A description of the resolution of performance problems.
  - A summary of the performance and/or effectiveness monitoring.
  - Comments, conclusions, and recommendations based on data evaluation.
- A Site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific Remedial Design Work Plan.

- The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications.
- Any new conclusions or observations regarding site contamination based on inspections or data generated by the OM&M Plan and the Soil/Fill Management Plan for the media being monitored.
- Recommendations regarding any necessary changes to the remedy and/or the OM&M Plan and the SFM Plan.
- The overall performance and effectiveness of the remedy.

The Annual Certification Report will be submitted, in hard-copy and electronic format to the following:

New York State Department of Environmental Conservation
Region 8 Office
HWR Regional Engineer
6274 East Avon-Lima Road
Avon, New York 14414

New York State Department of Health
Western Section Chief
Bureau of Environmental Exposure Investigation
Division of Environmental Health Investigation
547 River Street
Troy, New York 12180-2216

## 2.5 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Brownfield Cleanup Agreement (BCA), 6NYCRR Part 375, and/or Environmental Conservation Law (ECL Article 27 Title 13 – Inactive Hazardous Waste Disposal Sites). Change of use is defined in 6 NYCRR Part 375-2.2(d) and 375-3.2(d).
- 10-day advance notice of any proposed ground-intrusive activities.
- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other

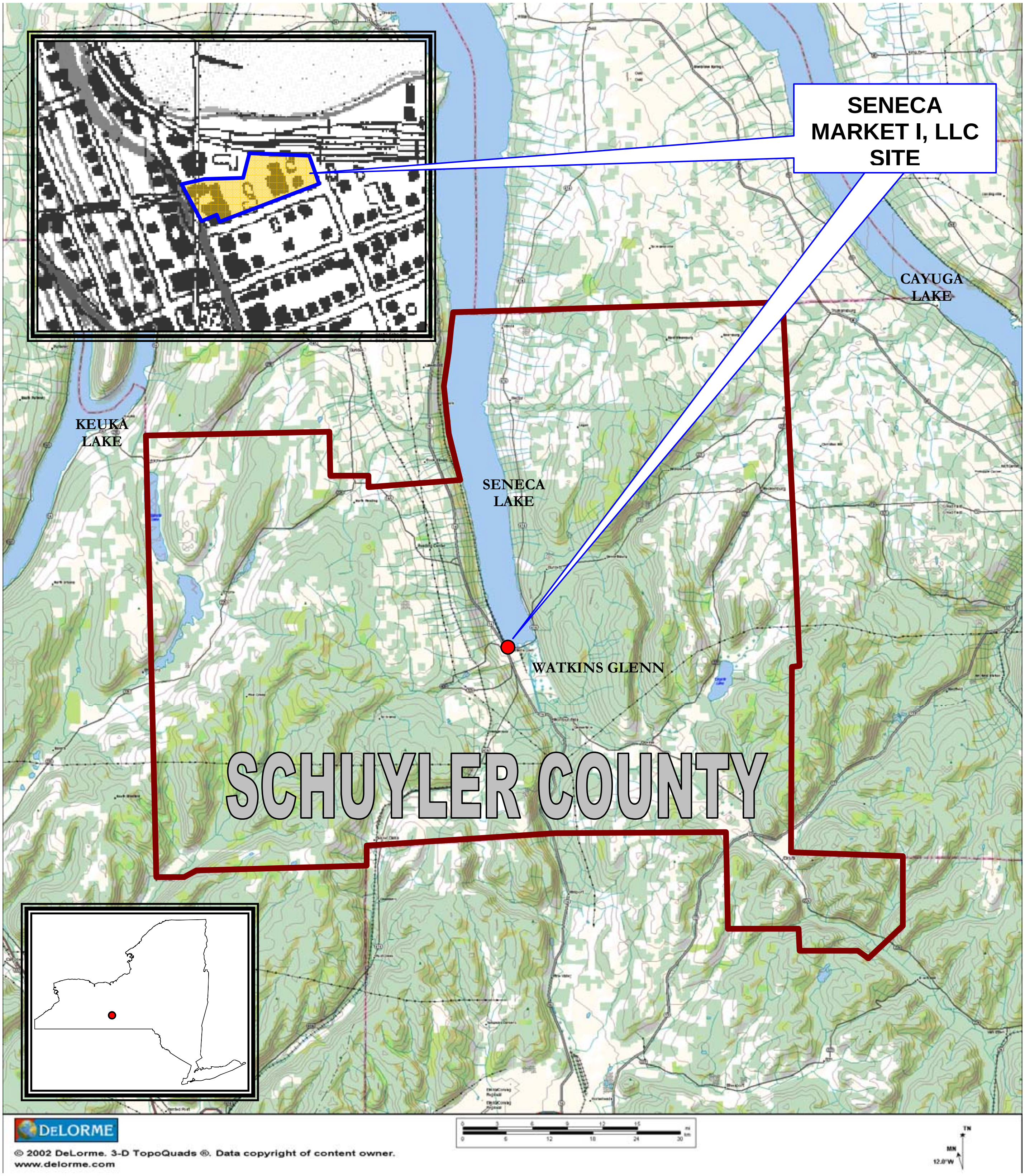
Engineering Controls and likewise any action to be taken to mitigate the damage or defect.

- Notice within 48-hours of any emergency, such as, but not limited to, a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC's project manager within 45 days and shall describe and document actions taken to restore the effectiveness of the Engineering Controls.

Notifications will be made to Charlotte B. Theobald the NYSDEC Site Project Manager. In the event that the NYSDEC develops a centralized notification system, that system will be used instead.

# FIGURES

FIGURE 1





BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599


PROJECT NO.: 0092-002-200

DATE: JANUARY 2008

DRAFTED BY: AJZ

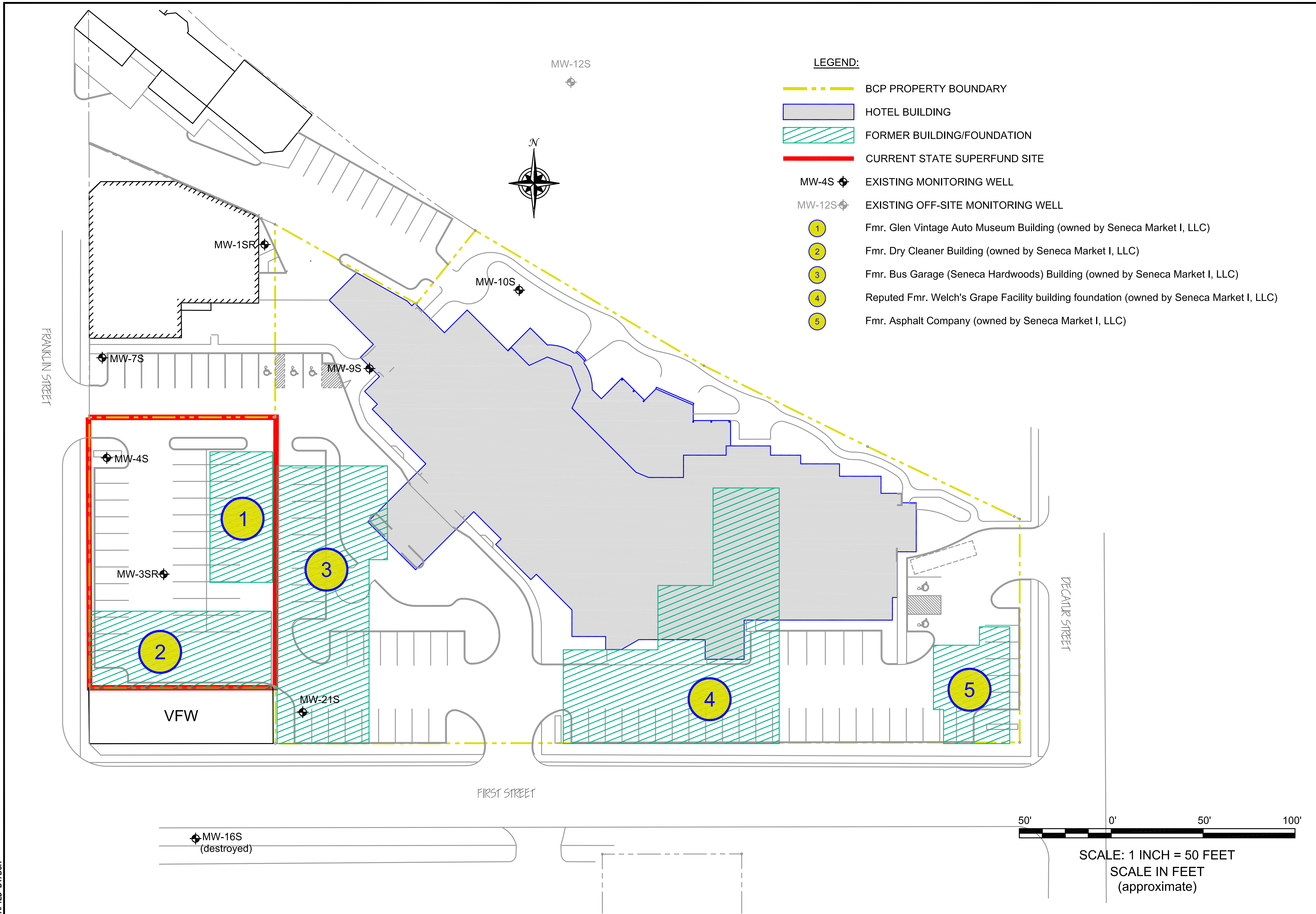
**SITE LOCATION AND VICINITY MAP**

OPERATION, MONITORING, AND MAINTENANCE PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR

SENECA MARKET I, LLC




# SITE PLAN

OPERATION, MONITORING, AND MAINTENANCE PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR
SENECA MARKET I, LLC


BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599


JOB NO.: 0092-002-200

**FIGURE 2**

DATE: DECEMBER 2008
DRAFTED BY: BCH

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# ATTACHMENT A1

## ACTIVE SUB-SLAB DEPRESSURIZATION SYSTEM OPERATIONS MANUAL

# PART I: OM&M PLAN
# ATTACHMENT A1

# ACTIVE SUBSLAB DEPRESSURIZATION SYSTEM OPERATIONS MANUAL (DESIGN, INSTALLATION, & TESTING)

**SENECA MARKET I, LLC SITE**
**SITE NO. C849004**
**WATKINS GLEN, NEW YORK**

August 2008 0092-002-200
Revised December 2008

Prepared for:

**Seneca Market I, LLC**
**Watkins Glen, New York**

Prepared by:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

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## LIST OF APPENDICES

# 1.0 ACTIVE SUB-SLAB DEPRESSURIZATION (ASD) SYSTEM DESIGN & INSTALLATION

## 1.1 General

An ASD system creates a low-pressure zone beneath a building slab using a powered fan connected via piping to create negative pressure beneath the building foundation. The low pressure field prevents soil gas from entering the building. Generally, essential components of an ASD include:

- A clean layer of coarse aggregate beneath the slab.
- A suction pit beneath the slab for each building area separated by sub-slab walls (i.e., footings).
- A vent stack from the suction pit(s) under the slab to the roof.
- A continuous operation fan equipped with a pressure gauge to assure the system is under negative pressure.
- Sealing all major slab and foundation penetrations, including joints, cracks and utility and pipe penetrations.

The active sub-slab depressurization (ASD) system used for this project was designed in accordance with the EPA design document entitled "Radon Prevention in the Design and Construction of Schools and Other Large Buildings" Third Printing with Addendum, June 1994 and the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006. The designed system consists of an 8-mil polyethylene vapor barrier; two suction pits; two vertical piping vent stacks and associated materials; two exhaust fans; two magnehelic pressure gauges; and two system warning devices. The following text details portions of the design criteria, methodology, and critical installation methods.

## 1.2 ASD System Design

Structural requirements for the building required a compacted aggregate to be placed under the slab. The system design consists of two independently operating suction pits, blowers, and vent stacks spaced approximately equally from the corners of the building footprint (refer to Figure 1) to optimize the area of influence with the choice of aggregate.



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An 8-mil polyethylene vapor barrier was placed above the aggregate before pouring the concrete floor slab to act as a passive secondary engineering control and assist in maintaining a sub-slab pressure differential. Suction pits were constructed by creating a 4-foot by 4-foot by 8-inch (min. depth) void at the locations indicated in Figure 1. Each pit was then covered by a ¾-inch pressure treated plywood panel supported by concrete blocks, and reinforced concrete flooring was poured on top of the plywood and surrounding aggregate (refer to Figure 2).

Sub-slab, 6-inch Schedule 40 PVC piping runs laterally from the center of each suction pit, as close as practicable to an adjacent roof column, elbows 90° to vertical, and penetrates through a pipe sleeve in the slab. Once above the slab, the pipe elbows 90° to horizontal, and travels to the designated roof column where it again elbows 90° to rise vertically along the column. This formation will ensure that the vent piping will not interfere with column foundations and/or footings. The vent stack elbows 90° at the first floor of the structure and continues horizontally to the west end of the building penetrating the wall, where it exhausts a minimum of 12 inches above the surface of the roof and 25 feet away from any air intake (refer to Figure 2).

A Fan Tech Model FR 160 (refer to Appendix B for specifications) was installed inline with each vent pipe on the exterior of the western building wall to provide negative pressure in the sub-slab soil. A Dwyer Model 2002 – AV Magnehelic Gauge was mounted to each vent stack in the western maintenance area of the building, using a Dwyer Model A-368 Surface mount bracket. This magnehelic gauge will measure and display the instantaneous negative pressure produced by the fan and indicate that the system is operational.

A Cleveland Controls Model AFS-222 air pressure sensing switch (refer to Appendix C for specifications) was installed inline with each vent pipe as a warning device. A red light indicator is attached to the sensing switch; if the vent pipe does not provide a negative pressure, the red light will illuminate indicating the system is not working properly.

## 1.3 ASD System Installation

The ASD system installation began in August 2007 and was completed in May 2008. The system was installed in accordance with the design criteria and specifications contained in Figures 1 and 2 of this document; and/or typical construction practices.

Installation of each suction pit, sub-slab piping, and the 8-mil polyethylene vapor barrier was completed before pouring the slab. All other piping and fixtures were installed following significant completion of the overall structure, and/or at the scheduling discretion of the owner and contractor. All 6-inch Schedule 40 PVC piping was pitched to promote drainage of any condensate below the fan towards the suction pits.

An exhaust fan (refer to Appendix B for specifications) was installed and vented a minimum of 12 inches above the finished roof elevation for each system. Each fan was hard-wired to a dedicated electrical circuit for which a dedicated breaker was installed and properly labeled in the breaker box.

Each vent stack extends above the exhaust fan to a point not less than 12 inches above the finished roof elevation to which rain caps were fastened. The vent pipe wall penetration was sealed using a polyurethane sealant applied in accordance with the manufacturer's instructions.

Upon system installation, all penetrations, expansion joints, cracks, and/or any other gaps in the slab and/or subsurface walls, were sealed with a polyurethane sealant applied in accordance with manufacturer's instructions.

# 2.0 POST INSTALLATION CONFIRMATION TESTING

## 2.1 General

The ASD System required performance testing to confirm the system's effectiveness and proper installation. The performance testing was conducted on July 23, 2008. The following steps were performed and documented, and are reported in the Final Engineering Report.

## 2.2 Visual Inspection

All system components were installed by a professional mechanical/plumbing contractor (Postler & Jeckle) and visually inspected by Krog Corporation personnel to ensure proper installation. In addition, Benchmark personnel (i.e., Mike Lesakowski and Rick Dubisz) conducted periodic inspections during the installation process. No technical problems were identified during the installation of the ASD system.

## 2.3 ASD System Confirmation

A field test was conducted to confirm the negative pressure created beneath the slab. Six, ¼-inch diameter holes were drilled through the concrete slab and into the sub-slab aggregate at points starting near the suction pits and continuing to points furthest from the depressurization pits that were accessible (see Figure 1). With the depressurization system operating, the vacuum was measured using a handheld electronic manometer at the test locations. Results of the testing indicated sufficient negative pressure readings below the slab throughout the building. Additional details related to the negative pressure testing are included in the Final Engineering Report. NYSDEC and NYSDOH personnel were present during the ASD system negative pressure testing.

# 3.0 ASD SYSTEM OPERATION, MAINTENANCE, & MONITORING

## 3.1 ASD System Operation

This ASD System was designed for continuous operation with minimal maintenance and/or operational oversight. It is imperative, however, that the system is inspected monthly and annually to ensure consistent and optimal operation.

Near each suction point, a magnehelic gauge was mounted approximately 5 feet above finished floor to the column at which the vent stack is attached. When the ASD system is operational, the magnehelic gauge will display the effective sub-slab (negative) pressure.

A "normal" operating pressure was established by recording the displayed pressure approximately four hours after initial system start-up. Another reading was taken and recorded after approximately one week of operation to check if significant change in pressure readings were observed relative to the initial "normal" operating pressure. Since there were no significant pressure differences from the "normal" operating pressure, no additional weekly inspections are required.

## 3.2 Monthly Visual Inspection

On a monthly basis, the pressure at each suction pit will be read and recorded (to ensure that the fan is maintaining adequate negative pressure), and system components will be visually inspected. Any large fluctuations or trends in pressure will be documented and brought to the attention of the owner or other responsible party. Visible leaks in piping and/or the concrete slab will be identified and noted for repair. Changes in use of the space, modifications to the system, building renovations, and/or significant non-running time will be documented on the Monthly Inspection Log (refer to Appendix A).

## 3.3 Annual Certification/Inspection

An annual system certification inspection and report documenting that the system is performing properly and remains effective will be required by the NYSDEC and is to be submitted by a Professional Engineer or Qualified Environmental Professional (QEP) as defined in 6 NYCRR Part 375-1.2(ak). The Annual Certification Report will contain the monthly logs, as well as an annual inspection checklist (refer to Appendix A). The annual inspection will be conducted by a QEP and include:

- Visual inspection of system components.
- Exhaust fan inspection for signs of abnormal operation or bearing failure (service and/or replacement if necessary).
- Discharge location inspection to verify no air intake has been located nearby vent pipe.
- HVAC system inspection to determine if it is being maintained and operated as designed.
- Detailed floor, wall, and slab inspection for cracks (resealing if necessary); smoke tubes may be used to check for leaks through floor joints and at suction points with the depressurization system running.

## 3.4 NYSDEC Inspection

The NYSDEC will be granted access to inspect all components of the ASD system, inspection logs, and maintenance records during normal business hours.

## 3.5 System Failure Protocols

In the event that the system is not working properly, the warning light located in the maintenance area will illuminate indicating that there is insufficient vacuum in the associated vent pipe. The following protocol should be followed:

- The building owner/operator and head maintenance person should be contacted immediately.
- The date and time should be recorded.
- The warning device should be identified (i.e., Vent #1 or #2).
- The fans should be inspected to confirm operation; if a circuit breaker was tripped causing the fan to cease operation, the circuit breaker should be reset.
- System components should be visually inspected for signs of damage or dysfunction.

If the system failure is not remedied, the building owner should contact a qualified engineer or other person with experience in ASD systems to inspect the system and take the necessary measures to place the system back in service within two weeks of system failure. The details of the system failure and what measures were taken to place the system back in service will be included in the monthly log and annual certification.

In addition, the NYSDEC will be notified of any system failures that exceed 48 hours and are more involved than a re-start of the system.

## 3.6 Troubleshooting

If the fan fails to operate, check the following:

1. Consult wiring diagrams (see below) to insure proper connection.
2. Check motor lead wiring, capacitor leads and incoming supply leads to insure definite contact.
3. If possible, use a meter to test for continuity across the fan motor leads. In order to do this, the capacitor must be disconnected (do not test the capacitor - it will not meter continuity). If motor leads show continuity, consult factory for a replacement capacitor.

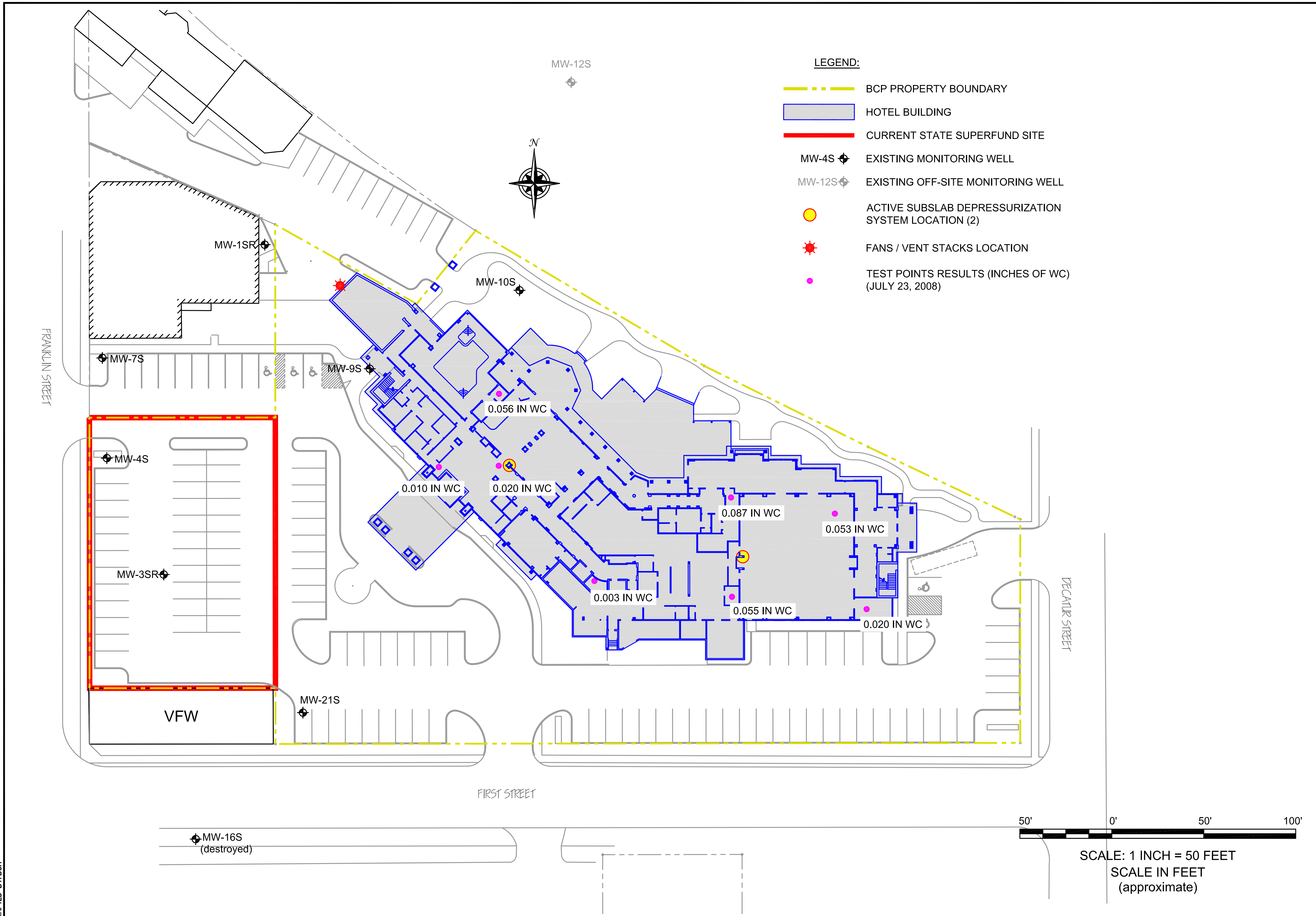
## 3.7 Maintenance

Since the fan bearings are sealed and provided with an internal lubricating material, no additional lubrication is necessary.

## 3.8 Warranty

During the entire 5-year warranty period, Fantech will repair or replace any part that has a factory defect in workmanship or material. The product may need to be returned to the Fantech factory, together with a copy of the bill of sale and identified with the RMA number.

# FIGURES





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# ASD SYSTEM FLOOR PLAN

SUB-SLAB DEPRESSURIZATION SYSTEM OPERATIONS MANUAL

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR
SENECA MARKET I, LLC

## FIGURE 1

DATE: DECEMBER 2008
DRAFTED BY: BCH

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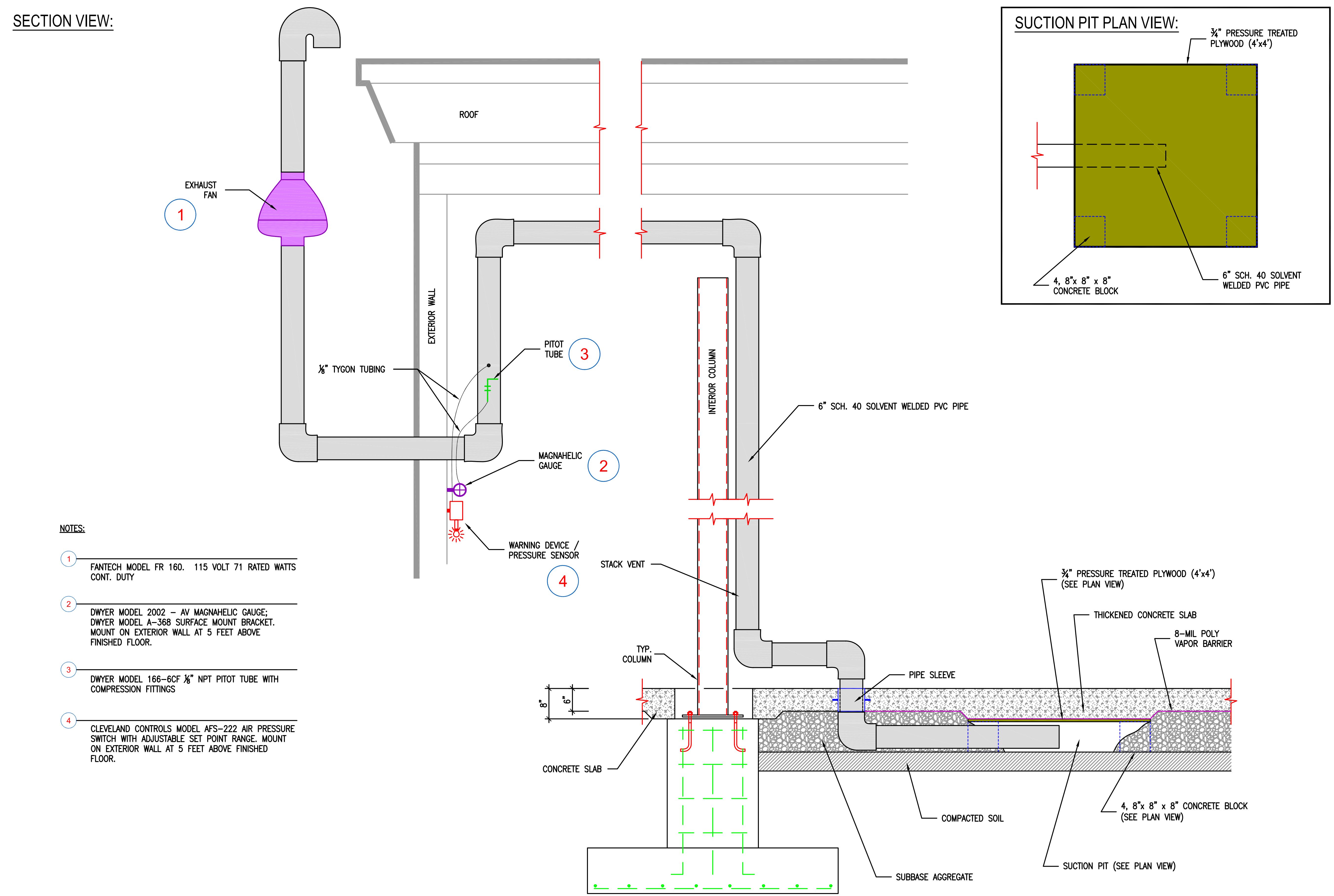


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JOB NO.: 0092-002-200

# ACTIVE SUB-SLAB DEPRESSURIZATION SYSTEM ASSEMBLY DESIGN RECORD DRAWING

SUB-SLAB DEPRESSURIZATION SYSTEM OPERATIONS MANUAL

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR
SENECA MARKET I, LLC

**FIGURE 2**

DATE: DECEMBER 2008
DRAFTED BY: BCH/WJM

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# APPENDIX A

## OPERATIONS AND MAINTENANCE LOGS

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# Monthly Operation & Maintenance Log
# Active Sub-Slab Depressurization System

| | |
|---|---|
| Project Name: | Project No.: |
| Project Location: | Client: |
| Preparer's Name: | Date/Time: |

**Notes:**

**Monthly Operating Status:**

System(s) currently running? ☐ yes ☐ no

Has the system been off-line in the past month? ☐ yes ☐ no

If yes, list the dates, total time, and brief description why (i.e., maintenance, part replacement, etc.):

| | | |
|---|---|---|
| What is the current Vacuum reading? | Gauge #1 | |
| | Gauge #2 | |

**Visual Inspection:**

| | | |
|---|---|---|
| Any piping disconnected? | ☐ yes | ☐ no |
| Any cracks visible in piping? | ☐ yes | ☐ no |
| Any new cracks visible in slab floor? | ☐ yes | ☐ no |
| Magnehelic gauge reading 0? | ☐ yes | ☐ no |
| Is the red warning light working? | ☐ yes | ☐ no |

If yes to any question above, please provide more information below.

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# Monthly Operation & Maintenance Log
# Active Sub-Slab Depressurization System

**Change in Occupancy / Use of Space:**

Please indicate general use of floor space? ______________________________

Has this general use changed in the past month? ☐ yes ☐ no

If yes, please explain:

______________________________

______________________________

______________________________

______________________________

______________________________

______________________________

______________________________

**System Modifications:**

Have any modifications been made to the Sub-Slab Depressurization System? ☐ yes ☐ no

If so, please list with date:

______________________________

______________________________

______________________________

______________________________

______________________________

______________________________

______________________________

______________________________

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ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

# Annual Operation & Maintenance
# Active Sub-Slab Depressurization System
# Certification Checklist

| | |
|---|---|
| Project Name: | Project No.: |
| Project Location: | Client: |
| Preparer's Name: | Date/Time: |

**Notes:**

**System Information**

| | | |
|---|---|---|
| Has monthly system inspection been completed regularly? | ☐ yes | ☐ no |
| Are last 11 inspection logs attached for the past 12 months? | ☐ yes | ☐ no |

What is the current Vacuum reading? ☐

**System Updates, Maintenance, Part Replacement**

Benchmark Environmental Engineering & Science, PLLC

# Annual Operation & Maintenance Active Sub-Slab Depressurization System Certification Checklist

## Change in Occupancy / Use of Space:

Please indicate general use of floor space? ____________________

Has this general use changed in the past year? ☐ yes ☐ no

If yes, please explain:

## Building Renovations:

Have any building renovations taken place in the last month? ☐ yes ☐ no

If yes, please provide more information below, and sketch any basement floor plan modifications on the floor plan sketch below.

## System Modifications:

Have any modifications been made to the Sub-Slab Depressurization System? ☐ yes ☐ no

If so, please list with date:

**Floor Plan Sketch:**

Draw a plan view sketch of the basement of the building. Indicate Sub-Slab Depressurization system location. Please also note and include, any alterations to the system, locations of visible cracks and/or repairs needed, and changes or alterations to the usage of this space.

# APPENDIX B

## EXHAUST FAN PRODUCT INFORMATION

# Fantech FR Series

## Versatility and Value

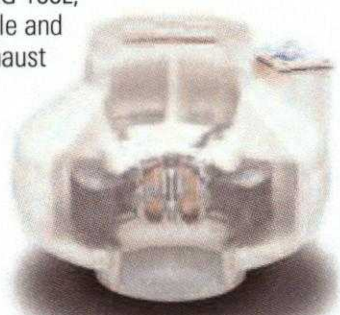
Fantech's versatile FR Series fans feature a plastic housing constructed of UL-recognized, UV-protected thermoplastic resin. This tough protective shell allows the fan to be mounted in outdoor and wet locations.* Ideal for multiple point exhaust, dual bathroom exhaust, or new room additions, Fantech's FR Series fans are caulked at the motor screws, the wiring cables and along the seams of the fan to prevent moisture from entering the housing. Fantech's FR Series fans have long been the choice of residential builders and remodelers but now can be used for commercial projects with our recent UL commercial applications rating.

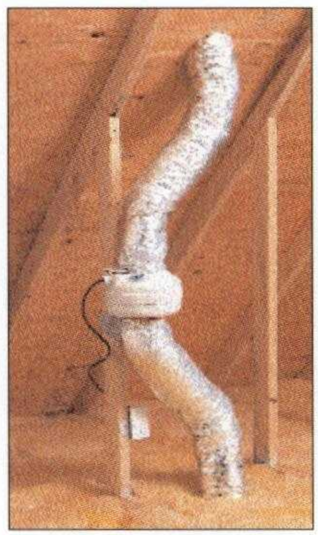
## Easy to install
## Loaded with features

- Prewired and supplied with a mounting bracket for easy installation
- Available singularly with bracket or in a variety of kits for specific applications. Each kit includes the appropriate fan and accessories
- UL Listed; CSA Certified
- Approved for residential and commercial applications and for wet locations
- Suitable for airstream temperatures up to 140° F
- Easy connection using external wiring box with waterproof gasket
- 122-649 CFM
- 4" to 10" duct diameters
- 100% speed controllable
- Five-year factory warranty

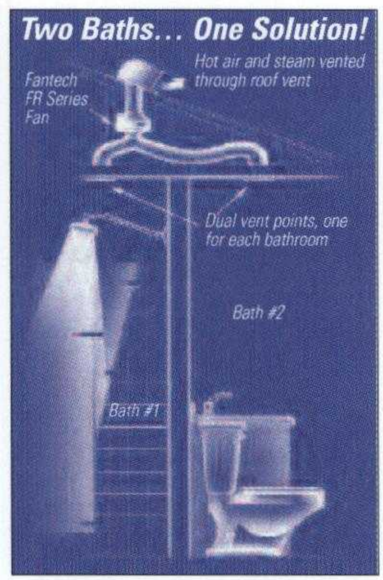
Kits are available for the following applications:

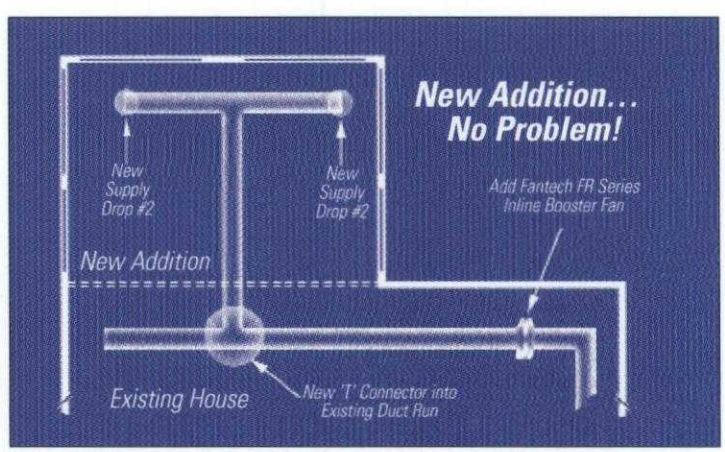
- Regular Kits (REG 100 and REG 140) for single point exhaust applications
- Deluxe Kits (DLX 110, DLX 150, and DLX 200) designed for dual point exhaust applications
- Vent Light Kits (REG 100L, DLX 150L) for single and dual vent light exhaust applications





*Typical attic installation*




** The FR Series is not manufactured to operate with water running through the motor compartment, or to be used in applications where the fan would be buried underground. A UL-recognized waterproof conduit should be used for all outdoor applications to prevent moisture entry via knockout in wiring box.*

## FR Kits

Pictured from left to right: DLX150 – Dual Point Ventilation Kit; REG100L – Single Vent Light Kit. Additional kits (not pictured) are available.

*DLX150*

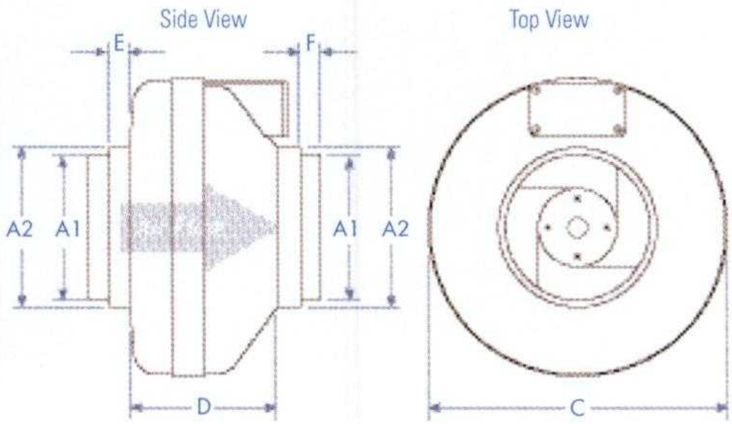
*REG100L*

## Specifications

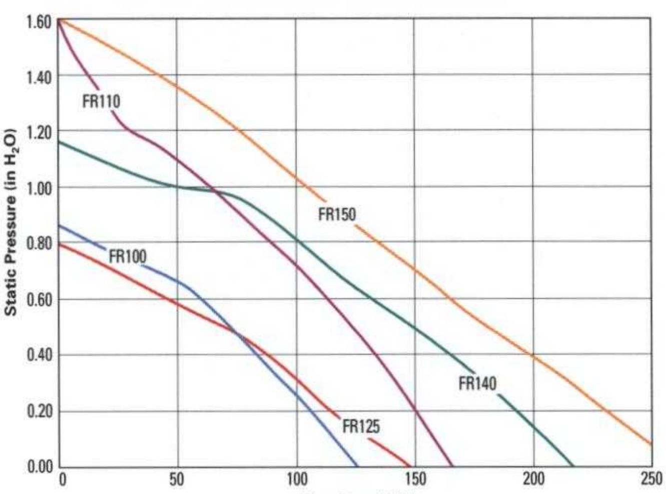
### FR Series Dimensional Data

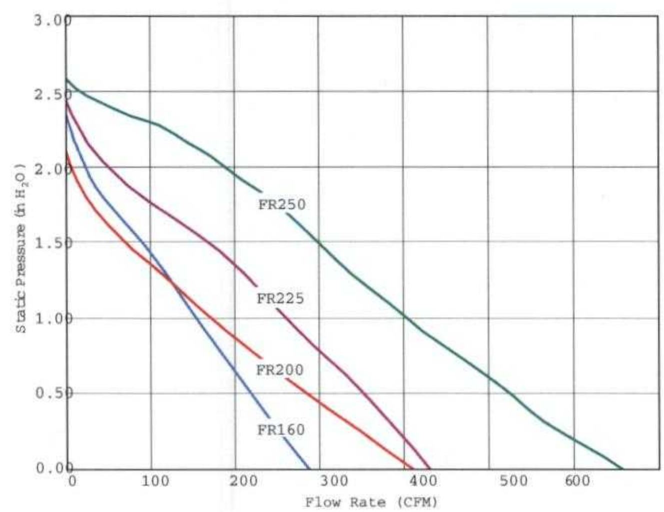
| model | †A1 | A2 | C | D | E | F |
|---|---|---|---|---|---|---|
| FR 100 | 4 | 5 | 9½ | 6⅛ | ⅞ | ⅞ |
| FR 110 | 4 | 5 | 9½ | 6⅛ | ⅞ | ⅞ |
| FR 125 | — | 5 | 9½ | 6⅛ | ⅞ | — |
| FR 140 | 6 | 6¼ | 11¾ | 5⅞ | 1 | ⅞ |
| FR 150 | 6 | 6¼ | 11¾ | 5⅞ | 1 | ⅞ |
| FR 160 | 6 | 6¼ | 11¾ | 6⅜ | 1 | ⅞ |
| FR 200 | 8 | 10 | 13¼ | 6¼ | 1½ | 1½ |
| FR 225 | 8 | 10 | 13¼ | 6¼ | 1½ | 1½ |
| FR 250 | — | 10 | 13¼ | 6¼ | 1½ | — |

*All dimensions in inches. † Duct connections are 1/8" smaller than duct size.*




### FR Series Air Performance Graphs




### FR Series Performance Data

| Fan Model | Energy Star | RPM | Volts | Rated Watts | Wattage Range | Max. Amps | Static Pressure in Inches W.G 0" | .2" | .4" | .6" | .8" | 1.0" | 1.5" | Max. Ps | Duct Dia. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FR 100 | √ | 2900 | 115 | 19 | 13 – 19 | 0.18 | 122 | 100 | 78 | 55 | 15 | — | — | 0.87" | 4" |
| FR 110 | — | 2900 | 115 | 80 | 62 – 80 | 0.72 | 167 | 150 | 133 | 113 | 88 | 63 | 4 | 1.60" | 4" |
| FR 125 | √ | 2950 | 115 | 18 | 15 – 18 | 0.18 | 148 | 120 | 88 | 47 | — | — | — | 0.79" | 5" |
| FR 140 | √ | 2850 | 115 | 61 | 47 – 62 | 0.53 | 214 | 190 | 162 | 132 | 99 | 46 | — | 1.15" | 6" |
| FR 150 | √ | 2750 | 120 | 71 | 54 – 72 | 0.67 | 263 | 230 | 198 | 167 | 136 | 106 | 17 | 1.58" | 6" |
| FR 160 | — | 2750 | 115 | 129 | 103 – 130 | 1.14 | 289 | 260 | 233 | 206 | 179 | 154 | 89 | 2.32" | 6" |
| FR 200 | √ | 2750 | 115 | 122 | 106 – 128 | 1.11 | 408 | 360 | 308 | 259 | 213 | 173 | 72 | 2.14" | 8" |
| FR 225 | √ | 3100 | 115 | 137 | 111 – 152 | 1.35 | 429 | 400 | 366 | 332 | 297 | 260 | 168 | 2.48" | 8" |
| FR 250 | — | 2850 | 115 | 241 | 146 – 248 | 2.40 | 649 | 600 | 553 | 506 | 454 | 403 | 294 | 2.58" | 10" |

*FR Series performance is shown with ducted outlet. Per HVI's Certified Ratings Program, charted air flow performance has been derated by a factor based on actual test results and the certified rate at .2 inches WG.*

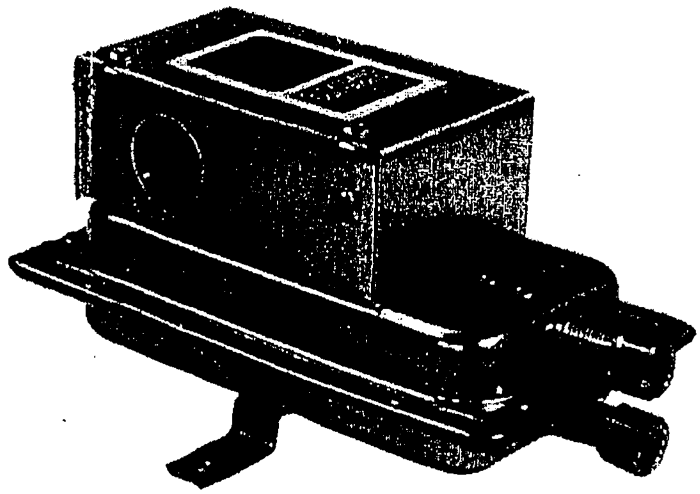
# APPENDIX C

## WARNING DEVICE PRODUCT INFORMATION

# Cleveland Controls
Division of UniControl Inc.

# Model AFS–222

## AIR PRESSURE SENSING SWITCH WITH ADJUSTABLE SET POINT RANGE



### APPLICATION

**Model AFS-222 Air Pressure Sensing Switch** is a general purpose proving switch designed for HVAC and Energy Management applications. It may be used to sense positive, negative, or differential air pressure.

### GENERAL DESCRIPTION & OPERATION

The plated housing contains a diaphragm, a calibration spring and a snap-acting SPDT switch. The sample connections located on each side of the diaphragm accept ¼" OD metallic tubing via the integral compression ferrule and nut.

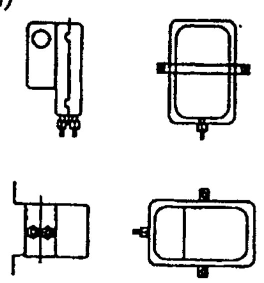
An enclosure cover guards against accidental contact with the live switch terminal screws and the set point adjusting screw. The enclosure cover will accept a ½" conduit connection.

### MOUNTING (SEE FIGURE 1)

Select a mounting location which is free from vibration. The **AFS-222** must be mounted with the diaphragm in any vertical plane in order to obtain the lowest specified operating set point. Avoid mounting with the sample line connections in the "up" position. Surface mount via the two 3/16" diameter holes in the integral mounting bracket. The mounting holes are 3-7/8" apart.

The **AFS-222** is designed to accept firm-wall sample lines of ¼" OD tubing by means of ferrule and nut compression connections. For sample lines of up to 10 feet, ¼" OD tubing is acceptable. For lines up to 20 feet, use ¼" ID tubing. For lines up to 60 feet, use ½" ID tubing. A ¼" OD adapter, suitable for slip-on flexible tubing is available: order part number 18311.

*(Fig. 1)*



### AIR SAMPLING CONNECTION (SEE FIGURE 2)

Locate the sampling probe a minimum of 1.5 duct diameters downstream from the air source. Install the sampling probe as close to the center of the airstream as possible. Refer to Figure 2 to identify the high pressure inlet (H) and the low pressure inlet (L). Select one of the five application options listed below, and connect the sample lines as recommended.

**POSITIVE PRESSURE ONLY:** Connect the sample line to inlet H; inlet L remains open to the atmosphere.

**NEGATIVE PRESSURE ONLY:** Connect the sample line to inlet L; inlet H remains open to the atmosphere.

**TWO NEGATIVE SAMPLES:** Connect the higher negative sample to inlet L. Connect the lower negative sample to inlet H.

**TWO POSITIVE SAMPLES:** Connect the higher positive sample to inlet H. Connect the lower positive sample to inlet L.

**ONE POSITIVE AND ONE NEGATIVE SAMPLE:** Connect the positive sample to inlet H. Connect the negative sample to inlet L.

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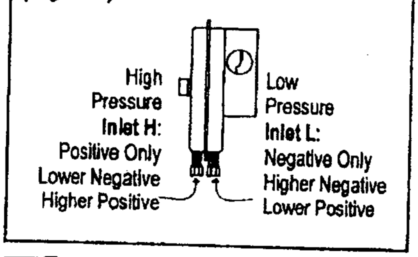
Web page: http://www.clevelandcontrols.com

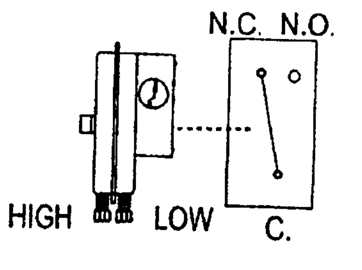


Bulletin AFS-222.07

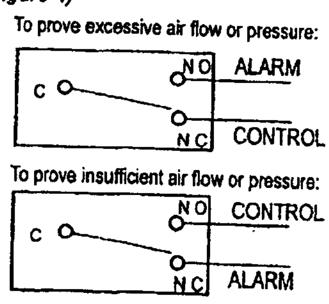
(Figure 2)




(Figure 3)




(Figure 4)



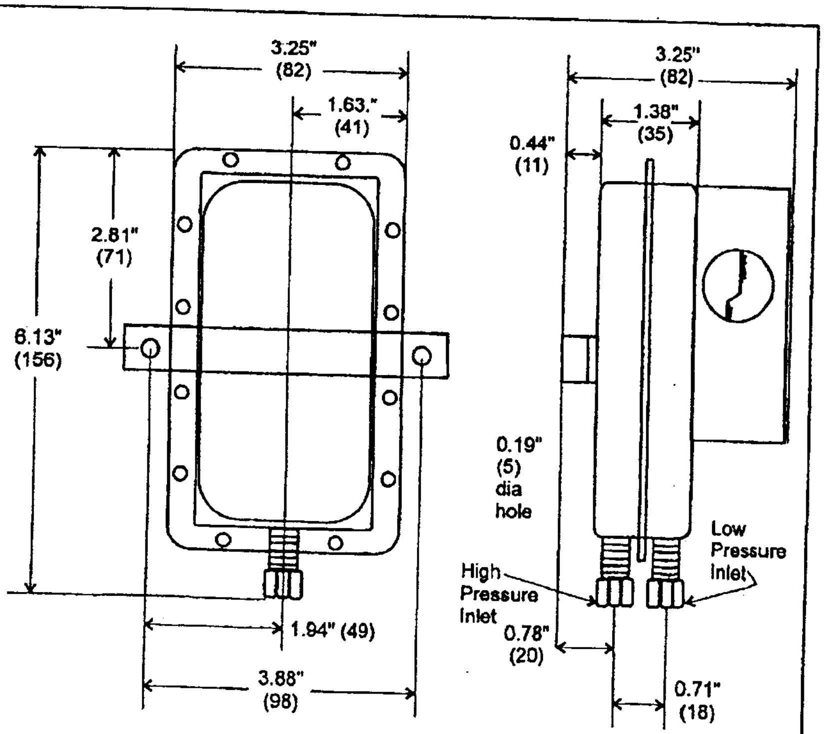

## ELECTRICAL CONNECTIONS (SEE FIGURE 3)

Before pressure is applied to the diaphragm, the switch contacts will be in the normally closed (NC) position. The snap switch has screw top terminals with cup washers. Wire alarm and control applications as shown in Figure 4.

## FIELD ADJUSTMENT

The adjustment range of an **AFS-222** Air Switch is 0.05±.02" w.c. to 12.0" w.c. To adjust the set point, turn the adjusting screw counterclockwise until motion has stopped. Next, turn the adjusting screw 4 complete turns in a clockwise direction to engage the spring. From this point, the next ten turns will be used for the actual calibration. **Each full turn represents approximately 1.2" w.c.**

**Please note:** To properly calibrate an air switch, a digital manometer or other measuring device should be used to confirm the actual set point.




*Nominal Dimensions in Inches (Millimeters)*

## SPECIFICATIONS

### MODEL AFS-222 AIR PRESSURE SENSING SWITCH WITH ADJUSTABLE SET POINT RANGE

**Mounting Position:**
Mount with the diaphragm in any vertical plane.

**Set Point Range:**
0.05±0.02" w.c. to 12.0" w.c.

**Field Adjustable Operate Range:**
0.07" w.c. to 12.0" w.c.

**Field Adjustable Release Range:**
0.05" w.c. to 11.[illegible]" w.c.

**Approximate Switching Differential:**
Progressively increasing from .02 ±.01" w.c. at minimum set point to approximately [illegible]" w.c. at maximum set point. [illegible]

**Measured Media:**
Air or combustion by-products that will not degrade silicone.

**Maximum Pressure:**
1 psi (.069 bar)

**Operating Temperature Range:**
-40°F to 180°F (-40 to 82°C)

**Life:**
100,000 cycles minimum at 1/2 psi maximum pressure each cycle and at maximum rated electrical load.

**Electrical Rating:**
300 VA pilot duty at 115 to 277 VAC
15 amps noninductive to 277 VAC
[illegible]

**Contact Arrangement:** SPDT

**Electrical Connections:**
Screw type terminals with cup washers.

**Conduit Opening:**
7/8" diameter opening accepts 1/2" conduit.

**Sample Line Connectors:**
Male, externally threaded 7/16"-24 UNS-2A thread complete with nuts and self-aligning ferrules.

**Sample Line Connections:**
Connectors will accept 1/4" OD rigid or semi-rigid tubing.

**Approvals:** UL, FM, CSA

**Shipping Weight:** 1.2 lbs.

**Accessories:**
- P/N 18311 Slip-on 1/4" OD Tubing Adapter, suitable for slipping on flexible plastic tubing.
- Sampling line probes
- Orifice plugs (pulsation dampers)

# ATTACHMENT A2

## LONG-TERM GROUNDWATER MONITORING PLAN

# PART I: OM&M PLAN
# ATTACHMENT A2

# LONG-TERM GROUNDWATER MONITORING PLAN

**SENECA MARKET I, LLC SITE**
**SITE NO. C849004**
**WATKINS GLEN, NEW YORK**

September 2008 | 0092-002-200
Revised December 2008

Prepared for:

**Seneca Market I, LLC**
**Watkins Glen, New York**

Prepared by:

Benchmark Environmental Engineering & Science, PLLC

# LONG-TERM GROUNDWATER MONITORING PLAN

## Table of Contents



## LIST OF FIGURES



## LIST OF APPENDICES

# 1.0 GROUNDWATER MONITORING PROGRAM

## 1.1 Purpose

This Long-Term Groundwater Monitoring Plan (LTGMP) has been designed to:

- Monitor the effectiveness of source area removal at the Seneca Market I, LLC Site in accordance with the Brownfield Cleanup Agreement; and

- Monitor the effectiveness of previous remedial measures undertaken by NYSDEC at the former Superfund parcel and continued natural attenuation of subsurface chlorinated VOCs in groundwater in accordance with the Record of Decision issued by NYSDEC for that parcel;

Groundwater quality trends will be monitored from one upgradient and four downgradient monitoring wells with respect to the Superfund drycleaner parcel identified on Figure 1.

## 1.2 Monitoring Network

The long-term groundwater monitoring network includes wells MW-1SR, MW-3SR, MW-7S, MW-10S, and MW-21S (see Figure 1). Network water level monitoring wells MW-4S and MW-9S will be used to improve isopotential map resolution. As soon as groundwater analytical results of well MW-10S indicate the presence of chlorinated volatile organic compounds (c-VOCs) above applicable NYSDEC Class GA Groundwater Quality Standards, then well MW-12S, shown on Figure 1, must be sampled. If c-VOCs are detected in well MW-12S, the Department must be notified immediately so that the Department and the NYSDOH can evaluate the analytical data and potential threat to Seneca Lake. In addition, monitoring well MW-12S will be added to the groundwater monitoring network sampled during the next scheduled monitoring event. Continued monitoring of well MW-12S beyond this event will be evaluated and approved by the Department.

## 1.3 Groundwater Quality Monitoring

The five network monitoring wells identified above will be sampled quarterly (i.e., four events) for the first year (2009). Upon completion of the first year of sampling, the Department will review the groundwater monitoring data (current and historical) and evaluate the efficiency of the remedy implemented at the Site. The Department will then determine at that time if the sampling frequency for the Site can be modified to semi-annually.

Each groundwater sample will be collected via standard low-flow purge and sample methods and analyzed in the field for water quality parameters (i.e., pH, conductivity, temperature, turbidity, and dissolved oxygen) and in the laboratory for Target Compound List Volatile Organic Compounds (TCL VOCs) via Method 8260B. In addition, well MW-3SR will be analyzed in the laboratory for natural attenuation/inorganic parameters (dissolved iron, dissolved manganese, nitrate, sulfate, sulfide, chloride, and alkalinity), HRC®-based electron donor compounds (total organic carbon and metabolic acids [lactic, pyruvic, acetic, propionic, and butyric]), and end-product dissolved gases (carbon dioxide, methane, ethane, and ethene).

Laboratory samples will be transported under chain-of-custody command to an Environmental Laboratory Approval Program (ELAP)-certified laboratory. The laboratory data package will be a Category A deliverable, however, the Department may request, at any time, to upgrade the deliverables to Category B.

## 1.4 Sampling Methods

Benchmark's Field Operating Procedure (FOP) entitled "Low-Flow Groundwater Purging and Sampling Procedures" is provided in Appendix A. In the event of pump failure, Benchmark will implement bailer purge and sample procedures in accordance with our FOP entitled "Groundwater Purging Procedures Prior to Sample Collection". Regardless of purge procedure, Benchmark's FOP entitled "Groundwater Sample Collection Procedures" will also be followed. Once the Department determines the monitored natural attenuation trend has been established for the Site, other sampling methods, such as passive diffusion bags (PDBs), may be implemented upon Department approval.

## 1.5 Reporting

A groundwater monitoring letter report will be prepared and submitted to the NYSDEC approximately 60 days following completion of sampling activities per each monitored event. Each groundwater monitoring report will include:

- The sample location and collection date;

- A summary of groundwater monitoring results compared to New York State Class "GA" Groundwater Quality Standards/Guidance Values;
- An explanation of any deviation from this Plan, if any; and,
- A discussion of any proposed changes to this Plan.

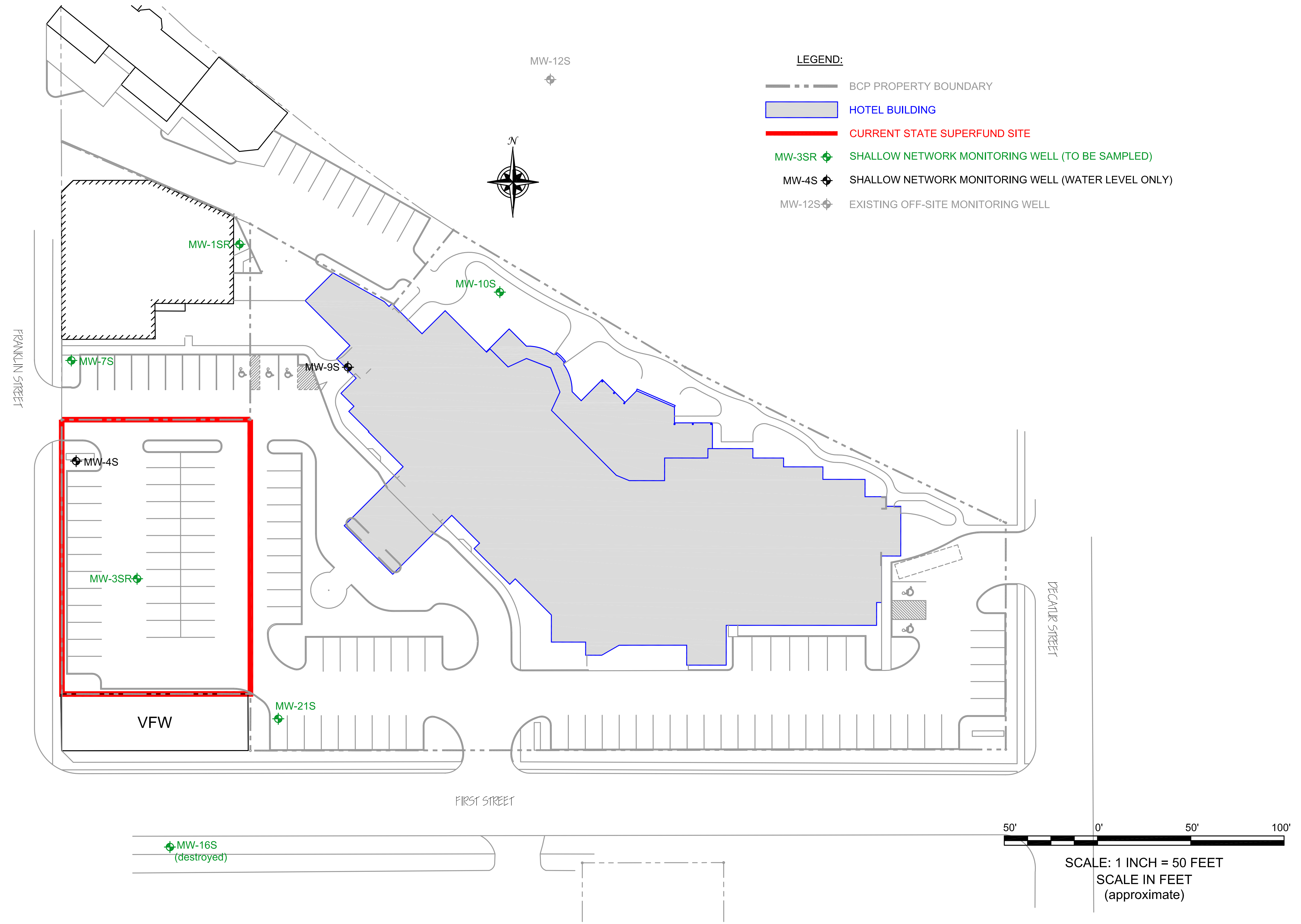
## 1.6 Well Repairs, Replacements, & Decommissioning

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per this Plan), if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The Department will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of Department's Site Project Manager. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the Department. The Department requests a five (5) day notification prior to any field work so that appropriate oversight can be provided.

# FIGURES




# LONG-TERM GROUNDWATER MONITORING NETWORK

LONG-TERM GROUNDWATER MONITORING PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR
SENECA MARKET I, LLC


BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599


JOB NO.: 0092-002-200

## FIGURE 1

DATE: DECEMBER 2008
DRAFTED BY: BCH

F:\CAD\Benchmark\Krog\Seneca Harbor Hotel - Watkins Glen\Site Management Plan\Part I - Operation & Maintenance Plan\Attachment A2; LTGWM\Figure 1; LTGWM Network (rev 122908).dwg

# APPENDIX A

## FIELD OPERATING PROCEDURES (FOPS)

Benchmark
Environmental
Engineering &
Science, PLLC

Field Operating Procedures

# Groundwater Purging Procedures Prior to Sample Collection

**FOP 023.0**

# GROUNDWATER PURGING PROCEDURES PRIOR TO SAMPLE COLLECTION

## PURPOSE

This procedure describes the methods for monitoring well/piezometer purging prior to groundwater sample collection in order to collect representative groundwater samples. The goal of purging is to remove stagnant, non-representative groundwater from the well and/or prevent stagnant water from entering collected samples. Purging involves the removal of at least three to five volumes of water in wells with moderate yields and at least one well volume from wells with low yields (slow water level recovery).

Purge and sample wells in order of least-to-most contaminated (this is not necessary if dedicated or disposable equipment is used). If you do not know this order, sample the upgradient wells first, then the furthest down-gradient or side-gradient wells, and finally the wells closest to, but down-gradient of the most contaminated area. Sampling should commence immediately following purging or as soon as the well has adequately recharged and not more than 24-hours following end time of evacuation.

## PROCEDURE

1. Prepare the electronic water level indicator (e-line) in accordance with the procedures referenced in the Benchmark Field Operating Procedure for Groundwater Level Measurement and decontaminate the e-line probe and a lower portion of cable following the procedures referenced in the Benchmark Field Operating Procedure for Non-disposable and Non-dedicated Sampling Equipment Decontamination. Store the e-line in a protected area until use. This may include wrapping the e-line in clean plastic until the time of use.

2. Inspect the interior and exterior of the well/piezometer for signs of vandalism or damage and record condition on the Groundwater Field Form and/or Groundwater Well Inspection Form (samples attached). Specifically, inspect

the integrity of the following: concrete surface seal, lock, protective casing and well cover, well riser and J-plug/cap. Report any irregular findings to the Project Manager.

3. Unlock and remove the well protective cap or cover and place on clean plastic to avoid introducing foreign material into the well.

4. Calibrate the photoionization detector (PID) in accordance with the Benchmark Field Operating Procedure for Calibration and Maintenance of Portable Photoionization Detector.

5. Monitor the well for organic vapors using a PID, as per the Work Plan. If a reading of greater than 5 ppm is recorded, the well should be allowed to vent until levels drop below 5 ppm before proceeding with purging.

6. Lower the e-line probe slowly into the monitoring well and record the initial water level in accordance with the procedures referenced in the Benchmark Field Operating Procedure for Groundwater Level Measurement.

7. Following static water level determinations, slowly lower the e-line to the bottom of the well/piezometer. Record the total depth to the nearest 0.01-foot and compare to the previous total depth measurement. If a significant discrepancy exists, re-measure the total depth. Continue with purging activities observing purge water to determine whether the well/piezometer had become silted due to inactivity or damaged (i.e., well sand within purge water). Upon confirmation of the new total depth and determination of the cause (i.e., siltation or damage), notify the Project Manager following field activities.

8. Calculate the volume of water in the well based on the water level below the top of riser and the total depth of the well using the following equation:

$$V = 0.0408[(B)^2 \times \{(A) - (C)\}]$$

Where,

A = Total Depth of Well (feet below measuring point)
B = Casing diameter (inches)
C = Static Water Level (feet below measuring point)

9. **For wells where the water level is 20 feet or less below the top of riser**, a peristaltic pump may be used to purge the well. Measure the purged volume using a calibrated container (i.e., graduated 5-gallon bucket) and record measurements on the attached Groundwater Well Development and Purge Log. Use new and dedicated tubing for each well. During the evacuation of shallow wells, the intake opening of the pump tubing should be positioned just below the surface of the water. As the water level drops, lower the tubing as needed to maintain flow. For higher yielding wells, the intake level should not be lowered past the top of the screen. Pumping from the top of the water column will ensure proper flushing of the well. Continue pumping until the required volumes are removed (typically three well volumes). For higher yielding wells, adjust the purging rate to maintain the water level above the screen. For lower yielding wells or wells where the screen straddles the water table, maintain purging at a rate that matches the rate of recovery of the well (well yield). If the well purges to dryness and is slow to recharge (greater than 15 minutes), terminate evacuation.

10. **For wells where the water level is initially below 20 feet,** or drawn down to this level because of slow recharge rate, conduct purging using one of three devices listed below:

- Bailer – A bottom filling dedicated polyethylene bailer attached to a length of dedicated hollow-braid polypropylene rope. Purging a well utilizing a bailer should be conducted smoothly and slowly as not to agitate the groundwater or damage the well.

- Well Wizard Purge Pump (or similar) – This pneumatic bladder pump uses compressed air to push water to the surface. Groundwater is not in contact with the drive air during the pumping process, therefore the pump may be used for sample collection.

- Waterra™ Pump – This manually operated pump uses dedicated polyethylene tubing and a check valve that can be used as an optional method for purging deeper wells. The pump utilizes positive pressure to evacuate the well, therefore the pump may be used for sample collection, and however over-agitation groundwater should be avoided.

Prior to use in a well, non-dedicated bailers, exterior pump bodies and pump tubing should be cleaned in accordance with the Benchmark Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination. Dedicated and/or disposable equipment should be contained within the sealed original manufacturers packaging and certified pre-cleaned by the manufacturer with a non-phosphate laboratory detergent and rinsed using de-ionized water.

8. Purging will continue until a predetermined volume of water has been removed (typically three well volumes) or to dryness. Measurements for pH, temperature, specific conductance, dissolved oxygen (optional), Eh (optional) and turbidity will be recorded following removal of each well volume. Purge the well to dryness or until the readings for indicator parameters listed above (or well-specific indicator parameters) stabilize within the following limits for each parameter measured:

| Field Parameter | Stabilization Criteria |
|---|---|
| Dissolved Oxygen | ± 0.3 mg/L |
| Turbidity | ± 10 % |
| Specific Conductance | ± 3 % |
| Eh | ± 10 mV |
| PH | ± 0.1 unit |

Stabilization criteria presented within the project Work Plan will take precedence.

## DOCUMENTATION AND SAMPLE COLLECTION

This section pertains to the documentation of collected field data during and following purging activities and sample collection.

1. Record all data including the final three stable readings for each indicator parameter on the attached Groundwater Well Purge & Sample Log.

2. Record, at a minimum, the "volume purged," "purging stop-time," "purged dry (Y/N)," "purged below sand pack (Y/N)," and any problems purging on the attached Groundwater Well Purge & Sample Log.

3. Collect groundwater samples in accordance with the Benchmark Field Operating Procedure for Groundwater Sample Collection. Record "sample flow rate" as an average, "time sample collected," and any other pertinent information related to the sampling event on the attached Groundwater Well Purge & Sample Log.

4. Restore the well to its capped/covered and locked condition.

## ALTERNATIVE METHODS

Alternative purging and sampling methods and equipment, other than those described herein are acceptable if they provide representative groundwater samples. The purging and sampling method and equipment must not adversely affect sample integrity, chemistry, temperature and turbidity. In addition, alternative equipment must have minimal or no effect on groundwater geochemistry, aquifer permeability and well materials. Equipment materials must also minimize sorption and leaching. The field team is responsible for documenting and describing any alternative equipment and procedures used to purge a well and collect samples.

## ATTACHMENTS

Groundwater Field Form
Groundwater Well Inspection Form

## REFERENCES

<u>Benchmark FOPs:</u>
*011 Calibration and Maintenance of Portable Photoionization Detector*
*022 Groundwater Level Measurement*
*024 Groundwater Sample Collection Procedures*
*040 Non-disposable and Non-dedicated Sampling Equipment Decontamination*

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

## GROUNDWATER FIELD FORM

Project Name: Date:

Location: Project No.: Field Team:

| Well No. | | | Diameter (inches): | | | Sample Time: | | | |
|---|---|---|---|---|---|---|---|---|---|
| Product Depth (fbTOR): | | | Water Column (ft): | | | DTW when sampled: | | | |
| DTW (static) (fbTOR): | | | Casing Volume: | | | Purpose: ☐ Development ☐ Sample | | | |
| Total Depth (fbTOR): | | | Purge Volume (gal): | | | Purge Method: | | | |
| Time | Water Level (fbTOR) | Acc. Volume (gallons) | pH (units) | Temp. (deg. C) | SC (uS) | Turbidity (NTU) | DO (mg/L) | ORP (mV) | Appearance & Odor |
| | 0 Initial | | | | | | | | |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |
| | 8 | | | | | | | | |
| | 9 | | | | | | | | |
| | 10 | | | | | | | | |
| **Sample Information:** | | | Date: (if different from above) | | | | | | |
| | S1 | | | | | | | | |
| | S2 | | | | | | | | |

| Well No. | | | Diameter (inches): | | | Sample Time: | | | |
|---|---|---|---|---|---|---|---|---|---|
| Product Depth (fbTOR): | | | Water Column (ft): | | | DTW when sampled: | | | |
| DTW (static) (fbTOR): | | | Casing Volume: | | | Purpose: ☐ Development ☐ Sample | | | |
| Total Depth (fbTOR): | | | Purge Volume (gal): | | | Purge Method: | | | |
| Time | Water Level (fbTOR) | Acc. Volume (gallons) | pH (units) | Temp. (deg. C) | SC (uS) | Turbidity (NTU) | DO (mg/L) | ORP (mV) | Appearance & Odor |
| | 0 Initial | | | | | | | | |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |
| | 8 | | | | | | | | |
| | 9 | | | | | | | | |
| | 10 | | | | | | | | |
| **Sample Information:** | | | Date: (if different from above) | | | | | | |
| | S1 | | | | | | | | |
| | S2 | | | | | | | | |

**REMARKS:**

*Note: All water level measurements are in feet, distance from top of riser.*

Volume Calculation

| Diam. | Vol. (g/ft) |
|---|---|
| 1" | 0.041 |
| 2" | 0.163 |
| 4" | 0.653 |
| 6" | 1.469 |

Stabilization Criteria

| Parameter | Criteria |
|---|---|
| pH | ± 0.1 unit |
| SC | ± 3% |
| Turbidity | ± 10% |
| DO | ± 0.3 mg/L |
| ORP | ± 10 mV |

**PREPARED BY:**

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

# GROUNDWATER WELL INSPECTION FORM

| | |
|---|---|
| Project: | **WELL I.D.:** |
| Client: | |
| Job No.: | |
| Date: | |
| Time: | |
| | |

## EXTERIOR INSPECTION

| |
|---|
| Protective Casing: |
| Lock: |
| Hinge/Lid: |
| Concrete Surface Seal: |
| Bollards: |
| Label/I.D.: |
| Other: |
| |
| |
| |

## INTERIOR INSPECTION

| |
|---|
| Well Riser: |
| Annular Space: |
| Well Cap: |
| Water Level (fbTOR): |
| Total Depth (fbTOR): |
| Other: |
| |
| |

| |
|---|
| Comments/Corrective Actions: |
| |
| |
| |

PREPARED BY: DATE:

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

FIELD OPERATING PROCEDURES

# Groundwater Sample Collection Procedures

# FOP 024.0

# GROUNDWATER SAMPLE COLLECTION PROCEDURES

## PURPOSE

This procedure describes the methods for collecting groundwater samples from monitoring wells and domestic supply wells following purging and sufficient recovery. This procedure also includes the preferred collection order in which water samples are collected based on the volatilization sensitivity or suite of analytical parameters required.

## PROCEDURE

Allow approximately 3 to 10 days following well development before performing purge and sample activities at any well location. Conversely, perform sampling as soon as practical after sample purging at any time after the well has recovered sufficiently to sample, or within 24 hours after evacuation, if the well recharges slowly. If the well does not yield sufficient volume for all required laboratory analytical testing (including quality control), a decision should be made to prioritize analyses based on contaminants of concern at the site. If the well takes longer than 24 hours to recharge, the Project Manager should be consulted. The following two procedures outline sample collection activities for monitoring and domestic type wells.

**<u>Monitoring Wells</u>**

1. Purge the monitoring well in accordance with the Benchmark FOPs for Groundwater Purging Procedures Prior to Sample Collection or Low Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedures. Perform sampling as soon as practical after purging at any time after the well has recovered sufficiently to sample, or within 24 hours after evacuation, if the well recharges slowly. If the well does not yield sufficient volume for all required laboratory analytical testing (including quality control), a decision should be made to prioritize analyses based on contaminants of concern at the site. Analyses will be prioritized in the order of the parameters volatilization sensitivity. After volatile organics have been collected, field parameters

must be measured from the next sample collected. If a well takes longer than 24 hours to recharge, the Project Manager should be consulted.

2. Sampling equipment that is not disposable or dedicated to the well will be decontaminated in accordance with the Benchmark Field Operating Procedure for Non-Disposable and Non-Dedicated Sampling Equipment Decontamination.

3. Calibrate all field meters (i.e., pH/Eh, turbidity, specific conductance, dissolved oxygen, PID etc.) in accordance with the Benchmark Field Operating Procedure for Calibration and Maintenance of the specific field meter.

4. Prepare the electronic water level indicator (e-line) in accordance with the procedures referenced in the Benchmark Field Operating Procedure for Groundwater Level Measurement and decontaminate the e-line probe and a lower portion of cable following the procedures referenced in the Benchmark Field Operating Procedure for Non-disposable and Non-dedicated Sampling Equipment Decontamination. Store the e-line in a protected area until use. This may include wrapping the e-line in clean plastic until the time of use.

5. Inspect the well/piezometer for signs of vandalism or damage and record condition on the Groundwater Field Form (sample attached). Specifically, inspect the integrity of the following: concrete surface seal, lock, protective casing and well cover, well casing and J-plug/cap. Report any irregular findings to the Project Manager.

6. Unlock and remove the well protective cap or cover and place on clean plastic to avoid introducing foreign material into the well.

7. Calibrate the photoionization detector (PID) in accordance with the Benchmark Field Operating Procedure for Calibration and Maintenance of Portable Photoionization Detector.

8. Monitor the well for organic vapors using a PID, as per the Work Plan. If a reading of greater than 5 ppm is recorded, the well should be allowed to vent until levels drop below 5 ppm before proceeding with purging. Record PID measurements on a well-specific Groundwater Field Form (sample attached).

9. Lower the e-line probe slowly into the monitoring well and record the measurement on a well-specific Groundwater Field Form (sample attached).

10. Groundwater samples will be collected directly from the sampling valve on the flow through cell (low-flow), discharge port of a standard pump assembly (peristaltic, pneumatic, submersible, or Waterra™ pump) or bailer (stainless steel, PVC or polyethylene) into appropriate laboratory provided containers. In low-yielding wells at which the flow through cell is not used, the samples may be collected using a disposable bailer.

11. If disposable polyethylene bailers are used, the bailer should be lowered *slowly* below the surface of the water to minimize agitation and volatilization. For wells that are known to produce turbid samples (values greater than 50 NTU), the bailer should be lowered and retrieved at a rate that limits surging of the well.

12. Sampling data will be recorded on a Groundwater Field Form (sample attached).

13. Pre-label all sample bottles in the field using a waterproof permanent marker in accordance with the Benchmark Sample Labeling, Storage and Shipment FOP. The following information, at a minimum, should be included on the label:

    - Project Number;
    - Sample identification code (as per project specifications);
    - Date of sample collection (mm, dd, yy);
    - Time of sample collection (military time only) (hh:mm);
    - Specify "grab" or "composite" sample type;
    - Sampler initials;
    - Preservative(s) (if applicable); and
    - Analytes for analysis (if practicable).

14. Collect a separate sample of approximately 200 ml into an appropriate container prior to collecting the first and following the last groundwater sample collected to measure the following field parameters:

| Parameter | Units |
|---|---|
| Dissolved Oxygen | parts per million (ppm) |

| | |
|---|---|
| Specific Conductance | $\mu$mhos/cm or $\mu$S or mS |
| pH | pH units |
| Temperature | $^oC$ or $^oF$ |
| Turbidity | NTU |
| Eh (*optional*) | mV |
| PID VOCs (*optional*) | ppm |

Record all field measurements on a Groundwater Field Form (sample attached).

15. Collect samples into pre-cleaned bottles provided by the analytical laboratory with the appropriate preservative(s) added based on the volatilization sensitivity or suite of analytical parameters required, as designated in the **Sample Collection Order** section below.

16. Lower the e-line probe slowly into the monitoring well and record the measurement on a well-specific Groundwater Field Form (sample attached).

17. The samples will be labeled, stored and shipped in accordance with the Benchmark Field Operating Procedure for Sample Labeling, Storage and Shipment Procedures.

**<u>Domestic Supply Wells</u>**

1. Calculate or estimate the volume of water in the well. It is desirable to purge at least one casing volume before sampling. This is controlled, to some extent, by the depth of the well, well yield and the rate of the existing pump. If the volume of water in the well cannot be calculated, the well should be purged continuously for no less than 15 minutes.

2. Connect a sampling tap to an accessible fitting between the well and the pressure tank where practicable. A hose will be connected to the device and the hose discharge located 25 to 50 feet away. The well will be allowed to pump until the lines and one well volume is removed. Flow rate will be measured with a container of known volume and a stopwatch.

3. Place a clean piece of polyethylene or Teflon™ tubing on the sampling port and collect the samples in the order designated below and in the sample containers supplied by the laboratory for the specified analytes. ***DO NOT*** use standard garden hose to collect samples.

4. Sampling results and measurements will be recorded on a Groundwater Field Form (sample attached) as described in the previous section.

5. Collect samples into pre-cleaned bottles provided by the analytical laboratory with the appropriate preservative(s) added based on the volatilization sensitivity or suite of analytical parameters required, as designated in the **Sample Collection Order** section below.

6. The samples will be labeled, stored and shipped in accordance with the Benchmark Field Operating Procedure for Sample Labeling, Storage and Shipment Procedures.

## SAMPLE COLLECTION ORDER

All groundwater samples, from monitoring wells and domestic supply wells, will be collected in accordance with the following.

1. Samples will be collected preferentially in recognition of volatilization sensitivity. The preferred order of sampling if no free product is present is:

    - Field parameters
    - Volatile Organic Compounds (VOCs)
    - Purgeable organic carbons (POC)
    - Purgeable organic halogens (POH)
    - Total Organic Halogens (TOX)
    - Total Organic Carbon (TOC)
    - Extractable Organic Compounds (i.e., BNAs, SVOCs, etc.)
    - Total petroleum hydrocarbons (TPH) and oil and grease
    - PCBs and pesticides
    - Total metals (Dissolved Metals)
    - Total Phenolic Compounds

- Cyanide
- Sulfate and Chloride
- Turbidity
- Nitrate (as Nitrogen) and Ammonia
- Preserved inorganics
- Radionuclides
- Unpreserved inorganics
- Bacteria
- Field parameters

2. Document the sampling procedures and related information in the Project Field Book and on a Groundwater Field Form (sample attached).

## DOCUMENTATION

The three words used to ensure adequate documentation for groundwater sampling are accountability, controllability, and traceability. Accountability is undertaken in the sampling plan and answers the questions who, what, where, when, and why to assure that the sampling effort meets its goals. Controllability refers to checks (including QA/QC) used to ensure that the procedures used are those specified in the sampling plan. Traceability is documentation of what was done, when it was done, how it was done, and by whom it was done, and is found in the field forms, Project Field Book, and chain-of-custody forms. At a minimum, adequate documentation of the sampling conducted in the field consists of an entry in the Project Field Book (with sewn binding), field data sheets for each well, and a chain-of-custody form.

As a general rule, if one is not sure whether the information is necessary, it should nevertheless be recorded, as it is impossible to over-document one's fieldwork. Years may go by before the documentation comes under close scrutiny, so the documentation must be capable of defending the sampling effort without the assistance or translation of the sampling crew.

The minimum information to be recorded daily with an indelible pen in the Project Field Book and/or field data sheets includes date and time(s), name of the facility, name(s) of the sampling crew, site conditions, the wells sampled, a description of how the sample shipment was handled, and a QA/QC summary. After the last entry for the day in the Project Field Book, the Field Team Leader should sign the bottom of the page under the last entry and then draw a line across the page directly under the signature.

## PRECAUTIONS/RECOMMENDATIONS

The following precautions should be adhered to prior to and during sample collection activities:

- Field vehicles should be parked downwind (to avoid potential sample contamination concerns) at a minimum of 15 feet from the well and the engine turned off prior to PID vapor analysis and VOC sample collection.

- Ambient odors, vehicle exhaust, precipitation, or windy/dusty conditions can potentially interfere with obtaining representative samples. These conditions should be minimized and should be recorded in the field notes. Shield sample bottles from strong winds, rain, and dust when being filled.

- The outlet from the sampling device should discharge below the top of the sample's air/water interface, when possible. The sampling plan should specify how the samples will be transferred from the sample collection device to the sample container to minimize sample alterations.

- The order of sampling should be from the least contaminated to the most contaminated well to reduce the potential for cross contamination of sampling equipment (see the Sampling Plan or Work Plan).

- Samples should not be transferred from one sampling container to another.

- Sampling equipment must not be placed on the ground, because the ground may be contaminated and soil contains trace metals. Equipment and supplies should be removed from the field vehicle only when needed.

- Smoking and eating should not be allowed until the well is sampled and hands are washed with soap and water, due to safety and possibly sample contamination concerns. These activities should be conducted beyond a 15-foot radius of the well.

- No heat-producing or electrical instruments should be within 15 feet of the well, unless they are intrinsically safe, prior to PID vapor analysis.

- Minimize the amount of time that the sample containers remain open.

- Do not touch the inside of sample bottles or the groundwater sample as it enters the bottle. Disposable gloves may be a source of phthalates, which could be introduced into groundwater samples if the gloves contact the sample.

- Sampling personnel should use a new pair of disposable gloves for each well sampled to reduce the potential for exposure of the sampling personnel to contaminants and to reduce sample cross contamination. In addition, sampling personnel should change disposable gloves between purging and sampling operations at the same well.

- Sampling personnel should not use perfume, insect repellent, hand lotion, etc., when taking groundwater samples. If insect repellent must be used, then sampling personnel should not allow samples or sampling equipment to contact the repellent, and it should be noted in the documentation that insect repellent was used.

- Complete the documentation of the well. A completed assemblage of paperwork for a sampling event includes the completed field forms, entries in the Project Field Book (with a sewn binding), transportation documentation (if required), and possibly chain-of-custody forms.

## ATTACHMENTS

Groundwater Field Form (sample)

## REFERENCES

1. Wilson, Neal. *Soil Water and Ground Water Sampling*, 1995

Benchmark FOPs:

007 *Calibration and Maintenance of Portable Dissolved Oxygen Meter*
008 *Calibration and Maintenance of Portable Field pH/Eh Meter*
009 *Calibration and Maintenance of Portable Field Turbidity Meter*
011 *Calibration and Maintenance of Portable Photoionization Detector*
012 *Calibration and Maintenance of Portable Specific Conductance Meter*
022 *Groundwater Level Measurement*
023 *Groundwater Purging Procedures Prior to Sample Collection (optional)*
031 *Low Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedures (optional)*
040 *Non-Disposable and Non-Dedicated Sampling Equipment Decontamination*
046 *Sample Labeling, Storage and Shipment Procedures*

Benchmark Environmental Engineering & Science, PLLC

## GROUNDWATER FIELD FORM

Project Name: Date:

Location: Project No.: Field Team:

| | | |
|---|---|---|
| **Well No.** | Diameter (inches): | Sample Time: |
| Product Depth (fbTOR): | Water Column (ft): | DTW when sampled: |
| DTW (static) (fbTOR): | Casing Volume: | Purpose: ☐ Development ☐ Sample |
| Total Depth (fbTOR): | Purge Volume (gal): | Purge Method: |

| Time | Water Level (fbTOR) | Acc. Volume (gallons) | pH (units) | Temp. (deg. C) | SC (uS) | Turbidity (NTU) | DO (mg/L) | ORP (mV) | Appearance & Odor |
|---|---|---|---|---|---|---|---|---|---|
| | 0 Initial | | | | | | | | |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |
| | 8 | | | | | | | | |
| | 9 | | | | | | | | |
| | 10 | | | | | | | | |
| **Sample Information:** | | | Date: (if different from above) | | | | | | |
| | S1 | | | | | | | | |
| | S2 | | | | | | | | |

| | | |
|---|---|---|
| **Well No.** | Diameter (inches): | Sample Time: |
| Product Depth (fbTOR): | Water Column (ft): | DTW when sampled: |
| DTW (static) (fbTOR): | Casing Volume: | Purpose: ☐ Development ☐ Sample |
| Total Depth (fbTOR): | Purge Volume (gal): | Purge Method: |

| Time | Water Level (fbTOR) | Acc. Volume (gallons) | pH (units) | Temp. (deg. C) | SC (uS) | Turbidity (NTU) | DO (mg/L) | ORP (mV) | Appearance & Odor |
|---|---|---|---|---|---|---|---|---|---|
| | 0 Initial | | | | | | | | |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |
| | 8 | | | | | | | | |
| | 9 | | | | | | | | |
| | 10 | | | | | | | | |
| **Sample Information:** | | | Date: (if different from above) | | | | | | |
| | S1 | | | | | | | | |
| | S2 | | | | | | | | |

**REMARKS:**

*Note: All water level measurements are in feet, distance from top of riser.*

Volume Calculation

| Diam. | Vol. (g/ft) |
|---|---|
| 1" | 0.041 |
| 2" | 0.163 |
| 4" | 0.653 |
| 6" | 1.469 |

Stabilization Criteria

| Parameter | Criteria |
|---|---|
| pH | ± 0.1 unit |
| SC | ± 3% |
| Turbidity | ± 10% |
| DO | ± 0.3 mg/L |
| ORP | ± 10 mV |

**PREPARED BY:**

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

FIELD OPERATING PROCEDURES

# Low-Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedure

# FOP 031.0

# LOW FLOW (MINIMAL DRAWDOWN) GROUNDWATER PURGING & SAMPLING PROCEDURES

## PURPOSE

This procedure describes the methods used for performing low flow (minimal drawdown) purging, also referred to as micro-purging, at a well prior to groundwater sampling to obtain a representative sample from the water-bearing zone. This method of purging is used to minimize the turbidity of the produced water. This may increase the representativeness of the groundwater samples by avoiding the necessity of filtering suspended solids in the field prior to preservation of the sample.

Well purging is typically performed immediately preceding groundwater sampling. The sample should be collected as soon as the parameters measured in the field (i.e., pH, specific conductance, dissolved oxygen, Eh, temperature, and turbidity) have stabilized.

## PROCEDURE

1. Water samples should not be taken immediately following well development. Sufficient time should be allowed to stabilize the groundwater flow regime in the vicinity of the monitoring well. This lag time will depend on site conditions and methods of installation but may exceed one week.

2. Prepare the electronic water level indicator (e-line) in accordance with the procedures referenced in the Benchmark's Groundwater Level Measurement FOP and decontaminate the e-line probe and a lower portion of cable following the procedures referenced in the Benchmark's Non-disposable and Non-dedicated Sampling Equipment Decontamination FOP. Store the e-line in a protected area until use. This may include wrapping the e-line in clean plastic until the time of use.

3. Calibrate all sampling devices and monitoring equipment in accordance with manufacturer's recommendations, the site Quality Assurance Project Plan (QAPP) and/or Field Sampling Plan (FSP). Calibration of field

instrumentation should be followed as specified in Benchmark's Calibration and Maintenance FOP for each individual meter.

4. Inspect the well/piezometer for signs of vandalism or damage and record condition on the Groundwater Field Form (sample attached). Specifically, inspect the integrity of the following: concrete surface seal, lock, protective casing and well cover, well casing and J-plug/cap. Report any irregular findings to the Project Manager.

5. Unlock and remove the well protective cap or cover and place on clean plastic to avoid introducing foreign material into the well.

6. Monitor the well for organic vapors using a PID, as per the Work Plan. If a reading of greater than 5 ppm is recorded, the well should be allowed to vent until levels drop below 5 ppm before proceeding with purging.

7. Lower the e-line probe slowly into the monitoring well and record the initial water level in accordance with the procedures referenced in Benchmark's Groundwater Level Measurement FOP. Refer to the construction diagram for the well to identify the screened depth.

8. Decontaminate all non-dedicated pump and tubing equipment following the procedures referenced in the Benchmark's Non-disposable and Non-dedicated Sampling Equipment Decontamination FOP.

9. Lower the purge pump or tubing (i.e., low-flow electrical submersible, peristaltic, etc.) slowly into the well until the pump/tubing intake is approximately in the middle of the screened interval. Rapid insertion of the pump will increase the turbidity of well water, and can increase the required purge time. This step can be eliminated if dedicated tubing is already within the well.

   Placement of the pump close to the bottom of the well will cause increased entrainment of solids, which may have settled in the well over time. Low-flow purging has the advantage of minimizing mixing between the overlying stagnant casing water and water within the screened interval. The objective of low-flow purging is to maintain a purging rate, which minimizes stress (drawdown) of the water level in the well. Low-flow refers to the velocity with which water enters the pump intake and that is imparted to the formation pore water in the immediate vicinity of the well screen.

10. Lower the e-line back down the well as water levels will be frequently monitored during purge and sample activities.

11. Begin pumping to purge the well. The pumping rate should be between 100 and 500 milliliters (ml) per minute (0.03 to 0.13 gallons per minute) depending on site hydrogeology. Periodically check the well water level with the e-line adjusting the flow rate as necessary to stabilize drawdown within the well. If possible, a steady flow rate should be maintained that results in a stabilized water level (drawdown of 0.3 feet or less). If the water level exceeds 2 feet below static and declining, slow the purge rate until the water level generally stabilizes. Record each pumping rate and water level during the event.

    The low flow rate determined during purging will be maintained during the collection of analytical samples. At some sites where geologic heterogeneities are sufficiently different within the screened interval, high conductivity zones may be preferentially sampled.

12. Measure and record field parameters (pH, specific conductance, Eh, dissolved oxygen (DO), temperature, and turbidity) during purging activities. In lieu of measuring all of the parameters, a minimum subset could be limited to pH, specific conductance, and turbidity or DO.

    Water quality indicator parameters should be used to determine purging needs prior to sample collection in each well. Stabilization of indicator parameters should be used to determine when formation water is first encountered during purging. In general, the order of stabilization is pH, temperature, and specific conductance, followed by Eh, DO and turbidity. Performance criteria for determination of stabilization should be based on water-level drawdown, pumping rate and equipment specifications for measuring indicator parameters. An in-line flow through cell to continuously measure the above parameters may be used. The in-line device should be disconnected or bypassed during sample collection.

13. Purging will continue until parameters of water quality have stabilized. Record measurements for field indicator parameters (including water levels) at regular intervals during purging. The stability of these parameters with time can be used to guide the decision to discontinue purging. Proper adjustments must be made to stabilize the flow rate as soon as possible.

14. Record well purging and sampling data in the Project Field Book or on the attached Groundwater Well Purge & Sample Collection Log (sample attached). Measurements should be taken approximately every three to five minutes, or as merited given the rapidity of change.

15. Purging is complete when field indicator parameters stabilize. Stabilization is achieved after all field parameters have stabilized for three successive readings. Three successive readings should be within ± 0.1 units for pH, ± 3% for specific conductance, ± 10 mV for Eh, and ± 10% for turbidity and dissolved oxygen. These stabilization guidelines are provided for rough estimates only, actual site-specific knowledge may be used to adjust these requirements higher or lower.

    An in-line water quality measurement device (e.g., flow-through cell) should be used to establish the stabilization time for several field parameters on a well-specific basis. Data on pumping rate, drawdown and volume required for parameter stabilization can be used as a guide for conducting subsequent sampling activities.

16. Collect all project-required samples from the discharge tubing at the flow rate established during purging in accordance with Benchmark's Groundwater Sample Collection Procedures FOP. **If a peristaltic pump and dedicated tubing is used, collect all project-required samples from the discharge tubing as stated before, however volatile organic compounds should be collected in accordance with the procedure presented in the next**

**section.** Continue to maintain a constant flow rate such that the water level is not drawn down as described above. Fill sample containers with minimal turbulence by allowing the ground water to flow from the tubing along the inside walls of the container.

17. If field filtration is recommended as a result of increased turbidity, an in-line filter equipped with a 0.45-micron filter should be utilized.

18. Replace the dedicated tubing down the well taking care to avoid contact with the ground surface.

19. Restore the well to its capped/covered and locked condition.

20. Upon purge and sample collection completion, slowly lower the e-line to the bottom of the well/piezometer. Record the total depth to the nearest 0.01-foot and compare to the previous total depth measurement. If a significant discrepancy exists, re-measure the total depth. Record observations of purge water to determine whether the well/piezometer had become silted due to inactivity or damaged (i.e., well sand within purge water). Upon confirmation of the new total depth and determination of the cause (i.e., siltation or damage), notify the Project Manager following project field activities.

## Peristaltic Pump VOC Sample Collection Procedure

The collection of VOCs from a peristaltic pump and dedicated tubing assembly shall be collected using the following procedure.

1. Once all other required sample containers have been filled, turn off the peristaltic pump. The negative pressure effects of the pump head have not altered groundwater remaining within the dedicated tubing assembly and as such, this groundwater can be collected for VOC analysis.

2. While maintaining the pressure on the flexible tubing within the pump head assembly, carefully remove and coil the polyethylene tubing from the well; taking care to prevent the tubing from coming in contact with the ground

surface and without allowing groundwater to escape or drain from the tubing intake.

3. Once the polyethylene tubing is removed, turn the variable speed control to zero and reverse the pump direction.

4. Slowly increase the pump rate allowing the groundwater within the polyethylene tubing to be "pushed" out of the intake end (i.e., positive displacement) making sure the groundwater within the tubing is not "pulled" through the original discharge end (i.e., negative displacement). Groundwater pulled through the pump head assembly CANNOT be collected for VOC analysis.

5. Slowly fill each VOC vial by holding the vial at a 45-degree angle and allowing the flowing groundwater to cascade down the side until the vial is filled with as minimal disturbance as possible. As the vial fills, slowly rotate the vial to vertical. **DO NOT OVERFILL THE VIAL, AS THE PRESERVATIVE WILL BE LOST.** The vial should be filled only enough so that the water creates a slight meniscus at the vial mouth.

6. Cap the VOC vials leaving no visible headspace (i.e., air-bubbles). Gently tap each vial against your hand checking for air bubbles.

7. If an air bubble is observed, slowly remove the cap and repeat Steps 5 and 6.

## ATTACHMENTS

Groundwater Field Form (sample)

## REFERENCES

United States Environmental Protection Agency, 540/S-95/504, 1995. *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures.*

Benchmark FOPs:

*007 Calibration and Maintenance of Portable Dissolved Oxygen Meter*
*008 Calibration and Maintenance of Portable Field pH/Eh Meter*
*009 Calibration and Maintenance of Portable Field Turbidity Meter*
*011 Calibration and Maintenance of Portable Photoionization Detector*
*012 Calibration and Maintenance of Portable Specific Conductance Meter*
*022 Groundwater Level Measurement*
*024 Groundwater Sample Collection Procedures*
*040 Non-Disposable and Non-Dedicated Sampling Equipment Decontamination*
*046 Sample Labeling, Storage and Shipment Procedures*

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

## GROUNDWATER FIELD FORM

Project Name: Date:

Location: Project No.: Field Team:

| **Well No.** | | | Diameter (inches): | | | Sample Time: | | | |
|---|---|---|---|---|---|---|---|---|---|
| Product Depth (fbTOR): | | | Water Column (ft): | | | DTW when sampled: | | | |
| DTW (static) (fbTOR): | | | Casing Volume: | | | Purpose: ☐ Development ☐ Sample | | | |
| Total Depth (fbTOR): | | | Purge Volume (gal): | | | Purge Method: | | | |
| Time | Water Level (fbTOR) | Acc. Volume (gallons) | pH (units) | Temp. (deg. C) | SC (uS) | Turbidity (NTU) | DO (mg/L) | ORP (mV) | Appearance & Odor |
| | 0 Initial | | | | | | | | |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
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| | 6 | | | | | | | | |
| | 7 | | | | | | | | |
| | 8 | | | | | | | | |
| | 9 | | | | | | | | |
| | 10 | | | | | | | | |
| **Sample Information:** | | | Date: (if different from above) | | | | | | |
| | S1 | | | | | | | | |
| | S2 | | | | | | | | |

| **Well No.** | | | Diameter (inches): | | | Sample Time: | | | |
|---|---|---|---|---|---|---|---|---|---|
| Product Depth (fbTOR): | | | Water Column (ft): | | | DTW when sampled: | | | |
| DTW (static) (fbTOR): | | | Casing Volume: | | | Purpose: ☐ Development ☐ Sample | | | |
| Total Depth (fbTOR): | | | Purge Volume (gal): | | | Purge Method: | | | |
| Time | Water Level (fbTOR) | Acc. Volume (gallons) | pH (units) | Temp. (deg. C) | SC (uS) | Turbidity (NTU) | DO (mg/L) | ORP (mV) | Appearance & Odor |
| | 0 Initial | | | | | | | | |
| | 1 | | | | | | | | |
| | 2 | | | | | | | | |
| | 3 | | | | | | | | |
| | 4 | | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | | | | | | | |
| | 8 | | | | | | | | |
| | 9 | | | | | | | | |
| | 10 | | | | | | | | |
| **Sample Information:** | | | Date: (if different from above) | | | | | | |
| | S1 | | | | | | | | |
| | S2 | | | | | | | | |

**REMARKS:**

*Note: All water level measurements are in feet, distance from top of riser.*

Volume Calculation

| Diam. | Vol. (g/ft) |
|---|---|
| 1" | 0.041 |
| 2" | 0.163 |
| 4" | 0.653 |
| 6" | 1.469 |

Stabilization Criteria

| Parameter | Criteria |
|---|---|
| pH | ± 0.1 unit |
| SC | ± 3% |
| Turbidity | ± 10% |
| DO | ± 0.3 mg/L |
| ORP | ± 10 mV |

**PREPARED BY:**

# ATTACHMENT A3

## ENVIRONMENTAL INSPECTION FORM

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

# Environmental Inspection Form

Property Name: Project No.:

Client:

Property Address: City, State: Zip Code:

Property ID: (Tax Assessment Map) Section: Block: Lot(s):

Preparer's Name: Date/Time:

## CERTIFICATION

The results of this inspection were discussed with the owner and/or owner's representative. Any corrective actions required have been identified and noted in this report, and a supplemental Corrective Action Form has been completed. Proper implementation of these corrective actions have been discussed with the owner, agreed upon, and scheduled.

**Preparer / Inspector:** **Date:**

**Signature:**

Next Scheduled Inspection Date:

## Final Surface Cover / Vegetation

In accordance with the Soil/Fill Management Plan, the integrity of the vegetative soil cover or other surface coverage (e.g., asphalt, concrete) over the entire Site must be maintained. The following documents the condition of the above.

1. Final Cover is in Place and in good condition? ☐ YES ☐ NO ☐ N/A

   Cover consists of (mainly):

2. Evidence of erosion? ☐ YES ☐ NO ☐ N/A
3. Cracks visible in pavement? ☐ YES ☐ NO ☐ N/A
4. Evidence of distressed vegetation/turf? ☐ YES ☐ NO ☐ N/A
5. Evidence of unintended traffic and/or rutting? ☐ YES ☐ NO ☐ N/A
6. Evidence of uneven settlement and/or ponding? ☐ YES ☐ NO ☐ N/A
7. Damage to any surface coverage? ☐ YES ☐ NO ☐ N/A
8. Intrusive work completed since last inspection? ☐ YES ☐ NO ☐ N/A
9. If yes, was the surface cover replaced with appropriate material? ☐ YES ☐ NO ☐ N/A

If yes to any question above, please provide more information below.

# Environmental Inspection Form

## Property Use Changes / Site Development

Has the property usage changed, or site been redeveloped since the last inspection?

☐ YES ☐ NO ☐ N/A

If so, please list with date:

## Active Sub-Slab Depressurization (ASD) System

Is there an ASD present on-site? ☐ YES ☐ NO ☐ N/A

If yes, is it currently operating? ☐ YES ☐ NO ☐ N/A

Is the ASD annual inspection checklist completed and enclosed? ☐ YES ☐ NO ☐ N/A

## Long-Term Ground Water Monitoring

Is there a plan in place and currently being followed? ☐ YES ☐ NO ☐ N/A

Are the wells currently intact and operational? ☐ YES ☐ NO ☐ N/A

When was the most recent sampling event report and submittal? Date:

When is the next projected sampling event? Date:

## New Information

Has any new information been brought to the owner/engineer's attention regarding any and/or all engineering and institutional controls and their operation and effectiveness?

☐ YES ☐ NO ☐ N/A

Comments:

## This space for Notes and Comments

## Please include the following Attachments:

1. Site Sketch
2. Photographs

# ATTACHMENT A4

## CORRECTIVE ACTION CERTIFICATION

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

# Corrective Action Certification

Property Name: Project No.:

Client:

Property Address: City, State: Zip Code:

Property ID: (Tax Assessment Map) Section: Block: Lot(s):

Preparer's Name: Date/Time:

## Issue Addressed

The Environmental Inspection of the above property determined the need for corrective action. This form has been completed to document the required corrective action and it's implementation. Description of Site Issue identified during Environmental Inspection (include sketch & photographs as attachments):

## Corrective Action Taken

Date Completed:

Describe Action Taken (include sketch & photographs as attachments):

## Certification of Implementation

The signatory hereby certifies that the corrective action as described in this form has been completed in accordance with all relevant requirements of the Soil/Fill Management Plan and other applicable documents.

**Preparer / Inspector:** **Date:**

**Signature:**

**Please verify inclusion of the following Attachments:**

1. Site Sketch
2. Photographs

# ATTACHMENT A5

## NYSDEC INSTITUTIONAL AND ENGINEERING CONTROLS CERTIFICATION FORM

**Enclosure 1**
**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**
**Site Management Periodic Review Report Notice**
**Institutional and Engineering Controls Certification Form**

**Site Details** **Box 1**

**Site No. C849004**

**Site Name Seneca Market I, LLC Site**

Site Address: 16 North Franklin Street Zip Code: 14891

City/Town: Watkins Glen

County: Schuyler

Current Use: Commercial – hotel complex with parking

Intended Use: Commercial – hotel complex with parking

**Box 2**

**Verification of Site Details**

| | | YES | NO |
|---|---|---|---|
| 1. | Are the Site Details above, correct? | ☐ | ☐ |
| | If NO, are changes handwritten above or included on a separate sheet? | ☐ | ☐ |
| 2. | Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment since the initial/last certification? | ☐ | ☐ |
| | If YES, is documentation or evidence that documentation has been previously submitted included with this certification? | ☐ | ☐ |
| 3. | Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property since the initial/last certification? | ☐ | ☐ |
| | If YES, is documentation or evidence that documentation has been previously submitted included with this certification? | ☐ | ☐ |
| 4. | Has a change-of-use occurred since the initial/last certification? | ☐ | ☐ |
| | If YES, is documentation or evidence that documentation has been previously submitted included with this certification? | ☐ | ☐ |
| 5. | For non-significant-threat Brownfield Cleanup Program Sites subject to ECL 27-1415.7(c), has any new information revealed that assumptions made in the Qualitative Exposure Assessment for offsite contamination are no longer valid? | ☐ | ☐ |
| | If YES, is the new information or evidence that new information has been previously submitted included with this Certification? | ☐ | ☐ |
| 6. | For non-significant-threat Brownfield Cleanup Program Sites subject to ECL 27-1415.7(c), are the assumptions in the Qualitative Exposure Assessment still valid (must be certified every five years) ? | ☐ | ☐ |

**SITE NO. C849004** **Box 3**

**Description of Institutional Control Certification**

| | YES | NO |
|---|---|---|
| 1. Compliance with the Site Management Plan (SMP) for the implemented remedy: | ☐ | ☐ |
| 2. The groundwater beneath the Site is not used as a potable water source or for any other use without prior written permission of the Department: | ☐ | ☐ |
| 3. Groundwater monitoring as specified in the SMP: | ☐ | ☐ |
| 4. Operation and maintenance of the ASD system as specified in the SMP: | ☐ | ☐ |

**Description of Engineering Control Certification** **Box 4**

| | YES | NO |
|---|---|---|
| 1. Maintenance of the cover systems over the Site: | ☐ | ☐ |

**Control Certification Statement**

For each Institutional or Engineering control listed above, I certify by checking "Yes" that all of the following statements are true:

(a) the Institutional Control and/or Engineering Control employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

(c) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

(d) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control.

(e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

**IC/EC CERTIFICATIONS**
**SITE NO. C849004**

**Box 5**

**SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE**

I certify that all information and statements in Boxes 2 & 3 are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law.

I ________________________________ at ______________________________________________,
print name print business address

am certifying as __________________________________________________(Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

________________________________________________________ __________________
Signature of Owner or Remedial Party Rendering Certification Date

**Box 6**

**QUALIFIED ENVIRONMENTAL PROFESSIONAL (QEP) SIGNATURE**

I certify that all information and statements in Box 4 are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law.

I ________________________________ at ______________________________________________,
print name print business address

am certifying as a Qualified Environmental Professional for the ________________________________

(Owner or Remedial Party) for the Site named in the Site Details Section of this form.

______________________________________________ ________________ __________
Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification Stamp (if Required) Date

**Enclosure 2**

**Certification of Institutional Controls/ Engineering Controls** (ICs/ECs)
**Step-by-Step Instructions, Certification Requirements and Definitions**

The Owner, or Remedial Party, and when necessary, a Professional Engineer (P.E.), or the Qualified Environmental Professional (QEP), must review and complete the IC/EC Certification Form, sign the IC/EC Certifications Signature Page, and return it, along with the Periodic Review Report (PRR), within 45 days of the date of this notice.

Please use the following instructions to complete the IC/EC Certification.

**I. Verification of Site Details** (Box 1 and Box 2):

Answer the six questions in the Verification of Site Details Section. Questions 5 and 6 refer to only sites in the Brownfield Cleanup Program. ECL Section 27-1415-7(c) is included in
**IV. IC/EC Certification Requirements**. The Owner and/or your P.E. or QEP may include handwritten changes and/or other supporting documentation, as necessary.

**II. Verification of Institutional / Engineering Controls** (Box 3 and Box 4)

Review the listed Institutional / Engineering Controls, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Owner / Remedial Party is to petition the Department requesting approval to remove the control.

2. Select "YES" or "NO" for **Control Certification** for each IC/EC, based on Sections (a)-(e) of the **Control Certification Statement**.

   If the Department concurs with the explanation, the corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Project Manager. If the Department has any questions or concerns regarding the completion of the certification, the Project Manager will contact you.

3. If you cannot certify "Yes" for each Control, please continue to complete the remainder of this **Control Certification** form. Attach supporting documentation that explains why the **Control Certification** cannot be rendered, as well as a statement of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Control Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is conducted.

   If the Department concurs with the explanation, the corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Project Manager. Once the corrective measures are complete a new Periodic Review Report (with IC/EC Certification) is to be submitted within 45 days to the Department. If the Department has any questions or concerns regarding the PRR and/or completion of the IC/EC Certification, the Project Manager will contact you.

## III. IC/EC Certification by Signature (Box 5 and Box 6):

1. If you certified "Yes" for each Control, please complete and sign the IC/EC Certifications page. To determine WHO signs the **IC/EC Certification,** please use Table 1. Signature Requirements for the IC/EC Certification, which follows.

**Table 1. Signature Requirements for Control Certification Page**

| Type of Control | Example of IC/EC | Required Signatures |
|---|---|---|
| IC only | Environmental Easement Deed Restriction. | A site or property owner or remedial party. |
| IC with an EC which does not include a treatment system or engineered caps. | Fence, Clean Soil Cover, Individual House Water Treatment System, Vapor Mitigation System | A site or property owner or remedial party, and a QEP. (P.E. license not required) |
| IC with an EC that includes treatment system or an engineered cap. | Pump & Treat System providing hydraulic control of a plume, Part 360 Cap. | A site or property owner or remedial party, and a QEP with a P.E. license. |

## IV. IC/EC Certification Requirements:

Division of Environmental Remediation Program Policy requires periodic certification of IC(s) and EC(s) as follows:

<u>For Environmental Restoration Projects</u>: N.Y. Envtl Conserv.Law Section 56-0503 (Environmental restoration projects; state assistance)

<u>For State Superfund Projects</u>: Envtl Conserv.Law Section 27-1318. (Institutional and engineering controls)

<u>For Brownfields Cleanup Program Projects</u>: Envtl Conserv.Law Section 27-1415. (Remedial program requirements)

Envtl Conserv.Law Section 27-1415-7(c) states:

(c) At non-significant threat sites where contaminants in groundwater at the site boundary contravene drinking water standards, such certification shall also certify that no new information has come to the owner’s attention, including groundwater monitoring data from wells located at the site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of offsite contamination are no longer valid. Every five years the owner at such sites shall certify that the assumptions made in the qualitative exposure assessment remain valid. The requirement to provide such certifications may be terminated by a written determination by the Commissioner in consultation with the Commissioner of Health, after notice to the parties on the brownfield site contact list and a public comment period of thirty days.

<u>Voluntary Cleanup Program</u>: Applicable program guidance.

<u>Petroleum Remediation Program</u>: Applicable program guidance.

<u>Federal Brownfields</u>: Applicable program guidance.

Manufactured Gas Plant Projects: Applicable program guidance (including non-registry listed MGPs).

WHERE to mail the signed Certification Form by March 1st of each year (or within 45 days of the date of the Department notice letter):

Ms. Charlotte Theobald
New York State Department of Environmental Conservation
Division of Environmental Remediation
6274 East Avon-Lima Road
Avon, New York 14414

**Please note that extra postage may be required**.

## V. Definitions

**“Engineering Control”** (EC), means any physical barrier or method employed to actively or passively contain, stabilize, or monitor contamination, restrict the movement of contamination to ensure the long-term effectiveness of a remedial program, or eliminate potential exposure pathways to contamination. Engineering controls include, but are not limited to, pavement, caps, covers, subsurface barriers, vapor barriers, slurry walls, building ventilation systems, fences, access controls, provision of alternative water supplies via connection to an existing public water supply, adding treatment technologies to such water supplies, and installing filtration devices on private water supplies.

**“Institutional Control”** (IC), means any non-physical means of enforcing a restriction on the use of real property that limits human and environmental exposure, restricts the use of groundwater, provides notice to potential owners, operators, or members of the public, or prevents actions that would interfere with the effectiveness of a remedial program or with the effectiveness and/or integrity of operation, maintenance, or monitoring activities at or pertaining to a remedial site.

**“Professional Engineer”** (P.E.) means an individual or firm licensed or otherwise authorized under article 145 of the Education Law of the State of New York to practice engineering.

**“Property Owner”** means, for purposes of an IC/EC certification, the actual owner of a property. If the site has multiple properties with different owners, the Department requires that the owners be represented by a single representative to sign the certification.

**“Oversight Document”** means any document the Department issues pursuant to each Remedial Program (see below) to define the role of a person participating in the investigation and/or remediation of a site or area(s) of concern. Examples for the various programs are as follows:

> **BCP** (after approval of the BCP application by DEC) - Brownfield Site Cleanup Agreement.
> **ERP** (after approval of the ERP application by DEC) - State Assistance Contract.
> **Federal Superfund Sites** - Federal Consent Decrees, Administrative Orders on Consent or Unilateral Orders issued pursuant to CERCLA.
> **Oil Spill Program** - Order on Consent, or Stipulation pursuant to Article 12 of the Navigation Law (and the New York Environmental Conservation Law).
> **State Superfund Program** - Administrative Consent Order, Record of Decision.
> **VCP** (after approval of the VCP application by DEC) - Voluntary Cleanup Agreement.
> **RCRA Corrective Action Sites**- Federal Consent Decrees, Administrative Orders on Consent or permit conditions issued pursuant to RCRA.

**“Qualified Environmental Professional”** (QEP), means a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding the presence of releases or threatened releases to the surface or subsurface of a property or off-site areas, sufficient to meet the objectives and performance factors for the areas of practice identified by this Part. Such a person must:

(1) hold a current professional engineer’s or a professional geologist’s license or registration issued by the State or another state, and have the equivalent of three years of full-time relevant experience in site investigation and remediation of the type detailed in this Part; or

(2) be a site remediation professional licensed or certified by the federal government, a state or a recognized accrediting agency, to perform investigation or remediation tasks consistent with Department guidance, and have the equivalent of three years of full-time relevant experience.

**“Qualitative Exposure Assessment”** means a qualitative assessment to determine the route, intensity, frequency, and duration of actual or potential exposures of humans and/or fish and wildlife to contaminants.

**“Remedial Party”** means a person implementing a remedial program at a remedial site pursuant to an order, agreement or State assistance contract with the Department.

**“Site Management”** (SM) means the activities undertaken as the last phase of the remedial program at a site, which continue after a Certificate of Completion is issued. Site management is conducted in accordance with a site management plan, which identifies and implements the institutional and engineering controls required for a site, as well as any necessary monitoring and/or operation and maintenance of the remedy.

**“Site Management Plan”** (SMP) means a document which details the steps necessary to assure that the institutional and engineering controls required for a site are in-place, and any physical components of the remedy are operated, maintained and monitored to assure their continued effectiveness, developed pursuant to Section 6 (DER10 Technical Guide).

**“Site Owner”** means the actual owner of a site. If the site has multiple owners of multiple properties with ICs and/or ECs, the Department requires that the owners designate a single representative for IC/EC Certification activities.

# ATTACHMENT A6

## QUALITATIVE EXPOSURE ASSESSMENT

## 1.7 Summary of Baseline Risk Assessment

### 1.7.1 Chemicals of Potential Concern

A baseline Health Risk Assessment (HRA) was performed to evaluate potentially adverse health effects caused by the release of contaminants from the North Franklin Street site. Based on the analytical data from the Remedial Investigation, chemicals of potential concern (CPCs) were selected using the following criteria:

- All TCL organics detected in all matrices were selected as CPCs.
- All TAL metals which exceeded background concentrations by an order of magnitude in groundwater and/or subsurface soils.
- All TAL metals detected in surface soil samples.

### 1.7.2 Exposure Scenarios

For the current land use scenario, intake or exposure doses were calculated for four basic exposure pathways. These four pathways included: inhalation of air from soil-gas; dermal contact with surface soils; ingestion of surface soil; and inhalation of fugitive dust from surface soil. Two potential receptors were identified, namely an adult employee and child (from nearby residences).

For the future land use scenario, three potential receptors were identified, construction worker, and residents (an adult and a child.) The following six basic exposure pathways were evaluated for each receptor: inhalation of groundwater/soil-gas; inhalation of groundwater vapors; dermal contact with groundwater; ingestion of surface/subsurface soil; dermal contact with surface/subsurface soil; and inhalation of fugitive dust.

### 1.7.3 Risk Characterization

Risks were determined by integrating reported toxicity data with estimates of exposure intake or dose. Results of the risk characterization are summarized below:

Cancer Risk

- Current Land Use: The total calculated cancer risks for an employee (total Cancer Risks = $2\times10^{-6}$) and child ($2\times10^{-6}$) were within the lower end of the acceptable risk range of $10^{-6}$ to $10^{-4}$ established by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Two pathways (dermal contact and ingestion of surface soils) were primarily responsible for the cancer risk. Most of the risk associated with dermal contact with soil was due to the presence of Aroclor 1260. Beryllium and Aroclor 1260 are the major contributors to the cancer risk resulting from ingestion of surface soil.

- Future Land Use - The cancer risks for a construction worker ($3\times10^{-6}$ in the DC area and $2\times10^{-6}$ at the SCIDA property) were also on the lower end of the acceptable risk range of $10^{-6}$ to $10^{-4}$ established by NCP. The cancer risks for an adult and child were calculated to be $2\times10^{-7}$ each under a future use residential basement scenario. The pathways primarily responsible for the cancer risk are inhalation of vapors from groundwater by construction workers, and inhalation of chemicals volatilized from groundwater or soil-gas for an adult/child in the residential basement scenario. Vinyl chloride contributed to most of the risk for each of these pathways.

Chronic Health Effects

- Current Land Use - For an employee, the Hazard Index was estimated to be 1 which is the acceptable value established by the USEPA. The major contributing pathway is the inhalation of airborne chemicals from soil-gas with toluene and carbon disulfide as the primary contributors to the Hazard Index.

- Future Land Use - The Hazard Indices for an adult and child were calculated to be 6 and 1, respectively, from the inhalation of groundwater/soil-gas vapors from a residential basement under very conservative assumptions. Toluene and ethylbenzene are the primary chemicals contributing to the risk.

Subchronic Health Effects

- Current Land Use - The subchronic Hazard Index of 0.8 calculated for a child was within the USEPA acceptable limit of 1.0. The major contributing pathway for this Hazard Index was inhalation of chemicals from soil-gas. Carbon disulfide was the primary chemical contributing to this Hazard Index.

- Future Land Use - The Hazard Indices for two subchronic receptors, a construction worker and a child, were calculated to be 0.5 and 1, respectively. For the construction worker, the inhalation of fugitive dust from surface/subsurface soil is primarily responsible for the Hazard Index. The only pathway considered for a child under the future land use scenario is the inhalation of chemicals from groundwater/soil-gas under the residential basement scenario using conservative assumptions.

In summary, calculated health risks for several exposure pathways under current use scenarios are below or within the acceptable range established by the USEPA under NCP. However, calculated health risks for future use scenarios are not within the acceptable range established by USEPA.

# PART II

## SOIL / FILL MANAGEMENT PLAN

# SITE MANAGEMENT PLAN
# PART II

# SOIL/FILL MANAGEMENT PLAN

**SENECA MARKET I, LLC SITE**
**SITE NO. C849004**
**WATKINS GLEN, NEW YORK**

September 2008 0092-002-200
Revised December 2008

Prepared for:

**Seneca Market I, LLC**
**Watkins Glen, New York**

Prepared by:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

# SOIL/FILL MANAGEMENT PLAN

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# SOIL/FILL MANAGEMENT PLAN

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## APPENDICES

# 1.0 INTRODUCTION

## 1.1 Purpose and Scope

This Soil/Fill Management Plan (SFMP or Plan) has been prepared for inclusion in the Site Management Plan (SMP) for the Seneca Market I, LLC site (Site) (refer to Figures 1 and 2). The purpose of this SFMP is to protect both the environment and human health following completion of Brownfield Cleanup activities and development of the Site to address residual chlorinated organic and petroleum-impacted soil/fill, if encountered.

While remediation of surface and subsurface soil/fill and groundwater at the Site has already been performed, subsurface information is never 100 percent complete or accurate, especially on a site with a long and diverse history. As such, it is not unreasonable to anticipate the possibility that some quantity of impacted subsurface soil/fill may be encountered after Site development. In particular, soil/fill impacts may be encountered during post-development activities such as: infrastructure construction, improvements, repairs and replacement (i.e., roads, parking lots, waterline, sewers, electric cable, etc.); foundation excavation; Site re-grading; and, landscaping.

Compliance with this SFMP is required to properly manage any impacted subsurface soil/fill encountered during any intrusive activities at the Site. This SFMP was developed with the express purpose of addressing unknown subsurface impacts if and when encountered. The SFMP also facilitates the transfer of responsibilities with property ownership.

This SFMP provides protocols for the proper handling of Site soil/fill during post-development activities, including:

- Excavation, grading, sampling, and handling of Site soil/fill.
- Acceptability of soil/fill from off-site sources for backfill or subgrade fill.
- Erosion and dust control measures for subsurface construction work.
- Health and safety procedures for subsurface construction work.
- Maintenance of final cover.
- Environmental easements.
- Notification and reporting requirements.

## 1.2 Soil/Fill Management Program Responsibility

The developer and property owner, Seneca Market I, will be responsible for all monitoring, implementation, and reporting requirements of this Plan. The developer and owner will not perform, nor contract, nor permit their employees, agents, or assigns to perform any excavations or disturbance of Site soil/fill, except as delineated in this Plan. The property owner(s) or their agents will be responsible for proper notification and reporting to state regulatory agencies (i.e., NYSDEC Region 8, Division of Environmental Remediation and NYS Department of Health) following Site development as described in Section 2.10 of this Plan.

# 2.0 SOIL/FILL MANAGEMENT

## 2.1 Excavation and Handling of On-Site Soil/Fill

During post-development intrusive activities on the Site (excluding minor landscaping and maintenance), Benchmark Environmental Engineering & Science, PLLC (Benchmark) or a Professional Engineer with experience in environmental site investigations and the New York State BCP will inspect soil/fill excavations or disturbances on behalf of the property owner. The soil/fill excavated, as well as the excavation sidewalls and floor, will be inspected for staining or discoloration, and will be field screened for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID). A MiniRae 2000 PID equipped with a 10.6 eV lamp, or other appropriate instrument(s), will be calibrated as per the manufacturer's requirements. Benchmark's field operating procedure (FOP) for PID screening is included in Appendix A of this Plan. The Community Air Monitoring Plan presented in Appendix C will be implemented at the Site during intrusive activities that are anticipated to encounter impacted soil/fill. The field PID will be calibrated and maintained in accordance with Benchmark's FOP presented in Appendix A. The particulate meter only requires a fresh-air zero calibration in the field and an annual factory calibration in accordance with the manufacturers' specifications.

Generally, impacted soil/fill at the Site was characterized as either impacted with chlorinated volatile organic compounds (cVOCs), petroleum VOCs or petroleum semi-volatile organic compounds (SVOCs). The known cVOC-, petroleum VOC- and SVOC-impacted hotspot areas were excavated and transported off-site to a permitted disposal facility in accordance with the Remedial Design (RD) Work Plan (Ref. 1). If, during post-development activities, potentially impacted soil/fill is encountered that is visibly stained, discolored, exhibits olfactory evidence of petroleum contamination or produces elevated PID readings (i.e., sustained readings of 5 ppm above background or greater), NYSDEC and Benchmark or a Professional Engineer with experience in the New York BCP will be contacted.

Potentially impacted material, if encountered, will be placed on plastic sheeting in an area away from the primary work activities, and covered to prevent the infiltration of precipitation and wind erosion. The potentially impacted material will either be sampled to determine whether it is subject to special disposal/reuse requirements[1] or disposed off-site at a permitted solid waste management facility. The on-site storage of stockpiled material will be limited to 90 days from the date of excavation due to potential hazardous waste storage requirement concerns. Sampling and analyses for disposal or re-use purposes will be in accordance with the protocols delineated in Section 2.3 of this Plan.

Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the Certificate of Completion.

Soils will be segregated based on previous environmental data and screening results into material that: requires off-site disposal, requires testing, can be returned to the subsurface, and can be used as cover soil.

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated off-site disposal (i.e., clean soil removed for development purposes), a formal written request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this Site will not occur without formal written approval from NYSDEC.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown, if appropriate, by class of disposal facility (e.g., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, and C&D recycling facility). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Annual Certification Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading, and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at a minimum, as a Municipal Solid Waste pursuant to 6NYCRR Part 360-1.2. Material that does not meet the lower of the site cleanup objectives (SCOs) for residential use or groundwater

[1] The presence of subsurface construction and demolition debris (e.g., brick, concrete, wood, miscellaneous metal products, etc.) that does not exhibit any staining or contamination does not necessitate stockpiling in accordance with this SFMP.

protection will not be taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility) without a beneficial use determination issued by NYSDEC.

## 2.2 Transportation of Excavated Soil/Fill

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used. All trucks will be brushed down of excess soil material prior to leaving the Site. Truck brush down material will be collected and disposed of off-site in an appropriate manner.

Truck transport routes will be identified that will: (a) limit transport through residential areas and past sensitive sites; (b) use city mapped truck routes; (c) minimize off-site queuing of trucks entering the facility; (d) limit total distance to major highways; and (e) promote safety in access to highways.

Trucks will be prohibited from stopping and idling in the neighborhood outside the Site. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during site redevelopment. Due to limited available space at the Site, some off-site queuing of trucks may be necessary. The number and duration of trucks lined up outside the Site entrance will be minimized through efficient scheduling and staging at a remote location.

## 2.3 On-Site Soil/Fill Material

### *2.3.1 On-Site Use Criteria*

Subgrade material used to backfill excavations or to increase Site grades or elevations may be comprised of excavated non-impacted on-site soil/fill or off-site borrow soil/fill meeting the use criteria described herein. The criteria under which these materials may be used as on-site subgrade backfill are presented below.

- **Excavated, Non-Impacted On-Site Soil/Fill:** Non-impacted soil/fill that is excavated from the Site may be used on-site as backfill without special handling. The non-impacted soil/fill must be placed back into the excavation from which it came and covered with either a minimum of one foot of soil cover with a demarcation layer or an impervious cover such as asphalt or concrete. Chemical criteria for on-site reuse of material have been approved by the Department and are listed in Table 2. The qualified environmental professional (as defined in 6 NYCRR Part 375-1.2(ak)) will ensure that procedures defined for materials reuse in this SFMP are followed and that unacceptable material does not remain on-site.
- **Excavated, Impacted On-Site Soil/Fill:** Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for re-use on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Potentially impacted soils (i.e., soils that exhibit visible or olfactory evidence of contamination or with elevated PID readings) may not be used on-site unless tested and determined to meet the Site-Specific Action Levels (SSALs).
- **On-Site Demolition Material:** Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (e.g., wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-site.
- **Off-Site Borrow Soil/Fill:** Off-site soil/fill material must be documented as having originated from locations having no evidence of disposal or releases of hazardous, toxic, or radioactive substances, or petroleum products. The soil/fill material must be tested and meet the acceptance criteria identified on Table 1. In addition, no off-site materials meeting the definition of a solid waste as defined in 6 NYCRR, Part 360-1.2 (a) shall be used as backfill.

### *2.3.2 Borrow Source Sampling Requirements*

All materials proposed for import onto the Site will be approved by the Qualified Environmental Professional (as defined in 6 NYCRR Part 375-1.2(ak)) and will be in compliance with provisions in this SFMP, applicable regulations (6NYCRR 375-6.7(d)) and guidance (DER-10) prior to receipt at the Site. Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.



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All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards for imported backfill are listed in Table 1. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent wind and precipitation erosion.

If an off-site soil/fill borrow source is of unknown origin or originates from a commercial, industrial or urban site, then it must be tested to meet the criteria identified on Table 1. A minimum of one composite sample will be collected for each 500 cubic yards (CY) of backfill material from each source area. If more than 1,000 CY of backfill are needed from the same off-site backfill source and both samples of the first five 1,000 CY meet the criteria listed in Table 1, the sample collection frequency may be reduced to one composite sample for each additional 2,500 CY of backfill from the same source up to 5,000 CY.

Grab samples will be collected for VOC and SVOC analyses. For all other analyses, a minimum of four grab samples will be collected per composite sample. Approximately equal aliquots of the grab samples will be composited in the field using a stainless steel trowel and bowl. The trowel and bowl shall be decontaminated with a non-phosphate detergent (i.e., Alconox®) and potable water wash solution followed by a distilled water rinse between sampling locations. The soil/fill samples will be analyzed for TCL VOCs, TCL SVOCs, pesticides, PCBs, RCRA metals, and cyanide in accordance with USEPA SW-846 Methodology by a NYSDOH ELAP-certified laboratory.

## 2.4 Excavation of Off-Site Soil/Fill

If the Volunteer/Certificate of Completion holder is aware of any excavations or any intrusive work that occurs adjacent to the VFW building and/or in the area adjacent to the western side of the Site, which is currently in use as a sidewalk (from the corner of First Street to the Seneca Market Building) on North Franklin Street, the intrusive work must be preceded with a notification to the NYSDEC at least 10 days in advance of the intrusive work.

## 2.5 Soil/Fill Sampling and Analysis Protocol

Excavated soil/fill that is potentially impacted and designated for off-site disposal (i.e., soil/fill that exhibits evidence of staining, discoloration, or elevated PID readings) will be sampled in accordance with the requirements of the permitted off-site disposal facility and the appropriate regulatory authorities.

### *2.5.1 Impacted Soil/Fill Characterization*

The following procedure shall be used to determine if potentially impacted soil/fill excavated from the Site may be used on or off-site as backfill.

Excavated soil/fill should be separately stockpiled in 250 CY or smaller piles. A single grab sample will be collected from each stockpile, with the grab biased toward the zone displaying the most elevated field PID reading. If the stockpiles are from a single source area, sampling may be reduced to one sample per 1,000 CY following receipt of data from four 250 CY stockpiles.

The samples will be analyzed by a NYSDOH ELAP-certified laboratory for TCL plus NYSDEC STARS List VOCs and NYSDEC STARS List SVOCs. If the results are below the SSALs in Table 2, the soil can be re-used on-site beneath the 1-foot soil cover or below the impervious surface (i.e., asphalt or concrete). If the excavated soil is being considered for potential off-site use it must also be fully characterized for RCRA metals, pesticides, herbicides and PCBs as well as VOCs and SVOCs and determined to meet unrestricted use criteria as defined in 6NYCRR Part 375-6. In addition, NYSDEC approval must be obtained prior to the material leaving the Site.

### *2.5.2 Verification Sampling*

Sidewall and bottom samples will be collected from excavations when visual staining or olfactory evidence of contamination is present or PID readings are greater than 5 ppm above background. The samples will be analyzed for TCL VOCs and TCL SVOCs. Verification sampling will be conducted in accordance with NYSDEC DER-10 guidelines.

## 2.6 Final Surface Coverage

A vegetated soil or other (e.g., asphalt, buildings, concrete) surface coverage over the entire redeveloped parcel was required at the Site as part of the RD Work Plan. Any disturbance of this surface coverage must be repaired with 12 inches of vegetated soil cover, concrete or asphalt. A woven geotextile, orange snow fence, or other approved material, will be placed on top of the native subgrade as a demarcation layer. Select gravel fill placed beneath concrete building slabs and asphalt paving will serve as a demarcation layer for those areas. If the cover is breached or found to be compromised (e.g., soil erosion) following redevelopment, it shall be replaced in kind.

After the completion of soil removal and any other invasive remedial activities the cover system will be restored in a manner that complies with the SFMP. The demarcation layer, consisting of snow fence, will be replaced to provide a visual reference to the top of the 'Remaining Contamination Zone,' defined as the zone that requires adherence to special conditions as described in this SFMP. If the type of cover system changes from that which exists prior to the excavation (e.g., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the 'Remaining Contamination Zone.' A figure showing the modified surface will be included in the subsequent Annual Certification Report and in any updates to the Site Management Plan.

Topsoil used for final soil cover shall meet the following general specifications:

- Fertile, friable, natural loam surface soil, capable of sustaining plant growth, free of, clods of hard earth, plants or roots, sticks or other extraneous material harmful to plant growth. Supply a well-graded topsoil with the following approximate analysis:

(a)

| Sieve Size | Percent Passing by Weight |
|---|---|
| 3-inch | 100 |
| No. 4 | >75 |
| No. 200 | >30 |
| 0.002 mm | <20 |

(b) pH 5.5 to pH 7.6.

(c) Minimum organic content of 2.5 percent as determined by ignition loss.

(d) Soluble salt content not greater than 500 ppm.

In addition to the above specifications, all topsoil must originate from a reputable supplier/source having no evidence of disposal or releases of hazardous substances, hazardous, toxic or radioactive wastes, or petroleum. The off-site topsoil will meet the criteria identified on Table 1.

## 2.7 Erosion Controls

An important element of soil/fill management on this Site is the mitigation and control of surface erosion from stormwater runoff. For this reason, a Master Erosion Control Plan to be used by all developers has been developed and incorporated as Appendix B of this Plan.

## 2.8 Dust Controls

Particulate monitoring will be performed continuously at upwind and downwind locations of the Site, in accordance with the Community Air Monitoring Plan (see Appendix C), during subgrade excavating, grading, and handling activities that comprise exposed soils greater than 500 square feet or at locations that are likely to contain remaining impacted material. Dust suppression techniques will be employed as necessary to mitigate fugitive dust from unvegetated or disturbed soil/fill during post-remediation construction and redevelopment. Techniques to be used include one or more of the following:

- Applying water on exposed soil.
- Wetting equipment and excavation faces.
- Spraying water on buckets during excavation and dumping.
- Hauling materials in properly tarped containers or vehicles.
- Restricting vehicle speeds on-site.
- Covering excavated areas and materials after excavation activity ceases.
- Reducing the excavation size and/or number of excavations.

All reasonable attempts will be made to keep visible and/or fugitive dust to a minimum.

## 2.9 Property Use Limitations

Requirements for surface coverage over the Site and limitations placed on the type of buildings to be constructed will be enforced through the issuance of building permits by the Village of Watkins Glen. The Village of Watkins Glen has zoned the North Franklin Street Site for commercial, office, and light industrial use. Commercial use includes retail and wholesale establishments (e.g., shoe stores, gasoline service stations, food stores, etc.) while light industrial use includes manufacturing, warehousing, storing, etc. The zoning specifically prohibits residential use. An environmental easement restricting the use of and contact with Site groundwater and soil was created and has been recorded with the county pursuant to ECL 71-360. The environmental easement will be binding for the current property owner and all subsequent property owners and occupants (see Part III of the SMP).

## 2.10 Notification and Reporting Requirements

The NYSDEC and NYSDOH will be notified that intrusive activities that comprise exposed soils greater than 500 square feet are being initiated a minimum of 5 working days in advance of construction. A Qualified Environmental Professional (as defined in 6NYCRR Part 375-1.2(ak)) will inspect all subsurface excavation work for conformance with this SFMP.

At least 10 days prior to the start of any activity that is reasonably anticipated to encounter remaining contamination, the site owner or their representative will notify the NYSDEC. The designated representative must work under a NYS Professional Engineer's supervision. Currently, this notification will be made to:

Charlotte B. Theobald
NYSDEC
Region 8 – HWR
6274 East Avon-Lima Road
Avon, New York 14414

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, or any work that may impact an engineering control.
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling.
- A schedule for the work, detailing the start and completion of all intrusive work.
- A statement that the work will be performed in compliance with this SFMP and 29 CFR 1910.120.
- A copy of the contractor's Health & Safety Plan, in electronic format.
- Identification of disposal facilities for potential waste streams.
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

## 2.11 Reporting Requirements

The Site owner will complete and submit to the NYSDEC an Annual Report by March 1st of each year. The Annual Report will contain certification that: the institutional and engineering controls put in place are still in place, have not been altered and are still effective; the remedy and protective cover have been maintained; and the conditions at the Site are fully protective of public health and the environment. If the cover system has been breached during the year covered by the Annual Report, the Site owner will include a certification that all work was performed in conformance with the SFMP.

# 3.0 HEALTH AND SAFETY PROCEDURES

During intrusive activities, the contractor will be responsible for implementing suitable procedures to prevent both Site construction workers and the community from adverse exposure to residual parameters of concern and other potential hazards posed by the work. This will be accomplished through adherence to a written site-specific worker Health and Safety Plan (HASP), prepared in accordance with the regulations contained in OSHA 29CFR 1910.120 (see Appendix D), and a Community Air Monitoring Plan (CAMP) prepared in conformance with NYSDOH requirements (see Appendix C).

Although Brownfield Cleanup remedial measures and redevelopment activities have reduced the potential for encountering parameters of concern above SSALs, post-development activities governed by this SFMP are a required element of the BCA for the Site. Thus, 29 CFR 1910.120(a)(1)(iii) indicates that these activities are subject to OSHA's hazardous waste operations and emergency response (Hazwopper) standard. This includes the requirement for preparation and implementation of a site-specific worker HASP addressing the following items:

- A safety and health or hazard analysis for each Site task and operation.
- Employee training requirements.
- Personal protective equipment (PPE) to be used by employees for the Site tasks.
- Medical surveillance requirements.
- Frequency and type of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of equipment.
- Site control measures, including temporary fencing and warning signs to alert the general public and hotel guests of open excavations and construction areas.
- Decontamination procedures.
- An emergency response plan.
- Confined space entry procedures.
- A spill containment program.

As an integral component of the worker HASP, the developer or Site owner will be responsible for implementing a CAMP designed to prevent the surrounding community from adverse exposures due to potential release/migration of airborne particulates or vapors. The community, as referenced herein, includes potential receptors located off-site (e.g., neighboring residents or businesses). The CAMP will be implemented during any intrusive activities at the Site. Intrusive activities include, but are not limited to, soil/waste excavation, and handling, test pitting or trenching (any excavation below the one foot soil cover), and installation of soil borings or monitoring wells. A Qualified Environmental Professional (as defined in 6NYCRR Part 375-1.2(ak)), or a designated representative under the direct supervision of a Qualified Environmental Professional will implement the CAMP.

# 4.0 REFERENCES

1. Benchmark Environmental Engineering and Science, PLLC, *Remedial Design Work Plan for the Seneca Market 1 Site*, Watkins Glenn, New York, June 2005/ Revised February 2006.

# TABLES

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

# TABLE 1

## CRITERIA FOR SOIL/FILL MATERIAL FROM OFF-SITE SOURCES

### Soil/Fill Management Plan
### Seneca Market I, LLC Site
### Watkins Glen, New York

| Parameter | Allowable Concentration for Soil/Fill Material from Off-Site Sources [1] |
|---|---|
| **Volatile Organic Compounds (mg/kg)** | |
| 1,1,1-Trichloroethane | 0.68 |
| 1,1-Dichloroethane | 0.27 |
| 1,1-Dichloroethene | 0.33 |
| 1,2-Dichlorobenzene | 1.1 |
| 1,2-Dichloroethane | 0.02 |
| 1,2-Dichloroethene(cis) | 0.25 |
| 1,2-Dichloroethene(trans) | 0.19 |
| 1,3-Dichlorobenzene | 2.4 |
| 1,4-Dichlorobenzene | 1.8 |
| 1,4-Dioxane | 0.1 |
| Acetone | 0.05 |
| Benzene | 0.06 |
| Butylbenzene | 12 |
| Carbon tetrachloride | 0.76 |
| Chlorobenzene | 1.1 |
| Chloroform | 0.37 |
| Ethylbenzene | 1 |
| Hexachlorobenzene | 3.2 |
| Methyl ethyl ketone | 0.12 |
| Methyl tert-butyl ether | 0.93 |
| Methylene chloride | 0.05 |
| Propylbenzene-n | 3.9 |
| Sec-Butylbenzene | 11 |
| Tert-Butylbenzene | 5.9 |
| Tetrachloroethene | 1.3 |
| Toluene | 0.7 |
| Trichloroethene | 0.47 |
| Trimethylbenzene-1,2,4 | 3.6 |
| Trimethylbenzene-1,3,5 | 8.4 |
| Vinyl chloride | 0.02 |
| Xylene (mixed) | 1.6 |
| **Semi-Volatile Organic Compounds (mg/kg)** | |
| Acenaphthene | 98 |
| Acenaphthylene | 107 |
| Anthracene | 500 |
| Benzo(a)anthracene | 1 |
| Benzo(a)pyrene | 1 |

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

# TABLE 1

## CRITERIA FOR SOIL/FILL MATERIAL FROM OFF-SITE SOURCES

### Soil/Fill Management Plan
### Seneca Market I, LLC Site
### Watkins Glen, New York

| Parameter | Allowable Concentration for Soil/Fill Material from Off-Site Sources [1] |
|---|---|
| **Semi-Volatile Organic Compounds (mg/kg)** | |
| Benzo(b)fluoranthene | 1.7 |
| Benzo(g,h,i)perylene | 500 |
| Benzo(k)fluoranthene | 1.7 |
| Chrysene | 1 |
| Dibenz(a,h)anthracene | 0.56 |
| Fluoranthene | 500 |
| Fluorene | 386 |
| Indeno(1,2,3-cd)pyrene | 5.6 |
| m-Cresol(s) | 0.33 |
| Naphthalene | 12 |
| o-Cresol(s) | 0.33 |
| p-Cresol(s) | 0.33 |
| Pentachlorophenol | 0.8 |
| Phenanthrene | 500 |
| Phenol | 0.33 |
| Pyrene | 500 |
| **Metals (mg/kg)** | |
| Arsenic | 16 |
| Barium | 400 |
| Beryllium | 47 |
| Cadmium | 7.5 |
| Chromium, Hexavalent [2] | 19 |
| Chromium, Trivalent [2] | 1500 |
| Copper | 270 |
| Cyanide | 27 |
| Lead | 450 |
| Manganese | 2000 |
| Mercury (total) | 0.73 |
| Nickel | 130 |
| Selenium | 4 |
| Silver | 8.3 |
| Zinc | 2480 |
| **PCBs/Pesticides (mg/kg)** | |
| 2,4,5-TP Acid (Silvex) | 3.8 |
| 4,4'-DDE | 17 |
| 4,4'-DDT | 47 |
| 4,4'-DDD | 14 |

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

# TABLE 1

## CRITERIA FOR SOIL/FILL MATERIAL FROM OFF-SITE SOURCES

### Soil/Fill Management Plan
### Seneca Market I, LLC Site
### Watkins Glen, New York

| Parameter | Allowable Concentration for Soil/Fill Material from Off-Site Sources [1] |
|---|---|
| **PCBs/Pesticides (mg/kg)** | |
| Aldrin | 0.19 |
| Alpha-BHC | 0.02 |
| Beta-BHC | 0.09 |
| Chlordane (alpha) | 2.9 |
| Delta-BHC | 0.25 |
| Dibenzofuran | 210 |
| Dieldrin | 0.1 |
| Endosulfan I | 102 |
| Endosulfan II | 102 |
| Endosulfan sulfate | 200 |
| Endrin | 0.06 |
| Heptachlor | 0.38 |
| Lindane | 0.1 |
| Polychlorinated biphenyls | 1 |

**Notes:**

1. Based on the lesser of protection of groundwater and restricted-commercial soil clean-up objectives established in 6NYCRR 375-6.

2. The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.

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# TABLE 2

## SITE SPECIFIC ACTION LEVELS (SSALs)

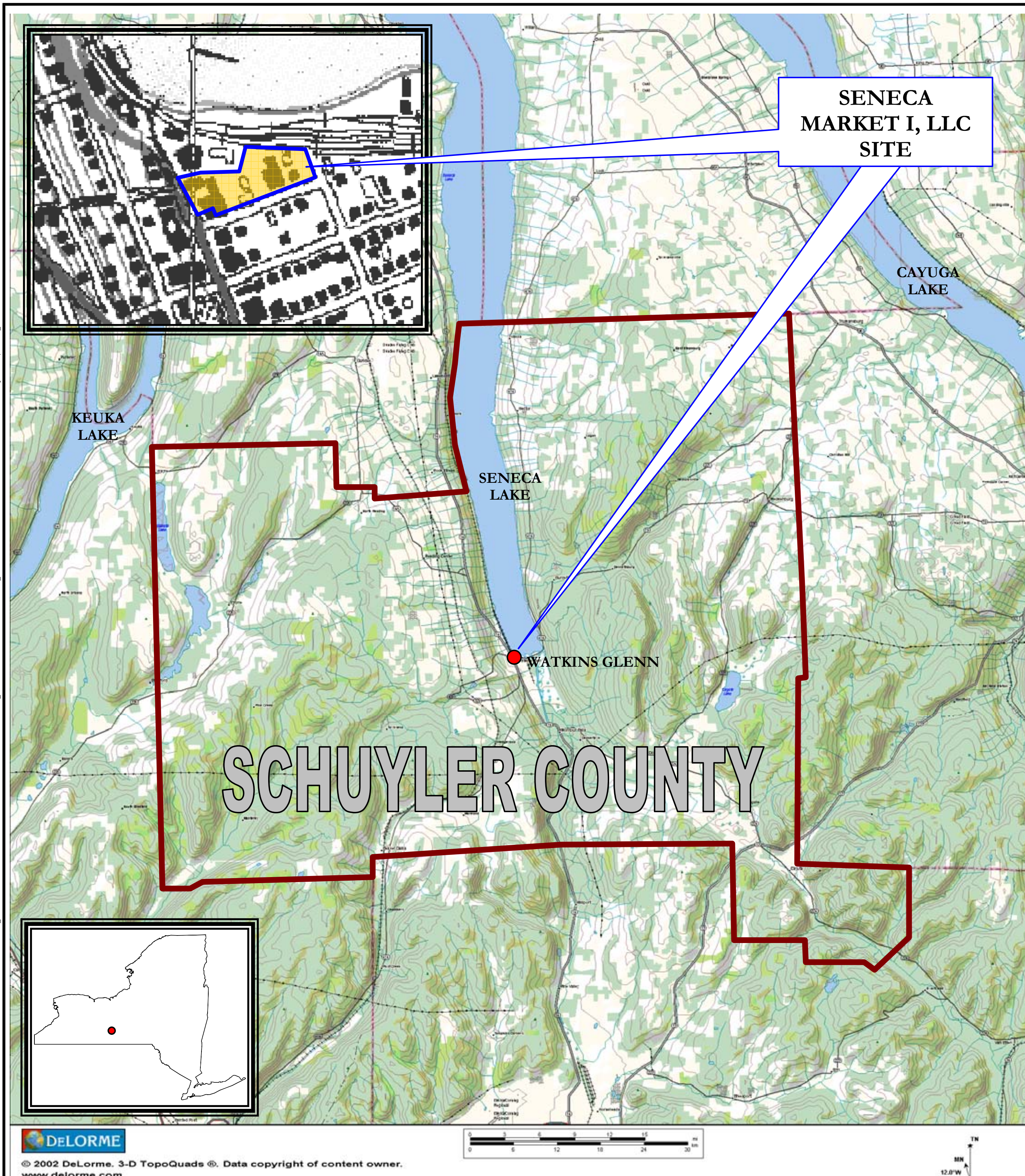
## Soil/Fill Management Plan
## Seneca Market I, LLC Site
## Watkins Glen, New York

| Parameter | Maximum Concentration in Soil/Fill 1 (ppm) |
|---|---|
| Individual VOC | 1 |
| Total VOCs | 10 |
| Individual SVOC | 50 |
| Total SVOCs | 500 |

**Notes:**
1. The SSALs were developed for the North Franklin Street Site under NYSDEC's State Superfund Program.

# FIGURES

# FIGURE 1

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(716) 856-0599

PROJECT NO.: 0092-002-200

DATE: JANUARY 2008

DRAFTED BY: AJZ

## SITE LOCATION AND VICINITY MAP

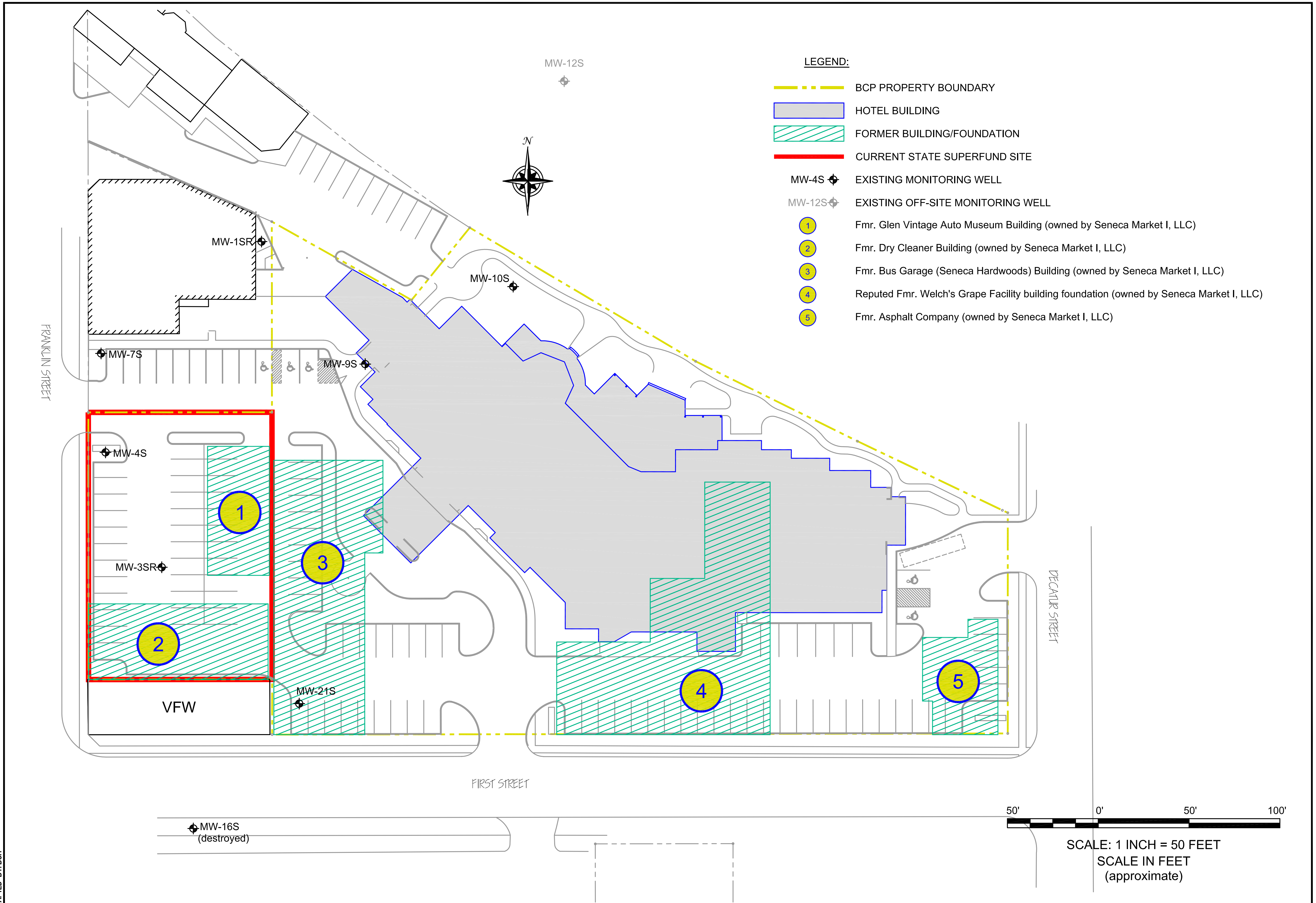
SOIL/FILL MANAGEMENT PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR

SENECA MARKET I, LLC

FILEPATH:F:\Benchmark\Clients\Krog\Seneca Market - Watkins Glen\Site Management Plan\Part II - Soil-Fill Management Plan\CAD\figure 1; site location and vicinity map.dwg




F:\CAD\Benchmark\Krog\Seneca Harbor Hotel - Watkins Glen\Site Management Plan\Part II - Soil-Fill Management Plan\Figure 2; Site Plan (rev 122908).dwg

DATE: DECEMBER 2008
DRAFTED BY: BCH

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JOB NO.: 0092-002-200

**SITE PLAN**

SOIL/FILL MANAGEMENT PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR
SENECA MARKET I, LLC

**FIGURE 2**

# APPENDIX A

## FIELD OPERATING PROCEDURES

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FIELD OPERATING PROCEDURES

# Calibration and Maintenance of Portable Photoionization Detector (PID)

**FOP 011.0**

**CALIBRATION AND MAINTENANCE OF PORTABLE PHOTOIONIZATION DETECTOR**

## PURPOSE

This procedure describes a general method for the calibration and maintenance of a portable photoionization detector (PID). The PID detects and initially quantifies a reading of the volatile organic compound (VOC) concentration in air. The PID is used as a field-screening tool for initial evaluation of soil samples and for ambient air monitoring of compounds with ionization potentials (IP) less than the PID lamp electron voltage (eV) rating. The IP is the amount of energy required to move an electron to an infinite distance from the nucleus thus creating a positive ion plus an electron. It should be noted that all of the major components of air (i.e., carbon dioxide, methane, nitrogen, oxygen etc.) have IP's above 12 eV. As a result, they will not be ionized by the 9.5, 10.2, 10.6 or 11.7 eV lamps typically utilized in field PIDs. The response of the PID will then be the sum of the organic and inorganic compounds in air that are ionized by the appropriate lamp (i.e., 9.5, 10.2, 10.6 or 11.7 eV). Attached to this FOP is a table summarizing common organic compounds and their respective IPs.

Calibration is performed to verify instrument accuracy and function. All field instruments will be calibrated, verified and recalibrated at frequencies required by their respective operating manuals or manufacturer's specifications, but not less than once each day that the instrument is in use. Field personnel should have access to all operating manuals for the instruments used for the field measurements. This procedure also documents critical maintenance activities for this meter.

**Note:** The information included below is equipment manufacturer- and model-specific, however, accuracy, calibration, and maintenance procedures for this type of portable equipment are typically similar. The information below pertains to the Photovac 2020 photoionization detector equipped with a 10.6 eV lamp. The actual equipment to be used in the field will be equivalent or similar. The previously mentioned attached table indicates the compounds that cannot be detected by a standard 10.6 eV lamp.

**Note:** The PID indicates total VOC concentration readings that are normalized to an isobutylene standard, so actual quantification of individual compounds is not provided. In addition, the PID response to compounds is highly variable, dependent on ionization potential of the compound, and the presence or absence of other compounds.

## ACCURACY

The Photovac 2020 is temperature compensated so that a 20 ºC change in temperature corresponds to a change in reading of less than two percent full-scale at maximum sensitivity. The useful range of the instrument is from 0.5 – 2000 ppm isobutylene with an accuracy of ± 10% or ± 2 ppm. Response time is less than three seconds to 90 percent of full-scale. The operating temperature range is 0 to 40º C and the operating humidity range is 0 to 100 % relative humidity (non-condensing).

## PROCEDURE

1. Calibrate all field test equipment at the beginning of each sampling day. Check and recalibrate the PID according to the manufacture's specifications.

2. Calibrate the PID meter using a compressed gas cylinder containing a 100-ppm isobutylene standard, a flow regulator, and a tubing assembly. In

addition, a compressed gas cylinder containing zero air ("clean" air) may be required if ambient air conditions do not permit calibration to "clean air".

3. Fill two Tedlar bags equipped with a one-way valve with zero-air (if applicable) and 100-ppm isobutylene gas.

4. Assemble the calibration equipment and actuate the PID in its calibration mode. Connect the PID probe to the zero air calibration bag (or calibrate to ambient air if conditions permit) and wait for a stable indication.

5. Change the response factor of the PID to the Methyl Isobutyl Ketone (MIBK) setting, which is a response factor of 1.0 for the Photovac 2020.

6. Connect the PID probe to the 100-ppm isobutylene standard calibration bag. Measure an initial reading of the isobutylene standard and wait for a stable indication.

7. Keep the PID probe connected to the 100-ppm isobutylene standard calibration bag, calibrate to 100-ppm with the isobutylene standard and wait for a stable indication.

8. Document the calibration results and related information in the Project Field Book and on an **Equipment Calibration Log** (see attached sample), indicating the meter readings before and after the instrument has been adjusted. This is important, not only for data validation, but also to establish maintenance schedules and component replacement. Information will include, at a minimum:
   - Time, date and initials of the field team member performing the calibration
   - The unique identifier for the meter, including manufacturer, model, and serial number
   - The brand and expiration date of the isobutylene gas
   - The instrument readings: before and after calibration
   - The instrument settings (if applicable)

- Pass or fail designation in accordance with the accuracy specifications presented above
- Corrective action taken (see Maintenance below) in the event of failure to adequately calibrate.

## MAINTENANCE

- The probe and dust filter of the PID should be checked before and after every use for cleanliness. Should instrument response become unstable, recalibration should be performed. If this does not resolve the problem, access the photoionization bulb and clean with the manufacturer-supplied abrasive compound, then recalibrate.

- The PID battery must be recharged after each use. Store the PID in its carrying case when not in use. Additional maintenance details related to individual components of the PID are provided in the equipment manufacturer's instruction manual. If calibration or instrument performance is not in accordance with specifications, send the instrument to the equipment manufacturer for repair.

- Maintain a log for each monitoring instrument. Record all maintenance performed on the instrument on this log with date and name of the organization performing the maintenance.

## ATTACHMENTS

Table 1; Summary of Ionization Potentials
Equipment Calibration Log (sample)

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| **A** | | |
| 2-Amino pyridine | 8 | |
| Acetaldehyde | 10.21 | |
| Acetamide | 9.77 | |
| Acetic acid | 10.69 | X |
| Acetic anhydride | 10 | |
| Acetone | 9.69 | |
| Acetonitrile | 12.2 | X |
| Acetophenone | 9.27 | |
| Acetyl bromide | 10.55 | |
| Acetyl chloride | 11.02 | X |
| Acetylene | 11.41 | X |
| Acrolein | 10.1 | |
| Acrylamide | 9.5 | |
| Acrylonitrile | 10.91 | X |
| Allyl alcohol | 9.67 | |
| Allyl chloride | 9.9 | |
| Ammonia | 10.2 | |
| Aniline | 7.7 | |
| Anisidine | 7.44 | |
| Anisole | 8.22 | |
| Arsine | 9.89 | |
| **B** | | |
| 1,3-Butadiene (butadiene) | 9.07 | |
| 1-Bromo-2-chloroethane | 10.63 | X |
| 1-Bromo-2-methylpropane | 10.09 | |
| 1-Bromo-4-fluorobenzene | 8.99 | |
| 1-Bromobutane | 10.13 | |
| 1-Bromopentane | 10.1 | |
| 1-Bromopropane | 10.18 | |
| 1-Bromopropene | 9.3 | |
| 1-Butanethiol | 9.14 | |
| 1-Butene | 9.58 | |
| 1-Butyne | 10.18 | |
| 2,3-Butadione | 9.23 | |
| 2-Bromo-2-methylpropane | 9.89 | |
| 2-Bromobutane | 9.98 | |
| 2-Bromopropane | 10.08 | |

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| 2-Bromothiophene | 8.63 | |
| 2-Butanone (MEK) | 9.54 | |
| 3-Bromopropene | 9.7 | |
| 3-Butene nitrile | 10.39 | |
| Benzaldehyde | 9.53 | |
| Benzene | 9.25 | |
| Benzenethiol | 8.33 | |
| Benzonitrile | 9.71 | |
| Benzotrifluoride | 9.68 | |
| Biphenyl | 8.27 | |
| Boron oxide | 13.5 | X |
| Boron trifluoride | 15.56 | X |
| Bromine | 10.54 | |
| Bromobenzene | 8.98 | |
| Bromochloromethane | 10.77 | X |
| Bromoform | 10.48 | |
| Butane | 10.63 | X |
| Butyl mercaptan | 9.15 | |
| cis-2-Butene | 9.13 | |
| m-Bromotoluene | 8.81 | |
| n-Butyl acetate | 10.01 | |
| n-Butyl alcohol | 10.04 | |
| n-Butyl amine | 8.71 | |
| n-Butyl benzene | 8.69 | |
| n-Butyl formate | 10.5 | |
| n-Butyraldehyde | 9.86 | |
| n-Butyric acid | 10.16 | |
| n-Butyronitrile | 11.67 | X |
| o-Bromotoluene | 8.79 | |
| p-Bromotoluene | 8.67 | |
| p-tert-Butyltoluene | 8.28 | |
| s-Butyl amine | 8.7 | |
| s-Butyl benzene | 8.68 | |
| sec-Butyl acetate | 9.91 | |
| t-Butyl amine | 8.64 | |
| t-Butyl benzene | 8.68 | |
| trans-2-Butene | 9.13 | |
| C | | |

## TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| 1-Chloro-2-methylpropane | 10.66 | X |
| 1-Chloro-3-fluorobenzene | 9.21 | |
| 1-Chlorobutane | 10.67 | X |
| 1-Chloropropane | 10.82 | X |
| 2-Chloro-2-methylpropane | 10.61 | X |
| 2-Chlorobutane | 10.65 | X |
| 2-Chloropropane | 10.78 | X |
| 2-Chlorothiophene | 8.68 | |
| 3-Chloropropene | 10.04 | |
| Camphor | 8.76 | |
| Carbon dioxide | 13.79 | X |
| Carbon disulfide | 10.07 | |
| Carbon monoxide | 14.01 | X |
| Carbon tetrachloride | 11.47 | X |
| Chlorine | 11.48 | X |
| Chlorine dioxide | 10.36 | |
| Chlorine trifluoride | 12.65 | X |
| Chloroacetaldehyde | 10.61 | X |
| $\alpha$ -Chloroacetophenone | 9.44 | |
| Chlorobenzene | 9.07 | |
| Chlorobromomethane | 10.77 | X |
| Chlorofluoromethane (Freon 22) | 12.45 | X |
| Chloroform | 11.37 | X |
| Chlorotrifluoromethane (Freon 13) | 12.91 | X |
| Chrysene | 7.59 | |
| Cresol | 8.14 | |
| Crotonaldehyde | 9.73 | |
| Cumene (isopropyl benzene) | 8.75 | |
| Cyanogen | 13.8 | X |
| Cyclohexane | 9.8 | |
| Cyclohexanol | 9.75 | |
| Cyclohexanone | 9.14 | |
| Cyclohexene | 8.95 | |
| Cyclo-octatetraene | 7.99 | |
| Cyclopentadiene | 8.56 | |
| Cyclopentane | 10.53 | |
| Cyclopentanone | 9.26 | |
| Cyclopentene | 9.01 | |

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| Cyclopropane | 10.06 | |
| m-Chlorotoluene | 8.83 | |
| o-Chlorotoluene | 8.83 | |
| p-Chlorotoluene | 8.7 | |
| **D** | | |
| 1,1-Dibromoethane | 10.19 | |
| 1,1-Dichloroethane | 11.12 | X |
| 1,1-Dimethoxyethane | 9.65 | |
| 1,1-Dimethylhydrazine | 7.28 | |
| 1,2-Dibromoethene | 9.45 | |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114) | 12.2 | X |
| 1,2-Dichloroethane | 11.12 | X |
| 1,2-Dichloropropane | 10.87 | X |
| 1,3-Dibromopropane | 10.07 | |
| 1,3-Dichloropropane | 10.85 | X |
| 2,2-Dimethyl butane | 10.06 | |
| 2,2-Dimethyl propane | 10.35 | |
| 2,3-Dichloropropene | 9.82 | |
| 2,3-Dimethyl butane | 10.02 | |
| 3,3-Dimethyl butanone | 9.17 | |
| cis-Dichloroethene | 9.65 | |
| Decaborane | 9.88 | |
| Diazomethane | 9 | |
| Diborane | 12 | X |
| Dibromochloromethane | 10.59 | |
| Dibromodifluoromethane | 11.07 | X |
| Dibromomethane | 10.49 | |
| Dibutylamine | 7.69 | |
| Dichlorodifluoromethane (Freon 12) | 12.31 | X |
| Dichlorofluoromethane | 12.39 | X |
| Dichloromethane | 11.35 | X |
| Diethoxymethane | 9.7 | |
| Diethyl amine | 8.01 | |
| Diethyl ether | 9.53 | |
| Diethyl ketone | 9.32 | |
| Diethyl sulfide | 8.43 | |
| Diethyl sulfite | 9.68 | |
| Difluorodibromomethane | 11.07 | X |

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| Dihydropyran | 8.34 | |
| Diiodomethane | 9.34 | |
| Diisopropylamine | 7.73 | |
| Dimethoxymethane (methylal) | 10 | |
| Dimethyl amine | 8.24 | |
| Dimethyl ether | 10 | |
| Dimethyl sulfide | 8.69 | |
| Dimethylaniline | 7.13 | |
| Dimethylformamide | 9.18 | |
| Dimethylphthalate | 9.64 | |
| Dinitrobenzene | 10.71 | X |
| Dioxane | 9.19 | |
| Diphenyl | 7.95 | |
| Dipropyl amine | 7.84 | |
| Dipropyl sulfide | 8.3 | |
| Durene | 8.03 | |
| m-Dichlorobenzene | 9.12 | |
| N,N-Diethyl acetamide | 8.6 | |
| N,N-Diethyl formamide | 8.89 | |
| N,N-Dimethyl acetamide | 8.81 | |
| N,N-Dimethyl formamide | 9.12 | |
| o-Dichlorobenzene | 9.06 | |
| p-Dichlorobenzene | 8.95 | |
| p-Dioxane | 9.13 | |
| trans-Dichloroethene | 9.66 | |
| **E** | | |
| Epichlorohydrin | 10.2 | |
| Ethane | 11.65 | X |
| Ethanethiol (ethyl mercaptan) | 9.29 | |
| Ethanolamine | 8.96 | |
| Ethene | 10.52 | |
| Ethyl acetate | 10.11 | |
| Ethyl alcohol | 10.48 | |
| Ethyl amine | 8.86 | |
| Ethyl benzene | 8.76 | |
| Ethyl bromide | 10.29 | |
| Ethyl chloride (chloroethane) | 10.98 | X |
| Ethyl disulfide | 8.27 | |

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| Ethyl ether | 9.51 | |
| Ethyl formate | 10.61 | X |
| Ethyl iodide | 9.33 | |
| Ethyl isothiocyanate | 9.14 | |
| Ethyl mercaptan | 9.29 | |
| Ethyl methyl sulfide | 8.55 | |
| Ethyl nitrate | 11.22 | X |
| Ethyl propionate | 10 | |
| Ethyl thiocyanate | 9.89 | |
| Ethylene chlorohydrin | 10.52 | |
| Ethylene diamine | 8.6 | |
| Ethylene dibromide | 10.37 | |
| Ethylene dichloride | 11.05 | X |
| Ethylene oxide | 10.57 | |
| Ethylenelmine | 9.2 | |
| Ethynylbenzene | 8.82 | |
| **F** | | |
| 2-Furaldehyde | 9.21 | |
| Fluorine | 15.7 | X |
| Fluorobenzene | 9.2 | |
| Formaldehyde | 10.87 | X |
| Formamide | 10.25 | |
| Formic acid | 11.05 | X |
| Freon 11 (trichlorofluoromethane) | 11.77 | X |
| Freon 112 (1,1,2,2-tetrachloro-1,2-difluoroethane) | 11.3 | X |
| Freon 113 (1,1,2-trichloro-1,2,2-trifluororethane) | 11.78 | X |
| Freon 114 (1,2-dichloro-1,1,2,2-tetrafluoroethane) | 12.2 | X |
| Freon 12 (dichlorodifluoromethane) | 12.31 | X |
| Freon 13 (chlorotrifluoromethane) | 12.91 | X |
| Freon 22 (chlorofluoromethane) | 12.45 | X |
| Furan | 8.89 | |
| Furfural | 9.21 | |
| m-Fluorotoluene | 8.92 | |
| o-Fluorophenol | 8.66 | |
| o-Fluorotoluene | 8.92 | |
| p-Fluorotoluene | 8.79 | |
| **H** | | |
| 1-Hexene | 9.46 | |

## TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| 2-Heptanone | 9.33 | |
| 2-Hexanone | 9.35 | |
| Heptane | 10.08 | |
| Hexachloroethane | 11.1 | X |
| Hexane | 10.18 | |
| Hydrazine | 8.1 | |
| Hydrogen | 15.43 | X |
| Hydrogen bromide | 11.62 | X |
| Hydrogen chloride | 12.74 | X |
| Hydrogen cyanide | 13.91 | X |
| Hydrogen fluoride | 15.77 | X |
| Hydrogen iodide | 10.38 | |
| Hydrogen selenide | 9.88 | |
| Hydrogen sulfide | 10.46 | |
| Hydrogen telluride | 9.14 | |
| Hydroquinone | 7.95 | |
| **I** | | |
| 1-Iodo-2-methylpropane | 9.18 | |
| 1-Iodobutane | 9.21 | |
| 1-Iodopentane | 9.19 | |
| 1-Iodopropane | 9.26 | |
| 2-Iodobutane | 9.09 | |
| 2-Iodopropane | 9.17 | |
| Iodine | 9.28 | |
| Iodobenzene | 8.73 | |
| Isobutane | 10.57 | |
| Isobutyl acetate | 9.97 | |
| Isobutyl alcohol | 10.12 | |
| Isobutyl amine | 8.7 | |
| Isobutyl formate | 10.46 | |
| Isobutyraldehyde | 9.74 | |
| Isobutyric acid | 10.02 | |
| Isopentane | 10.32 | |
| Isophorone | 9.07 | |
| Isoprene | 8.85 | |
| Isopropyl acetate | 9.99 | |
| Isopropyl alcohol | 10.16 | |
| Isopropyl amine | 8.72 | |

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| Isopropyl benzene | 8.69 | |
| Isopropyl ether | 9.2 | |
| Isovaleraldehyde | 9.71 | |
| m-Iodotoluene | 8.61 | |
| o-Iodotoluene | 8.62 | |
| p-Iodotoluene | 8.5 | |
| **K** | | |
| Ketene | 9.61 | |
| **L** | | |
| 2,3-Lutidine | 8.85 | |
| 2,4-Lutidine | 8.85 | |
| 2,6-Lutidine | 8.85 | |
| **M** | | |
| 2-Methyl furan | 8.39 | |
| 2-Methyl napthalene | 7.96 | |
| 1-Methyl napthalene | 7.96 | |
| 2-Methyl propene | 9.23 | |
| 2-Methyl-1-butene | 9.12 | |
| 2-Methylpentane | 10.12 | |
| 3-Methyl-1-butene | 9.51 | |
| 3-Methyl-2-butene | 8.67 | |
| 3-Methylpentane | 10.08 | |
| 4-Methylcyclohexene | 8.91 | |
| Maleic anhydride | 10.8 | X |
| Mesityl oxide | 9.08 | |
| Mesitylene | 8.4 | |
| Methane | 12.98 | X |
| Methanethiol (methyl mercaptan) | 9.44 | |
| Methyl acetate | 10.27 | |
| Methyl acetylene | 10.37 | |
| Methyl acrylate | 9.9 | |
| Methyl alcohol | 10.85 | X |
| Methyl amine | 8.97 | |
| Methyl bromide | 10.54 | |
| Methyl butyl ketone | 9.34 | |
| Methyl butyrate | 10.07 | |
| Methyl cellosolve | 9.6 | |
| Methyl chloride | 11.28 | X |

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| Methyl chloroform (1,1,1-trichloroethane) | 11 | X |
| Methyl disulfide | 8.46 | |
| Methyl ethyl ketone | 9.53 | |
| Methyl formate | 10.82 | X |
| Methyl iodide | 9.54 | |
| Methyl isobutyl ketone | 9.3 | |
| Methyl isobutyrate | 9.98 | |
| Methyl isocyanate | 10.67 | X |
| Methyl isopropyl ketone | 9.32 | |
| Methyl isothiocyanate | 9.25 | |
| Methyl mercaptan | 9.44 | |
| Methyl methacrylate | 9.7 | |
| Methyl propionate | 10.15 | |
| Methyl propyl ketone | 9.39 | |
| α -Methyl styrene | 8.35 | |
| Methyl thiocyanate | 10.07 | |
| Methylal (dimethoxymethane) | 10 | |
| Methylcyclohexane | 9.85 | |
| Methylene chloride | 11.32 | X |
| Methyl-n-amyl ketone | 9.3 | |
| Monomethyl aniline | 7.32 | |
| Monomethyl hydrazine | 7.67 | |
| Morpholine | 8.2 | |
| n-Methyl acetamide | 8.9 | |
| **N** | | |
| 1-Nitropropane | 10.88 | X |
| 2-Nitropropane | 10.71 | X |
| Naphthalene | 8.12 | |
| Nickel carbonyl | 8.27 | |
| Nitric oxide, (NO) | 9.25 | |
| Nitrobenzene | 9.92 | |
| Nitroethane | 10.88 | X |
| Nitrogen | 15.58 | X |
| Nitrogen dioxide | 9.78 | |
| Nitrogen trifluoride | 12.97 | X |
| Nitromethane | 11.08 | X |
| Nitrotoluene | 9.45 | |
| p-Nitrochloro benzene | 9.96 | |

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| **O** | | |
| Octane | 9.82 | |
| Oxygen | 12.08 | X |
| Ozone | 12.08 | X |
| **P** | | |
| 1-Pentene | 9.5 | |
| 1-Propanethiol | 9.2 | |
| 2,4-Pentanedione | 8.87 | |
| 2-Pentanone | 9.38 | |
| 2-Picoline | 9.02 | |
| 3-Picoline | 9.02 | |
| 4-Picoline | 9.04 | |
| n-Propyl nitrate | 11.07 | X |
| Pentaborane | 10.4 | |
| Pentane | 10.35 | |
| Perchloroethylene | 9.32 | |
| Pheneloic | 8.18 | |
| Phenol | 8.5 | |
| Phenyl ether (diphenyl oxide) | 8.82 | |
| Phenyl hydrazine | 7.64 | |
| Phenyl isocyanate | 8.77 | |
| Phenyl isothiocyanate | 8.52 | |
| Phenylene diamine | 6.89 | |
| Phosgene | 11.77 | X |
| Phosphine | 9.87 | |
| Phosphorus trichloride | 9.91 | |
| Phthalic anhydride | 10 | |
| Propane | 11.07 | X |
| Propargyl alcohol | 10.51 | |
| Propiolactone | 9.7 | |
| Propionaldehyde | 9.98 | |
| Propionic acid | 10.24 | |
| Propionitrile | 11.84 | X |
| Propyl acetate | 10.04 | |
| Propyl alcohol | 10.2 | |
| Propyl amine | 8.78 | |
| Propyl benzene | 8.72 | |
| Propyl ether | 9.27 | |

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| Propyl formate | 10.54 | |
| Propylene | 9.73 | |
| Propylene dichloride | 10.87 | X |
| Propylene imine | 9 | |
| Propylene oxide | 10.22 | |
| Propyne | 10.36 | |
| Pyridine | 9.32 | |
| Pyrrole | 8.2 | |
| **Q** | | |
| Quinone | 10.04 | |
| **S** | | |
| Stibine | 9.51 | |
| Styrene | 8.47 | |
| Sulfur dioxide | 12.3 | X |
| Sulfur hexafluoride | 15.33 | X |
| Sulfur monochloride | 9.66 | |
| Sulfuryl fluoride | 13 | X |
| **T** | | |
| o-Terphenyls | 7.78 | |
| 1,1,2,2-Tetrachloro-1,2-difluoroethane (Freon 112) | 11.3 | X |
| 1,1,1-Trichloroethane | 11 | X |
| 1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113) | 11.78 | X |
| 2,2,4-Trimethyl pentane | 9.86 | |
| o-Toluidine | 7.44 | |
| Tetrachloroethane | 11.62 | X |
| Tetrachloroethene | 9.32 | |
| Tetrachloromethane | 11.47 | X |
| Tetrahydrofuran | 9.54 | |
| Tetrahydropyran | 9.25 | |
| Thiolacetic acid | 10 | |
| Thiophene | 8.86 | |
| Toluene | 8.82 | |
| Tribromoethene | 9.27 | |
| Tribromofluoromethane | 10.67 | X |
| Tribromomethane | 10.51 | |
| Trichloroethene | 9.45 | |
| Trichloroethylene | 9.47 | |
| Trichlorofluoromethane (Freon 11) | 11.77 | X |

# TABLE 1

## SUMMARY OF IONIZATION POTENTIALS

| Chemical Name | Ionization Potential (eV) | Cannot be Read by 10.6 eV PID |
|---|---|---|
| Trichloromethane | 11.42 | X |
| Triethylamine | 7.5 | |
| Trifluoromonobromo-methane | 11.4 | X |
| Trimethyl amine | 7.82 | |
| Tripropyl amine | 7.23 | |
| **V** | | |
| o-Vinyl toluene | 8.2 | |
| Valeraldehyde | 9.82 | |
| Valeric acid | 10.12 | |
| Vinyl acetate | 9.19 | |
| Vinyl bromide | 9.8 | |
| Vinyl chloride | 10 | |
| Vinyl methyl ether | 8.93 | |
| **W** | | |
| Water | 12.59 | X |
| **X** | | |
| 2,4-Xylidine | 7.65 | |
| m-Xylene | 8.56 | |
| o-Xylene | 8.56 | |
| p-Xylene | 8.45 | |

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

**EQUIPMENT CALIBRATION LOG**

**PROJECT INFORMATION:**

Project Name:

Date:

Project No.:

Client:

Instrument Source: ☐ BM ☐ Rental

| METER TYPE | UNITS | TIME | MAKE/MODEL | SERIAL NUMBER | CAL. BY | STANDARD | POST CAL. READING | SETTINGS |
|---|---|---|---|---|---|---|---|---|
| ☐ pH meter | units | | Myron L Company Ultra Meter 6P | 606987 | | 4.00 | | |
| | | | | | | 7.00 | | |
| | | | | | | 10.01 | | |
| ☐ Turbidity meter | NTU | | Hach 2100P Turbidimeter | 970600014560 | | < 0.4 | | |
| | | | | | | 20 | | |
| | | | | | | 100 | | |
| | | | | | | 800 | | |
| ☐ Sp. Cond. meter | uS mS | | Myron L Company Ultra Meter 6P | 606987 | | _____ mS @ 25 °C | | |
| ☐ PID | ppm | | MinRAE 2000 | | | open air zero | | MIBK response factor = 1.0 |
| | | | | | | _____ ppm Iso. Gas | | |
| ☐ Dissolved Oxygen | ppm | | YSI Model 55 | 05D2677 | | | | |
| ☐ Particulate meter | $mg/m^3$ | | | | | zero air | | |
| ☐ Oxygen | % | | | | | open air | | |
| ☐ Hydrogen sulfide | ppm | | | | | open air | | |
| ☐ Carbon monoxide | ppm | | | | | open air | | |
| ☐ LEL | % | | | | | open air | | |
| ☐ Radiation Meter | uR/H | | | | | background area | | |
| ☐ | | | | | | | | |

**ADDITIONAL REMARKS:**

**PREPARED BY:** **DATE:**

Benchmark Environmental Engineering & Science, PLLC

Field Operating Procedures

# Screening of Soil Samples for Organic Vapors During Impacted Soil Removal Activities

# FOP 048.0

# SCREENING OF SOIL SAMPLES FOR ORGANIC VAPORS DURING IMPACTED SOIL REMOVAL ACTIVITIES

## PURPOSE

This procedure is used to screen soil samples for the presence of volatile organic constituents (VOCs) using a field organic vapor meter. The field meter should either be a photoionization detector (PID) or flame-ionization detector (FID) type. This type of screening is generally performed during underground storage tank (UST) and/or impacted soil removal activities as a procedure for ensuring the health and safety of the community and personnel at the site as well as to identify potential VOC-impacted soil samples for laboratory analysis (i.e., confirmatory or verification samples). Soil samples are also screened in the field to provide assessment criteria to determine horizontal and vertical extents of VOC-impacts in order to ensure soils that may have been impacted by volatile organic substances are removed.

## PROCEDURE

1. Calibrate air-monitoring equipment in accordance with the appropriate Benchmark's Field Operating Procedures or manufacturers recommendations for calibration of field meters.

2. Perform community air monitoring in accordance with the Project Work Plan and/or Benchmark's FOP: Real-Time Air Monitoring During Intrusive Activities.

3. Upon proper removal of any identified UST in accordance with NYSDEC Division of Environmental Remediation, Spill Response Unit or Bulk Storage Unit guidelines and/or Benchmark's FOP: Underground Storage Tank Removal Procedures; examine the four sidewalls and bottom of the excavation for visually impacted (i.e., stained) soils.

4. If visually impacted soils are identified, direct the excavating equipment operator to scrape the impacted area (i.e., sidewall or bottom of the excavation) and present the scraped soil for evaluation. NOTE: Under no circumstances should anyone enter an excavation greater than 4 feet in depth, unless absolutely necessary. Excavation entry may only occur under strict confined space entry procedures following implementation of specific engineering controls (i.e., continuous air monitoring, excavation shoring, trench box installation, benching).

5. Visually inspect and perform an open air PID/FID scan of the scraped soil sample noting stratification, visible staining, or other evidence of impact (i.e., presence of non-aqueous phase liquid, NAPL).

6. Collect a representative sample (approximately 100 milligrams (mg)) of soil using a decontaminated or dedicated stainless steel sampling tool (i.e., spoon, spatula, scoop, or approved equivalent), for field headspace determination of VOC-impact. Place the representative soil sample into a labeled wide-mouth glass jar approximately ½ to ¾ full and seal with aluminum foil and a screw top cap. Alternatively, the soil sample may be placed into a clean, re-sealable plastic bag and sealed. Be sure to leave adequate headspace above the soil sample within either sealed container.

7. Place the field screening sample (i.e., jar or bag) in a location where the ambient temperature is at least 70$^{o}$ Fahrenheit for at least 15 minutes, but no more than 60 minutes.

8. Carefully remove the screw top cap from the jar and slowly insert the tip of the organic vapor meter (PID or FID) through the aluminum foil seal making the smallest hole possible. Alternatively, unseal a portion of the plastic bag just big enough to insert the probe of a calibrated PID.

9. Record the depth, sample location (i.e., sidewall, bottom) and <u>maximum</u> reading in parts per million by volume (ppmv) in the Project Field Book and Impacted Soil Excavation Log (sample attached), at the depth interval corresponding to the depth of sample collection.

10. The representative soil samples collected from the excavation will be used to assess the vertical and horizontal limits of VOC-impact and guide the impacted soil removal activities in accordance with project requirements (i.e., PID scans less than 20 ppm will not require removal unless laboratory analytical results exceed regulatory limits).

11. Collect verification/confirmation samples in accordance with NYSDEC Division of Environmental Remediation, Spill Response Unit or Bulk Storage Unit guidelines and/or Benchmark's FOP: Surface and Subsurface Soil Sampling Procedures.

## ATTACHMENTS

Impacted Soil Excavation Log (sample)

## REFERENCES

Benchmark FOPs:

*010* *Calibration and Maintenance of Portable Flame Ionization Detector*
*011* *Calibration and Maintenance of Portable Photoionization Detector*
*063* *Surface and Subsurface Soil Sampling Procedures*
*073* *Real-Time Air Monitoring During Intrusive Activities*
*074* *Underground Storage Tank Removal Procedures*

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

## IMPACTED SOIL EXCAVATION LOG

| | |
|---|---|
| Project: | EXCAVATION I.D.: |
| Project No.: | Excavation Date: |
| Client: | Excavation Method: |
| Location: | CQA Observer: |

Excavation Location: *NOT TO SCALE (approximate)*

Excavation Cross Section:

Grade - 0'
2'
4'
6'
8'
10'
12'
14'
16'
18'
20'

| TIME | | |
|---|---|---|
| Start: | Length: | (approx.) |
| End: | Width: | (approx.) |
| | Depth: | (approx.) |

| Verification Sample I.D. | Depth (fbgs) | Location Within Excavation (sidewall/bottom) | PID Scan (ppm) | PID Headspace (ppm) | Photos Y / N | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

COMMENTS:

| | | | |
|---|---|---|---|
| UST ENCOUNTERED: | ☐ yes | ☐ no | If yes, Describe (type, material, size, capacity etc.): |
| | | | |
| GROUNDWATER ENCOUNTERED: | ☐ yes | ☐ no | If yes, depth to GW: |
| VISUAL IMPACTS: | ☐ yes | ☐ no | Describe: |
| OLFACTORY OBSERVATIONS: | ☐ yes | ☐ no | Describe: |
| NON-NATIVE FILL ENCOUNTERED: | ☐ yes | ☐ no | |
| OTHER OBSERVATIONS: | ☐ yes | ☐ no | Describe: |
| QUANTITY OF IMPACTED SOIL REMOVED: | | | |
| FINAL DESTINATION OF IMPACTED SOIL: | | | |
| TYPE OF BACKFILL: | | | |
| SURFACE COMPLETION: | | | |

# APPENDIX B

## MASTER EROSION CONTROL PLAN (MECP)

# SOIL/FILL MANAGEMENT PLAN
# APPENDIX B

# MASTER EROSION CONTROL PLAN (MECP)

**SENECA MARKET I, LLC**
**SITE NO. C849004**
**WATKINS GLEN, NEW YORK**

September 2008
Revised December 2008

0092-002-200

Prepared for:

**Seneca Market I, LLC**
**Watkins Glen, New York**

Prepared by:

Benchmark Environmental Engineering & Science, PLLC

# SOIL/FILL MANAGEMENT PLAN
# APPENDIX B

# MASTER EROSION CONTROL PLAN
# SENECA MARKET I, LLC SITE

## Table of Contents



## APPENDICES

# 1.0 INTRODUCTION

## 1.1 Background and History

Seneca Market I, LLC owns approximately 2.27 acres within the block bounded by Franklin, First, Decatur Streets, and the Finger Lakes Railway right-of-way in the Village of Watkins Glen, Schuyler County, New York. Seneca Market remediated and redeveloped the property under the New York State Brownfield Cleanup Program (BCP).

## 1.2 Purpose and Scope

The Soil/Fill Management Plan (SFMP) describes protocols for the proper handling of Site soil/fill during post-development activities. The property owner at the time of the intrusive activities will be responsible for all monitoring, implementing, and reporting requirements of the SFMP.

Since erosion control will be a critical component in preventing the potential migration of contaminants off-site or onto already developed areas of the Site, this Master Erosion Control Plan (MECP) was prepared to provide guidance to developers during build-out activities on the properties. This MECP is a critical component of the SFMP. This document is generic in nature and provides minimum erosion control practices to be used by Site owners and/or developers.

## 2.0 GENERAL PERMIT REQUIREMENTS

If construction activities disturb more than 1 acre of land, the Federal Water Pollution Control Act (as amended, 33 U.S.C. 1251 et. seq.) and the New York State Environmental Conservation Law (Article 17, Titles 7 and 8, and Article 70) would apply.

With some exceptions, operators of construction activities that will result in the disturbance of 1 or more acres of land must obtain coverage under SPDES General Permit (GP-02-01) prior to the commencement of soil disturbance. Also requiring a permit are construction activities disturbing less than 1 acre if they are part of a larger common plan of development or sale with a planned disturbance of equal to or greater than 1 acre, or activities that are designated by the NYSDEC. The NYSDEC can require a permit for construction activities disturbing less than 1 acre based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the United States.

As the Site is being remediated and redeveloped under the Brownfield Cleanup Program, this MECP is intended to meet the functional equivalent of NYSDEC Storm water Pollution Prevention Plan. Implementation of the MECP will be the responsibility of the Site contractor.

# 3.0 POTENTIAL EROSION CONTROL CONCERNS

Potential areas and erosion control concerns during post-development activities include the following:

- All portions of the Site not covered by buildings, sidewalks, roadways, parking areas, or other structures will be required to be covered with a woven geotextile followed by 12 inches of "clean" soil to limit exposure to remaining subsurface soil/fill materials. The transportation and placement activities associated with this work will require erosion and sediment controls to prevent the surface soil from being washed off the area being developed.

- Remediated areas or off-site properties adjacent to unremediated parcels need protection so they do not become impacted by Site operations.

- Storm water inlets will require protective measures to limit sediment transfer to storm sewers.

- Runoff from soil stockpiles will require erosion controls.

- Surface slopes need to be minimized as much as practical to control sediment transfer.

- Soil/fill excavated during development will require proper handling and disposal.

# 4.0 EROSION CONTROL MEASURES

## 4.1 Background

Standard soil conservation practices need to be incorporated into the construction plans to mitigate soil erosion damage, off-site sediment migration, and water pollution from erosion. These practices combine vegetative and structural measures, many of which will be permanent in nature and become part of the completed project (i.e., drainage channels and grading). Other measures will be temporary and serve only during the construction stage. Selected erosion and sediment control measures will meet the following criteria:

- Minimize erosion through project design (maximum slopes, phased construction, etc.).
- Incorporate temporary and permanent erosion control measures.
- Remove sediment from sediment-laden storm water before it leaves the Site.

## 4.2 Temporary Measures

Temporary erosion and sedimentation control measures and facilities will be used during construction. They will be installed by the Site owner/developer and will be maintained until they are either no longer needed or until such time as permanent measures are installed and become effective. Erosion and sediment controls shall be installed in accordance with the standards and specifications presented in Appendix B-1. At a minimum, the following temporary measures will be used:

- Silt fencing
- Straw/hay bales
- Temporary vegetation/mulching
- Temporary sedimentation basins
- Cautious placement, compaction and grading of stockpiles


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#### *4.2.1 Silt Fencing*

Construction and regrading activities will result in surface water flow to drainage ditches and swales, storm sewers, and adjacent properties. Silt fencing will be the primary sediment control measure used in these areas. Prior to extensive soil excavation or grading activities, silt fences will be installed along the perimeter of all construction areas. The orientation of the fencing will be adjusted as necessary as the work proceeds to accommodate changing Site conditions.

Intermediate fencing will be used upgradient of the perimeter fencing to help lower surface water runoff velocities and reduce the volume of sediment to perimeter fencing. Stockpiles will also be surrounded with silt fencing.

As sediment collects, the silt fences will be cleaned as necessary to maintain their integrity. Removed sediment will be used elsewhere on-site as general fill provided it: is placed beneath the 1-foot soil cover or impermeable surface (asphalt or concrete); and does not exhibit evidence of staining, discoloration, or elevated PID readings (5 ppm above background). All perimeter silt fences will remain in place until construction activities in an area are completed and vegetative cover has been established.

#### *4.2.2 Straw and/or Hay Bales*

Straw and/or hay bales will be used to intercept sediment laden storm water runoff in drainage channels during construction. The use of either hay or straw will be based on the availability of materials at the time of construction.

Bales will be placed in swales and ditches where the anticipated flow velocity is not expected to be greater than 5 feet/second (fps). Intermediate bales will be placed upgradient of the final barrier to reduce flow velocities and sediment loadings where higher velocities are anticipated.

As with silt fencing, sediment will be removed as necessary from behind the bales and disposed on-site provided it: is placed beneath the 1-foot soil cover or impermeable surface (asphalt or concrete); and does not exhibit evidence of staining, discoloration, or elevated PID readings (5 ppm above background). Bales that have become laden with sediment or that have lost their structural integrity or effectiveness due to the weather will be replaced.

#### *4.2.3 Cautious Placement of Stockpiles*

Excavation activities will produce stockpiles of soil and subgrade soil/fill materials. Careful placement and construction of stockpiles will be required to control erosion. Stockpiles will be placed no closer than 50 feet from storm water inlets and parcel boundaries. Additionally, stockpiles will be graded and compacted as necessary for positive surface water runoff and dust control. All soil stockpiles (i.e., non-impacted, potentially impacted, impacted) at the Site will be underlain and covered with poly/plastic sheeting to prevent erosion from wind and precipitation.

### 4.3 Permanent Control Measures During Site Redevelopment

Permanent erosion and sedimentation control measures and structures will be installed as soon as practical during construction for long-term erosion protection. Examples of permanent erosion control measures could include:

- Using maximum slopes in erosion prone areas to limit erosion.
- Minimizing the potential contact with, and migration of, subsurface soil/fill through the placement of a "clean" soil cover system in all areas not covered with structures, roads, parking areas, sidewalks, etc.
- Planting and maintaining vegetation.
- Limiting runoff flow velocities to the extent practical.
- Lining collection channels with riprap, erosion control fabric, vegetation, or similar materials.

# 5.0 CONSTRUCTION MANAGEMENT PRACTICES

## 5.1 General

The following general construction practices should be evaluated for erosion and sedimentation control purposes during post-development activities:

- Clearing and grading only as much area as is necessary to accommodate the construction needs to minimize disturbance of areas subject to erosion (i.e., phasing the work).
- Covering exposed or disturbed areas of the Site as quickly as practical.
- Installing erosion and sediment control measures before disturbing the Site subgrade.
- Minimizing on-site and off-site tracking of soil by vehicles using routine entry/ exit routes.

## 5.2 Monitoring, Inspection, and Maintenance Plan

All erosion and sedimentation controls described in this Plan will be inspected by a qualified representative of the Site developer/owner within 24 hours of a heavy rainfall event and repaired or modified as necessary to effectively control erosion of turbidity problems. The qualified representative inspecting the controls will be familiar with the components of the control, its proper installation, and signs that its integrity may be compromised. Inspections should include areas under construction, stockpile areas, erosion control devices (i.e., silt fences, hay bales, etc.), and locations where vehicles enter and leave the Site. Routine inspections of the entire Site should also be made on a monthly basis during development.

If inspections indicate problems, corrective measures should be implemented within 24 hours. A report summarizing the scope of the inspection, name of the inspector, date, observations made, and a description of the corrective actions taken should be completed. Examples of inspection forms to be completed are included in Appendix B-2.

# APPENDIX B-1

## EROSION CONTROL DETAILS

- *Silt Fence*
- *Straw Bale Dike*
- *Perimeter Dike/Swale*
- *Temporary Swale*
- *Sediment Trap for Drop Inlet*



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New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water

# New York State Standards and Specifications for Erosion and Sediment Control

August 2005

New York State
Department of Environmental Conservation

George E. Pataki, Governor

# STANDARD AND SPECIFICATIONS FOR SILT FENCE

## Definition

A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil.

## Purpose

The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment load. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used (approximately one year).

## Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope lengths contributing runoff to a silt fence placed on a slope are:

| Slope Steepness | Maximum Length (ft.) |
|---|---|
| 2:1 | 25 |
| 3:1 | 50 |
| 4:1 | 75 |
| 5:1 or flatter | 100 |

2. Maximum drainage area for overland flow to a silt fence shall not exceed ¼ acre per 100 feet of fence, with maximum ponding depth of 1.5 feet behind the fence; and

3. Erosion would occur in the form of sheet erosion; and

4. There is no concentration of water flowing to the barrier.

## Design Criteria

Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff. All silt fences shall be placed as close to the areas as possible, but at least 10 feet from the toe of a slope to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.

Sensitive areas to be protected by silt fence may need to be reinforced by using heavy wire fencing for added support to prevent collapse.

Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. A detail of the silt fence shall be shown on the plan. See Figure 5A.8 on page 5A.21 for details.

## Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

| Fabric Properties | Minimum Acceptable Value | Test Method |
|---|---|---|
| Grab Tensile Strength (lbs) | 90 | ASTM D1682 |
| Elongation at Failure (%) | 50 | ASTM D1682 |

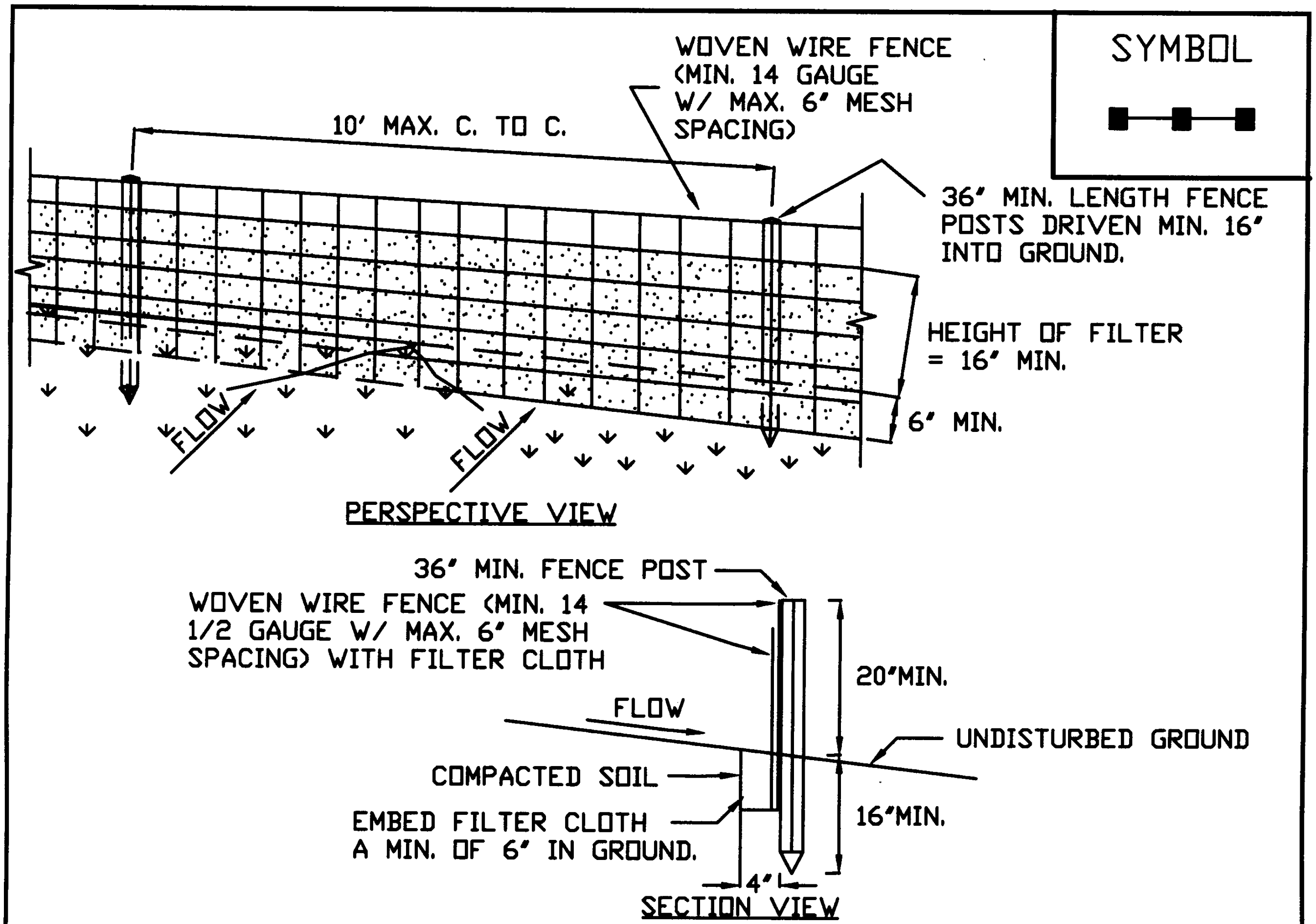
| | | |
|---|---|---|
| Mullen Burst Strength (PSI) | 190 | ASTM D3786 |
| Puncture Strength (lbs) | 40 | ASTM D751 (modified) |
| Slurry Flow Rate (gal/min/sf) | 0.3 | |
| Equivalent Opening Size | 40-80 | US Std Sieve CW-02215 |
| Ultraviolet Radiation Stability (%) | 90 | ASTM G-26 |

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.0 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot.

3. Wire Fence (for fabricated units): Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated Units: Envirofence, Geofab, or approved equal, may be used in lieu of the above method providing the unit is installed per details shown in Figure 5A.8.

# Figure 5A.8
## Silt Fence




## CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

| ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | SILT FENCE |
| --- | --- |

# STANDARD AND SPECIFICATIONS FOR STRAW BALE DIKE

## Definition

A temporary barrier of straw, or similar material, used to intercept sediment laden runoff from small drainage areas of disturbed soil.

## Purpose

The purpose of a bale dike is to reduce runoff velocity and effect deposition of the transported sediment load. Straw bale dikes have an estimated design life of three (3) months.

## Conditions Where Practice Applies

The straw bale dike is used where:

1. No other practice is feasible.
2. There is no concentration of water in a channel or other drainage way above the barrier.
3. Erosion would occur in the form of sheet erosion.
4. Length of slope above the straw bale dike does not exceed these limits.

| Constructed Slope | Percent Slope | Slope Length (ft.) |
|---|---|---|
| 2:1 | 50 | 25 |
| 3:1 | 33 | 50 |
| 4:1 | 25 | 75 |

Where slope gradient changes through the drainage area, steepness refers to the steepest slope section contributing to the straw bale dike.

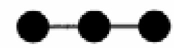
The practice may also be used for a single family lot if the slope is less than 15 percent. The contributing drainage areas in this instance shall be less than one quarter of an acre per 100 feet of fence and the length of slope above the dike shall be less than 200 feet.

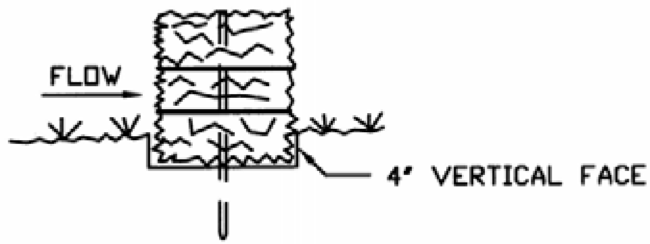
## Design Criteria

The above table is adequate, in general, for a one-inch rainfall event. Larger storms could cause failure of this practice. Use of this practice in sensitive areas for longer than one month should be specifically designed to store expected runoff. All bales shall be placed on the contour with cut edge of bale adhering to the ground. See Figure 5A.7 on page 5A.18 or details.

# Figure 5A.7
# Straw Bale Dike

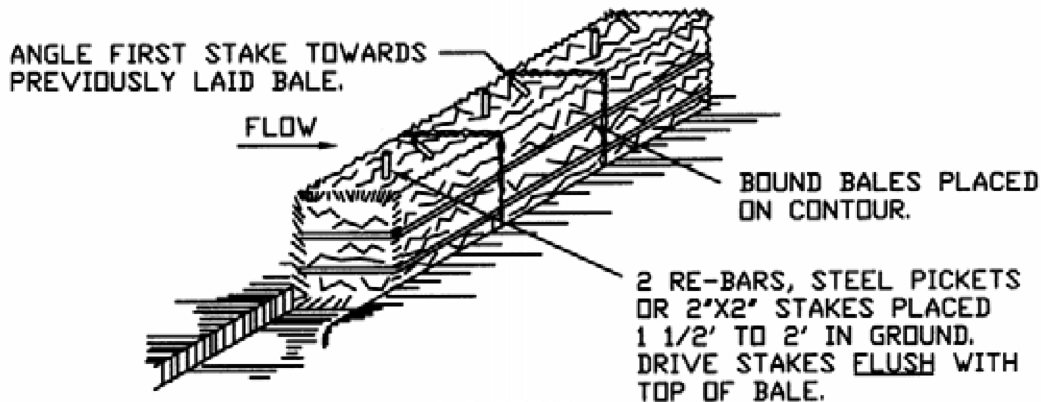
SYMBOL






BEDDING DETAIL
NOT TO SCALE

DRAINAGE AREA NO MORE THAN 1/4 ACRE PER 100 FEET OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%.




ANCHORING DETAIL
NOT TO SCALE

## CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULLNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

| | |
|---|---|
| ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | STRAW BALE DIKE |

# STANDARD AND SPECIFICATIONS FOR PERIMETER DIKE/SWALE

## Definition

A temporary ridge of soil excavated from an adjoining swale located along the perimeter of the site or disturbed area.

## Purpose

The purpose of a perimeter dike/swale is to prevent off site storm runoff from entering a disturbed area and to prevent sediment laden storm runoff from leaving the construction site or disturbed area.

## Conditions Where Practice Applies

Perimeter dike/swale is constructed to divert flows from entering a disturbed area, or along tops of slopes to prevent flows from eroding the slope, or along base of slopes to direct sediment laden flows to a trapping device.

The perimeter dike/swale shall remain in place until the disturbed areas are permanently stabilized.

## Design Criteria

See Figure 5A.3 on page 5A.8 for details.

The perimeter dike/swale shall not be constructed outside the property lines without obtaining legal easements from affected adjacent property owners. A design is not required for perimeter dike/swale. The following criteria shall be used:

Drainage area – Less than 2 acres (for drainage areas larger than 2 acres but less than 10 acres, see earth dike or temporary swale; for drainage areas larger than 10 acres, see standard and specifications for diversion).

Height – 18 inches minimum from bottom of swale to top of dike evenly divided between dike height and swale depth.

Bottom width of dike – 2 feet minimum.

Width of swale – 2 feet minimum.

Grade – Dependent upon topography, but shall have positive drainage (sufficient grade to drain) to an adequate outlet. Maximum allowable grade not to exceed 8 percent.

Stabilization – The disturbed area of the dike and swale shall be stabilized within 7 days of installation, in accordance with the standard and specifications for temporary swales.

**Outlet**

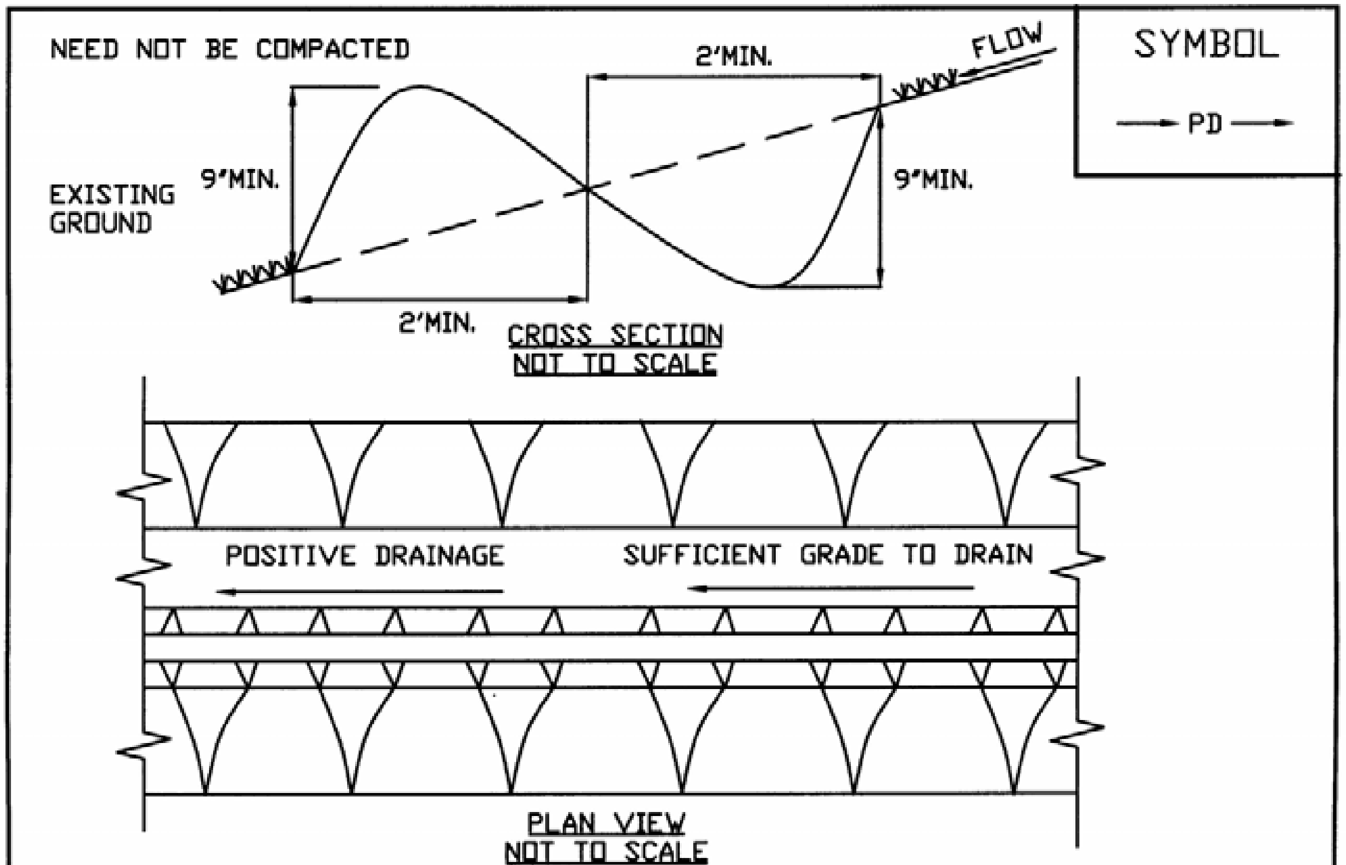
1. Perimeter dike/swale shall have a stabilized outlet.

2. Diverted runoff from a protected or stabilized upland area shall outlet directly onto an undisturbed stabilized area.

3. Diverted runoff from a disturbed or exposed upland area shall be conveyed to a sediment trapping device such as a sediment trap, sediment basin, or to an area protected by any of these practices.

4. The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.

# Figure 5A.3
# Perimeter Dike/Swale




## CONSTRUCTION SPECIFICATIONS

1. ALL PERIMETER DIKE/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSION VELOCITY.
4. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED IN THE STANDARD.
5. STABILIZATION OF THE AREA DISTURBED BY THE DIKE AND SWALE SHALL BE DONE IN ACCORDANCE WITH THE STANDARD AND SPECIFICATIONS FOR TEMPORARY SEEDING AND MULCHING, AND SHALL BE DONE WITHIN 10 DAYS.
6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

MAX. DRAINAGE AREA LIMIT: 2 ACRES

| ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | PERIMETER DIKE OR SWALE |
|---|---|

# STANDARD AND SPECIFICATIONS FOR TEMPORARY SWALE

## Definition

A temporary excavated drainage way.

## Purpose

The purpose of a temporary swale is to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet or to intercept sediment laden water and divert it to a sediment trapping device.

## Conditions Where Practice Applies

Temporary swales are constructed:

1. to divert flows from entering a disturbed area.

2. intermittently across disturbed areas to shorten overland flow distances.

3. to direct sediment laden water along the base of slopes to a trapping device.

4. to transport offsite flows across disturbed areas such as rights-of-way.

Swales collecting runoff from disturbed areas shall remain in place until the disturbed areas are permanently stabilized.

## Design Criteria

See Figure 5A.2 on page 5A.5 for details.

| | Swale A | Swale B |
|---|---|---|
| Drainage Area | <5 Ac | 5-10 Ac |
| Bottom Width of Flow Channel | 4 ft | 6 ft |
| Depth of Flow Channel | 1 ft | 1 ft |
| Side Slopes | 2:1 or flatter | 2:1 or flatter |
| Grade | 0.5% Min.<br>20% Max. | 0.5% Min.<br>20% Max. |

For drainage areas larger than 10 acres, refer to the Standard and Specification for Waterways on page 5B.11.

**Stabilization**

Stabilization of the swale shall be completed within 7 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year. The flow channel shall be stabilized as per the following criteria:

| Type of Treatment | Channel Grade[1] | Flow Channel A (<5 Ac.) | Flow Channel B (5-10 Ac) |
|---|---|---|---|
| 1 | 0.5-3.0% | Seed & Straw Mulch | Seed & Straw Mulch |
| 2 | 3.1-5.0% | Seed & Straw Mulch | Seed and cover with RECP, Sod, or lined with plastic or 2 in. stone |
| 3 | 5.1-8.0% | Seed and cover with RECP, Sod, or line with plastic or 2 in. stone | Line with 4-8 in. or stone or Recycled Concrete Equivalent[2] or geotextile |
| 4 | 8.1-20% | Line with 4-8 in. stone or Recycled Concrete Equivalent[2] or geotextile | Site Specific Engineering Design |

[1] In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.
[2] Recycled Concrete Equivalent shall be concrete broken into the required size, and shall contain no steel reinforcement.

**Outlet**

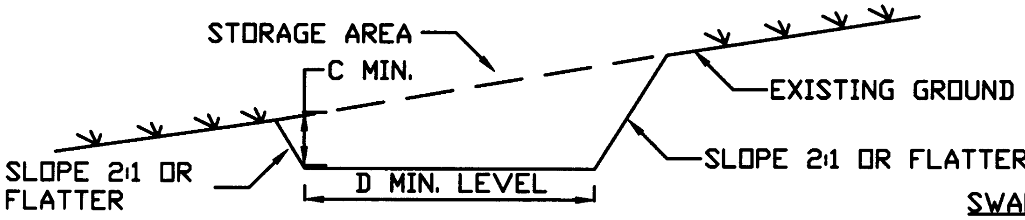
Swale shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin until the drainage area above the swale is adequately stabilized.

The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet condition.

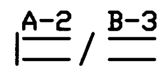
If a swale is used to divert clean water flows from entering a disturbed area, a sediment trapping device may not be needed.

# Figure 5A.2
# Temporary Swale




CROSS SECTION

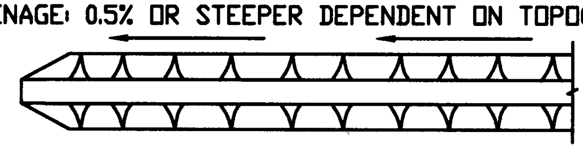
SYMBOL




| | SWALE A | SWALE B |
|---|---|---|
| C | 1' | 1' |
| D | 4' | 6' |

POSITIVE DRAINAGE: 0.5% OR STEEPER DEPENDENT ON TOPOGRAPHY

OUTLET AS REQUIRED
SEE ITEM 8 BELOW.



PLAN VIEW

## CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY SWALES SHALL HAVE UNINTERUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE SWALE.
8. STABILIZATION SHALL BE AS PER THE FLOW CHANNEL STABILIZATION CHART BELOW:

| TYPE OF TREATMENT | CHANNEL GRADE | A(5 AC. OR LESS) | B(5 AC -10AC) |
|---|---|---|---|
| 1 | 0.5-3.0% | SEED AND STRAW MULCH | SEED AND STRAW MULCH |
| 2 | 3.1-5.0% | SEED AND STRAW MULCH | SEED AND COVER USING RECP |
| 3 | 5.1-8.0% | SEED AND COVER WITH RECP | LINED WITH 4-8' RIP-RAP OR GEOTEXTILE |
| 4 | 8.1-20.% | LINED WITH 4-8' RIP-RAP OR GEOTEXTILE | ENGINEERED DESIGN |

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

TEMPORARY SWALE

# STANDARD AND SPECIFICATIONS FOR SEDIMENT TRAP

## Definition

A temporary sediment control device formed by excavation and/or embankment to intercept sediment laden runoff and retain the sediment.

## Purpose

The purpose of the structure is to intercept sediment-laden runoff and trap the sediment in order to protect drainage ways, properties, and rights-of-way below the sediment trap from sedimentation.

## Conditions Where Practice Applies

A sediment trap is usually installed in a drainage way, at a storm drain inlet, or other points of collection from a disturbed area.

Sediment traps should be used to artificially break up the natural drainage area into smaller sections where a larger device (sediment basin) would be less effective.

## Design Criteria

If any of the design criteria presented here cannot be met, see Standard and Specification for Sediment Basin on page 5A.49.

**Drainage Area**

The drainage area for sediment traps shall be in accordance with the specific type of sediment trap used (Type I through V).

**Location**

Sediment traps shall be located so that they can be installed prior to grading or filling in the drainage area they are to protect. Traps must not be located any closer than 20 feet from a proposed building foundation if the trap is to function during building construction. Locate traps to obtain maximum storage benefit from the terrain and for ease of cleanout and disposal of the trapped sediment.

**Trap Size**

The volume of a sediment trap as measured at the elevation of the crest of the outlet shall be at least 3,600 cubic feet per acre of drainage area. The volume of a constructed trap shall be calculated using standard mathematical procedures. The volume of a natural sediment trap may be approximated by the equation: Volume (cu.ft.) = 0.4 x surface area (sq.ft.) x maximum depth (ft.).

**Trap Cleanout**

Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to ½ of the design depth of the trap. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.

**Embankment**

All embankments for sediment traps shall not exceed five (5) feet in height as measured at the low point of the original ground along the centerline of the embankment. Embankments shall have a minimum four (4) foot wide top and side slopes of 2:1 or flatter. The embankment shall be compacted by traversing with equipment while it is being constructed. The embankment shall be stabilized with seed and mulch as soon as it is completed

The elevation of the top of any dike directing water to any sediment trap will equal or exceed the maximum height of the outlet structure along the entire length of the trap.

**Excavation**

All excavation operations shall be carried out in such a manner that erosion and water pollution shall be minimal. Excavated portions of sediment traps shall have 1:1 or flatter slopes.

**Outlet**

The outlet shall be designed, constructed, and maintained in such a manner that sediment does not leave the trap and that erosion at or below the outlet does not occur.

Sediment traps must outlet onto stabilized (preferable undisturbed) ground, into a watercourse, stabilized channel, or into a storm drain system. Distance between inlet and outlet should be maximized to the longest length practicable.

## Trap Details Needed on Erosion and Sediment Control Plans

Each trap shall be delineated on the plans in such a manner that it will not be confused with any other features. Each trap on a plan shall indicate all the information necessary to properly construct and maintain the structure. If the drawings are such that this information cannot be delineated on the drawings, then a table shall be developed. If a table is developed, then each trap on a plan shall have a number and the numbers shall be consecutive.

The following information shall be shown for each trap in a summary table format on the plans.

1. Trap number
2. Type of trap
3. Drainage area
4. Storage required
5. Storage provided (if applicable)
6. Outlet length or pipe sizes
7. Storage depth below outlet or cleanout elevation
8. Embankment height and elevation (if applicable)

## Type of Sediment Traps

There are five (5) specific types of sediment traps which vary according to their function, location, or drainage area.

I. Pipe Outlet Sediment Trap
II. Grass Outlet Sediment Trap
III. Catch Basin Sediment Trap
IV. Stone Outlet Sediment Trap
V. Riprap Outlet Sediment Trap

### I. Pipe Outlet Sediment Trap

A Pipe Outlet Sediment Trap consists of a trap formed by embankment or excavation. The outlet for the trap is through a perforated riser and a pipe through the embankment. The outlet pipe and riser shall be made of steel, corrugated metal or other suitable material. The top of the embankment shall be at least 1 ½ feet above the crest of the riser. The top 2/3 of the riser shall be perforated with one (1) inch nominal diameter holes or slits spaced six (6) inches vertically and horizontally placed in the concave portion of the corrugated pipe.

No holes or slits will be allowed within six (6) inches of the top of the horizontal barrel. All pipe connections shall be watertight. The riser shall be wrapped with ½ to ¼ inch hardware cloth wire then wrapped with filter cloth with a sieve size between #40-80 and secured with strapping or connecting band at the top and bottom of the cloth. The cloth shall cover an area at least six (6) inches above the highest hole and six (6) inches below the lowest hole. The top of the riser pipe shall not be covered with filter cloth. The riser shall have a base with sufficient weight to prevent flotation of the riser. Two approved bases are:

1. A concrete base 12 in. thick with the riser embedded 9 in. into the concrete base, or

2. One quarter inch, minimum, thick steel plate attached to the riser by a continuous weld around the circumference of the riser to form a watertight connection. The plate shall have 2.5 feet of stone, gravel, or earth placed on it to prevent flotation. In either case, each side of the square base measurement shall be the riser diameter plus 24 inches.

Pipe outlet sediment traps shall be limited to a five (5) acre maximum drainage area. Pipe outlet sediment traps may be interchangeable in the field with stone outlet or riprap sediment traps provided that these sediment traps are constructed in accordance with the detail and specifications for that trap.

Select pipe diameter from the following table:

<u>Minimum Sizes</u>

| Barrel Diameter[1] (in.) | Riser Diameter[1] (in.) | Maximum Drainage Area (ac.) |
|---|---|---|
| 12 | 15 | 1 |
| 15 | 18 | 2 |
| 18 | 21 | 3 |
| 21 | 24 | 4 |
| 21 | 27 | 5 |

[1] Barrel diameter may be same size as riser diameter.

See details for Pipe Outlet Sediment Trap ST-I in Figure 5A.16 (1) and 5A.16 (2) on pages 5A.38 and 5A.39.

### II. Grass Outlet Sediment Trap

A Grass Outlet Sediment Trap consists of a trap formed by excavating the earth to create a holding area. The trap has a discharge point over natural existing grass. The outlet crest width (feet) shall be equal to four (4) times the drainage area (acres) with a minimum width of four (4) feet. The outlet shall be free of any restrictions to flow. The outlet lip must remain undisturbed and level. The volume of this trap shall be computed at the elevation of the crest of the outlet. Grass outlet sediment traps shall be limited to a five (5) acre maximum drainage area.

See details for Grass Outlet Sediment Trap ST-II in Figure 5A.17 on page 5A.40.

### III. Catch Basin Sediment Trap

A Catch Basin Sediment Trap consists of a basin formed by excavation on natural ground that discharges through an opening in a storm drain inlet structure. This opening can either be the inlet opening or a temporary opening made by omitting bricks or blocks in the inlet.

A yard drain inlet or an inlet in the median strip of a dual highway could use the inlet opening for the type outlet. The trap should be out of the roadway so as not to interfere with future compaction or construction. Placing the trap on the opposite side of the opening and diverting water from the roadway to the trap is one means of doing this. Catch basin sediment traps shall be limited to a three (3) acre maximum drainage area. The volume of this trap is measured at the elevation of the crest of the outlet (invert of the inlet opening).

See details for Catch Basin Sediment Trap ST-III in Figure 5A.18 on page 5A.41.

### IV. Stone Outlet Sediment Trap

A Stone Outlet Sediment Trap consists of a trap formed by an embankment or excavation. The outlet of this trap is over a stone section placed on level ground. The minimum length (feet) of the outlet shall be equal to four (4) times the drainage area (acres).

Required storage shall be 3,600 cubic feet per acre of drainage area.

The outlet crest (top of stone in weir section) shall be level, at least one (1) foot below top of embankment and no more than one (1) foot above ground beneath the outlet. Stone used in the outlet shall be small riprap (4 in. x 8 in.). To provide more efficient trapping effect, a layer of filter cloth should be embedded one (1) foot back into the upstream face of the outlet stone or a one (1) foot thick layer of two (2) inch or finer aggregate shall be placed on the upstream face of the outlet.

Stone Outlet Sediment Traps may be interchangeable in the field with pipe or riprap outlet sediment traps provided they are constructed in accordance with the detail and specifications for those traps. Stone outlet sediment traps shall be limited to a five (5) acre maximum drainage area.

See details for Stone Outlet Sediment Trap ST-IV in Figure 5A.19 on page 5A.42.

### V. Riprap Outlet Sediment Trap

A Riprap Outlet Sediment Trap consists of a trap formed by an excavation and embankment. The outlet for this trap shall be through a partially excavated channel lined with riprap. This outlet channel shall discharge onto a stabilized area or to a stable watercourse. The riprap outlet sediment trap may be used for drainage areas of up to a maximum of 15 acres.

Design Criteria for Riprap Outlet Sediment Trap

1. The total contributing drainage area (disturbed or undisturbed either on or off the developing property) shall not exceed 15 acres.
2. The storage needs for this trap shall be computed using 3600 cubic feet of required storage for each acre of drainage area. The storage volume provided can be figured by computing the volume of storage area available behind the outlet structure up to an elevation of one (1) foot below the level weir crest.
3. The maximum height of embankment shall not exceed five (5) feet.
4. The elevation of the top of any dike directing water to a riprap outlet sediment trap will equal or exceed the minimum elevation of the embankment along the entire length of this trap.

<u>Riprap Outlet Sediment Trap ST-V</u>
<u>(for Stone Lined Channel)</u>

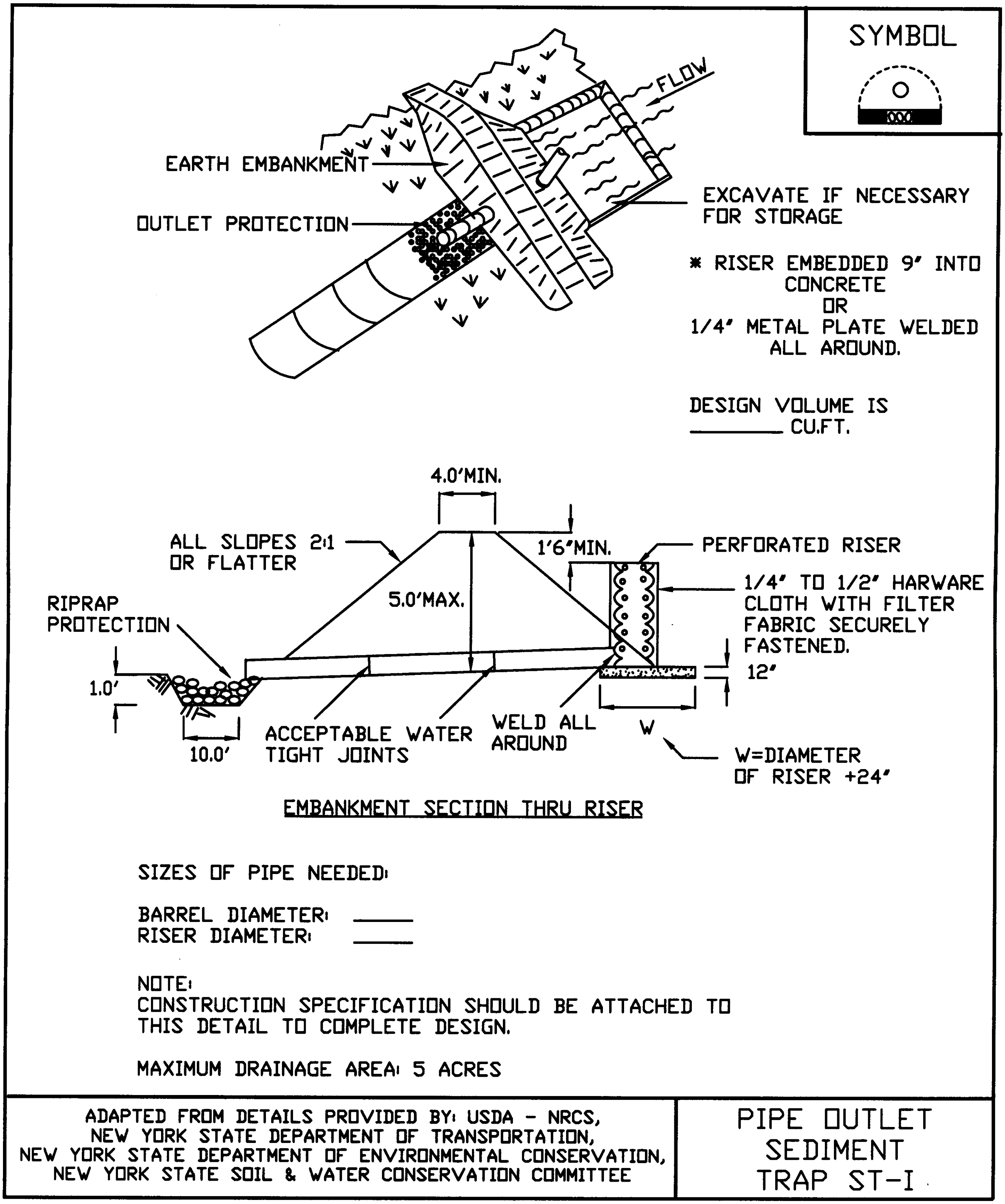
| Contributing Drainage Area (ac.) | Depth of Channel (a) (ft.) | Length of Weir (b) (ft.) |
|---|---|---|
| 1 | 1.5 | 4.0 |
| 2 | 1.5 | 5.0 |
| 3 | 1.5 | 6.0 |
| 4 | 1.5 | 10.0 |
| 5 | 1.5 | 12.0 |
| 6 | 1.5 | 14.0 |
| 7 | 1.5 | 16.0 |
| 8 | 2.0 | 10.0 |
| 9 | 2.0 | 10.0 |
| 10 | 2.0 | 12.0 |
| 11 | 2.0 | 14.0 |
| 12 | 2.0 | 14.0 |
| 13 | 2.0 | 16.0 |
| 14 | 2.0 | 16.0 |
| 15 | 2.0 | 18.0 |

See details for Riprap Outlet Sediment Trap ST-V on Figures 5A.20(1) and 5A.20(2) on pages 5A.43 and 5A.44.

**Optional Dewatering Methods**

Optional dewatering devices may be designed for use with sediment traps. Included are two methods, which may be used. See Figure 5A.21 on page 5A.45 for details.

# Figure 5A.16(1)
# Pipe Outlet Sediment Trap: ST-I



# Figure 5A.16(2)
# Pipe Outlet Sediment Trap: ST-I—Construction Specifications

SYMBOL

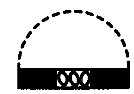
## CONSTRUCTION SPECIFICATIONS

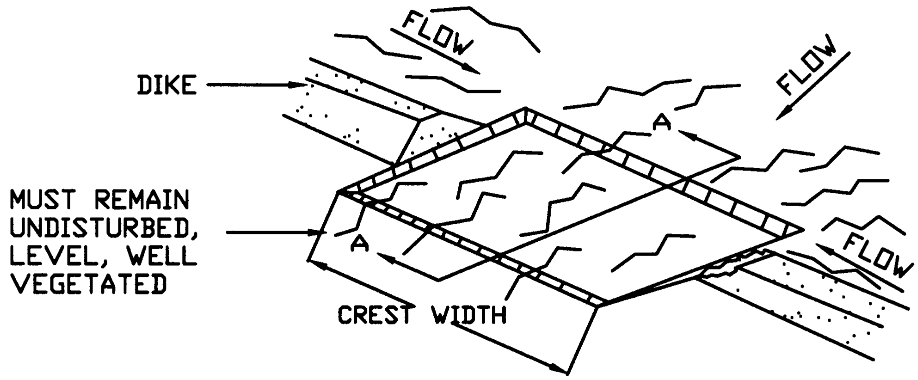
1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE.
4. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
5. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
6. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
7. THE STRUCTURE SHALL BE REMOVED AND AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
8. ALL FILL SLOPES SHALL BE 2:1 OR FLATTER; CUT SLOPES 1:1 OR FLATTER.
9. ALL PIPE CONNECTIONS SHALL BE WATERTIGHT.
10. THE TOP 2/3 OF THE RISER SHALL BE PERFORATED WITH ONE (1) INCH DIAMETER HOLES OR SLITS SPACED SIX (6) INCHES VERTICALLY AND HORIZONTALLY AND PLACED IN THE CONCAVE PORTION OF PIPE. NO HOLES WILL BE ALLOWED WITHIN SIX (6) INCHES OF THE HORIZONTAL BARREL.
11. THE RISER SHALL BE WRAPPED WITH 1/4 TO 1/2 INCH HARDWARE CLOTH WIRE THEN WRAPPED WITH FILTER CLOTH (HAVING AN EQUIVALENT SIEVE SIZE OF 40-80). THE FILTER CLOTH SHALL EXTEND SIX (6) INCHES ABOVE THE HIGHEST HOLE AND SIX (6) INCHES BELOW THE LOWEST HOLE. WHERE ENDS OF THE FILTER CLOTH COME TOGETHER, THEY SHALL BE OVER-LAPPED, FOLDED AND STAPLED TO PREVENT BYPASS.
12. STRAPS OR CONNECTING BANDS SHALL BE USED TO HOLD THE FILTER CLOTH AND WIRE FABRIC IN PLACE. THEY SHALL BE PLACED AT THE TOP AND BOTTOM OF THE CLOTH.
13. FILL MATERIAL AROUND THE PIPE SPILLWAY SHALL BE HAND COMPACTED IN FOUR (4) INCH LAYERS. A MINIMUM OF TWO (2) FEET OF HAND COMPACTED BACKFILL SHALL BE PLACED OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
14. THE RISER SHALL BE ANCHORED WITH EITHER A CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. FOR CONCRETE BASED THE DEPTH SHALL BE TWELVE (12) INCHES WITH THE RISER EMBEDDED NINE (9) INCHES. A 1/4 INCH MINIMUM THICKNESS STEEL PLATE SHALL BE ATTACHED TO THE RISER BY A CONTINUOUS WELD AROUND THE BOTTOM TO FORM A WATERTIGHT CONNECTION AND THEN PLACE TWO (2) FEET OF STONE, GRAVEL, OR TAMPED EARTH ON THE PLATE.

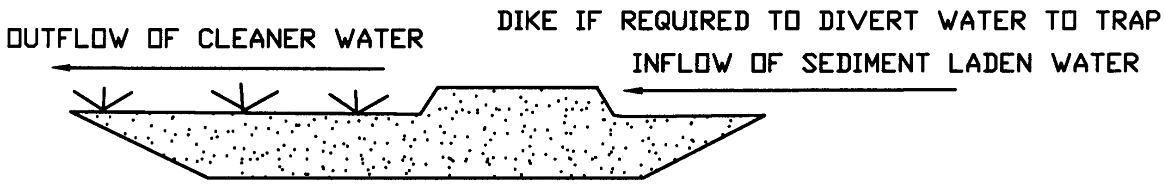
| | |
|---|---|
| ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,<br>NEW YORK STATE DEPARTMENT OF TRANSPORTATION,<br>NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,<br>NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | PIPE OUTLET<br>SEDIMENT TRAP<br>ST-I |

# Figure 5A.17
# Grass Outlet Sediment Trap: ST-II

SYMBOL






CREST WIDTH (FT)=4xDRAINAGE AREA (ACRES)

SECTION A - A
EXCAVATED GRASS OUTLET SEDIMENT TRAP

## CONSTRUCTION SPECIFICATIONS

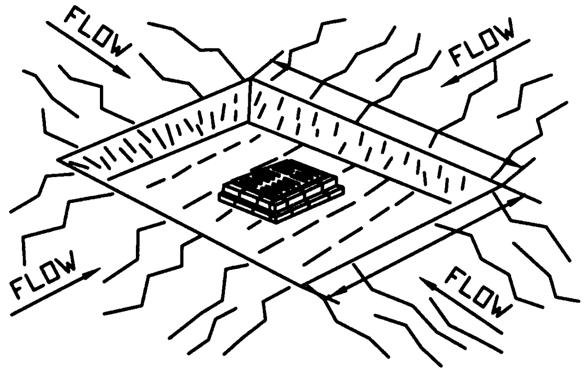
1. VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE AREA.
2. MINIMUM CREST WIDTH SHALL BE 4 x DRAINAGE AREA
3. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
4. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
5. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
6. THE SEDIMENT TRAP SHALL BE REMOVED AND AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
7. ALL CUT SLOPES SHALL BE 1:1 OR FLATTER.

MAXIMUM DRAINAGE AREA: 5 ACRES

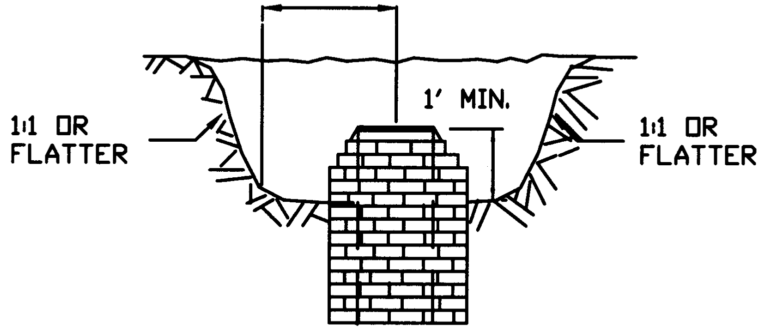
| | |
|---|---|
| ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | GRASS OUTLET SEDIMENT TRAP ST-II |

# Figure 5A.18
# Catch Basin Sediment Trap: ST-III

SYMBOL




YARD DRAIN




CROSS SECTION

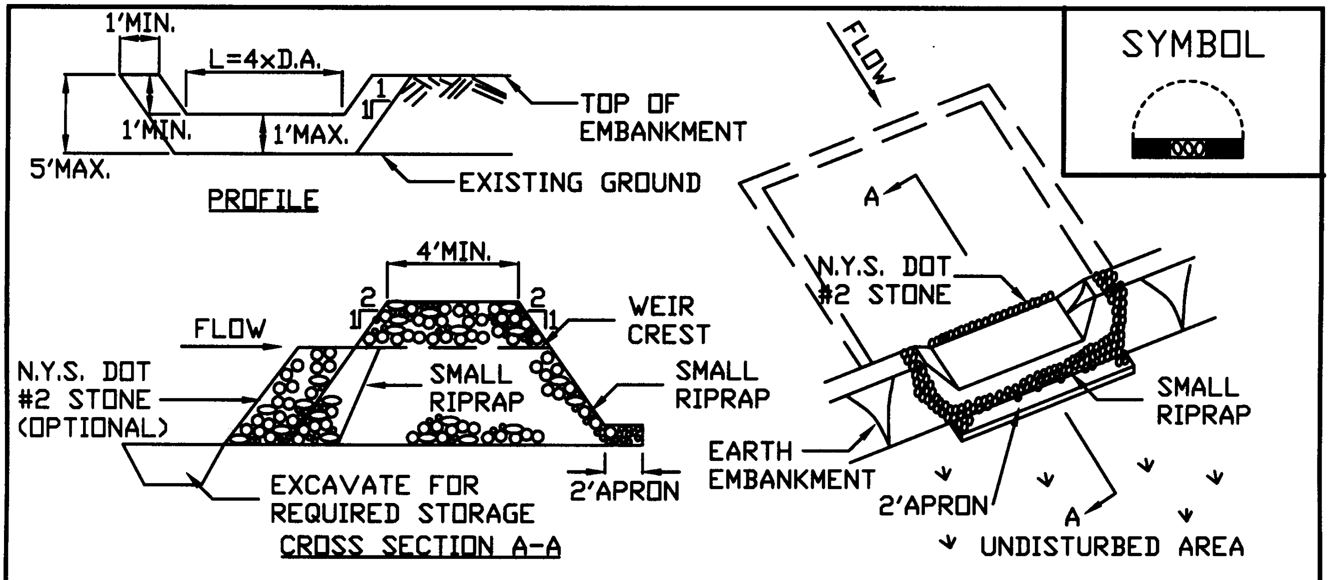
## CONSTRUCTION SPECIFICATIONS

1. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
2. THE VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE.
3. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
5. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE CONSTRUCTED DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
6. ALL CUT SLOPES SHALL BE 1:1 OR FLATTER.

MAXIMUM DRAINAGE AREA: 3 ACRES

| | |
|---|---|
| ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | CATCH BASIN SEDIMENT TRAP ST-III |

# Figure 5A.19
# Stone Outlet Sediment Trap: ST-IV




OPTION: A ONE FOOT LAYER OF N.Y.S. DOT #2 STONE MAY BE PLACED ON THE UPSTREAM SIDE OF THE RIPRAP INPLACE OF THE EMBEDDED FILTER CLOTH.

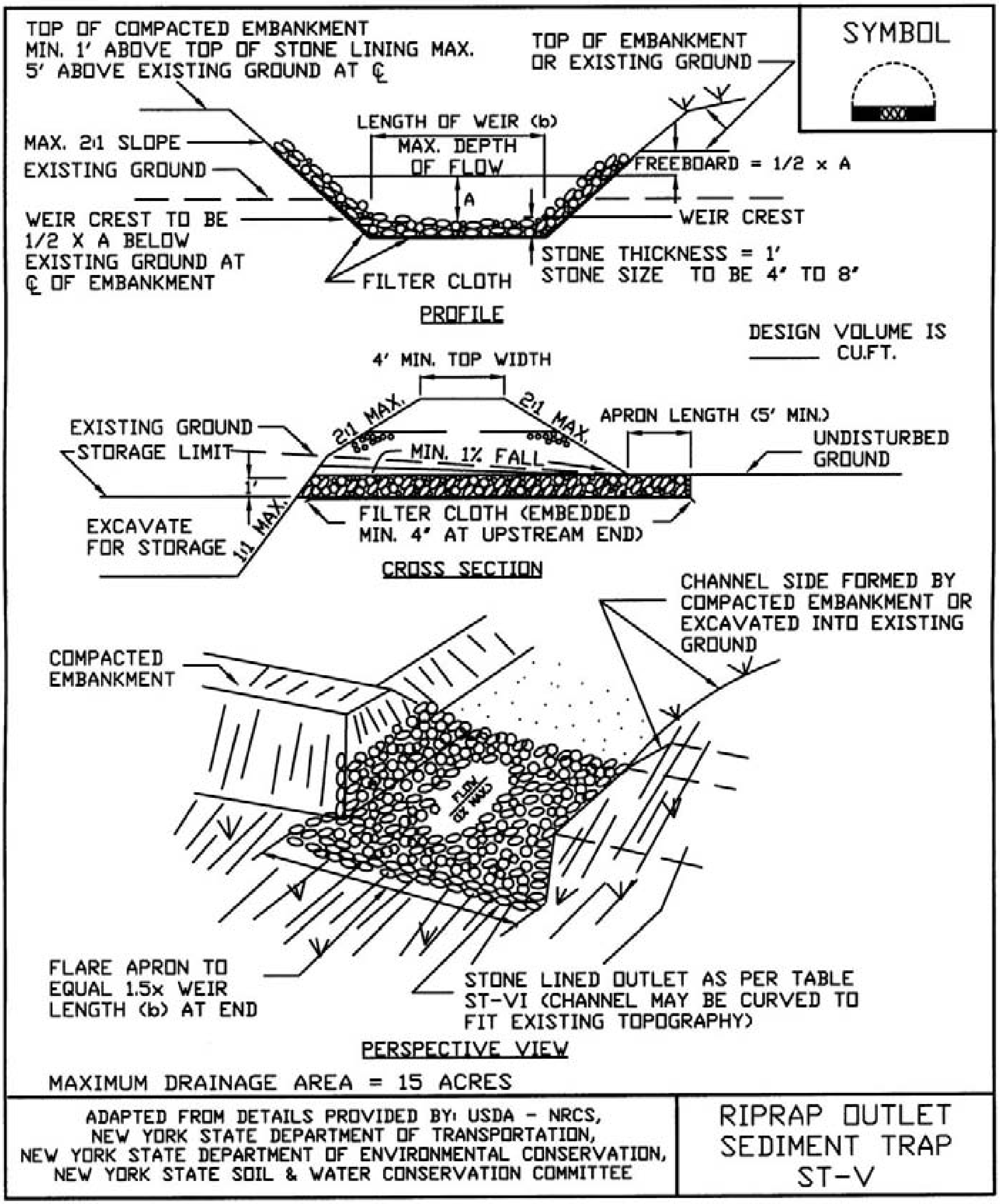
## CONSTRUCTION SPECIFICATIONS

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS AND OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIPRAP 4"-8" ALONG WITH A 1' THICKNESS OF 2" AGGREGATE PLACED ON THE UP-GRADE SIDE ON THE SMALL RIPRAP OR EMBEDDED FILTER CLOTH IN THE RIPRAP.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. IT SHALL BE PLACED ON SITE AND STABILIZED.
6. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
8. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

MAXIMUM DRAINAGE AREA 5 ACRES

| ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,<br>NEW YORK STATE DEPARTMENT OF TRANSPORTATION,<br>NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,<br>NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | STONE OUTLET<br>SEDIMENT TRAP<br>ST-IV |
|---|---|

# Figure 5A.20(1)
# Riprap Outlet Sediment Trap: ST-V



# Figure 5A.202)
# Riprap Outlet Sediment Trap: ST-V—Construction Specifications

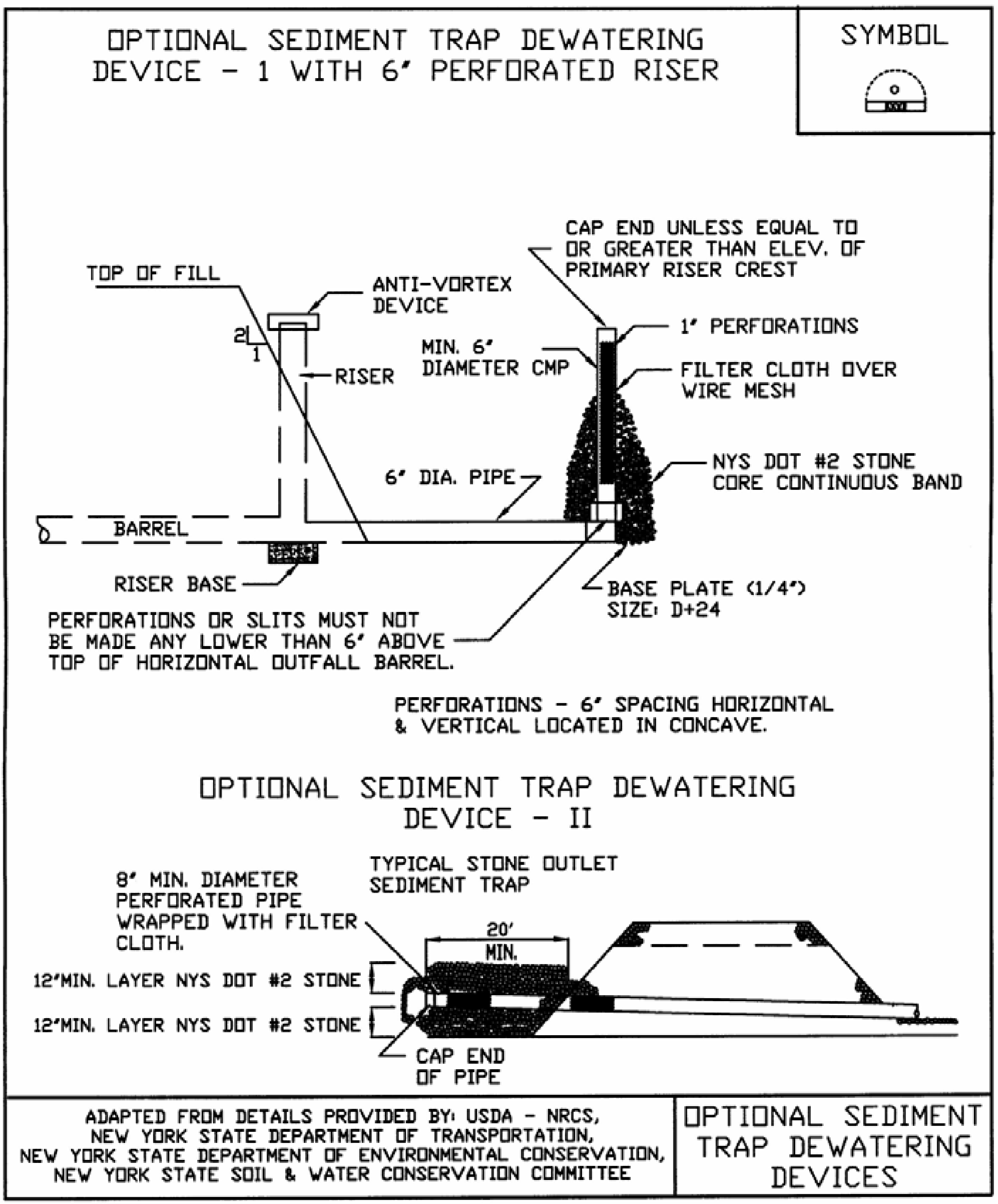
SYMBOL

## CONSTRUCTION SPECIFICATIONS

1. THE AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED. MAXIMUM HEIGHT OF OF EMBANKMENT SHALL BE FIVE (5) FEET, MEASURED AT CENTERLINE OF EMBANKMENT.
3. ALL FILL SLOPES SHALL BE 2:1 OR FLATTER, CUT SLOPES 1:1 OR FLATTER.
4. ELEVATION OF THE TOP OF ANY DIKE DIRECTING WATER INTO TRAP MUST EQUAL OR EXCEED THE HEIGHT OF EMBANKMENT.
5. STORAGE AREA PROVIDED SHALL BE FIGURED BY COMPUTING THE VOLUME AVAILABLE BEHIND THE OUTLET CHANNEL UP TO AN ELEVATION OF ONE (1) FOOT BELOW THE LEVEL WEIR CREST.
6. FILTER CLOTH SHALL BE PLACED OVER THE BOTTOM AND SIDES OF THE OUTLET CHANNEL PRIOR TO PLACEMENT OF STONE. SECTIONS OF FABRIC MUST OVERLAP AT LEAST ONE (1) FOOT WITH SECTION NEAREST THE ENTRANCE PLACED ON TOP. FABRIC SHALL BE EMBEDDED AT LEAST SIX (6) INCHES INTO EXISTING GROUND AT ENTRANCE OUTLET CHANNEL.
7. STONE USED IN THE OUTLET CHANNEL SHALL BE FOUR (4) TO EIGHT (8) INCH RIPRAP. TO PROVIDE A FILTERING EFFECT, A LAYER OF FILTER CLOTH SHALL BE EMBEDDED ONE (1) FOOT WITH SECTION NEAREST ENTRANCE PLACED ON TOP. FABRIC SHALL BE EMBEDDED AT LEAST SIX (6) INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
8. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
9. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRED AS NEEDED.
10. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
11. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
12. DRAINAGE AREA FOR THIS PRACTICE IS LIMITED TO 15 ACRES OR LESS.

| | |
|---|---|
| ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,<br>NEW YORK STATE DEPARTMENT OF TRANSPORTATION,<br>NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,<br>NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | RIPRAP OUTLET<br>SEDIMENT TRAP<br>ST-V |

## Figure 5A.21
## Optional Sediment Trap Dewatering Devices



# APPENDIX B-2

## INSPECTION AND MAINTENANCE REPORT FORM

# Inspection and Maintenance Report Form

**To be completed every 7 days and within 24 hours of a rainfall event of 0.5 inches or more**

Regular Inspector:_______________Rainfall Event Inspector:_____________Rainfall (inches):_____

| Contractor Activities | OK | NO | N/A | Notes |
|---|---|---|---|---|
| Are construction onsite traffic routes, parking, and storage of equipment and supplies restricted to areas specifically designated for those uses? | | | | |
| Are locations of temporary soil stock piles of construction materials in approved areas? | | | | |
| Is there any evidence of spills and resulting cleanup procedures? | | | | |
| **General Erosion & Sediment Controls** | | | | |
| Are sediment and erosion controls installed in the proper location and according to the specifications set out in the MECP | | | | |
| Are all operational storm drain inlets protected from sediment inflow? | | | | |
| Do any seeded or landscaped areas require maintenance, irrigation, fertilization, seeding or mulching? | | | | |
| Is there any evidence that sediment is leaving the site? | | | | |
| Is there any evidence of erosion or cut fill slopes? | | | | |
| **Perimeter Road Use** | | | | |
| Does much sediment get tracked on to the perimeter road?<br>Is the gravel clean or is it filled with sediment?<br>Does all traffic use the perimeter road to leave the site?<br>Is maintenance or repair required for the perimeter road? | | | | |

____________________________ ____________________________

Inspected by (Signature) Date

# Inspection and Maintenance Report Form

**To be completed every 7 days and within 24 hours of a rainfall event of 0.5 inches or more**

Inspector:______________________________

| STABILIZATION MEASURES | | | | | |
|---|---|---|---|---|---|
| Area | Date Since Last Disturbed | Date of Next Disturbance | Stabilized? Yes/No | Stabilized with | Condition |
| | | | | | |
| | | | | | |
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| | | | | | |

Stabilization Required: ____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________

To be performed by: ____________________ On or before: ____________________

# APPENDIX C

## NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

# APPENDIX C

## New York State Department of Health
## Generic Community Air Monitoring Plan [1]

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

## <u>Community Air Monitoring Plan</u>

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

**Continuous monitoring** will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

---

[1] Taken from Appendix 1A of the Draft DER-10 Technical Guidance for Site Investigation and Remediation, December 2002.

**APPENDIX C**
**(continued)**

**Periodic monitoring** for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence

## VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

## Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

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

# APPENDIX D

## HEALTH & SAFETY PLAN

# SOIL/FILL MANAGEMENT PLAN
# APPENDIX D

# SITE HEALTH AND SAFETY PLAN (HASP)

**SENECA MARKET I, LLC SITE**
**SITE NO. C849004**
**WATKINS GLEN, NEW YORK**

October 2008 0092-002-200
Revised December 2008

Prepared for:

**Seneca Market I, LLC**
**Watkins Glen, New York**

Prepared by:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

# SOIL/FILL MANAGEMENT PLAN
# APPENDIX D

# HEALTH AND SAFETY PLAN
# SENECA MARKET I, LLC SITE

## ACKNOWLEDGEMENT

**Plan Reviewed by (initial):**

Corporate Health and Safety Director: Thomas H. Forbes, P.E. ____________

Project Manager: Michael Lesakowski ____________

Designated Site Safety and Health Officer: Bryan C. Hann ____________

**Acknowledgement:**
I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

| NAME (PRINT) | SIGNATURE | DATE |
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# SOIL/FILL MANAGEMENT PLAN
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# HEALTH AND SAFETY PLAN
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## APPENDICES

# 1.0 INTRODUCTION

## 1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by Benchmark Environmental Engineering & Science, PLLC (Benchmark) employees during post-development activities on the Seneca Market 1 Site located in the Village of Watkins Glen, New York (see Figure 1). This HASP presents procedures for Benchmark employees who will be involved with field activities; it does not cover the activities of other contractors, subcontractors, or individuals on the Site. These firms will be required to develop and enforce their own HASPs, as discussed in Section 2.0. Benchmark accepts no responsibility for the health and safety of contractors, subcontractors or other personnel.

This HASP presents information on known site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

The purpose of the Soil/Fill Management Plan is to protect both the environment and human health, following completion of Brownfield Cleanup Program (BCP) activities, to address residual chlorinated organic and petroleum-impacted soil/fill, if encountered.

## 1.2 Background

The BCP Site, owned by Seneca Market I, LLC, is an approximate 2.27-acre property comprised of four tax parcels, including Tax ID nos. 65.09-2-56, 65.09-2-58, 65.09-2-59.1 and 65.09-2-61.2. The Site is bounded by Franklin, First, and Decatur Streets, and the Finger Lakes Railway right-of-way in the Village of Watkins Glen, New York (see Figures 1 and 2).

The parcels have a history of use that dates back to the 1860s. The Site was historically used as a dry cleaning facility, a bus garage, an automobile museum, a grape processing facility, and an asphalt company. The portion of the Site addressed at 20 North Franklin Street was historically occupied by a dry cleaning facility. That portion of the Site was investigated and partially remediated by the NYSDEC under the NYSDEC Superfund program (i.e., "the North Franklin Street Site" NYSDEC Registry No. 8-49-002). Due the presence of contaminated soil within the footprint of the former dry cleaning building, soil contaminated with chlorinated solvents was left in-place, with a stipulation that such soil would be excavated following building demolition.

In accordance with the NYSDEC-approved Remedial Design Work Plan (Ref. 1) under the Brownfield Cleanup Agreement, Seneca Market remediated the residual VOC contamination and redeveloped the property under the New York State BCP.

## 1.3 Known and Suspected Environmental Conditions

While remediation of surface and subsurface soil/fill and groundwater at the Site has already been performed, subsurface information is never 100 percent complete or accurate, especially on a Site with a long and diverse history. Therefore, based on the environmental assessments and investigations to date, the potential exists for Site soils and groundwater to contain residual chlorinated organic compounds and benzene, toluene, ethylbenzene, and xylene (BTEX).

## 1.4 Parameters of Interest

Based on the investigative findings, constituents of potential concern (COPCs) at the Site include:

- **Volatile Organic Compounds (VOCs)** – VOCs potentially remaining in Site soils and groundwater include chlorinated and petroleum hydrocarbons. The chlorinated organic contaminants may include: 1,2-dichloroethene (1,2-DCE), tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride (VC). The former source of these chlorinated VOCs was disposal of dry cleaning solvents used by the former dry cleaning operation. The petroleum hydrocarbons may include benzene, toluene, ethylbenzene, and xylene (i.e., BTEX). The former source of petroleum contamination was underground storage tanks and reported oil spills.

## 1.5 Overview of Post-Development Activities

Benchmark personnel will be on-site to observe any intrusive activities following development of the property. Potential post-development activities may include:

1. Infrastructure construction, improvements, repairs, and replacement (i.e., roads, parking lots, waterline, sewers, electric cable, etc.).

2. Foundation excavation.

3. Site regrading and landscaping.

# 2.0 ORGANIZATIONAL STRUCTURE

This chapter of the HASP describes the lines of authority, responsibility, and communication as they pertain to health and safety functions at the Site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations, and establishes the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

## 2.1 Roles and Responsibilities

All Benchmark personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this site are detailed in the following paragraphs.

### 2.1.1 Corporate Health and Safety Director

The Benchmark Corporate Health and Safety Director is ***Mr. Thomas H. Forbes, P.E.*** The Corporate Health and Safety Director is responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates Benchmark's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

### 2.1.2 Project Manager

The Project Manager for this Site is ***Mr. Michael Lesakowski.*** The Project Manager has the responsibility and authority to direct all Benchmark work operations at the site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the site work plan.
- Providing Benchmark workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with site contractors and the property owner.

### 2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this Site is ***Mr. Bryan C. Hann***. The qualified alternate SSHO is ***Mr. Richard L. Dubisz.*** The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the site during all work operations and has the authority to halt site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for Benchmark personnel on the site.
- Serving as the point of contact for safety and health matters.
- Ensuring that Benchmark field personnel working on the site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing site monitoring as required by the HASP.
- Assisting in the preparation and review of the HASP
- Maintaining site-specific safety and health records as described in this HASP
- Coordinating with the Project Manager, Site Workers, and Contractor's SSHO as necessary for safety and health efforts.

### 2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent

HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

#### 2.1.5 Other Site Personnel

Other Site personnel with health and safety responsibilities are responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than Benchmark's HASP. Benchmark assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non-Benchmark site personnel. Each Contractor shall assign a SSHO who will coordinate with Benchmark's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to Benchmark and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing site inspection work (e.g., the New York State Department of Environmental Conservation). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

# 3.0 HAZARD EVALUATION

The possibility exists that workers may be exposed to hazardous substances during intrusive Site activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil/fill, and through the inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large-sized construction equipment (e.g., excavators) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

## 3.1 Chemical Hazards

As discussed in Section 1.3, historic activities related to former operations and facilities at the Site have resulted in elevated concentrations of chlorinated organics, petroleum products, and inorganic compounds in Site soils and to a lesser extent in Site groundwater. Table D-1 identifies concentration ranges for constituents of potential concern (COPCs) historically detected in Site soils prior to remedial measures completed in August 2008. Table D-2 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent COPCs and related health and safety guidance and criteria are provided below.

- **Benzene (CAS #71-43-2)** poisoning occurs most commonly through inhalation of the vapor, however, benzene can also penetrate the skin and poison in that way. Locally, benzene has a comparatively strong irritating effect, producing erythema and burning and, in more severe cases, edema and blistering. Exposure to high concentrations of the vapor (i.e., 3,000 ppm or higher) may result in acute poisoning characterized by the narcotic action of benzene on the central nervous system. In acute poisoning, symptoms include confusion, dizziness, tightening of the leg muscles, and pressure over the forehead. Chronic exposure to benzene (i.e., long-term exposure to concentrations of 100 ppm or less) may lead to damage of the blood-forming system. Benzene is very flammable when exposed to heat or flame and can react vigorously with oxidizing materials.



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- **1,2-Dichloroethene (CAS #540-59-0)** is a solvent for phenols it is also as a additive to dye and lacquer solutions. Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and upper respiratory tract. May cause dizziness and nausea. This compound is flammable and will react with alkalis.

- **Ethylbenzene (CAS #100-41-4)** is a component of automobile gasoline. Over-exposure may cause kidney, skin liver and/or respiratory disease. Signs of exposure may include dermatitis, irritation of the eyes and mucus membranes, headache. Narcosis and coma may result in more severe cases.

- **Tetrachloroethene (CAS #127-18-4)** is used a solvent for greases, waxes and rubbers. It is harmful by ingestion inhalation and skin absorption. Exposure can cause dermatitis, dizziness, nausea, liver and kidney damage. This compound is a suspected carcinogen.

- **Toluene (CAS #108-88-3)** is a common component of paint thinners and automobile fuel. Acute exposure predominantly results in central nervous system depression. Symptoms include headache, dizziness, fatigue, muscular weakness, drowsiness and coordination loss. Repeated exposures may cause removal of lipids from the skin, resulting in dry, fissured dermatitis.

- **Trichloroethene (CAS #79-01-6)** was used in dry cleaning operations. It is toxic by inhalation and skin absorption. It is an irritant to the skin, eyes and mucous membranes. Symptoms of exposure may include headache, dizziness and nausea. Exposure may cause liver and kidney damage. TCE is a suspected human carcinogen.

- **Vinyl Chloride (CAS #75-01-4)** is a synthetic chlorinated organic chemical used in the manufacture of polyvinyl chloride (PVC). Its presence in site-specific circumstances may be attributable to breakdown of the halogenated aliphatic hydrocarbons TCE and 1,2-trans-dichloroethene to vinyl chloride, In high concentrations, vinyl chloride may cause reversible narcosis similar to alcohol intoxication. Skin contact with undiluted vinyl chloride results in frostbite by rapid evaporation and subsequent freezing. It is unlikely that these acute effects would be observed at the concentrations and site-specific exposure scenarios expected. Chronic exposure to vinyl chloride through inhalation has been associated with liver toxicity, fatty deposition in particular. Vinyl chloride is considered to be a suspect carcinogen.

- **Xylenes (o, m, and p) (CAS #95-47-6, 108-38-3, and 106-42-3)** are colorless, flammable liquids present in paint thinners and fuels. Acute exposure may cause central nervous system depression, resulting in headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may also cause removal of lipids from the skin, producing dry, fissured dermatitis. Exposure of high concentrations of vapor may cause eye irritation and damage, as well as irritation of the mucus membranes.

With respect to potential post-development activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table D-3. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

## 3.2 Physical Hazards

Post-development activities at the Site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as backhoes and excavators.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).
- The potential for slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during intrusive activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

# 4.0 TRAINING

## 4.1 Site Workers

All personnel performing intrusive activities at the Site (such as, but not limited to, equipment operators, general laborers, and contractors) who may be exposed to hazardous substances, health hazards, or safety hazards, including their supervisors/managers responsible for the Site, shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

### 4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and site control.
- Safe use of engineering controls and equipment.
- Decontamination procedures.



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- Emergency response and escape.
- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at Benchmark's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones or engaging in any on-site work activities that may involve exposure to hazardous substances or wastes.

#### 4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The Site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for site safety and health.
- Safety, health and other hazards present on the site.
- The site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the Site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.

- Decontamination procedures as detailed in Chapter 12 of this HASP.
- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in site conditions (i.e., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during site work.

## 4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, an additional 8 hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

## 4.3 Emergency Response Training

Emergency response training is addressed in the Emergency Response Plan (see Appendix D-1).

## 4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to all site visitors and other non-Benchmark personnel who enter the site beyond the site entry point. The site-specific briefing will provide information about site hazards; the site layout including work zones and places of refuge; the emergency communications system and emergency evacuation procedures; and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for site workers as described in Section 4.1.

# 5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to Benchmark employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual, and employment termination physicals for employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without the necessary PPE. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by ADP Screening & Selection Services, an occupational health care provider under contract with Benchmark. ADP's local facility is Health Works WNY, Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the Benchmark Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 yrs age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).
- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites and to establish baseline medical data.

In conformance with OSHA regulations, Benchmark will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

# 6.0 SAFE WORK PRACTICES

All Benchmark employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.
- Respiratory protective equipment and clothing must be worn by all personnel entering the site as required by the HASP or as modified by the site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.
- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.
- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the Benchmark occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.
- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.
- On-site personnel shall use the "buddy" system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.
- Personnel and equipment in the contaminated area shall be minimized, consistent with effective site operations.
- All employees have the obligation to immediately report and if possible, correct unsafe work conditions.
- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for Benchmark employees, as requested and required.

The recommended specific safety practices for working around the Contractor's equipment (e.g., backhoes, bulldozers, excavators, drill rigs etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the site, Benchmark personnel are also responsible for their own safety.

- Subsurface work will not be initiated without first clearing underground utility services.
- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.
- Care should be taken to avoid overhead wires when moving heavy equipment from location to location.
- Hard hats, safety boots and safety glasses should be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended.
- The work site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the site.
- Proper lighting must be provided when working at night.
- Construction activities should be discontinued during an electrical storm or severe weather conditions.
- The presence of combustible gases should be checked before igniting any open flame.
- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.
- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

# 7.0 PERSONAL PROTECTIVE EQUIPMENT

## 7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories, designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.
- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.
- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.
- **Level D:** Should not be worn on any site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

## 7.2 Protection Ensembles

### 7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection; however, Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing. The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

### 7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded. Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

### 7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen. Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

#### 7.2.4 Recommended Level of Protection for Site Tasks

Based upon current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the remedial activities, the minimum required Levels of Protection for these tasks shall be as identified in Table D-4.

# 8.0 EXPOSURE MONITORING

## 8.1 General

Although soil and groundwater at the Site has been remediated, the possibility still exists that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table D-2), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based on real-time field monitoring data.

### 8.1.1 On-Site Work Zone Monitoring

Benchmark personnel will conduct routine, real-time air monitoring during all intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photo-ionization detector (PID), combustible gas meter and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by Benchmark personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

### 8.1.2 Off-Site Community Air Monitoring

In addition to on-site monitoring within the work zone(s), continuous monitoring will be performed at upwind and downwind locations during all intrusive activities at the Site. This will provide a real-time method for determination of substantial vapor and/or particulate releases to the surrounding community as a result of ground intrusive work. The daily wind conditions will determine the location of the upwind and downwind monitoring locations. The wind direction will be monitored throughout the work day and if the wind direction changes, then the upwind and downwind monitoring points will be changed accordingly.

Ground intrusive activities are defined by NYSDOH Appendix 1A Generic Community Air Monitoring Plan (Ref. 2) and attached as Appendix D-2 of this HASP. Ground intrusive activities include soil/waste excavation and handling; test pitting or trenching; and the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of soil, sediment, and groundwater samples. Continuous monitoring is required for ground intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil; monitoring while bailing a well; and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the Site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring.

## 8.2 Monitoring Action Levels

### 8.2.1 On-Site Work Zone Action Levels

The PID, MiniRae 2000 PID equipped with a 10.6 eV lamp or other appropriate instrument(s), will be used by Benchmark personnel to continuously monitor organic vapor concentrations. Combustible gas will be monitored with the "combustible gas" option on the combustible gas meter or other appropriate instrument(s). In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (e.g., soil excavation) using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other site conditions) as follows for Benchmark personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Appendix D-2 of this HASP).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C (see Appendix D-2 of this HASP).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID -

Continue operations under Level B (see Appendix D-2), re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.

- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The explosimeter will be used to monitor levels of both combustible gases and oxygen during intrusive activities. Action levels based on the instrument readings shall be as follows:

- Less than 10% LEL - Continue engineering operations with caution.
- 10-25% LEL - Continuous monitoring with extreme caution, determine source/cause of elevated reading.
- Greater than 25% LEL - Explosion hazard, evaluate source and leave the Work Zone.
- 19.5% - 21% oxygen - Proceed with extreme caution; attempt to determine potential source of oxygen displacement.
- Less than 19.5% oxygen - Leave work zone immediately.
- 21-25% oxygen - Continue engineering operations with caution.
- Greater than 25% oxygen - Fire hazard potential, leave Work Zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during all intrusive activities and during handling of Site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 $\mu g/m^3$ – Continue field operations.
- 50-150 $\mu g/m^3$ – Don dust/particulate mask or equivalent
- Greater than 150 $\mu g/m^3$ – Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (e.g., wetting of excavated soils or tools at discretion of SHSO).

Readings with the organic vapor analyzer, combustible gas meter, and particulate monitor will be recorded and documented on the appropriate Project Field Forms. All instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

#### 8.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for Benchmark personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors. These criteria are consistent with the NYSDOH Generic Community Air Monitoring Plan (CAMP) requirements (see Appendix D-2 of this HASP):

- **ORGANIC VAPOR PERIMETER MONITORING:**
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background, work activities will be halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume but more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, must be conducted.
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.
  - If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone, the Site Health and Safety Officer must be notified and work activities shut down. The Site Health and Safety Officer will determine when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for New York State Department of Environmental Conservation (NYSDEC) and Department of Health (NYSDOH) personnel to review.

- **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**
  - If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.

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

- If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

o **MAJOR VAPOR EMISSION RESPONSE PLAN:**

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Appendix D-1) will be advised.

2. The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.

3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

| Responsible Person | Contact | Phone Number |
|---|---|---|
| SSHO | Police | 911 |
| SSHO | State Emergency Response Hotline | (800) 457-7362 |

Additional emergency numbers are listed in the Emergency Response Plan included as Appendix D-1.


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- **EXPLOSIVE VAPORS:**
  - Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the site perimeter.
  - Sustained atmospheric concentrations of greater than 10% LEL at the downwind site perimeter – Halt work and contact local Fire Department.

- **Airborne Particulate Community Air Monitoring**

Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a 15-minute period for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m$^3$) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed 150 ug/m$^3$ above the upwind level and that visible dust is not migrating from the work area.
- If, after implementation of dust suppression techniques downwind PM-10 levels are greater than 150 ug/m$^3$ above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m$^3$ of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Appendix D-1).

# 9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

## 9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a "harmful quantity" of oil (including petroleum and non-



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petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form a visible sheen on the water or violate applicable water quality standards.

- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.
- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during post-development activities.

## 9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented in Appendix D-1will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

## 9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned or otherwise blocked off to prevent unauthorized access.

- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50-lb bag of "speedy dry" granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the Site. The response contractor may use heavy equipment (e.g., excavator, backhoe, etc.) to berm the soils surrounding the spill site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- C&W Environmental, Inc.: (716) 597-0001
- Op-Tech: (607) 565-8891 (Waverly, NY) or (800) 225-6750

## 9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

# 10.0 HEAT/COLD STRESS MONITORING

Although it is anticipated that work activities at the Site would be completed during the warmer months, measures to be taken to minimize cold stress to Benchmark employees have also been included in the event that work activities extend to the winter months. The Site Safety and Health Officer and/or his or her designee will be responsible for monitoring Benchmark field personnel for symptoms of heat/cold stress.

## 10.1 Heat Stress Monitoring

PPE may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. PPE may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.

- Train workers to recognize the symptoms of heat related illness.

**Heat-Related Illness - Symptoms:**

- Heat rash may result from continuous exposure to heat or humid air.
- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.
- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.
- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same, If the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.
- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No Benchmark employee will be permitted to continue wearing semi-permeable or

impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

## 10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:

    1) **Frost Nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.

    2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.

    3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.

- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:

    1) Shivering
    2) Apathy (i.e., a change to an indifferent or uncaring mood)
    3) Unconsciousness
    4) Bodily freezing

Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

1) Remove the victim from the cold environment and remove wet or

frozen clothing. (Do this carefully as frostbite may have started.)

2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).

3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated area, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
  - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
  - At a workers request.
  - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill less than 30 degrees Fahrenheit with precipitation).
  - As a screening measure whenever anyone worker on site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

# 11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to all employees and other site users by the SSHO. It shall be each Contractor's SSHO's responsibility to ensure that all site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- **Exclusion Zone ("Hot Zone")** - The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. The zone will be delineated by flagging tape. All personnel entering the Exclusion Zone must wear the prescribed level of PPE identified in Section 7.
- **Contamination Reduction Zone** - The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.
- **Support Zone** - The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all remedial activities involving disruption or handling of site soils or groundwater:

- **Exclusion Zone**: 50 foot radius from the outer limit of the sampling/construction activity.
- **Contaminant Reduction Zone**: 100 foot radius from the outer limit of the sampling/construction activity.
- **Support Zone**: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the completion of the task will be allowed access to these areas and only if they are wearing the prescribed PPE. Entrance of all personnel must be approved by the SSHO. Construction fencing and warning symbols (i.e., construction cones and flags) and signage will be erected around the site to alert the general public to the intrusive activities.

The SSHO will maintain a Health and Safety Logbook containing the names of Benchmark workers and their level of protection. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

# 12.0 DECONTAMINATION

## 12.1 Decontamination for Benchmark Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the site. All Benchmark personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

**Station 1 - Equipment Drop:** Deposit re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting and follow the decontamination steps outlined in Section 12.3.

**Station 2 - Boots and Gloves Wash and Rinse:** Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

**Station 3 - Tape, Outer Boot and Glove Removal:** Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

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

**Station 5 - Outer Garment/Face Piece Removal**: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

**Station 6 - Inner Glove Removal:** Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR 1910.120(n).

## 12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a site contaminant would be considered "Immediately Dangerous to Life or Health."

## 12.3 Decontamination of Field Equipment

Decontamination of heavy equipment will be conducted by the Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone. At a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Decontamination of all tools used for sample collection purposes will be conducted by Benchmark personnel. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Wash with water to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

## 13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 defines a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work; has limited or restricted means for entry and exit; and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by Benchmark employees is not anticipated to be necessary during post-development activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by Benchmark employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through Benchmark's corporate Health and Safety Director. Benchmark employees shall not enter a confined space without these procedures and permits in place.

# 14.0 FIRE PREVENTION AND PROTECTION

## 14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

## 14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly, weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

## 14.3 Flammable and Combustible Substances

All storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the National Fire Protection Association.

## 14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Appendix D-3 of this HASP will be completed by the SSHO and reviewed/issued by the Project Manager.

## 15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is included as Appendix D-1. Figure 3 is a map of the route to the nearest hospital.

# 16.0 REFERENCES

1. *Remedial Design Work Plan: Seneca Market 1 Site, Brownfield Cleanup Program*, Benchmark Environmental Engineering & Science, PLLC, Revised June 2005.

2. *New York State Department of Health Generic Community Air Monitoring Plan, Appendix 1A*, Draft DER-10 Technical Guidance for Site Investigation and Remediation, December 2002.

# TABLES

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

# TABLE 1

## CONSTITUENTS OF POTENTIAL CONCERN

**Appendix D: Health and Safety Plan (HASP)**
**Seneca Market I, LLC Site**
**Watkins Glen, New York**

| Parameter | CAS No. | Maximum Detected Concentration[1] | | |
|---|---|---|---|---|
| | | Groundwater (ug/L) | Surface Soil/Fill (mg/kg) | Sub-Surface Soil/Fill (mg/kg) |
| ***Volatile Organic Compounds (VOCs):*** | | | | |
| Benzene | 71-43-2 | 17 | ND | 0.019 |
| 1,2-Dichloroethene | 540-59-0 | 2900 | ND | 0.46 |
| Ethylbenzene | 100-41-4 | 51 | ND | 0.37 |
| Tetrachloroethene | 127-18-4 | 3500 | 41 | 31 |
| Toluene | 108-88-3 | 6 | ND | 0.04 |
| Trichloroethene | 79-01-6 | 1100 | ND | 7.7 |
| Vinyl Chloride | 75-01-4 | 300 | ND | 0.43 |
| Total Xylene | 1330-20-7 | 250 | ND | 1.8 |

**Notes:**

1. Maximum detected concentrations for soil and groundwater media from the 1993 RI by URS. The site has been remediated through BCP cleanup efforts. Accordingly, actual maximum concentrations would most likely be lower.

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

# TABLE 2

## TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

### Appendix D: Health and Safety Plan (HASP)
### Seneca Market I, LLC Site
### Watkins Glen, New York

| Parameter | Synonyms | CAS No. | Code | Concentration Limits[1] | | |
|---|---|---|---|---|---|---|
| | | | | PEL | TLV | IDLH |
| ***Volatile Organic Compounds (VOCs): ppm*** | | | | | | |
| Benzene | Benzol, Phenyl hydride | 71-43-2 | Ca | 1 | 0.5 | 500 |
| 1,2-Dichloroethene | 1,2-DCE | 540-59-0 | *none* | 200 | 200 | 1000 |
| Ethylbenzene | Ethylbenzol, Phenylethane | 100-41-4 | *none* | 100 | 100 | 800 |
| Tetrachloroethene | Perchloroethene, Perk, PCE | 127-18-4 | Ca | 100 | 25 | 150 |
| Toluene | Methyl benzene, Methyl benzol | 108-88-3 | C-300 | 200 | 50 | 500 |
| Trichloroethene | Ethylene trichloride, TCE | 79-01-6 | Ca | 100 | 50 | 1000 |
| Vinyl Chloride | Chloroethene, VC | 75-01-4 | Ca | 1 | 1 | ND |
| Xylene, Total | o-, m-, p-isomers | 1330-20-7 | *none* | 100 | 100 | 900 |

**Notes:**

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with changes and updates).
2. " -- " = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

**Explanation:**

Ca = NIOSH considers constituent to be a potential occupational carcinogen.
C-## = Ceiling Level equals the maximum exposure concentration allowable during the work day.
IDLH = Immediately Dangerous to Life or Health.
ND indicates that an IDLH has not as yet been determined.
TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), = the max. exposure conc. allowable for 8 hrs/day @ 40 hrs/week.
TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.
TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)
TLV-STEL or Short Term Exposure Limits are 15 min. exposures that should not be exceeded for even an instant. Not a stand alone value - accompanied by TLV-TWA.
It indicates a higher exposure that can be tolerated for a short time without adverse effect as long as the total time weighted average is not exceded.
TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.
Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.
PEL = Permissible Exposure Limit, established by OSHA, equals the maximium exposure conconcentration allowable for 8 hours per day @ 40 hours per week

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# TABLE 3

## POTENTIAL ROUTES OF EXPOSURE TO THE CONSTITUENTS OF POTENTIAL CONCERN

### Appendix D: Health and Safety Plan (HASP)
### Seneca Market I, LLC Site
### Watkins Glen, New York

| Activity [1] | Direct Contact with Soil/Fill | Inhalation of Vapors or Dust | Direct Contact with Groundwater |
|---|---|---|---|
| 1. Infrastructure Construction | x | x | x |
| 2. Foundation Excavation | x | x | x |
| 3. Site Regrading and Landscaping | x | x | |

**Notes:**
1. Activity as described in Section 1.5 of the Health and Safety Plan.

# TABLE 4

## REQUIRED LEVELS OF PROTECTION

## Appendix D: Health and Safety Plan (HASP)
## Seneca Market I, LLC Site
## Watkins Glen, New York

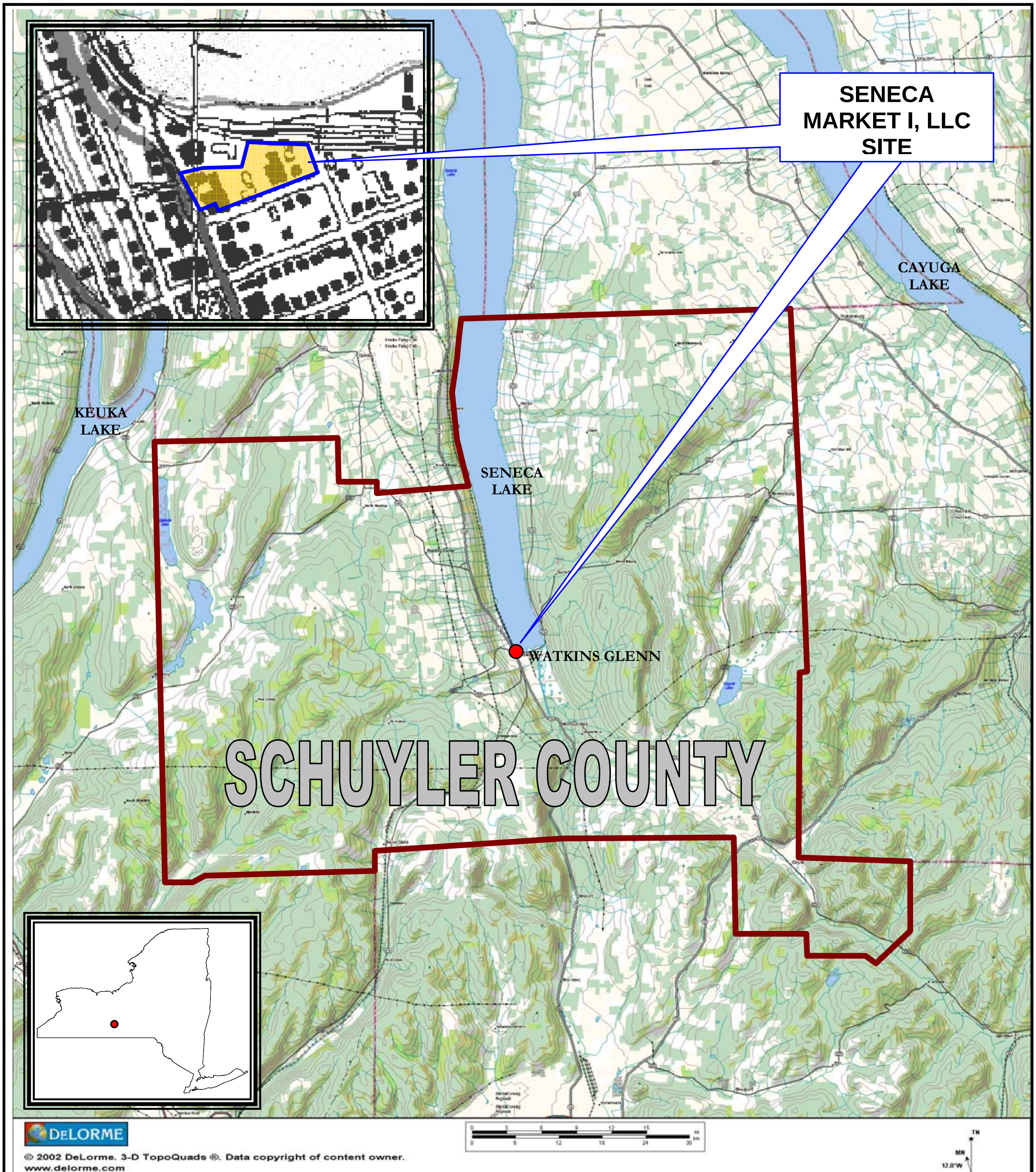
| Activity | Respiratory Protection 1 | Clothing | Gloves 2 | Boots 2, 3 | Other Required PPE/Modifications 2, 4 |
|---|---|---|---|---|---|
| 1. Infrastructure Construction | Level D (upgrade to Level C if necessary) | Work Uniform or Tyvek | L/N | outer: L<br>inner: STSS | HH<br>SGSS |
| 2. Foundation Excavation | Level D (upgrade to Level C if necessary) | Work Uniform or Tyvek | L/N | outer: L<br>inner: STSS | HH<br>SGSS |
| 3. Site Regrading and Landscaping | Level D (upgrade to Level C if necessary) | Work Uniform or Tyvek | L/N | outer: L<br>inner: STSS | HH<br>SGSS |

**Notes:**

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equiped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; S = Saranex; SG = safety glasses; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

# FIGURES

FIGURE 1

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ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599

PROJECT NO.: 0092-002-200

DATE: DECEMBER 2008

DRAFTED BY: BCH

## SITE LOCATION AND VICINITY MAP

APPENDIX D: HEALTH & SAFETY PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004

PREPARED FOR

SENECA MARKET I, LLC

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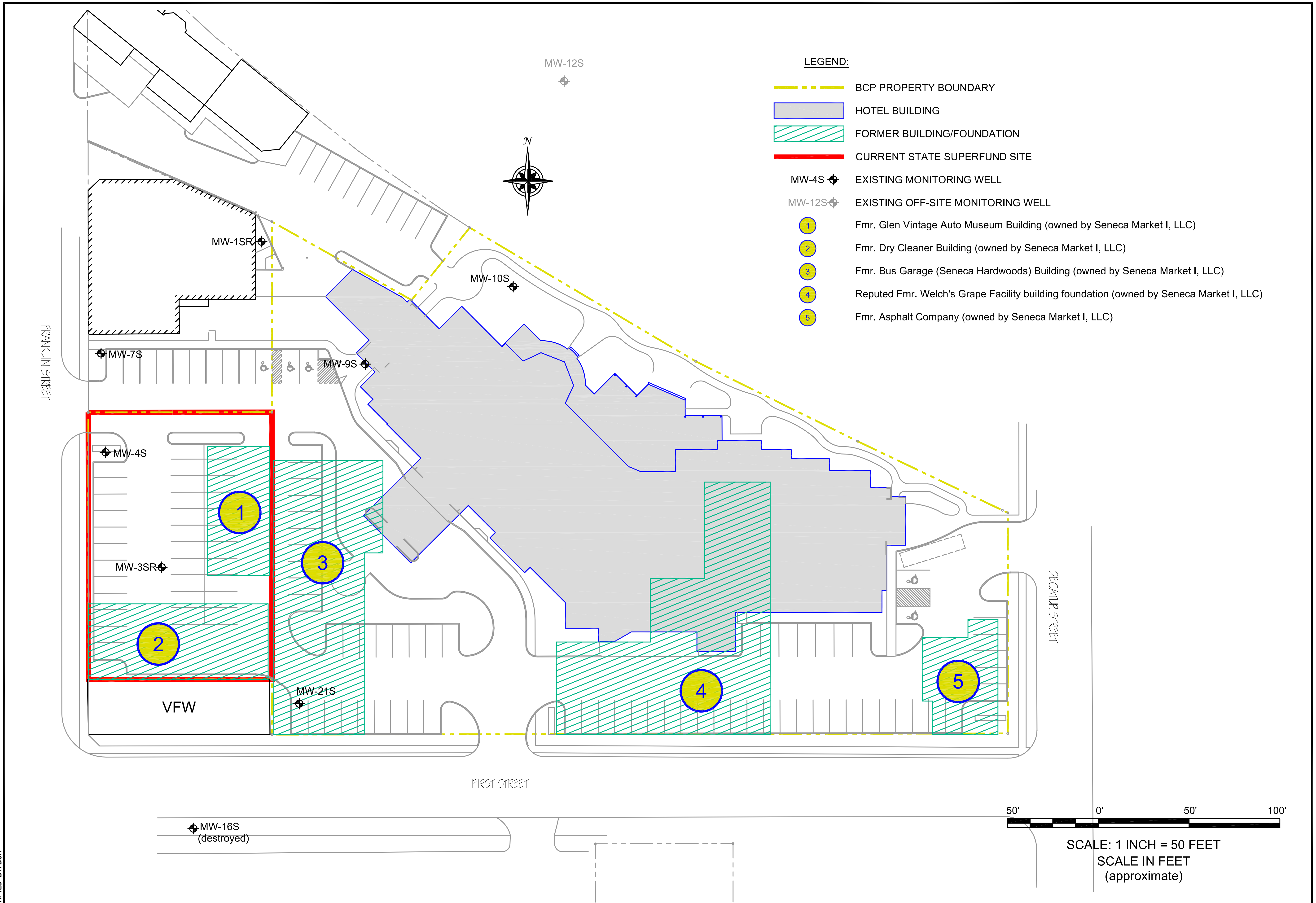



DATE: DECEMBER 2008
DRAFTED BY: BCH

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599

JOB NO.: 0092-002-200

# SITE PLAN

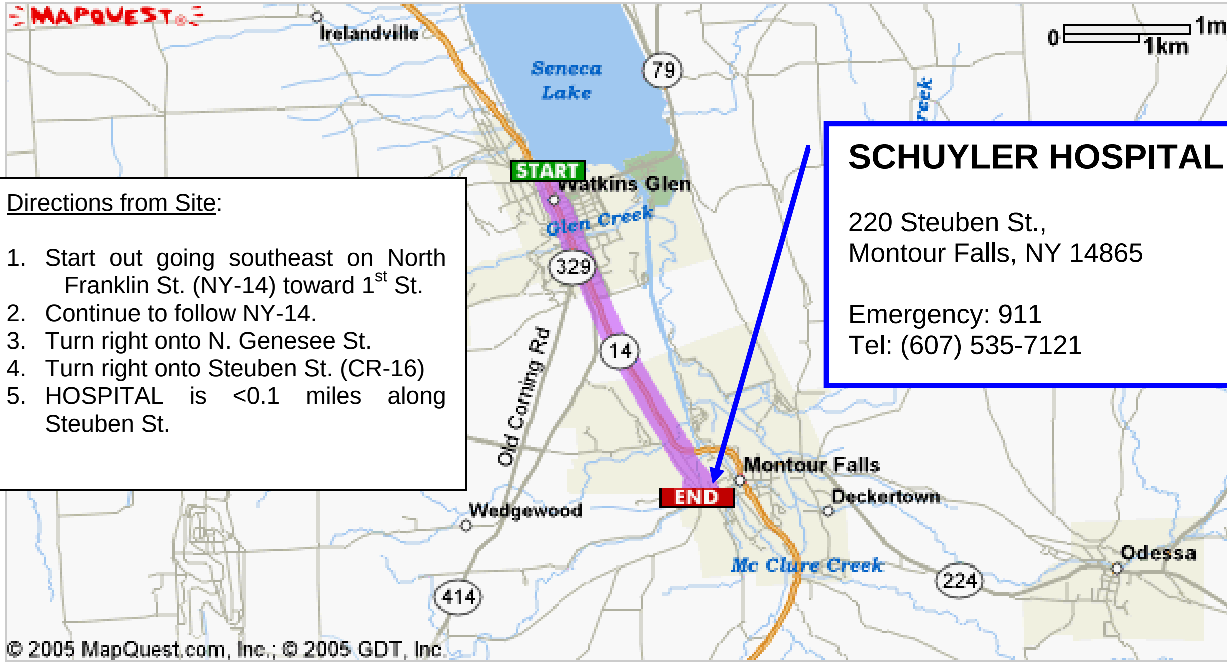
APPENDIX D: HEALTH & SAFETY PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
SITE NO. C849004
PREPARED FOR
SENECA MARKET I, LLC

**FIGURE 2**

# FIGURE 3

**Total Est. Time: 6 minutes** **Total Est. Distance: 2.95 miles**




Directions from Site:

1. Start out going southeast on North Franklin St. (NY-14) toward 1st St.
2. Continue to follow NY-14.
3. Turn right onto N. Genesee St.
4. Turn right onto Steuben St. (CR-16)
5. HOSPITAL is <0.1 miles along Steuben St.

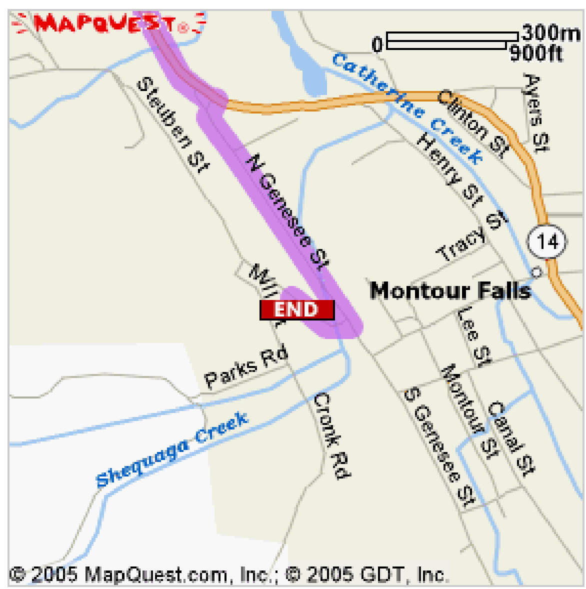
**SCHUYLER HOSPITAL**

220 Steuben St.,
Montour Falls, NY 14865

Emergency: 911
Tel: (607) 535-7121

**Start:**
**20 N Franklin St**
Watkins Glen, NY 14891-1221, US

**End:**
**220 Steuben St**
Montour Falls, NY 14865-9740, US



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SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599


PROJECT NO.: 0092-002-200

DATE: DECEMBER 2008

DRAFTED BY: BCH

## HOSPITAL ROUTE MAP

APPENDIX D: HEALTH & SAFETY PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
C849004

PREPARED FOR

SENECA MARKET I, LLC

# APPENDIX D-1

## EMERGENCY RESPONSE PLAN

# HEALTH & SAFETY PLAN
# APPENDIX D-1

# EMERGENCY RESPONSE PLAN
# for
# BROWNFIELD CLEANUP PROGRAM
# POST-REMEDIAL ACTIVITIES

**SENECA MARKET I, LLC SITE**
**SITE NO. C849004**
**WATKINS GLEN, NEW YORK**

December 2008 0092-002-200

Prepared for:

**Seneca Market I, LLC**
**Watkins Glen, New York**

Prepared by:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

# HEALTH & SAFETY PLAN
# APPENDIX D1

# EMERGENCY RESPONSE PLAN
# SENECA MARKET I, LLC SITE

## TABLE OF CONTENTS



## LIST OF FIGURES

# 1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for post-remedial activities that may be required at the Seneca Market I, LLC Site, Watkins Glen, New York (see Figures 1 and 2 of the Site Management Plan). This appendix of the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

## 2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Type of Emergency:
1. Medical, due to physical injury
2. Fire, due to use of gasoline onsite by vehicles.

Source of Emergency:
1. Slip/trip/fall
2. Fire

Location of Source:
1. Non-specific

# 3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of the HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

| Emergency Equipment | Quantity | Location |
|---|---|---|
| Spill Response Kit | 1 | Utility Room |
| First Aid Kit | 1 | Utility Room |
| Chemical Fire Extinguisher | 2 (minimum) | Throughout hotel |

| Emergency PPE | Quantity | Location |
|---|---|---|
| Full-face respirator | 1 for each worker | To be determined |
| Chemical-resistant suits | 4 (minimum) | To be determined |

## 4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Seneca Market I, LLC Site will be developed on a daily basis during performance of any intrusive post-remedial field activity. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features; however, the direction of prevailing winds/weather conditions that could affect emergency response planning will also be marked on the map. The map will be posted at a site-designated place of refuge and inside any field trailer/shelter and/or field vehicles associated with the activity.

## 5.0 EMERGENCY CONTACTS

The following identifies the current emergency contacts for this ERP. This list should be updated and kept current, as necessary.

Emergency Telephone Numbers:

**Benchmark Project Manager:** ***Michael Lesakowski***
Work: (716) 856-0599
Mobile: (716) 818-3954

**Benchmark Corporate Health and Safety Director:** ***Thomas H. Forbes***
Work: (716) 856-0599
Mobile: (716) 864-1730

**Benchmark Site Safety and Health Officer (SSHO):** ***Bryan C. Hann***
Work: (716) 856-0635
Home: (716) 870-1165

**Benchmark Alternate SSHO:** ***Richard L. Dubisz***
Work: (716) 856-0635
Home: (716) 655-7406

**Seneca Market I, LLC Representative:** Wayne Mosher (Maintenance Supervisor)
Work: (607) 535-6116

| | |
|---|---|
| **SCHUYLER HOSPITAL:** | (607) 535-7121 |
| **FIRE:** | 911 |
| **AMBULANCE:** | 911 |
| **VILLAGE OF WATKINS GLEN POLICE DEPARTMENT:** | (607) 535-7883 OR 911 |
| **STATE EMERGENCY RESPONSE HOTLINE:** | (800) 457-7362 |
| **NATIONAL RESPONSE HOTLINE:** | (800) 424-8802 |
| **NYSDOH (MARK SERGOTT):** | (800) 458-1158 EXT. 27860 |
| **NYSDEC (CHARLOTTE THEOBALD):** | (585) 226-5354 |
| **NYSDEC 24-HOUR SPILL HOTLINE:** | (800) 457-7252 |
| **FINGER LAKES REG. POISON & DRUG INFORMATION CENTER** | (800) 222-1222 |

The Site location is:

16 North Franklin Street
Watkins Glen, New York 14891-1221
Site Phone Number: (607) 535-6116
Alternate Phone number (Cell Phone or Field Trailer): (to be determined)

# 6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's Site Health and Safety Officer to ensure an adequate method of internal communication is understood by all personnel entering the site. Unless all personnel are otherwise informed, the following signals shall be used.

1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.

2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction Site Health and Safety Officer to review evacuation routes and procedures as necessary and to inform all Benchmark workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

## 7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the SSHO in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (viz., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

# 8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

**Personnel Exposure:**

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Schuyler Hospital.

- Inhalation: Move to fresh air and, if necessary, transport to Schuyler Hospital.

- Ingestion: Decontaminate and transport to Schuyler Hospital.

**Personal Injury:**

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Schuyler Hospital via ambulance. The SSHO will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

**Directions to Schuyler Hospital (see Figure D1-1):**

The following directions describe the best route to Schuyler Hospital, 220 Steuben Street, Montour Falls, New York (total distance approximately 3 miles south of the Site):

- Turn left (southeast) on North Franklin Street (NY-14) toward 1st Street.
- Continue to follow NY-14 South.
- Turn right (east) onto North Genesee Street.
- Turn right (west) onto Steuben Street (CR-16).
- Schuyler Hospital is <0.1 miles along Steuben Street.

## 9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

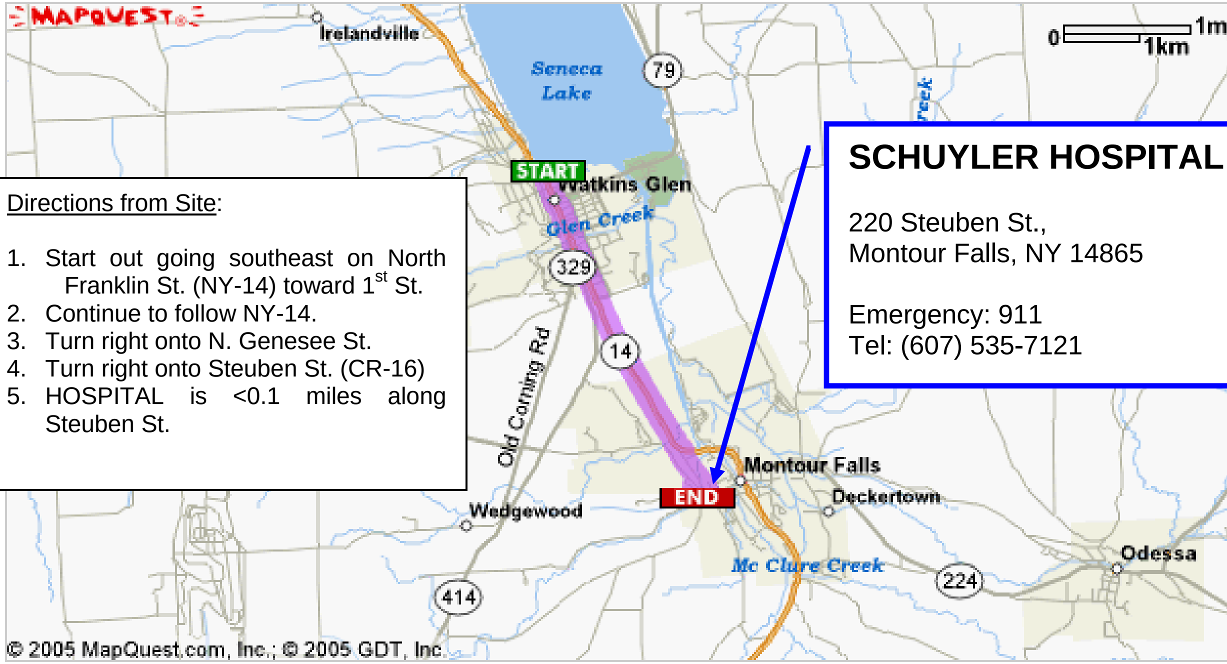
## 10.0 EMERGENCY RESPONSE TRAINING

All persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this Site.

# FIGURES

FIGURE 1

**Total Est. Time: 6 minutes** **Total Est. Distance: 2.95 miles**




Directions from Site:

1. Start out going southeast on North Franklin St. (NY-14) toward 1st St.
2. Continue to follow NY-14.
3. Turn right onto N. Genesee St.
4. Turn right onto Steuben St. (CR-16)
5. HOSPITAL is <0.1 miles along Steuben St.

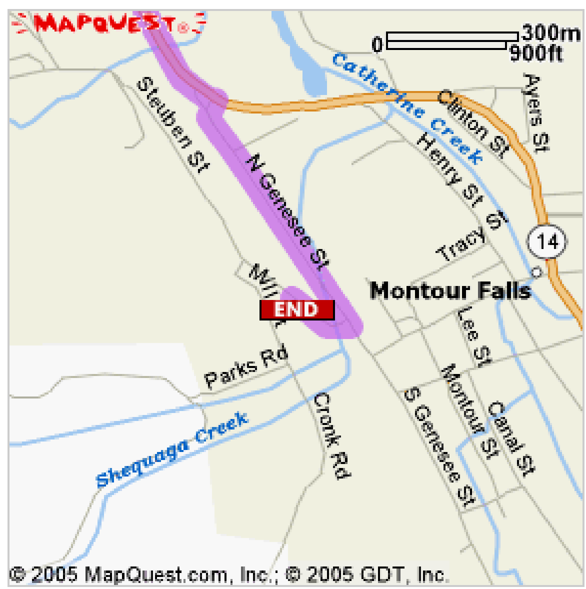
**SCHUYLER HOSPITAL**

220 Steuben St.,
Montour Falls, NY 14865

Emergency: 911
Tel: (607) 535-7121

**Start:**
**20 N Franklin St**
Watkins Glen, NY 14891-1221, US

**End:**
**220 Steuben St**
Montour Falls, NY 14865-9740, US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PROJECT NO.: 0092-002-200

DATE: DECEMBER 2008

DRAFTED BY: BCH

**HOSPITAL ROUTE MAP**

APPENDIX D-1: EMERGENCY RESPONSE PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK
C849004

PREPARED FOR

SENECA MARKET I, LLC

# APPENDIX D-2

## NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN



BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

## APPENDIX D-2

### New York State Department of Health
### Generic Community Air Monitoring Plan [1]

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

### Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

**Continuous monitoring** will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

[1] Taken from Appendix 1A of the Draft DER-10 Technical Guidance for Site Investigation and Remediation, December 2002.

**APPENDIX D-2**
**(continued)**

**Periodic monitoring** for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence

## VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

## Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

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

# APPENDIX D-3

## HOT WORK PERMIT FORM

Benchmark Environmental Engineering & Science, PLLC

# HOT WORK PERMIT

## PART 1 - INFORMATION

Issue Date:

Date Work to be Performed: Start: Finish (permit terminated):

Performed By:

Work Area:

Object to be Worked On:

## PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in: Finish (permit terminated):

| | | |
|---|---|---|
| 1. Metal partition, wall, ceiling covered by combustible material? | yes | no |
| 2. Pipes, in contact with combustible material? | yes | no |
| 3. Explosive area? | yes | no |

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

## PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

| | PROTECTIVE ACTION | | PROTECTIVE EQUIPMENT |
|---|---|---|---|
| | Specific Risk Assessment Required | | Goggles/visor/welding screen |
| | Fire or spark barrier | | Apron/fireproof clothing |
| | Cover hot surfaces | | Welding gloves/gauntlets/other: |
| | Move movable fire hazards, specifically | | Wellintons/Knee pads |
| | Erect screen on barrier | | Ear protection: Ear muffs/Ear plugs |
| | Restrict Access | | B.A.: SCBA/Long Breather |
| | Wet the ground | | Respirator: Type: |
| | Ensure adequate ventilation | | Cartridge: |
| | Provide adequate supports | | Local Exhaust Ventilation |
| | Cover exposed drain/floor or wall cracks | | Extinguisher/Fire blanket |
| | Fire watch (must remain on duty during duration of permit) | | Personal flammable gas monitor |
| | Issue additional permit(s): | | |

Other precautions:

** Permit will not be issued until these conditions are met.

## SIGNATURES

Orginating Employee: Date:

Project Manager: Date:

Part 2 Approval: Date:



Prepared By: ___________

# PART III

## ENVIRONMENTAL EASEMENTS

# SITE MANAGEMENT PLAN
# PART III

# ENVIRONMENTAL EASEMENT

**SENECA MARKET I, LLC**
**SITE NO. C849004**
**WATKINS GLEN, NEW YORK**

September 2008
Revised December 2008

0092-002-200

Prepared for:

**Seneca Market I, LLC**
**Watkins Glen, New York**

Prepared by:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

County:__ SCHUYLER___ Site No:_C 849004__BCA Index No:-____ B8-0699-05-08/Code-849002__

# ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this ________ day of _____________, 2008, between Owner(s) Seneca Market I LLC having an office at 4 Centre Drive, Orchard Park, New York 14127 (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

**WHEREAS,** the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

**WHEREAS,** the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of environmental easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and of ensuring the potential restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

**WHEREAS,** the Legislature of the State of New York has declared that environmental easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

**WHEREAS,** Grantor, is the owner of real property located at the address of 16 North Franklin Street in the Village of Watkins Glen, Town of Dix, County of Schuyler and State of New York known and designated on the tax map of the County Clerk of Schuyler as tax map parcel numbers; Section 65.09 Block 2 Lot 56; Section 65.09 Block 2 Lot 58; Section 65.09 Block 2 Lot 59.1 and Section 65.09 Block 2 Lot 61.22, being the same as that property conveyed to Grantor by Deed dated January 09, 2007 [Lot 56] recorded in Liber 353 page 127; Deed dated November 16, 2005 [Lot 58] recorded at Liber 347 page 475; Deed dated September 27, 2006 [Lot 59.1] recorded at Liber 350 page 418 and Deed dated February 14, 2006 [Lot 61.22] recorded at Liber 348 page 232 in the Land Records of the Schuyler County Clerk., comprised of approximately 2.27 acres, and hereinafter more fully described in Schedule "A" attached hereto and made a part hereof ( the " Controlled Property"); and

**WHEREAS,** the Commissioner does hereby acknowledge that the Department accepts this Environmental Easement in order to ensure the protection of human health and the environment and to achieve the requirements for remediation established at this Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

**NOW THEREFORE,** in consideration of the covenants and mutual promises contained herein and the terms and conditions of Brownfield Cleanup Agreement Number B8-0699-05-08 and Site Code Number 849002, Grantor grants, conveys and releases to Grantee a permanent Environmental Easement pursuant to Article 71, Title 36 of the ECL in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the potential restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The following controls apply to the use of the Controlled Property, run with the land are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property:

A. The Controlled Property may be used for **commercial and industrial** use as long as the following long-term engineering controls are employed and the land use restrictions specified below are adhered to :

1. All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

2. All Engineering Controls on the Controlled Property (the Site) must be inspected and certified at a frequency and in a manner defined in the SMP;

3. Groundwater, soil vapor, and other environmental or public health monitoring must be performed as defined in the SMP;

4. Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

5. On-Site environmental monitoring devices, including but not limited to groundwater monitoring wells must be protected and replaced as necessary to ensure continued functioning in the manner specified in the SMP;

6. Compliance with this Environmental Easement by the Grantor and the Grantor's successors and adherence to all elements of the SMP is required;

7. A composite cover system consisting of concrete building foundation, concrete sidewalks, a vapor barrier beneath the building, one foot of topsoil cover in areas not covered with the building, concrete or asphalt, and asphalt parking surfaces must be inspected, certified, operated and maintained as required in the SMP;

8. The Sub-Slab Depressurization System under the building structure at the site, must be inspected, certified, operated and maintained as required in the SMP;

9. Engineering Controls may not be discontinued without an amendment or extinguishment of the Environmental Easement and without obtaining approval from the Department.

The Controlled Property has a series of Institutional Controls in the form of Site restrictions. Adherence to these Institutional Controls is required under the Environmental Easement. Site restrictions that apply to the Controlled Property are:

1. Vegetable gardens, residences (single and multi family homes), and farming on the Controlled Property are prohibited;

2. Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for the intended use. Approval by the New York State Department of Health must be obtained prior to such intended use;

3. All future activities on the Controlled Property that will disturb residual contaminated material ( any soil/fill material below the cover system) are prohibited unless they are conducted in accordance with the soil management provisions in the SMP;

4. The Controlled Property may be used for commercial and industrial use only provided the long-term Engineering and Institutional Controls included in the SMP remain in use;

5. The one foot of topsoil soil cover, asphalt-paved surfaces, concrete-paved surfaces, and the building itself, act as a cover system at the Controlled Property. Disturbances and incidental damage to this cover system shall be repaired upon discovery in a manner that complies with the SMP. If the type of cover system changes from that which existed prior to disturbances or incidental damage, the cover system must be implemented as required in the SMP.

6. Any new buildings developed on the Controlled Property must be constructed with a vapor mitigation system, prior to occupancy. The vapor mitigation system shall be operated and maintained until such time as the NYSDEC and NYSDOH deems it is no longer needed.

7. The Grantor and its successors and assigns must provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal would: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

B. Grantor shall provide all persons who acquire any interest in the Controlled Property a true and complete copy of the Site Management Plan that the Department has approved for the Controlled Property and all Department-approved amendments to that Site Management Plan.

The Grantor hereby acknowledges receipt of a copy of the NYSDEC-approved Site Management Plan, dated September, 2008 ("SMP") and all Department-approved amendments to the SMP. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system on the Controlled Property, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. Upon notice of not less than thirty (30) days the Department in exercise of its discretion and consistent with applicable law may revise the SMP. The notice shall be a final agency determination. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Regional Remediation Engineer:
Region 8,
NYS DEC
6274 Avon-Lima Road
(Routes 5-20)
Avon, NY 14414-9519

or

Site Control Section
Division of Environmental Remediation
NYS DEC
625 Broadway
Albany, NY 12233

C. The Controlled Property may not be used for a higher level of use such as **restricted residential** or **unrestricted residential** use and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

D. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

**This property is subject to an environmental easement held by the New York State Department of Environmental Conservation pursuant of Title 36 to Article 71 of the Environmental Conservation Law.**

E. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

F. Grantor covenants and agrees that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury that the controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls employed at the Controlled Property were approved by the NYSDEC, and that nothing has occurred that would impair the ability of such control to protect the public health and environment or constitute a violation or failure to comply with any Site Management Plan for such controls and giving access to such Controlled Property to evaluate continued maintenance of such controls.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Controlled Property, including:

1. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

2. The right to give, sell, assign, or otherwise transfer the underlying fee interest to the Controlled Property by operation of law, by deed, or by indenture, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This environmental easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this environmental easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person intentionally violates this environmental easement, the Grantee may revoke the Certificate of Completion provided under ECL Article 27, Title 14, or Article 56, Title 5 with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach. Grantor shall then have a reasonable amount of time from receipt of such notice to cure. At the expiration of said second period, Grantee may commence any proceedings and take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement in accordance with applicable law to require compliance with the terms of this Environmental Easement.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar its enforcement rights in the event of a subsequent breach of or noncompliance with any of the terms of this Environmental easement.

6. Notice. Whenever notice to the State (other than the annual certification) or approval from the State is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:
County, NYSDEC Site Number, NYSDEC Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to: Site Number: C 849004
Environmental Easement Attorney
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

Such correspondence shall be delivered by hand, or by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. This environmental easement may be amended only by an amendment executed by the Commissioner of the New York State Department of Environmental Conservation and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This environmental easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

_County:__ SCHUYLER___ Site No:_C 849004__BCA Index No:-____ B8-0699-05-08/Code-849002__

**IN WITNESS WHEREOF,** Grantor has caused this instrument to be signed in its name.

**Grantor's Name:** **Seneca Market I LLC**

By:_______________________________
David P. Hart

Title:_ Managing Member_______Date: 12/4/08

By:_______________________________
Peter L. Krog

Title:_ Managing Member_______Date: 12/2/08

**THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK,** Acting By and Through the Department of Environmental Conservation

by: _______________________________
Alexander B. Grannis, Commissioner

## Grantor's Acknowledgment

STATE OF NEW YORK )
) ss:
COUNTY OF Erie )

On the 4th day of December, in the year 2008, before me, the undersigned, personally appeared DAVID Hart, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Tina Croom
Notary Public - State of New York

TINA CROOM
Notary Public, State of New York
Qualified in Erie County
My Commission Expires 12/07/2010

## Grantor's Acknowledgment

STATE OF NEW YORK )
) ss:
COUNTY OF Erie )

On the 2nd day of Dec, in the year 20 __, before me, the undersigned, personally appeared Peter R. Bros, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Janie M. Troup
Notary Public - State of New York

JANIE M. TROUP
NOTARY PUBLIC, STATE OF NEW YORK
QUALIFIED IN ERIE COUNTY
MY COMMISSION EXPIRES AUG. 31, 2009

## Grantee's Acknowledgment

STATE OF NEW YORK )
) ss:
COUNTY OF )

On the _______ day of _________, in the year 20__, before me, the undersigned, personally appeared _______________, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public - State of New York

SCHEDULE "A"
PROPERTY DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND situate in the Village of Watkins Glen, Town of Dix, Schuyler County, New York, and being more particularly bounded and described as follows:

BEGINNING at the intersection of the northerly limit of First Street and the westerly limit of Decatur Street; thence South along the northerly limit of First Street a distance of 400.57 feet to a point; thence North 22°31' 0" West a distance of 30.22 feet to a point; thence South 67°29' 0" West a distance of 100 feet to the easterly limit of North Franklin Street; thence northerly along the easterly limit of North Franklin Street to a point that is 175.78 feet north of the intersection of the easterly limit of North Franklin Street and the northerly limit of First Street; thence North 67°29' 0" East a distance of 100 feet to a point; thence North 22° 31' 0" West a distance of 103.81 feet to a point; thence South 83° 11' 56" East a distance of 87.29 feet to a point; thence North 16° 18' 38" East a distance of 50.52 feet to a point; thence South 81° 52' 17" East a distance of 142.91 feet to a point; thence South 86° 12' 04" East a distance of 98.30 feet to a point; thence South 86°59' 15" East a distance of 87.41 feet to a point; thence South 87° 41' 39" East a distance of 3.22 feet to the Westerly limit of Decatur Street; thence Southerly along the Westerly limit of Decatur Street; thence South 22° 28' 44" East a distance of 120.19 feet to the Northerly limit of First Street, being the point or place of beginning; comprising an area of 2.27 ± acres.

**SURVEY**