BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

February 22, 2006

Charlotte Theobald
Environmental Engineer I
New York State Department of
Environmental Conservation
Division of Environmental Remediation, Region 8
6274 East Avon-Lima Road
Avon, New York 14414-9519

Re: Seneca Market I, LLC Site
Remedial Design Work Plan for BCP

Dear Ms. Theobald:

In response to the NYSDEC's January 5, 2006 comment letter and our response letter dated February 7, 2006, Benchmark Environmental Engineering & Science, PLLC (Benchmark) hereby enclose one hard copy of the revised Remedial Design Work Plan and associated appendices on behalf of our client, Seneca Market I, LLC. A copy of these documents has also been sent to those individuals on the distribution list.

Our client has advised us they are planning to begin demolition of the former dry cleaner building and subsequent remediation tasks immediately upon your approval of the revised Work Plan.

Please do not hesitate to contact us with any questions.

Sincerely,
Benchmark Environmental Engineering & Science, PLLC

Patrick T. Martin FOR

Paul H. Werthman, P.E.
President

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FEB 24 2006

c: P. Krog (Seneca Market I, LLC)
B. Putzig (NYSDEC Reg. 8)
D. Chiusano (NYSDEC Central)
M. Schuck (NYSDOH Troy)

Remedial Design Work Plan for Brownfield Cleanup Program

Seneca Market I, LLC Site
Watkins Glen, New York

Revised June 2005
Revised February 2006

0092-002-100

Prepared For:

SENECA MARKET I, LLC
Watkins Glen, New York

Prepared By:

BENCHMARK
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WORK PLAN FOR
BROWNFIELD CLEANUP PROGRAM
REMEDIAL DESIGN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

CERTIFICATION:

Patrick T Martin

Patrick T. Martin, P.E.

2/22/06

Date

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SENECA MARKET I, LLC SITE
REMEDIAL DESIGN WORK PLAN

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1.0 INTRODUCTION

1.1 Background and History

Seneca Market I, LLC owns approximately 2.28 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 (see Figures 1 and 2). Seneca Market intends to remediate and redevelop the property under the New York State Brownfield Cleanup Program (BCP).

Referring to the parcels outlined on Figure 2, Seneca Market I owns the 0.20-acre and 0.13-acre parcels referred to as the inactive hazardous waste site. These parcels, together with the 1.76-acre and 0.19-acre[1] parcels within this same block, comprise those areas included in the BCP. The 0.2-acre parcel contains the former Glen Vintage Auto Museum (presently unoccupied). The 0.13-acre parcel contains a structure deemed the "former dry cleaning building." This is a two-story brick building that includes two unoccupied single-story brick sheds to the east. The former dry cleaning building is presently occupied by a real estate firm. The western portion of the 1.76-acre parcel contains a large block building that was formerly used as a bus garage and is currently leased to Seneca Hardwoods, a manufacturer of custom flooring. A building foundation, reputedly a remnant of a former Welch's Grape facility, also remains on the 1.76-acre parcel.

Seneca Market II, LLC owns the approximately 0.29-acre parcel located along North Franklin Street. This property, which contains the Seneca Market Building and a multipurpose shopping and office building, is not part of the BCP. The 0.21-acre property south of First Street will be leased by Seneca Market I for use as ancillary parking but is not part of the BCP.

The parcels have a history of use that dates back to the 1860s. The Seneca Market Building has formerly been used as a foundry; a flour and grist mill; and most recently retail shops on the first floor and professional office space on the second and third floors. A marble works building was formerly present just south of Seneca Market until it was destroyed in 1970. The former Auto Museum was previously used for miscellaneous storage,

[1] The 0.19-acre parcel along the railroad is currently owned by Schuyler County but will be purchased by Seneca Market I, LLC.

in particular auto parts. The dry cleaning building has mainly been used for retail businesses, a machine shop, and for dry cleaning operations.

1.2 Environmental Investigations and Remedial Efforts

1.2.1 Chlorinated Organic-Impacted Area

A 1991 Environmental Assessment of the Site revealed that groundwater under a portion of the property (i.e., 20 Franklin Street at the corner of North Franklin and First) was contaminated with chlorinated organic compounds associated with the former dry cleaning operations. The New York State Department of Environmental Conservation (NYSDEC) subsequently listed an approximate 0.3-acre portion of the property as a Class 2 inactive hazardous waste site (i.e., "the North Franklin Street Site" - NYSDEC Registry No. 8-49-002). The inactive hazardous waste site encompasses the 0.13-acre parcel, including the former dry cleaner building, and a portion of the 0.20-acre parcel (see Figure 2).

A Remedial Investigation/Feasibility Study (RI/FS) performed and completed in 1993 by URS Consultants under a Standby Contract with the NYSDEC delineated the extent of soil and groundwater contamination on and adjacent to the Franklin Street site. URS subsequently designed remediation systems to treat soil and groundwater, pursuant to a Record of Decision (ROD) signed in 1994. The remedial measures included a soil vapor extraction (SVE) system to treat shallow VOC-impacted soil, and a groundwater pump and treat system to extract and treat groundwater adjacent to the former dry cleaner building. The systems were placed into operation in 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, in the process of collecting the confirmatory soil samples, it was discovered that the soil 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 to cleanup objectives 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.

In 1998/1999, URS performed additional soil investigations and cleanup technology feasibility studies to evaluate deeper soil contamination. It was concluded that chlorinated organic compounds remained on-site in a small area directly adjacent to and outside the former dry cleaning building, as well as beneath the dry cleaner building at depths greater than 16 feet. A chemical oxidation pilot study conducted from March through May 2000 significantly reduced the mass of chlorinated contaminants in Site soils. Despite the reduction, localized areas of residual chlorinated organic contamination remain in soils and groundwater adjacent to and beneath the former dry cleaner building. In March 2004, an active venting system was installed within the former dry cleaner building to control the potential indoor migration of vapors from the residual contamination.

At the direction of NYSDEC, URS collected air samples within the Seneca Market Building and beneath the concrete floor slab in 2005. The air samples collected beneath the concrete slab contained elevated levels of tetrachloroethene (PCE). As a result, NYSDEC contracted URS to design and install an active subslab depressurization (SSD) system in the Seneca Market Building. The SSD system was installed by Geologic NY, Inc. in October 2005. The SSD system is comprised of the following elements:

- Two suction points, extending through the concrete slab in the Storage Room, with a 6-inch deep pit below each suction point.
- 4-inch diameter PVC piping connecting the suction points and exiting the building through a dormer on the roof. Gate valves to control the vacuum pressure and magnehelic gauges to measure vacuum are located at each suction point.
- A fan and exhaust system secured outdoors on the eastern side of the 3-story portion of the building.

URS performed post-mitigation testing consisting of running the system for 1 hour before drilling two test holes to confirm that the system was producing a negative pressure beneath the concrete slab. The SSD system is currently operating and being maintained by Seneca Harbor Wine Center.

1.2.2 Other Areas

A Phase I Environmental Site Assessment (ESA) was performed in November 1991 for the parcels on the eastern portion of the subject property. The ESA identified several potential environmental conditions including possible underground storage tanks, drums, an inoperable piston arrangement for a hydraulic lift, and oil spills near the corner of First and Decatur Streets. Petroleum hydrocarbons, lower levels of chlorinated hydrocarbons, and several elevated inorganic compounds related to the above described conditions were detected in the soil and groundwater during the RI/FS. Two areas on the larger parcel that contained soil heavily contaminated with benzene, toluene, ethylbenzene, and xylene (BTEX) were excavated and bioremediated off-site in the late 1990s. As such, residual BTEX contamination in soil and groundwater may exist proximate to these historic source areas. In addition, the RI identified BTEX contamination in soil/fill and groundwater beneath the former bus garage near the former dry cleaner building (i.e., monitoring well MW-8S). While SVE and/or in-situ oxidation treatment of the chlorinated organic impacted soils may have partially addressed the BTEX impacted soils, there is likely residual BTEX contamination in soil/fill beneath the former bus garage.

1.2.3 Areal Extent of Groundwater Contamination

During the RI, 46 groundwater samples were collected using a Geoprobe sampler and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs). Chlorinated hydrocarbons (HCs) were detected in 31 of the 46 samples and BTEX compounds were detected in 21 of the 46 samples. The Geoprobe groundwater data was supplemented with the second round groundwater monitoring data collected during the RI in order to develop the areal distribution of chlorinated HCs and BTEX in shallow groundwater. Figures 3 and 4 present the areal extent of groundwater contamination detected during the RI/FS for chlorinated HCs and BTEX, respectively.

1.2.4 Areal Extent of Soil Contamination

During the RI, surface soil and subsurface soil samples were collected as summarized below:

- Surface Soil Samples:
  - 22 samples were analyzed in the field via PCB field test kits.
  - 12 of the 22 samples were analyzed in the laboratory for TCL VOCs, PCBs, and metals.

- Subsurface Soil Samples:
  - 25 First Phase samples (21 vadose zone and 4 phreatic zone) were analyzed in the laboratory for TCL VOCs, TCL SVOCs, PCBs, and metals.

- 21 Second Phase samples (all vadose zone) were analyzed for TCL VOCs only.

Of the compounds analyzed, only chlorinated HCs and BTEX compounds were detected above regulatory limits at the site. Maximum concentrations detected at each area of the Site are presented in the following table[2]:

Area of Site Defined During the RI/FS	Figure 2 Area No.	Maximum Chlorinated HC (sample depth)	Maximum Total BTEX (sample depth)
Dry Cleaner Area (DC)	2 and 3	41,000 ppb PCE (0-6")	2,198 ppb (4-6')
Seneca Market Northeast Area (SM)	1	99 ppb PCE (3-5')	11 ppb (3-5')
SCIDA Area	4, 5, 6, and 7	13 ppb PCE (2.5-4.5')	608 ppb (4-6')
Background Area (BG)	Areas west, east, and south of the Site and 8	110 ppb TCE (2-4')	Not detected

In addition, relatively low concentrations of PCBs were observed in soils from each of the four areas of the Site identified above. Polycyclic aromatic hydrocarbons (PAHs) were relatively ubiquitous, although at concentrations well below regulatory limits, and metals concentrations were all within regulatory values reported for Eastern United States background soils per NYSDEC Technical Assistance and Guidance Memorandum HWR-94-4046 (TAGM 4046). The highest observed PCB concentration was 2,800 ppb within the SCIDA area, the highest observed PAH concentration was 130,030 ppb at boring/ monitoring well MW-5, and metals concentrations were relatively consistent from sample to sample. Figures 5 and 6 present the areal extent of soil contamination detected during the RI/FS for chlorinated HCs and BTEX, respectively.

[2] Analytical summary has been reproduced from conclusions made in the Final Remedial Investigation Report, prepared by URS Consultants, Inc., August 1993.

1.3 Intended Future Use of Site

Seneca Market I (hereafter referred to as Seneca Market) plans to redevelop the approximately 2.57-acre site as a hotel complex (see Figure 7). An additional 0.21-acre property south of First Street will also be incorporated in the plan to provide space for ancillary parking. With the exception of the Seneca Market building, all buildings and foundations within this entire site will be demolished to facilitate redevelopment efforts. Areas within the site that are not incorporated into the hotel or related structures will be covered by asphalt parking areas, driveway and landscaping.

1.4 Purpose and Objectives

Seneca Market intends to remediate the residual VOC and petroleum contamination within and redevelop the property under the New York State Brownfield Cleanup Program (BCP). Given the extensive nature of the investigations performed to date, Seneca Market has elected to enter the BCP at the remedial design planning stage. This Remedial Design (RD) Work Plan identifies the scope of planned remedial measures and the means by which they will be completed, including target site-specific cleanup levels, confirmatory sampling requirements, and post-remediation soil management practices.

1.5 Project Organization and Responsibilities

Seneca Market has been accepted into the BCP, and has executed a Brownfield Cleanup Agreement (BCA) as a non-responsible party (volunteer) per ECL§27-1405. Benchmark Environmental Engineering & Science, PLLC, shall manage the brownfield cleanup on behalf of Seneca Market. The NYSDEC Division of Environmental Remediation shall monitor the remedial actions to verify that the work is performed in accordance with the BCA, the approved Remedial Design Work Plan, and DER-10.

2.0 CLEANUP APPROACH

As discussed in Section 1.0 of this Work Plan, residual chlorinated organic contaminant concentrations remain at the site. In particular, three such "hot spot" areas exist beneath and to the east of the side (north) door of the former dry cleaning building: one outside the building at a depth of 0-4 feet below ground surface (bgs); and two are located beneath and adjacent to the building at depths of 4-6 feet bgs. An additional isolated area of lower level soil/fill impacts is also located in saturated clayey soils beneath and adjacent to the building at depths greater than 6 feet bgs. Tabulated concentration data and the estimated mass of residual chlorinated VOCs associated with the 0-4' and 4-6' bgs hot spots are presented in Table 1. As indicated, approximately 55 cubic yards of chlorinated VOC-impacted soil/fill is estimated to be excavated from these hot spot areas (see Figure 8). Approximately 84% of the total mass of contamination exists in the 4-6' interval based upon data collected and presented in the RI. It is possible that other small, isolated pockets of chlorinated VOC contamination could exist elsewhere beneath and outside of the building. Table 2 presents a summary of the maximum chlorinated VOC concentrations detected during the RI at depths greater than 6 feet bgs.

The NYSDEC has evaluated alternatives for addressing the residual chlorinated organic contamination in site soil near the former dry cleaning building. The evaluation is contained in NYSDEC's May 2003 Explanation of Significant Differences (ESD) (see Appendix A of this Work Plan). Specifically, six options were evaluated:

- No Action
- Continued In-situ Chemical Oxidation
- Building Demolition and Soil Excavation
- Passive Venting
- Active Venting
- Soil Excavation/Off-Site Disposal (no demolition)

The ESD concluded that, in the absence of building demolition, active venting of the former dry cleaning building would be the most effective and implementable remedial alternative. Accordingly, an active venting system was installed and placed into operation in March 2004.

However, the ESD indicated that if dry cleaning building demolition were to occur, excavation and off-site disposal of the hot spots should be pursued. The ESD further stipulated that redevelopment of the site should be performed under an NYSDEC-approved Soils Management Plan to guide handling of residual contaminated soils that may be encountered during development activities.

In addition to the chlorinated volatile organic areas, petroleum-related contamination in soil and groundwater was encountered during the RI at concentrations in excess of 100 ppb beneath the former bus garage (see Figure 6). It is unknown as to what extent SVE and/or in-situ oxidation of the adjacent chlorinated impacted soils near the former dry cleaning building may have reduced these concentrations. In addition, while certain petroleum source areas were excavated from the eastern portion of the site in the late 1990s, it is possible that residual petroleum impacts exist on the eastern portion of the property. The suspected primary contaminants of potential concern associated with petroleum-impacted soil are BTEX and base-neutral semi-volatile organic compounds (SVOCs).

Consistent with the ESD, Seneca Market plans to implement a remedy under the BCP that will include the following elements, performed concurrent with building demolition and site redevelopment:

- Excavation and off-site disposal of the three chlorinated VOC "hot spot" areas near the former dry cleaning building (see Figure 8). Excavation will proceed to a depth of 6 feet below grade or to the top of the groundwater table. If verification samples indicate concentrations in excess of ten times SSALs at the base of the 6-foot excavation, hydrogen release compound (HRC®) will be applied to the saturated soils to expedite the natural attenuation process. Groundwater encountered during excavation work will be treated on-site and disposed via a temporary discharge permit, as described in Section 3.3 of this Work Plan.

- Implementation of a Soil/Fill Management Plan (SFMP) to address handling of other areas of contaminated soil/fill that may be encountered during redevelopment and/or post redevelopment construction activities. The SFMP will include requirements for soil reuse and/or backfilling.

- Construction, monitoring, and maintenance of a vapor barrier and an active SSD system beneath all newly created on-site structures to mitigate intrusion of vapors from residual VOCs in soil and groundwater.

- Placement of cover, in the form of asphalt parking, drives, curbing, building foundations, and landscaping, to mitigate direct contact with surface soils on the redeveloped property.

- An environmental easement restricting the use of and contact with Site groundwater and soil will be recorded with the county. The environmental easement will be binding for the current property owner and all subsequent property owners and occupants.

As required by the BCP, maintenance of existing institutional controls (i.e., environmental easements to prevent usage of groundwater) and any other engineering controls (e.g., vapor barriers, cover material) must be certified annually. The annual certification would include assurance that the engineering controls have not been altered and remain effective. In addition, provisions will be made in the redevelopment plan to protect existing groundwater monitoring wells. The property owner will assume responsibility for a groundwater sampling and monitoring plan, as part of the operation & monitoring activities at the Site. Appendix G of this Work Plan contains the proposed Long-Term Groundwater Monitoring Plan.

A description of the remedial measures is presented in greater detail in Section 3.0 of this Work Plan.

2.1 Site-Specific Action Levels for Soil/Fill

Site-specific action levels (SSALs) have been established for surficial and subsurface soil/fill on the Seneca Market Site (see Table 3). These values are derived from remedial goals accepted by the NYSDEC on other restricted use brownfield redevelopment sites, and are generally consistent with NYSDEC Technical Assistance and Guidance Memorandum (TAGM) HWR-94-4046 "Determination of Soil Cleanup Objectives and Cleanup Levels." These action levels are designed to be target values that will be used in determining, with the NYSDEC, the need for and/or continuation of remedial measures. Such decisions will consider the practicality and benefit of remedial construction in light of the restricted use of the site and other planned remedial measures designed to prevent contact with constituents of concern (e.g., vapor barrier, cover material).

Conformance with SSALs will be confirmed via soil sample verification testing. Sample collection and testing protocols are described in Section 3.0 of this Work Plan and further delineated in the Site Quality Assurance Project Plan (QAPP), submitted under separate cover.

3.0 SOIL/FILL REMEDIATION

3.1 Chlorinated VOC-Impacted Soil/Fill

This section delineates remedial actions to be implemented adjacent to and beneath the former dry cleaning building. Soil/fill excavation will occur within three impacted hot spot areas. The approximate impacted limits in each subarea are shown on Figure 8. Table 1 summarizes approximate quantities of impacted soil within these subareas (est. 55 CY). The soil/fill in these areas will be excavated to a depth of 6 feet, or to the top of the groundwater table, as this was determined in the RI to contain the majority of the contaminant mass. In addition to these subareas, lower levels of VOC contamination have been detected in saturated, native clayey soils in an isolated area adjacent to and beneath the former dry cleaning building at depths greater than 6 feet below grade (see Table 2 of this Work Plan). Excavation of these deeper soils will not be performed due to adjacent building foundation stability concerns, safety concerns associated with deeper saturated soil excavation, and complications related to dewatering. If verification samples indicate concentrations in excess of ten times SSALs at the base of the 6-foot excavation, hydrogen release compound (HRC®) will be applied to the saturated soils to expedite the natural attenuation process.

3.1.1 Excavation and Disposal

Excavations will proceed to the depth and lateral extent identified on Figure 8 based on the soil/fill testing already performed and documented in the in-situ oxidation pilot study report (Reference 1). The lateral extent of excavation will be adjusted as determined by field observations and confirmatory sampling. A photoionization detector (PID) may also be employed to assist in field determining the limits prior to confirmatory sampling.

Excavated hot spot soils will be direct loaded to lined dump trailers for disposal at a permitted treatment, storage, and disposal facility (TSDF) capable of handling the material. If soil/fill is stockpiled for characterization or re-use, hazardous waste roll-offs or 55-gallon drums will be used. The stockpiled material will be managed to prevent infiltration of precipitation and wind erosion. Based on the source of the VOC impacts (alleged disposal of dry cleaning fluids), the hot spot soil/fill is considered impacted by a listed hazardous waste (F001), and will therefore need to be handled and disposed as a hazardous waste unless it meets "action level" criteria presented in NYSDEC's November 1992 TAGM 3028 – "Contained In" Criteria for Environmental Media (see Appendix B of this Work Plan). However, data presented on Table 1 indicate that average contaminant concentrations for the residual VOCs adjacent to and beneath the former dry cleaning building generally exceed the "action level" criteria. Accordingly, Seneca Market will arrange for transportation by a licensed hauler and disposal at a facility capable of employing off-site treatment (e.g., ex-situ chemical oxidation) to reduce VOCs below RCRA treatment standards prior to secure landfill disposal. If applicable, the use of the "contained-in" policy will be submitted to the NYSDEC Central Office Division of Solid and Hazardous Materials for approval.

Excluding soil/fill within the 0-4' hot spot (which will be treated and disposed off-site), other shallow soil/fill that is excavated for the purpose of reaching the 4'-6' hot spots will be staged on plastic sheeting and re-used as subsurface backfill in accordance with Section 3.1.3 of this Work Plan.

3.1.2 Verification Sampling for Chlorinated VOC-Impacted Soil/Fill

Verification sampling will be performed on the sidewalls and bottom of the excavation after lateral and vertical excavation limits have been achieved and visibly impacted soil/fill has been removed. In general, one sidewall sample will be collected on each of the four sides of the excavation and one sample will be collected from the bottom of the excavation. The samples will be collected by retrieving a discrete sample from across the excavation face. The backhoe bucket will be used to assist in sample collection and avoid the need for confined space entry. For excavations having lengths greater than 100 feet, an additional discrete sample will be collected for each additional 100 feet of excavation length. Sample collection methodology is further described in the Quality Assurance Project Plan (QAPP). Verification samples will be analyzed for Target Compound List (TCL) VOCs and SVOCs in accordance with NYSDEC SW-846 Methodology with a 48-hour turnaround time. The laboratory will be required to furnish an equivalent ASP Category B deliverables package to facilitate data evaluation and preparation of a DUSR by a third-party validation expert. Accordingly, the samples will be analyzed by an NYSDOH ELAP-approved laboratory certified to perform CLP work.

Lateral and vertical excavation will continue as described above until the SSALs for VOCs are met or NYSDEC agrees that no further excavation is required. Factors that may preclude or restrict excavation include physical conditions (e.g., utilities or buried foundations) or property ownership considerations for excavations near property lines. Large concrete debris will not be excavated unless desired by the owner. All field decisions concerning the limits of excavation shall be approved by the NYSDEC site representative.

3.1.3 Backfilling

Subgrade material used to backfill excavations or to increase site grades or elevations in all areas of the site shall meet the following criteria:

- Excavated on-site soil analytical results must meet the SSALs for VOCs and SVOCs (see Table 3). On-site soils that exceed SFMP field screening criteria (i.e., exhibit visible or olfactory evidence of contamination or elevated PID readings) shall be staged on plastic sheeting or in roll-off containers covered with plastic sheeting while awaiting analytical results. Soil that does not exhibit evidence of staining, discoloration, or elevated PID readings will not require special handling.

- Off-site soil/fill material will 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 criteria identified on Table 4. Borrow source sampling requirements are outlined in the SFMP (Appendix D, Section 2.2.2).

- No off-site materials meeting the definition of a solid waste as defined in 6NYCRR, Part 360-1.2(a) shall be used as backfill.

All backfill material will be compacted in 12-inch lifts with the backhoe bucket or other methods approved by the field inspector or resident engineer. Excavations remaining overnight will be surrounded with orange construction fencing.

3.2 Petroleum-Impacted Soil/Fill

Petroleum-impacted soil/fill in the eastern portion of the Site has been thoroughly investigated as part of the 1993 RI performed by URS for the NYSDEC. Specifically, only two small areas with BTEX concentrations in the range of 100 to 1,000 ppb were identified in the RI (see Figure 6). The area to the east is presumed to be related to the gasoline station that was formerly located in this area. The area to the west is presumed to be related to maintenance activities associated with the former bus garage. These potential petroleum-impacted areas meet site-specific action levels (SSALs) and therefore will not be remediated except to the extent that they are encountered in the course of subgrade preparation, foundation excavation, and/or subgrade utility excavation associated with site redevelopment. Any soils encountered during redevelopment that exhibit visible or olfactory evidence of petroleum impacts, or exhibits elevated PID readings (i.e., >5 ppm) will be handled in accordance with the SFMP presented as Appendix D to this Work Plan.

3.3 Groundwater Management

Groundwater elevation measurements recorded during the RI indicate that groundwater is present in the vicinity of the former dry cleaner and southern portion of the former bus garage at depths of approximately 6 feet bgs (see Figure 3). Perched water may also be encountered on clay lenses within the upper 6-foot zone. The most recent groundwater monitoring event conducted at the Site occurred on October 21 and 22, 2004 and December 29, 2004. The event included groundwater sample collection and analysis of nine on-site monitoring wells (identified as MW-01S, MW-03S, MW-04S, MW-05D, MW-07S, MW-08S, MW-09S, MW-12S, and MW-20S) and two off-site monitoring wells (identified as MW-16S and MW-19S) for TCL VOCs via EPA Method 8260B (Reference 5). Analytical results for the October/December monitoring event are presented for reference only in Appendix F of this Work Plan.

In general, chlorinated HCs, particularly tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (1,2-DCE), and vinyl chloride (VC) were detected exceeding groundwater criteria at several locations. Benzene, ethylbenzene, and xylenes were only detected in monitoring well MW-8S, which is located immediately west of the former bus garage. Groundwater management may be required during the redevelopment period to handle water encountered during building demolition and construction.

Water removed from excavations and surface water run-in to excavations during the remediation and redevelopment periods will be treated on-site prior to discharge to the storm sewer, consistent with operation of the former NYSDEC groundwater pump & treat system. In general, water removed from excavations will be stored/settled in a portable steel tank (Baker Open/Closed Top Tank or equivalent), and pumped through a bag or cartridge filter prior to treatment using granular activated carbon (GAC). GAC vessels will be plumbed in series to allow for organic breakthrough monitoring between the lead and lag vessels. Following completion of excavation work, settled solids remaining in the tank and spent filter bags will be containerized for off-site disposal. Spent GAC will be characterized (TCLP VOC testing) and regenerated off-site, or disposed at a permitted TSDF in accordance with applicable federal and state regulations. The tank will be decontaminated via pressure washing. The property owner will coordinate with the Village to obtain any necessary temporary discharge permits.

4.0 HEALTH AND SAFETY AND COMMUNITY AIR MONITORING

4.1 Site-Specific HASP

A Site-Specific Health and Safety Plan (HASP) will be prepared and enforced by the remediation contractor in accordance with the requirements of 29 CFR 1910.120. The HASP will cover all on-site remediation activities. Benchmark's HASP is provided for informational purposes in Appendix C. The contractor will be required to develop a HASP as or more stringent than Benchmark's HASP.

4.2 Community Air Monitoring

Real-time community air monitoring will be performed during voluntary cleanup construction activities at the Site. A Community Air Monitoring Plan (CAMP) is included with Benchmark's HASP. Particulate and VOC monitoring will be performed continuously at upwind and downward locations during all intrusive activities (e.g., subgrade excavation, grading, and soil/fill handling) in accordance with the CAMP. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the New York State Department of Health (NYSDOH) and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDOH's Generic Community Air Monitoring Plan (dated June 20, 2000) and NYSDEC Technical Assistance and Guidance Memorandum (TAGM) 4031: Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites.

5.0 EROSION AND DUST CONTROLS

In conjunction with the performance of brownfield cleanup activities at the site, an important element of soil and fill management is the mitigation and control of surface erosion from stormwater runoff and wind borne dust.

A Master Erosion Control Plan (MECP) to be used by all remediation contractors and developers has been prepared and incorporated as an attachment to the SFMP, presented as Appendix D to this Work Plan. The MECP includes provisions for: silt fencing, hay baling, mulching, and other measures, as warranted.

Dust suppression techniques will be employed as necessary to mitigate fugitive dust from unvegetated or disturbed soil/fill to the extent practicable during construction and redevelopment. Dust suppression techniques will be initiated if the downwind PM-10 particulate level is 100 $\mu g/m^3$ above background (upwind perimeter). Such techniques shall be employed even if the community air monitoring results indicate particulate levels are below action levels. Techniques to be used may include one or more of the following:

- Applying water on haul roads.
- 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.

6.0 VAPOR BARRIER AND ACTIVE VENTING SYSTEM

All new buildings and structures designed for regular occupancy will be constructed with a foundation vapor barrier to mitigate subslab vapor intrusion from residual chlorinated and/or petroleum VOCs in subsurface soil and groundwater. The vapor barrier will be comprised of a minimum 8-mil poly membrane placed beneath and in contact with the underside of the concrete floor slab at the lowest floor level(s) within the building.

In addition, a sub-slab depressurization (SSD) system will be designed and installed beneath the vapor barrier. The SSD system will be comprised of perforated lateral piping, placed within the gravel bedding beneath the slab and manifolded to a blower that is exhausted to the outdoors.

The vapor barrier and SSD system shall be designed and installed in accordance with the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, draft February 2005. The SSD system design documents will be designed and certified by a professional engineer registered in the State of New York, and submitted separately from the RD Work Plan after preliminary floor plans and utility design drawings for the hotel are complete.

7.0 POST-REMEDIATION REQUIREMENTS

7.1 Soil/Fill Management Plan

This Work Plan addresses remediation activities to be performed as part of the Brownfield Cleanup of the site. Following completion of the Brownfield Cleanup activities, certain post-remediation requirements will need to be implemented by current and subsequent owners or developers of the site.

Attached as Appendix D of this Work Plan is a Soil/Fill Management Plan (SFMP) that provides protocols for the proper handling of Site soil/fill during development activities. The plan includes provisions for:

- Excavation, grading, sampling and handling of site soils.
- Acceptability of soils/fill from off-site sources for backfill of subgrade fill.
- Erosion and dust controls prior to final cover by buildings, parking and landscaping.
- Fencing and other access controls.
- Health and safety procedures for subsurface construction work and the protection of the surrounding community.
- Acceptability and placement of final cover.
- Site use restrictions.
- Program responsibilities.
- Certification and reporting requirements.

7.2 Site Cover

The proposed site redevelopment plan (see Figure 7) will inherently provide for a minimum of 4 inches of impervious cover across over 82% of the Site by asphalt or reinforced concrete parking, drives, walks, building floors and foundations. Select gravel fill placed beneath concrete building slabs and asphalt paving will serve as a demarcation layer.

Remaining property, encompassing less than ½ acres, will be enhanced with landscaping and lawn area. Landscaping and lawn areas will include a minimum of 12 inches of topsoil placed over subgrade backfill. A woven geotextile will be placed above the native subgrade as a demarcation layer.

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 4.

Grass seed used for the final soil cover shall be a perennial seed suitable for northeast climates, the soil type, and the location of the proposed grass area (e.g., full sun, shade). Non-grassed areas (e.g., landscape shrubs/beds) should be covered with chip mulch to mitigate erosion around plantings. Documentation of the source of the chip mulch shall be included in the construction closeout report (see Section 7.3 of this Work Plan).

7.3 Construction Closeout Report

A construction closeout report will be prepared and submitted to the NYSDEC after the site is remediated. The report will be stamped by a NYS licensed Professional Engineer and will be submitted within 90 days of completion of the remediation. A hard copy of the final and approved construction closeout report will be submitted to the NYSDEC as well as an electronic version in PDF searchable format. At a minimum, the report will include:

- A Site or area planimetric map showing the parcel(s) remediated and residual contamination, if any.
- A survey showing: the lateral limits of excavation, the grade before excavation, the grade when excavation is complete, and grade following backfill where soil/fill is excavated. The survey will be accurate to within 0.1 feet on a grid spacing no greater than 25-feet by 25-feet.
- Tabular summaries of unit quantities including, at a minimum: volume of soil/fill excavated; disposition of excavated soil/fill and collected ground/surface water; volume/type/source of backfill; volume of ground/surface water pumped and treated.
- Planimetric map showing location of all verification and other sampling locations with sample identification labels/codes.
- Tabular comparison of verification and other sample analytical results to SSALs or other pertinent acceptance criteria. An explanation shall be provided for all results exceeding acceptance criteria.
- Copies of daily inspection reports and a photographic log of remedial activities.
- Documentation of the source of cover system materials and chip mulch.
- Waste manifests/bills of lading, analytical data.
- Text describing the excavation activities performed; a description of any deviations from the Work Plan and associated corrective measures taken; and other pertinent information necessary to document that the site activities were carried out in accordance with this Work Plan.

- A certification by a licensed NYS Professional Engineer that all work was performed in accordance with the BCA, approved BCP RD Work Plan, Section 5.8 of DER-10, and the May 2004 Brownfield Cleanup Guide.

7.4 Annual Certification Report

The property owner shall complete and submit to the NYSDEC an Annual Certification Report by January 15 of each year. Such annual report shall contain certifications that: the institutional 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 Certification Report, the property owner shall include a certification that all work was performed in conformance with the SFMP (see Appendix D of this Work Plan). The Annual Certification Report will conform to the May 2004 Brownfield Cleanup Guide and DER-10.

8.0 PROJECT SCHEDULE AND SEQUENCE OF THE WORK

The remedial design and remedial actions detailed in this Work Plan shall be completed within approximately 9 months of the execution of the Brownfield Cleanup Agreement. Figure 9 presents an overall project schedule for the performance of remedial construction and redevelopment activities. The sequencing of the remedial construction and redevelopment activities is as follows:

1. **Brownfield Cleanup Activities:** The dry cleaner building will be demolished following asbestos abatement. The VOC-impacted soil/fill will then be excavated and disposed off-site. The bus garage will remain on-site to store vehicles and equipment until such time as demolition is necessary to complete final site improvements associated with redevelopment.

2. **Site Redevelopment:** Following brownfield cleanup activities, the Site will be redeveloped as a hotel complex. All intrusive activities associated with development will be conducted in accordance with the SFMP, which provides protocols for the proper handling of Site soil/fill and groundwater.

3. **Groundwater Monitoring:** Existing groundwater monitoring wells downgradient of the former dry cleaner building will be sampled in accordance with the Long-Term Groundwater Monitoring Plan provided as Appendix G of this Work Plan.

9.0 CITIZEN PARTICIPATION PLAN

In accordance with NYSDEC's Brownfield Cleanup Program guidance, a Citizen Participation Plan is required for this effort. A Citizen Participation Plan is included as Appendix E of this Work Plan.

10.0 REFERENCES

1. *Evaluation of Site Remediation by Insitu Oxidation. North Franklin Street Site, Watkins Glen (V).* URS, March 2001.

2. *Explanation of Significant Differences – North Franklin Street Site, Village of Watkins Glen. Registry No. 8-49-002.* New York State Department of Environmental Conservation, May 2003.

3. *Final Remedial Investigation Report. North Franklin Street Site, Watkins Glen (V).* URS Consultants, Inc. August 1993.

4. *Final Feasibility Study Report. North Franklin Street Site, Watkins Glen (V).* URS Consultants, Inc. November 1993.

5. *Groundwater Sampling Event Letter Report. North Franklin Street Site, Watkins Glen (V).* URS Corporation, April 2005.

TABLES

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TABLE 1

ESTIMATED QUANTITY OF CONTAMINATED SOIL/FILL

Remedial Design Work Plan
Seneca Market I, LLC
Watkins Glen, New York

Depth Interval	Location (total # of samples collected)	Area Contaminated Above SCGs (ft^2)	Volume Contaminated Soil (ft^3)	Contaminant	Average Concentration [1] (ug/kg)	Total Mass of Contamination [2] (lbs)
0-4' Fill	Underneath Building (2)	19	76	Tetrachloroethene	109,907	0.8397
				Trichloroethene	0	0.0000
				1,2-Dichloroethene	0	0.0000
				Vinyl Chloride	0	0.0000
	Outside Building (7)	108	433	Tetrachloroethene	208,878	9.0486
				Trichloroethene	0	0.0000
				1,2-Dichloroethene	0	0.0000
				Vinyl Chloride	0	0.0000
4-6' Fill / Clay Interface	Underneath Building (3)	221	442	Tetrachloroethene	1,368,428	60.4845
				Trichloroethene	1,118	0.0494
				1,2-Dichloroethene	1,492	0.0659
				Vinyl Chloride	0	0.0000
	Outside Building (Area 1) (10 total for all outside)	35	70	Tetrachloroethene	0	0.0000
				Trichloroethene	0	0.0000
				1,2-Dichloroethene	123	0.0014
				Vinyl Chloride	0	0.0000
	Outside Building (Area 2)	161	322	Tetrachloroethene	131,221	1.5222
				Trichloroethene	12,080	0.1401
				1,2-Dichloroethene	13,154	0.1526
				Vinyl Chloride	0	0.0000
	Outside Building (Area 3)	58	116	Tetrachloroethene	0	0.0000
				Trichloroethene	0	0.0000
				1,2-Dichloroethene	655	0.0076
				Vinyl Chloride	0	0.0000
Subtotals	Underneath Building (6)	518		Tetrachloroethene		61.32
				Trichloroethene		0.05
				1,2-Dichloroethene		0.07
				Vinyl Chloride		0.00
				Subtotal		61.44
	Outside Building (23)	941		Tetrachloroethene		10.57
				Trichloroethene		0.14
				1,2-Dichloroethene		0.16
				Vinyl Chloride		0.00
				Subtotal		10.87
Total	All Areas (29)	1459		Tetrachloroethene		71.90
				Trichloroethene		0.19
				1,2-Dichloroethene		0.23
				Vinyl Chloride		0.00
				Total		72.31

Notes:
1. Average concentration based on weighted average of contaminant detections within the contaminated soil area.
2. Assumed soil density is 100 lb/ft^3

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TABLE 2

CHLORINATED VOCs DETECTED DURING RI AT DEPTHS GREATER THAN 6 FEET

Remedial Design Work Plan
Seneca Market I, LLC
Watkins Glen, New York

Contaminant	Sample Number and Location	Sample Depth (fbgs)	Maximum Concentration (ppb)
Tetrachloroethene (PCE)	SB-4D (DC)	6 - 8	31,000
Trichloroethene (TCE)	SB-4D (DC)	6 - 8	7,700
1,2-Dichloroethene (1,2-DCE)	SB-2D (DC)	12 - 14	460
Vinyl Chloride (VC)	NA	NA	ND

Notes:
DC = Dry Cleaner Area (Figure 2 Area Nos. 2 and 3).
NA = Not applicable.
ND = Not detected.
fbgs = feet below ground surface.

TABLE 3

SITE SPECIFIC ACTION LEVELS (SSALs)

Remedial Design Work Plan
Seneca Market I, LLC
Watkins Glen, New York

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

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TABLE 4

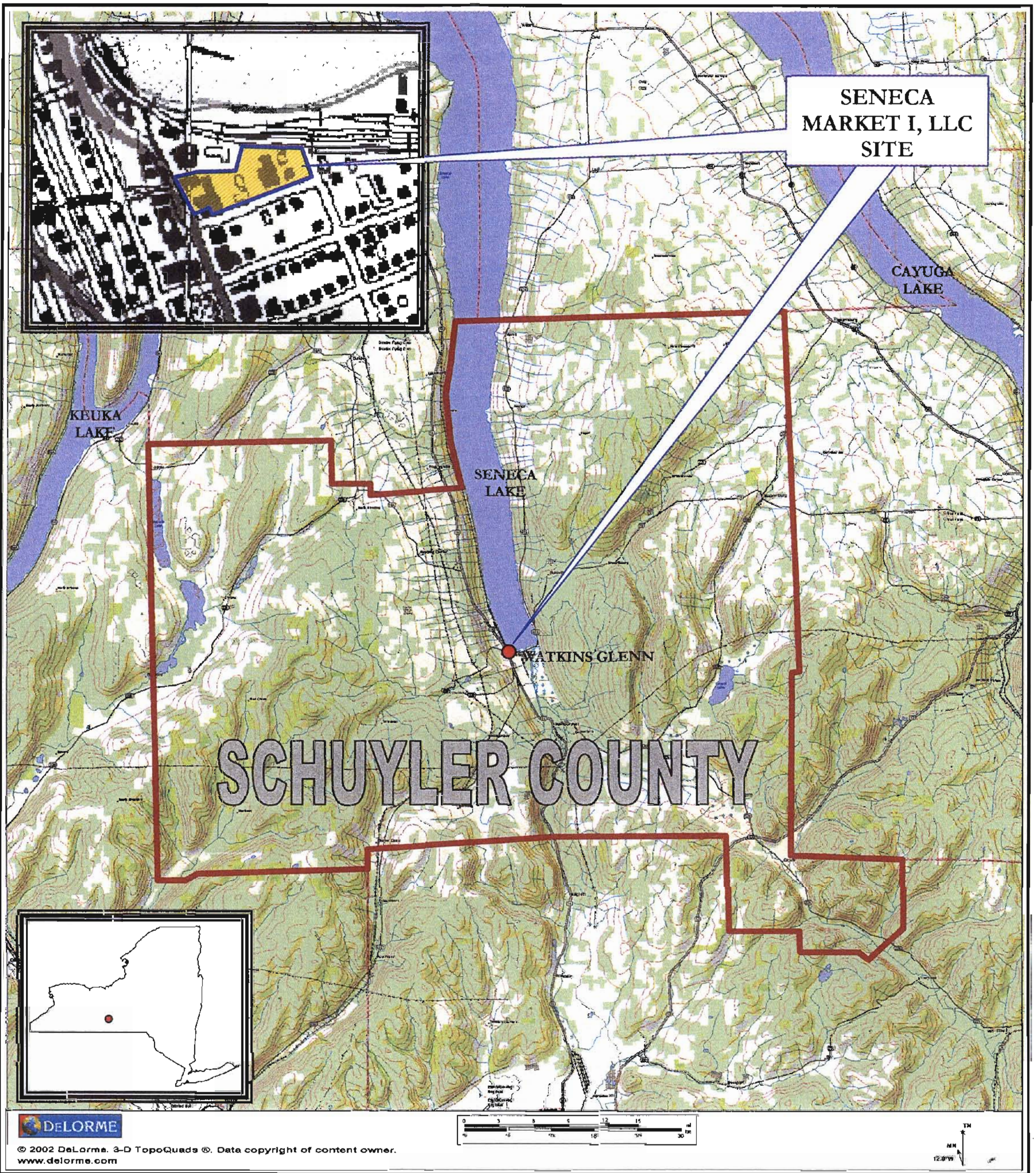
CRITERIA FOR USE OF OFF-SITE BACKFILL AS SUBGRADE MATERIAL

Remedial Design Work Plan
Seneca Market I, LLC
Watkins Glen, New York

Parameter	Individual Concentration (ppm)	Total Concentration (ppm)
TCL VOCs	-	10
Acetone	0.20	-
Benzene	0.06	-
2-Butanone (MEK)	0.30	-
Carbon Disulfide	2.70	-
Carbon Tetrachloride	0.60	-
Chlorobenzene	1.70	-
Chloroethane	1.90	-
Chloroform	0.30	-
1,1-Dichloroethane	0.20	-
1,1-Dichloroethene	0.40	-
1,2-Dichloroethane	0.10	-
1,2-Dichloroethene (Total)	0.30	-
Ethylbenzene	5.50	-
Methylene Chloride	0.10	-
4-Methyl-2-Pentanone	1.00	-
Tetrachloroethene	1.40	-
1,1,2,2-Tetrachloroethane	0.60	-
Toluene	1.50	-
1,1,1-Trichloroethane	0.80	-
Trichloroethene	0.70	-
Vinyl Chloride	0.20	-
Xylene (Total)	1.20	-
TCL SVOCs	50	500
RCRA Metals (8)		
Arsenic	7.5 or SB	-
Barium	300 or SB	-
Cadmium	1.0 or SB	-
Chromium	10 or SB	-
Lead	SB	-
Mercury	0.1	-
Selenium	2.0 or SB	-
Silver	SB	-
Pesticides/Herbicides	As per TAGM #4046	10
TCL PCBs		

FIGURES

FIGURE 1



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

PROJECT NO.: 0092-002-100

DATE: DECEMBER 2005

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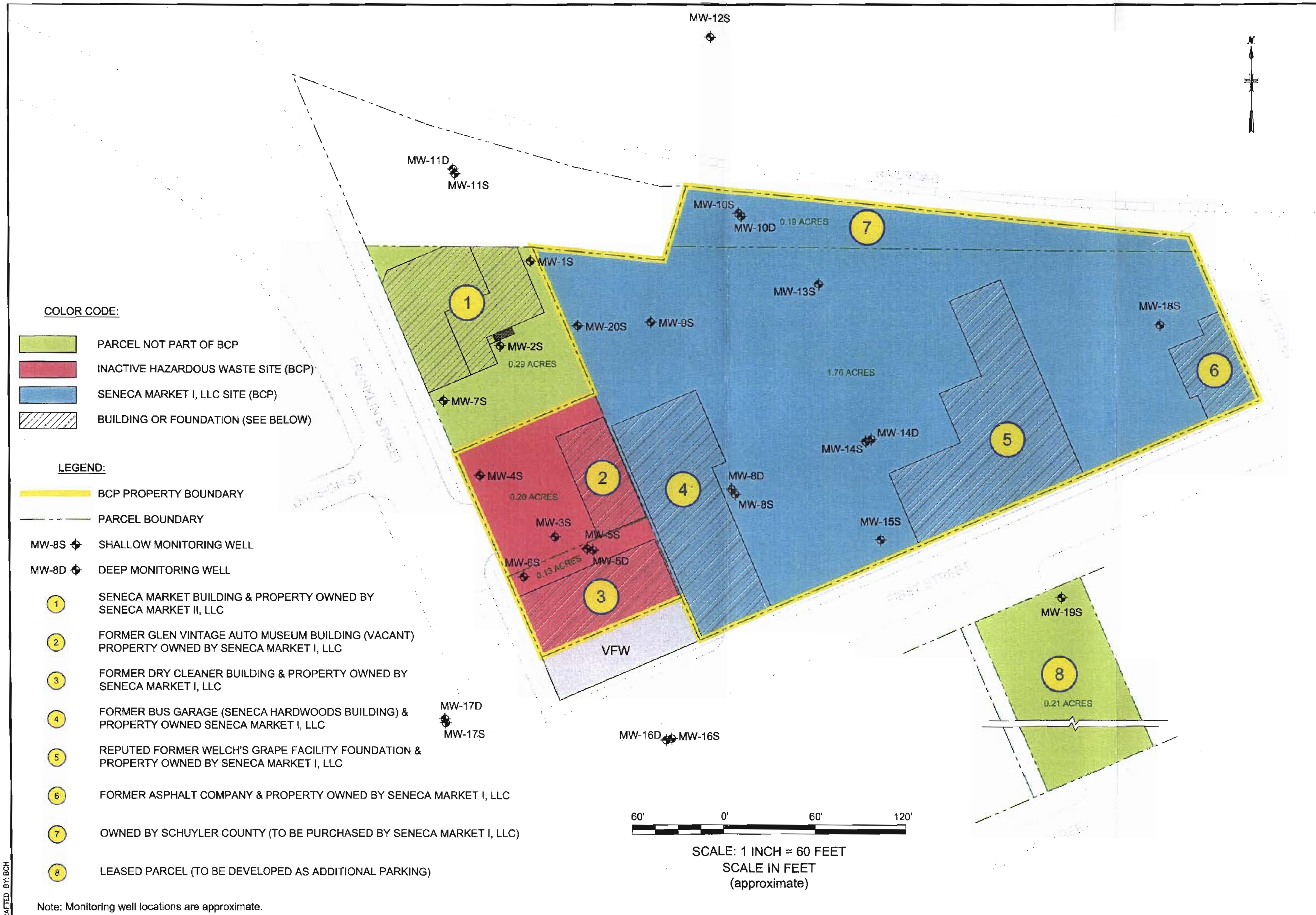
SITE LOCATION AND VICINITY MAP

BCP - REMEDIAL DESIGN WORK PLAN

SENECA MARKET I, LLC SITE
VILLAGE OF WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FILEPATH:g:\cad\benchmark\krog\seneca harbor hotel - watkins glenn\remedial design work plan\figure 1; site location and vicinity map.dwg



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JOB NO.: 0092-002-100

SITE PLAN

BCP - REMEDIAL DESIGN WORK PLAN

SECECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

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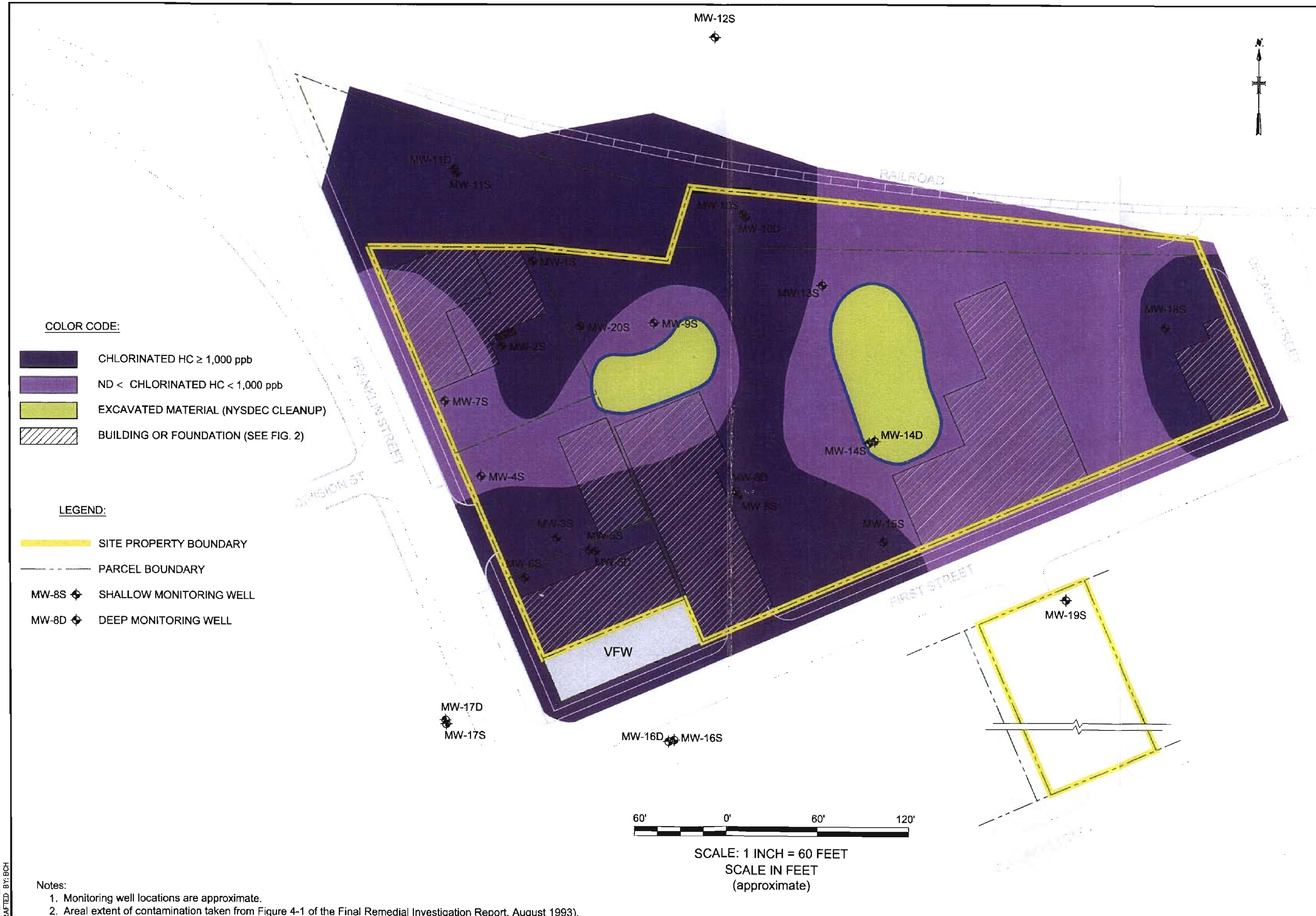
SENECA MARKET I, LLC

FIGURE 2



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JOB NO.: 0092-002-100

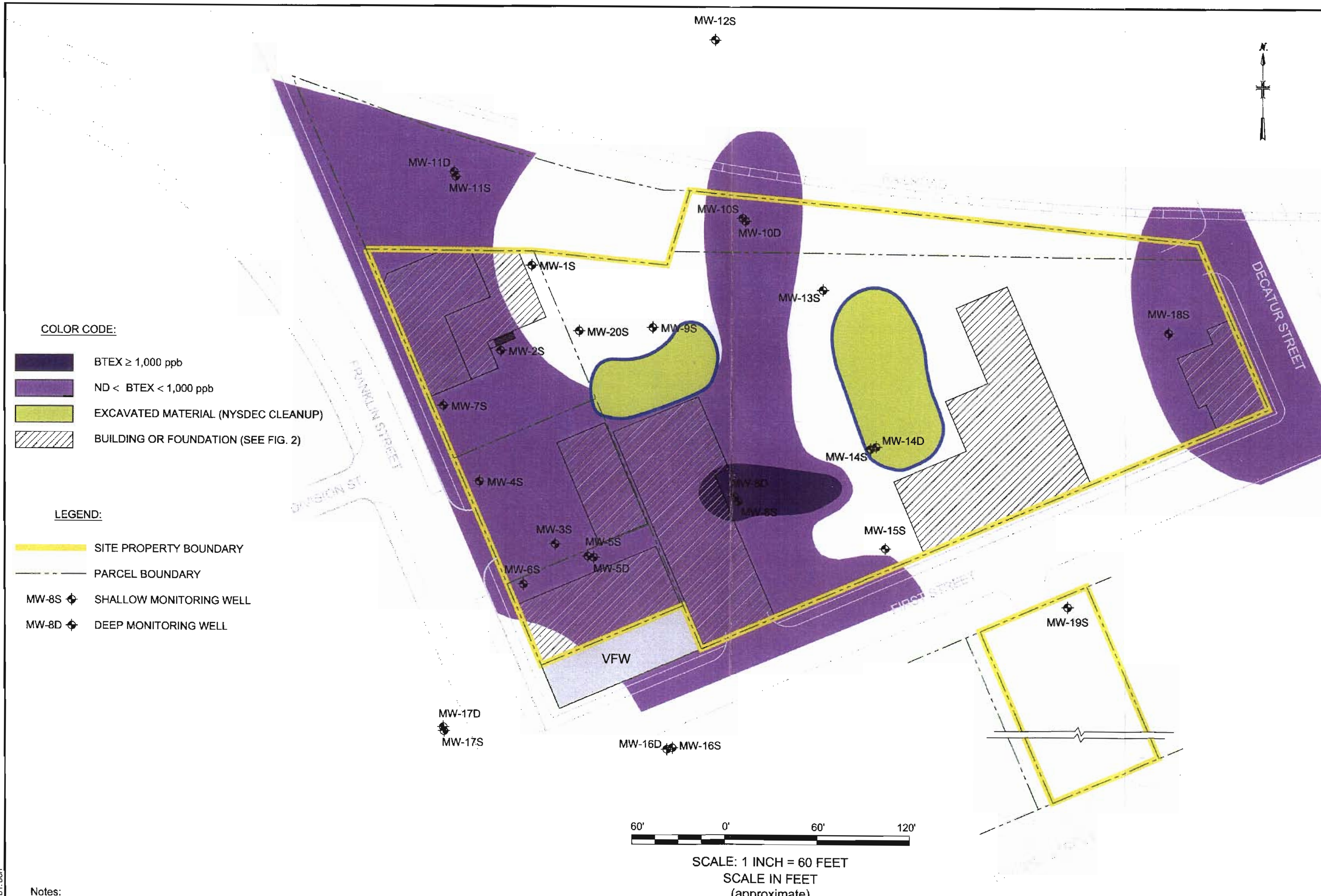
AREAL EXTENT OF CHLORINATED HC CONTAMINATION IN GROUNDWATER

BCP - REMEDIAL DESIGN WORK PLAN

SECECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FIGURE 3



Notes:
1. Monitoring well locations are approximate.
2. Areal extent of contamination taken from Figure 4-2 of the Final Remedial Investigation Report, August 1993).

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G:\CAD\Benchmark\Krog\Seneca Harbor Hotel - Watkins Glen\Remedial Design Work Plan\Figure 4; Areal Extent of BTEX Contamination in GW.dwg

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AREAL EXTENT OF BTEX CONTAMINATION IN GROUNDWATER

BCP - REMEDIAL DESIGN WORK PLAN

SECECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FIGURE 4

Notes:
1. Monitoring well locations are approximate.
2. Areal extent of contamination taken from Figure 4-2 of the Final Remedial Investigation Report, August 1993).

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AREAL EXTENT OF CHLORINATED HC CONTAMINATION IN SOIL

BCP - REMEDIAL DESIGN WORK PLAN

SECECA MARKET I, LLC SITE
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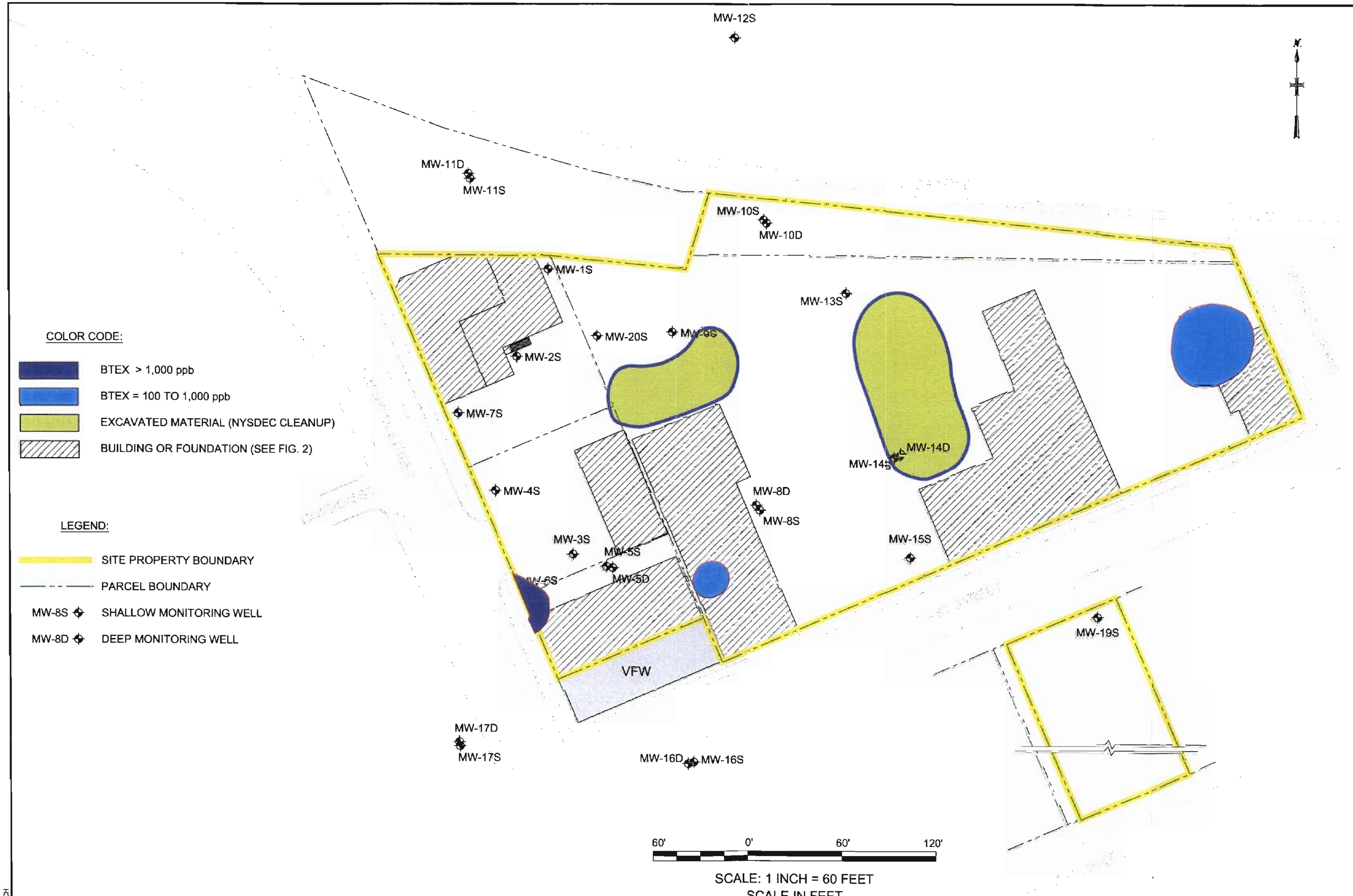
FIGURE 5



Notes:
1. Monitoring well locations are approximate.
2. Areal extent of contamination taken from Figure 4-2 of the Final Remedial Investigation Report, August 1993).

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G:\CAD\Benchmark\Krog\Seneca Harbor Hotel - Watkins Glen\Remedial Design Work Plan\Figure 6; Areal Extent of BTEX Contamination in Soil.dwg

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AREAL EXTENT OF BTEX CONTAMINATION IN SOIL

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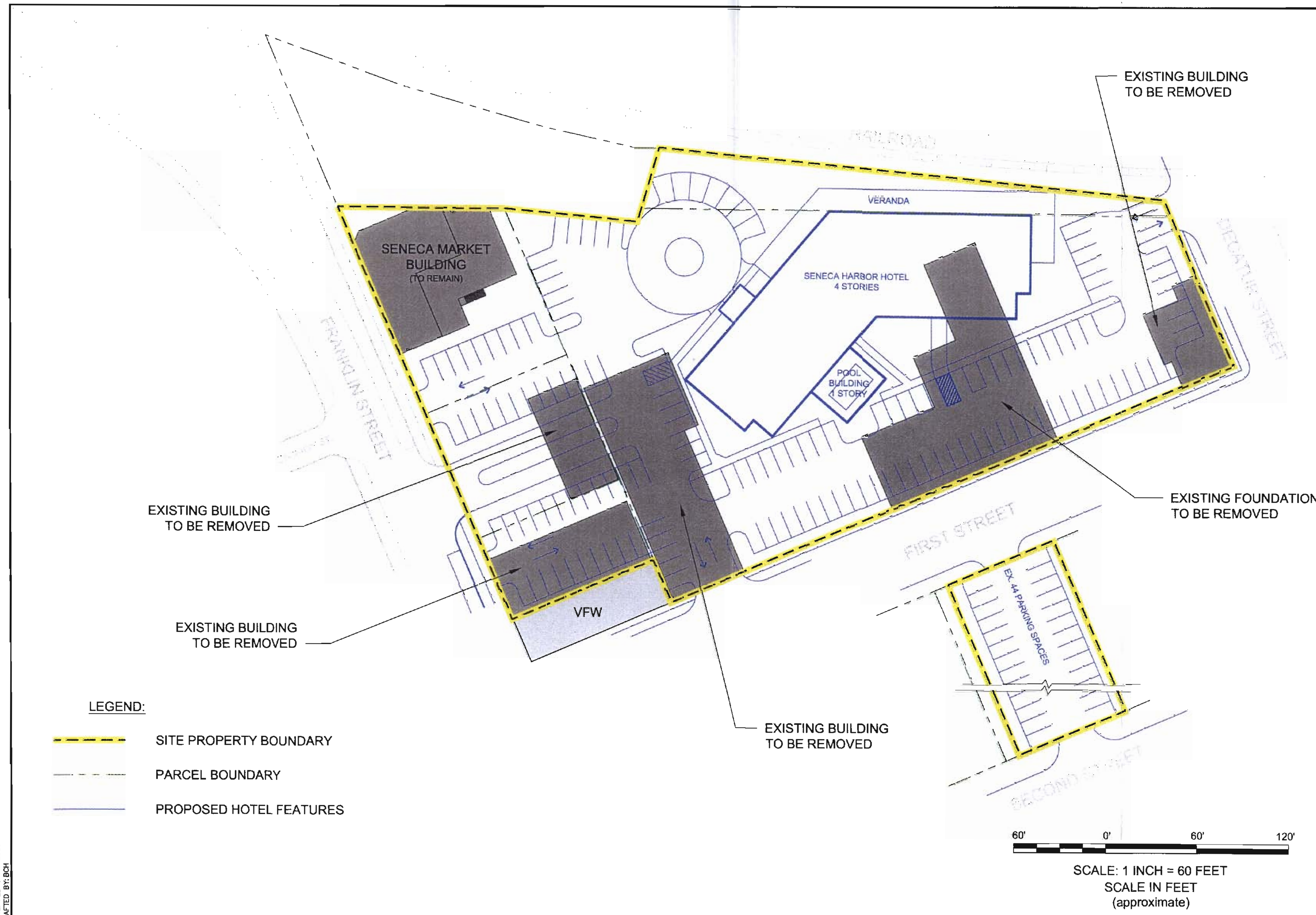
FIGURE 6



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PROPOSED REDEVELOPMENT PLAN

BCP - REMEDIAL DESIGN WORK PLAN

SECECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

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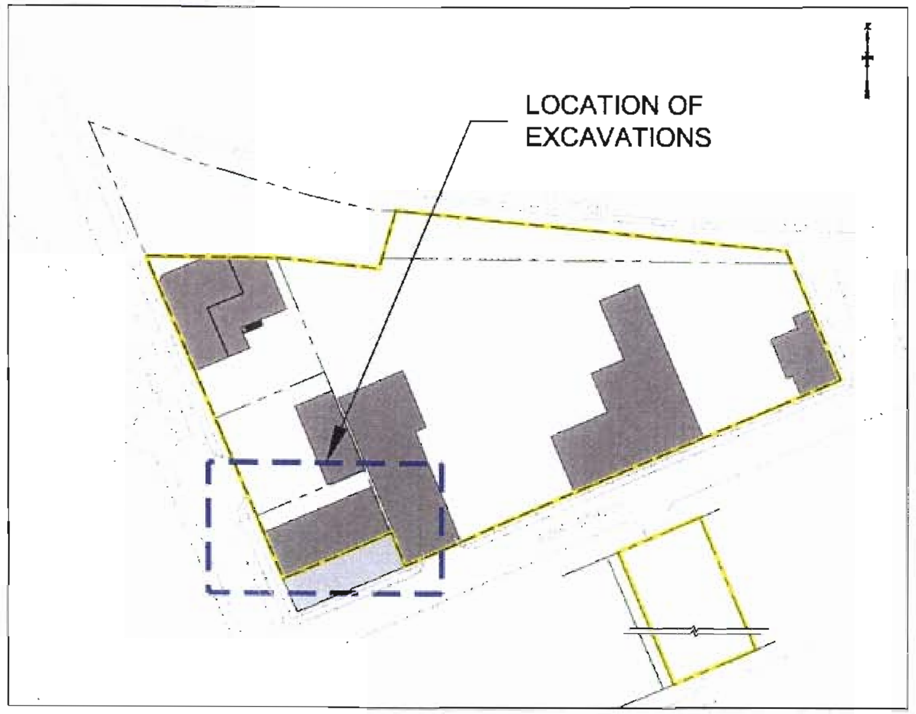
FIGURE 7

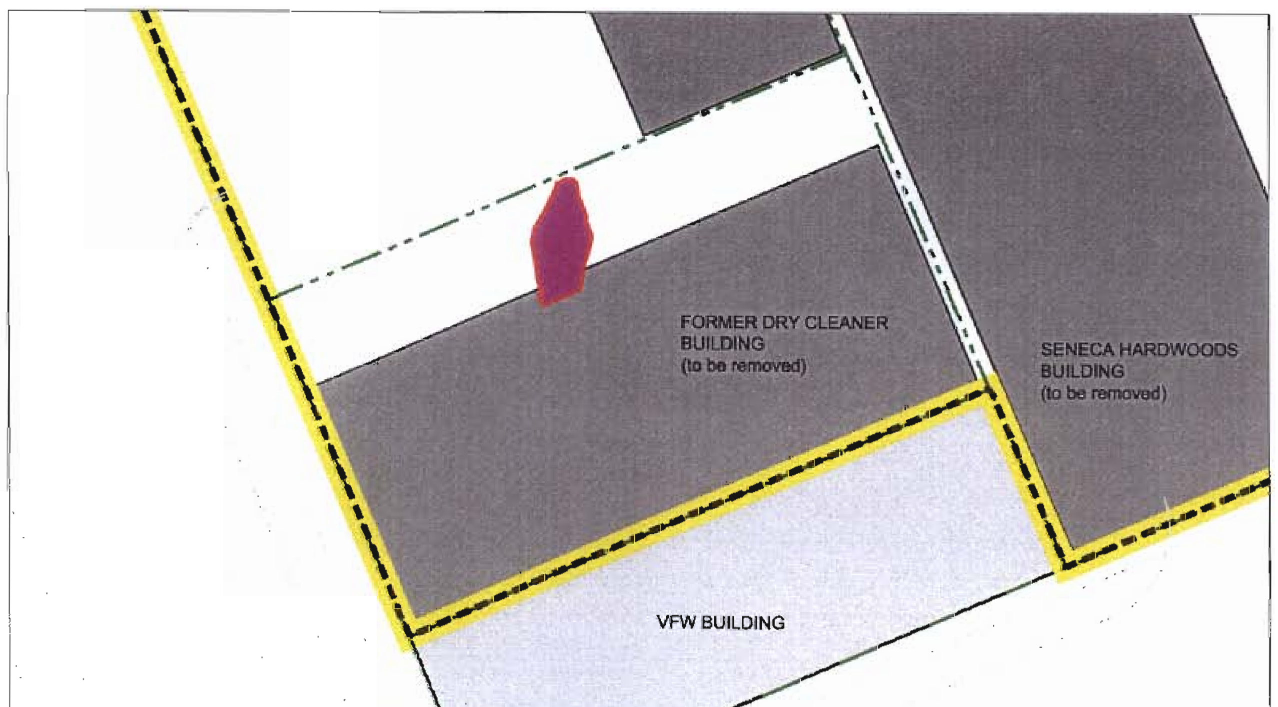


SITE PLAN:
SCALE: 1" = 160' (APPROX.)

LEGEND:

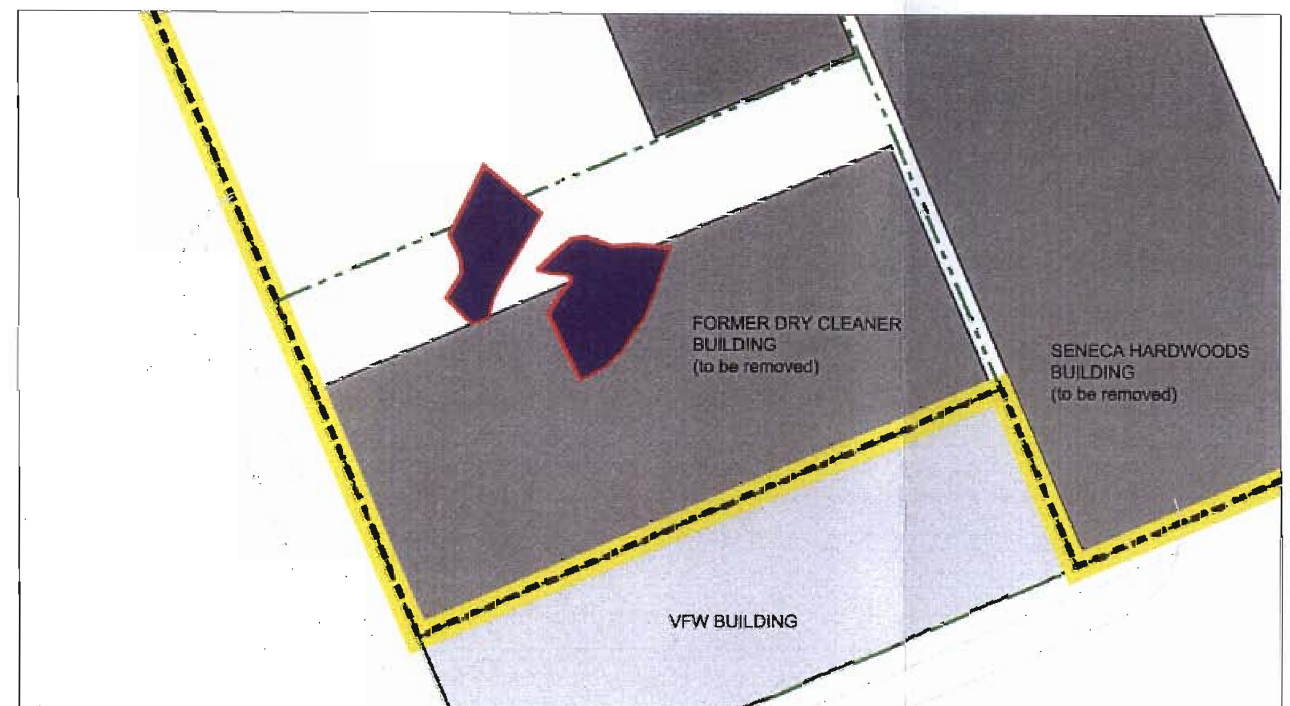
- SITE PROPERTY BOUNDARY
- PARCEL BOUNDARY
- RESIDUAL SOIL CONTAMINATION BY CHLORINATED ORGANIC (CO) COMPOUNDS - 0 TO 4 FBGS
- RESIDUAL SOIL CONTAMINATION BY CHLORINATED ORGANIC (CO) COMPOUNDS - 4 TO 6 FBGS

DEPTH: 0 TO 4 FBGS



DRY CLEANER AREA:
SCALE: 1" = 30' (APPROX.)

DEPTH: 4 TO 6 FBGS



DRY CLEANER AREA:
SCALE: 1" = 30' (APPROX.)

SOURCES: Chlorinated Organic Impacts - NYSDEC Explanation of Significant Differences - North Franklin Street Site, May 2003.
BTEX Impacts - FINAL Remedial Investigation, August 1993, URS Consultants, Inc.

DATE: FEBRUARY 2006
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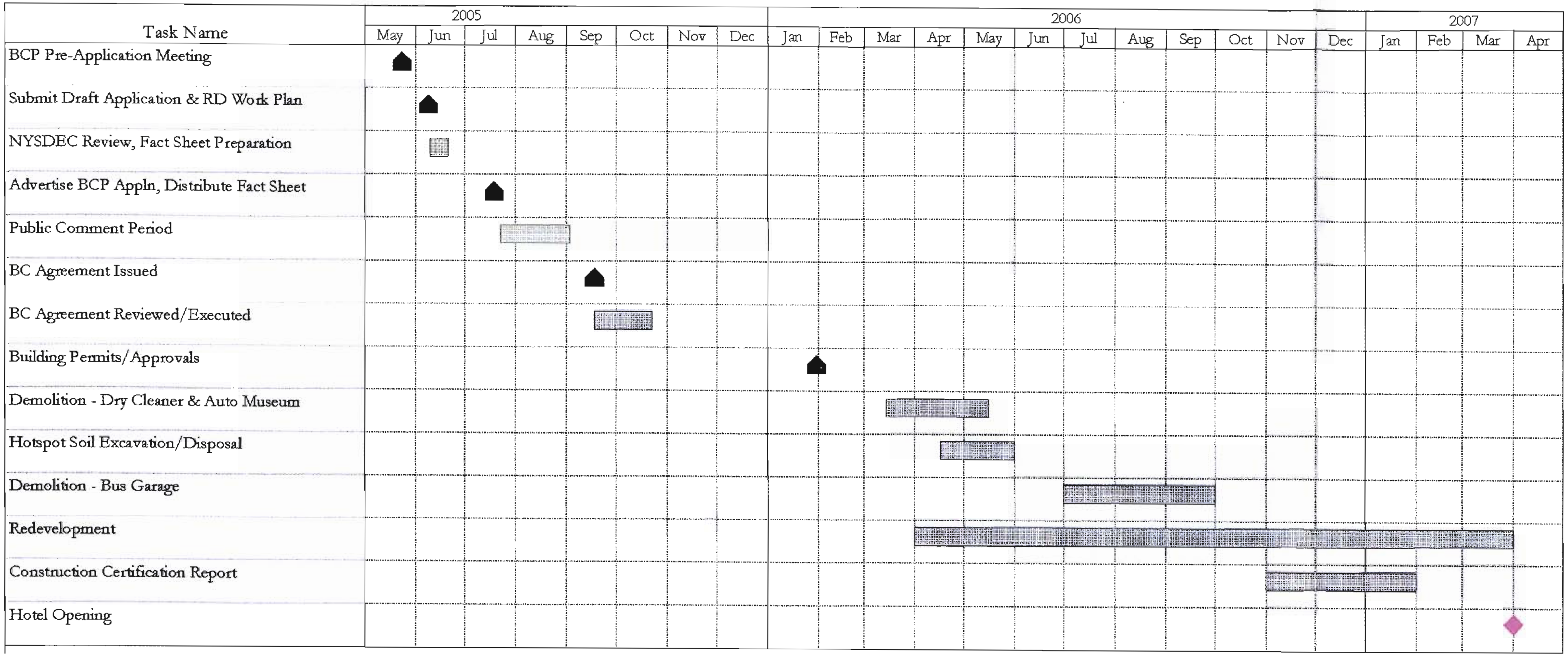
IMPACTED SOIL EXCAVATION PLAN

BCP - REMEDIAL DESIGN WORK PLAN

SECECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FIGURE 8



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PROJECT SCHEDULE

BCP - REMEDIAL DESIGN WORK PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

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FIGURE 9

DATE: FEBRUARY 2006
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APPENDIX A

EXPLANATION OF SIGNIFICANT DIFFERENCES

EXPLANATION OF SIGNIFICANT DIFFERENCES
NORTH FRANKLIN STREET SITE

Village of Watkins Glen / Schuyler County / Registry No. 8-49-002 / May 2003

Prepared by the New York State Department of Environmental Conservation
Division of Environmental Remediation

1.0 INTRODUCTION

The purpose of this notice is to describe the progress of the cleanup at the North Franklin Street Site and to inform you about a change in the site remedy. The North Franklin Street Class 2 inactive hazardous waste disposal site is an approximately 0.3 acre parcel of land situated in the Village of Watkins Glen, Schuyler County. The site is located in an urban area approximately 400 feet south of Seneca Lake. Two (2) structures currently exist on site. The building referred to as the "Former Auto Museum" is a single-story metal building on a concrete slab. At the present time, this building is apparently being used for storage. The second structure is referred to as the "Former Dry Cleaning Building." This is a two-story brick building that also includes two (2) unoccupied single-story brick sheds to the east and the "VFW Building attached to the south." The former dry cleaning building is currently occupied by a gift store and an adjacent antique shop (see Figures 1 and 2).

On January 26, 1994, the New York State Department of Environmental Conservation (NYSDEC) signed a Record of Decision (ROD) which selected a remedy to clean up the site involving active soil vapor extraction (SVE) and groundwater extraction and treatment technologies. The state funded remedial design was completed by the NYSDEC's engineering consultant, URS Consultants, Inc. (URS) in June 1995. 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, in the process of collecting the confirmatory samples, 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 remain concentrated within the deeper clay, approximately four (4) to six (6) feet below ground surface.

The purpose of this Explanation of Significant Difference (ESD) is to describe how the residual contaminated soil and groundwater will be addressed. The change to the remedy includes the 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. In addition, the natural attenuation of groundwater contaminant levels will be monitored.

This ESD will become part of the Administrative Record for this site. The information here is a summary of what can be found in greater detail in documents that have been placed in the following repositories:

Watkins Glen Public Library	**NYSDEC**	**NYSDEC Region 8 Office**
610 Decatur Street	**Div. of Environmental Remediation**	**6274 East Avon-Lima Road**
Watkins Glen, NY	**625 Broadway, 12th Floor**	**Avon, NY 14414**
(607) 535-2346	**Albany, NY 12233-7013**	**(716) 226-5326**
Hours: M,W,F 12-5 & 7-9	**David Chiusano, Project Manager**	**Attn: Linda Vera**
Hours: T, TH: 10-5 & 7-9	**(518) 402-9812**	**By Appointment Only**
Hours: Sat. 11-3, Sun 2-4	**Mon. - Fri. 7:30am - 3:30pm**	

Although this is not a request for comments, interested persons are invited to contact the NYSDEC's Project Manager for this site to obtain more information or have questions answered.

2.0 SITE DESCRIPTION AND ORIGINAL REMEDY

2.1 Site History, Contamination, and Selected Remedy

a. **Remedial Investigation/Feasibility Study:** A 1991 environmental assessment of the site revealed that groundwater under the site is contaminated with dry cleaning chemicals. Therefore, the NYSDEC added the site to its official list of inactive hazardous waste disposal sites as a Class 2 site. A classification of 2 means the site poses a significant threat to public health and/or the environment and action is required.

The NYSDEC completed a state-funded Remedial Investigation (RI) in April 1993, concluding that both groundwater and soils in the vicinity of the site had been contaminated by volatile organic compounds (VOCs) associated with the former dry cleaning operations. Dumping of tetrachloroethylene (PCE) contaminated water in an alley between the former auto museum and the former dry cleaning building was identified as the major source of contamination.

b. **ROD Remedy:** After a Feasibility Study (FS) was completed in November 1993, the NYSDEC prepared and signed the ROD on January 26, 1994. In accordance with the requirements of the ROD, a SVE system to treat shallow soil (above the clay layer) and a Groundwater Extraction Treatment System (GWET) to extract and treat groundwater was designed. The ROD required that the SVE system be operated until soil cleanup objectives were achieved, and for the GWET system to operate for five (5) years or until it was determined that further operation would not result in a significant reduction in contaminant concentrations.

c. **<u>Remedial Design/Remedial Action:</u>** The NYSDEC and URS completed the state-funded remedial design for the site in June 1995. The contract to construct and operate the SVE and GWET systems was subsequently awarded to Terra Vac, Inc. under URS oversight. Terra Vac completed construction of the treatment systems and began operations in the Fall of 1996.

Confirmatory soil analysis conducted during implementation of the remedy determined that the soil remedial action objectives had been achieved in areas beneath the former auto museum and the back of the former dry cleaning building of the site. At the same time, a previously unknown small vertical column of soil contamination existing along the former dry cleaning building foundation was identified. The contamination extends from 2 feet below ground surface to approximately 16 feet below ground surface within the deeper clay. It was ultimately determined by review of the field data generated that the original concept for remediation outlined within the ROD would not be feasible to clean up the remaining deeper contamination.

The GWET system was operated and monitored during this time and determined to be successful in reducing contaminant concentrations within the source area. Operation of the SVE system and GWET system were subsequently suspended by Terra Vac until further evaluation of the contamination was completed.

d. **<u>Additional Investigations:</u>** From the Fall of 1998 to the Fall of 1999 URS performed additional soil investigations and cleanup technology feasibility studies to evaluate the deeper soil contamination. Based on this work it was concluded that an estimated 370 pounds of contamination remained at the site, the majority of which was located in a small area directly adjacent to and outside the former dry cleaning building. Additional contamination was also located beneath the dry cleaners at depths of greater than 16 feet.

In the Winter of 1999, it was determined that the site was a viable candidate for chemical oxidation. As such, a pilot study was conducted by URS at the site from March 2000 through May 2000.

3.0 CURRENT STATUS

In November 2001, URS' report on the pilot study was approved by the NYSDEC. That report concluded that the chemical oxidation pilot study program significantly reduced the mass of chlorinated contaminants in on-site soils. The two (2) injection events have reduced the total mass of chlorinated organic compounds by approximately 79 percent, from an estimated 367 pounds to 78 pounds. Despite the reduction, localized areas with residual contaminant concentrations exceeding remedial action objectives for soils still remain concentrated at the depth of 4 to 6 feet within the subsurface clay below the building. As such, it is recommended that active venting be implemented. However, if the former dry cleaning building is demolished in the future by the site owner, soil excavation below the slab is recommended. Both of these options also include the placement of deed restrictions and continued groundwater monitoring.

4.0 DESCRIPTION OF SIGNIFICANT DIFFERENCES

4.1 New Information

SVE, groundwater extraction and treatment, and in-situ chemical oxidation activities conducted at the North Franklin Street Site have significantly reduced the mass of chlorinated organic contaminants in on-site soils. Despite this reduction, residual contaminant concentrations exceeding remedial action objectives remain. In particular, three (3) such areas exist beneath and just to the east of the side (north) door of the former dry cleaning building; one outside the building at a depth of 0-4 feet below ground surface (bgs.), another is located beneath the building at a depth of 4-6 feet bgs, and one is located beneath and adjacent to the building at depths greater than 6 feet bgs.**(see Figures 3, 4, and 5)**. In light of the site hydrogeology, it is likely that other small, isolated pockets with high levels of contamination may exist elsewhere beneath and outside the building. The ability to remediate these pockets of contamination by active soil vapor extraction and additional chemical oxidation injections is limited by the following factors:

The depth of fill beneath the east (concrete floor) section of the building is greater than elsewhere on the site and the fill includes large stones, cobbles, wood and other debris. This material is very heterogeneous and permeable, making it difficult to introduce a vacuum or distribute in-situ treatment reagents effectively and uniformly throughout the contaminated zone. Two (2) inside wells were installed through the concrete floor of the building. However, at five (5) other drilling locations, refusal was encountered due to obstructions within the underlying fill material, and the holes had to be abandoned prior to well installation.

The high concentrations of chlorinated organic compounds may indicate the presence of pockets of dense non-aqueous phase liquid (DNAPL). Active soil vapor extraction and in-situ chemical oxidation are generally not effective for the treatment of DNAPL and many injection events might be required to reduce contaminant levels in DNAPL-impacted or other high-concentration areas to acceptable levels.

Outside the building, the fill is shallower and less permeable. However, a significant mass of contamination (9 pounds) is estimated to remain in the shallow (0-4 foot) depth interval, including some locations with high residual contaminant concentrations. Because this zone is unsaturated, a large volume of reagent would be necessary to provide artificial saturation over a sufficient area and for a sufficient time to insure uniform and effective reagent distribution.

Different options have been considered to address residual soil and groundwater contamination at the North Franklin Street Site:

Option 1 – No Action: This option, as well as Options 2 through 6, includes the following two passive measures: (a) deed restrictions; and (b) long-term groundwater monitoring.

Deed restrictions: The presence of groundwater contamination and residual soil contamination at the site, including localized areas with relatively high contaminant concentrations, makes unrestricted future use of the site impractical without additional active remediation measures. Without such additional measures, deed restrictions would be required to prevent potable groundwater use and contact with the remaining residual soil contamination. Since contamination also occurs at greater depths (albeit it at generally lower concentrations), extending downward through the clay confining unit, restrictions will be necessary to prevent the installation of potable water supply wells at the site. A soils management plan would be developed to address the residual contaminated soils that may be excavated from the site during future redevelopment. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations. Moreover, the property owner would complete and submit to the NYSDEC an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would contain certification that the institutional controls put in place, pursuant to the ESD, are still in place, have not been altered, and are still effective.

Groundwater monitoring: Monitoring data suggest that the natural attenuation of groundwater contamination is occurring at the North Franklin Street Site. In general, chlorinated organic solvent plumes have been documented to attenuate, to varying degrees, as a result of physical, chemical and biological processes occurring within the subsurface. At this site, natural attenuation appears to be occurring as indicated by the occurrence of VOC breakdown products within monitoring wells located at and downgradient from the site.

The total cost for this option is estimated to be approximately $150,000. The costs for this option are associated with an annual groundwater monitoring analytical fee of $5,000 for a thirty year time period.

Option 2 – Continued In-Situ Chemical Oxidation: In addition to deed restrictions and groundwater monitoring, Option 2 includes the continuation of in-situ treatment by chemical oxidation. The two (2) in-situ chemical oxidation injections performed to date have effectively removed most of the contaminated soil mass from the site. Moreover, although the effects of the chemical oxidation pilot study upon groundwater quality at the site are not clearly evident to date, the source reduction that took place will undoubtedly lead to improved groundwater quality over the long term. However, it is unlikely that additional treatment applications using chemical oxidation or any other in-situ technology would, within a practical time frame and cost, achieve site-wide compliance with remedial action objectives or ensure that pockets with relatively high levels of contamination do not remain. For this reason, it is considered likely that, if institutional controls and/or measures to protect building occupants are found to be necessary now (i.e., given the residual contaminant levels occurring on the site at present), they would also be necessary after the performance of additional chemical oxidation injections.

The total cost for this option is estimated to be approximately $170,000 associated with two full scale treatments by a qualified contractor along with the costs for groundwater monitoring

<u>Option 3 – Building Demolition and Soil Excavation:</u> The deed restrictions associated with this option are intended in part to prevent future disturbance of and contact with residual soil contamination.

In addition to the placement of deed restrictions and monitoring groundwater natural attenuation, Option 3 also includes the demolition or partial demolition of the existing on-site building, and the excavation and off-site disposal of shallow contaminated soil adjacent to and beneath the building, as required. Almost 95 percent of the estimated residual on-site soil contaminant mass occurs within the 0-4 foot and 4-6 foot depth ranges. The combined area in which soil contamination from these depth ranges exceeds remedial action objectives is only approximately 25 feet by 35 feet. Although excavation and off-site disposal of this contaminated soil would not be practical with the former dry cleaning building in place, it would be the most complete, dependable and permanent remedy for the site if the building is removed. However, it would not be practical to remove all soil contamination from the site, specifically the deeper contamination that permeates the clay layer. Therefore, a deed restriction prohibiting deep excavations and/or the construction of on-site potable water supply wells would be necessary in any case. A soils management plan would be developed to address the residual contaminated soils that may be excavated from the site during future redevelopment. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations. Moreover, the property owner would complete and submit to the NYSDEC an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would contain certification that the institutional controls put in place, pursuant to the ESD, are still in place, have not been altered, and are still effective.

The total cost for this option is estimated to be approximately $300,000. The primary costs for this option are associated with excavation and offsite disposal of contaminated soil ($240,000) and building demolition ($60,000). No operation and maintenance costs would be required for this option.

<u>Option 4 – Passive Venting:</u> In addition to deed restrictions and groundwater monitoring, Option 4 includes the installation of a passive venting system within the existing building, assuming that the building remains standing at the site. A passive venting system could be constructed to control the potential migration of VOCs from subsurface soils beneath the building and prevent the potential for human exposure. Slotted pipe would be installed beneath the floor of the former dry cleaning building, with discharge to the atmosphere via a roof vent. Slotted collection pipes would be installed directly below the existing slab, would be located approximately 5 feet apart and would extend the width of the building (approximately 20 feet wide). It is estimated that six trenches would be necessary, for a total of approximately 125 linear feet of slotted collection pipe. To install the pipe, 1-foot wide trenches would be cut through the concrete floor. The 1-foot wide section of concrete and a quantity of the subgrade material would be removed to allow for installation of the slotted pipe and gravel. Following pipe installation, the concrete slab would be restored. The collection pipes would be extended out the wall of the building where they would connect to one common vent. Following restoration of the concrete floor, a sealant or plastic membrane would be applied to prevent vapors from migrating upwards through any cracks or holes in the floor. The total cost for this option is estimated to be approximately $20,000. Most of the costs for this option are for the slotted PVC screen and for the costs to repair the concrete slab. No operation and maintenance costs would be required for this option.

A soils management plan would be developed to address the residual contaminated soils that may be excavated from the site during future redevelopment. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations. Moreover, the property owner would complete and submit to the NYSDEC an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would contain certification that the institutional controls and engineering controls put in place, pursuant to the ESD, are still in place, have not been altered, and are still effective.

<u>Option 5 - Active Venting:</u> In addition to deed restrictions and groundwater monitoring, Option 5 includes the installation of an active venting system consisting of a small fan or blower mounted outside the building. To prevent contaminant migration into the building this type of system would create a positive flow of air from underneath the floor through pipes and suction holes that are cored through the floor. For this option, it is assumed that two extraction points would be located near the center of the concrete slab. To allow for the use of the building space, a 1-foot wide trench would be cut through the concrete floor, and PVC pipe would be installed to the desired extraction point(s). Following pipe installation, the concrete floor would be restored. Additional extraction points would be cored through the floor near the outside walls where piping could be installed above the floor and mounted on the walls. All collection pipes would extend out the wall of the building where they would manifold to one common vent connected to the exhaust fan. The discharge from the fan would then be extended up the outside wall of the building. The total cost for this option was estimated to be \$19,000. In addition, a separate power supply would have to be installed, in addition to the monthly utility bills for system operation. O&M costs for the first year of operation have been estimated at \$13,000, and \$5,000 annually thereafter.

A soils management plan would be developed to address the residual contaminated soils that may be excavated from the site during future redevelopment. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations. Moreover, the property owner would complete and submit to the NYSDEC an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would contain certification that the institutional controls and engineering controls put in place, pursuant to the ESD, are still in place, have not been altered, and are still effective.

<u>Option 6 - Soil Excavation / Off-Site Disposal:</u> Excavation of the soil in close proximity to the building, although possible, presents difficult logistical problems. The integrity of the one hundred year old building is a major consideration due to its age and its foundation consisting only of stacked stone. There was no guarantee that excavation activities would not damage or destroy the building. Additionally, excavation would not remove the soil immediately adjacent to the building, which is the most highly contaminated, due to limitations of conventional bracing and shoring systems. Contaminated soil underneath the building also would not be addressed. Finally, because significant sources of contamination would remain in-place, the time to achieve restoration of the site would be many years.

4.2 Comparison of Changes with Original Remedy

a. Soils:

January 1994 ROD Remedy - Approximately 1,000 cubic yards of subsurface soils were to be treated in place with the use of a soil vacuum extraction system designed to remove volatile organic contamination. Soil vapors collected by this process were monitored/sampled and treated, as necessary, to reduce contaminant concentrations to levels which are protective of human health and the environment and in compliance with New York State standards, criteria, and guidelines before being released into the atmosphere. This action was expected to take four (4) to eight (8) months from start-up.

May 2003 ESD Remedy - Based upon the above discussion, the "no action" (Option 1) is not recommended because of doubts concerning its long-term protectiveness. Secondly, although additional contaminant mass removals could undoubtedly be achieved by further treatment using chemical oxidation (Option 2), there is not a clear and achievable end for such treatment. Moreover, active or passive venting would still likely need to be implemented after additional treatment by chemical oxidation was completed. Given the fact that the current building owner continues to operate a viable business at this location, Option 4 (Passive Venting) and Option 5 (Active Venting) were further evaluated for implementation. For both options, the placement of deed restrictions and groundwater monitoring would be necessary. Active venting (option 5) has been determined to be the better of the two options when considering the similarity in costs, and less disruption to the ongoing business operations within the former dry cleaner building during installation of the active depressurization system. However, should the building be proposed for demolition by the site owner in the future, Option 3 (Building Demolition and Soil Excavation) is recommended for implementation, and a proposal defining the extent of soil excavation would be required.

The primary objective for implementation of both Options 4 and 5 is to prevent the migration of contamination into the building. The majority of the contamination is assumed to be located under the middle section of the building where the floor is concrete, 4 to 6 inches thick. The dimensions of this area are approximately 20 feet by 30 feet. The front portion of the building consists of plywood on wood joists. While it is assumed that only the concrete portion will be addressed, both options could be extended underneath the front portion of the building. Both systems would provide a measure of protection against the intrusion of contaminants into the building. Natural wind and variations in atmospheric pressure would allow the passive system to vent any contamination that may accumulate beneath the slab. However, by its very nature, the active system (Option 5) provides better protection of the structure, since a slight vacuum is always maintained below the slab. Of the two options, installing the passive system (Option 4) would be more disruptive to any ongoing operations inside the building, since the entire concrete section of the floor would be cut up and replaced, not to mention greater quantities of material for disposal, replacement concrete, etc. Due to the building limitations, much of this work would have to be performed manually. The active system (Option 5) potentially would be easier to install, since much less cutting through the concrete floor would be required. There would be no cost associated with the operation of the passive system (Option 4). Monitoring the effectiveness of the remedy is expected to be the same regardless of whether active or passive venting is implemented. No indoor air contaminants have been detected in the limited samples collected previously (although some contamination was observed during the oxidation events inside the building). Sampling would probably consist of Summa canister samples before and after implementation, to be collected on a monthly basis for the first summer after installation (assuming that the building operates only during the summer months). Assuming that no detections are noted, the sampling could probably continue with only one or two samples per year, again depending on the use and occupancy of the building. Moreover, a soils management plan would be developed to address the residual contaminated soils that may be excavated from the site during future redevelopment. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations. The property owner would complete and submit to the NYSDEC an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would contain certification that institutional and engineering controls put in place, pursuant to the ESD, are still in place, have not been altered, and are still effective.

e. **Groundwater:**

January 1994 ROD Remedy - Contaminated groundwater was extracted through a groundwater recovery well system with on-site treatment through an air stripper. The selected remedy for groundwater will meet surface water discharge standards. The effectiveness of this alternative will be evaluated after five (5) years from treatment system start-up, or sooner if warranted, using data generated from the monitoring program.

May 2003 ESD Remedy - The natural attenuation of groundwater contaminant levels will be monitored. The treatment measures that have been implemented at the site will continue to reduce groundwater contaminant concentrations over time. The SVE treatment system that operated from 1996 to 1998 and the more recent (2000) in-situ chemical oxidation pilot study have removed the majority of soil contaminant mass from within the source area. Nevertheless, at the present time, the concentration of chlorinated VOCs remains elevated above NYSDEC Class GA criteria in a number of wells at and downgradient from the site. Therefore, to ensure that residual on-site contamination does not cause groundwater contamination at levels high enough to significantly impact Seneca Lake or other downgradient receptors, long-term groundwater monitoring will be required.

5.0 SCHEDULE AND MORE INFORMATION

The conceptual design for a venting system, including cost and proposed layout, was completed in February 1999 by the NYSDEC. A re-evaluation of the costs and options for contaminant migration into the building was completed in February 2003. A full remedial design, including a long-term groundwater monitoring plan, will be completed once the scope of work for this ESD are found acceptable to the NYSDEC and the New York State Department of Health (NYSDOH) and funding becomes available. This information will also be presented to the project contact list through a fact sheet.

For more information the ESD and other information about the North Franklin Street Site is available for review at the following locations:

Watkins Glen Public Library
610 Decatur Street, Watkins Glen
(607) 535-2346
Hours: M, W, F 12-5 & 7-9
T, Th 10-5 & 7-9, Sat. 11-3, Sun. 2-4

NYSDEC Region 8 Office
6274 E Avon-Lima Rd.
Avon, NY 14414
(585) 226-5326
(Contact Linda Vera for an appointment)

For Technical Questions About the ESD, Contact:

David Chiusano, Project Manager
NYSDEC Central Office
625 Broadway, 12th Floor
Albany, NY 12233 -7013
(518) 402-9813

Linda Vera, Citizen Participation Office
Region 8 NYSDEC Office
6274 E. Avon-Lima Rd.
Avon, NY 14414
(585) 226-5326

➢ **For Site-Related Health Questions About the ESD, Contact:**

Mark VanValkenburg, Chief
Western Section, Bureau of Environmental Exposure Investigation
New York State Department of Health
Flanigan Square
547 River Street, Room 300
Troy, NY 12180-2216
(800) 458-1158, ext. 27860

5/01/03 Date	David J. Chiusano, Project Manager Section D Remedial Bureau D
5/2/03 Date	Robert C. Knizek, Chief Section D Remedial Bureau D
5/2/03 Date	Edward Belmore, Director Remedial Bureau D
5/2/03 Date	Salvatore Ervolina, Assistant Director Division of Environmental Remediation
5/6/03 Date	Dale Desnoyers, Director Division of Environmental Remediation

APPENDIX B

TAGM 3028
CONTAINED IN CRITERIA FOR ENVIRONMENTAL MEDIA

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

New York State Department of Environmental Conservation

MEMORANDUM

TO: RHWRE, Bureau Directors, Section Chiefs

FROM: Jim Harrington, Chief, Technology Section

SUBJECT: TAGM 3028: "Contained In" Criteria

DATE: DEC 20 1995

DEC 22 1995

CONSTRUCTION SERVICES

Attached is a copy of TAGM 3028 from DHSR along with Appendix I dated 10/31/94. This TAGM was issued November 30, 1992 but the appendix was revised October 31, 1994 and distributed without the TAGM. This has caused a great deal of confusion in the use of the document.

This TAGM defines the regulatory status for contaminated media, and Appendix I provides the Action Levels for Groundwater and Soil/Sediment for that determination. The pertinent points are summarized below.

1. The TAGM states that environmental media (soil, sediment, and groundwater) containing listed hazardous wastes (according to 6 NYCRR Part 371) must be managed as hazardous wastes **unless, or until**, the concentrations of the listed contaminants are reduced to, or below, the Action Level concentrations in the attached Appendix I. The purpose of the policy is to set minimum criteria (Action Levels) for contaminated environmental media which must be met in order to determine whether it should be managed as a hazardous waste or as a solid waste. Management as a hazardous waste causes more stringent requirements, e.g., minimum technology standards; groundwater monitoring; land disposal restrictions; and closure/post-closure standards.

   Appendix I had previously been distributed by itself with the title of "Action Levels ..." and the document was being mistakenly interpreted as cleanup levels for hazardous waste sites. **This document does not provide cleanup** levels (explicitly stated on page 2 of the TAGM). DHWR uses the process contained in DHWR TAGM 4046 for the determination of clean up levels.

2. This policy does not apply to waste or to any residuals derived from treatment. As an example, spent activated carbon from treating wastes is not addressed under this policy.

3. This policy applies to those contaminated media which are removed from their natural environment pursuant to a State or federal issued permit, order, etc. This policy does not apply to the consolidation of wastes on site. Consolidation is covered under TAGM 3038: Active Waste Management.

4. Compliance with Action Levels in this TAGM "... does not necessarily mean that the media is entirely decontaminated and acceptable for unrestricted use."

Solid treated media that has been removed off site is subject to regulation as a solid waste under Part 360. Similarly, aqueous treated wastes must satisfy the full Part 700 series which regulates discharges into groundwater and to surface waters.

5. Implementation

   a. Demonstration
   This policy cannot be self-implemented by the facility. Contained In determinations will be made by NYSDEC based on a demonstration that the contaminated media meets the criteria.

   b. Work Plan
   The facility must submit a work plan to NYSDEC for approval. Work plans must address listed hazardous waste components for all media. The work plan shall also address hazardous constituents from all other known or suspected sources of contamination.

   c. Management of Wastes "At or Below Action Levels"
   Upon initial removal or after treatment -

   Solids may be:
   (i) disposed on site as a non-hazardous solid waste; or

   (ii) shipped off site as a non-hazardous industrial solid waste to a Part 360 permitted facility.

   Aqueous wastes may be:
   (i) discharged on site as a non-hazardous waste under a SPDES permit or Department Order; or

   (ii) shipped or discharged off site as a non-hazardous industrial solid waste to a POTW or an industrial wastewater treatment facility.

6. Action Level Concentrations
Action levels to be used are listed in Appendix I "Action Levels for Groundwater and Soil/Sediment" and only focus on the direct human ingestion exposure pathway. Further information on the development of action levels may be found in Appendix A of the TAGM.

Some action levels are not promulgated standards and may change from time-to-time. The appendix will be updated quarterly, if necessary. If the appendix is more than three (3) months old, it should not be used without first checking with the Corrective Action Section, Bureau of Hazardous Compliance and Land Management (518-457-9255). (Note that the TAGM reference for assistance on page 6 is no longer correct.)

7. Please be aware that USEPA is in the midst of developing a Source Screening Guidance document which is expected in the very near future. The federal program, when implemented, would replace TAGM 3028. The Technology Section will notify you when this change is made.

If you have any questions on this TAGM relative to the DHWR program, please call the Technology Section and we will happy to provide assistance.

Attachments
cc: N. Kolak

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION
BUREAU OF TECHNICAL SUPPORT

Technical
Administrative
Guidance
Memorandum

Memorandum 3028	Page 1 of 21
Subject "Contained-In" Criteria for Environmental Media	
Date: November 30, 1992	
[X] New	
[ ] Obsolete	
[ ] Supercedes Memo No. ______	

Technical Manual

I. Policy

Environmental media containing hazardous constituents from listed hazardous waste identified in 6 NYCRR Part 371, must be managed as hazardous wastes unless or until the media contain hazardous constituent concentrations which are at or below action level concentrations.

II. Applicability

This "contained in" policy only applies to soil, sediment, and groundwater contaminated by listed hazardous waste and removed from their natural environment pursuant to a Department or EPA issued permit, order, approved closure plan, or approved corrective action plan (hereinafter referred to as permit/order/work plan). This policy does not apply to listed or characteristic hazardous wastes as initially generated or residuals derived from treating these listed hazardous wastes. Such residuals may include: fly and bottom ash from the incineration of listed hazardous waste; precipitation and biological sludge from the wastewater treatment of listed hazardous waste; spent activated carbon from the treatment of listed hazardous waste.

III. Intention and Purpose

The policy is primarily intended for situations where contaminated media, especially soil, is expected to contain low concentrations of listed hazardous waste for which treatment may not be practical or feasible. By far the most frequently occurring situation which this policy will address is the excavation of such

TAGTA-2.FRM

contaminated soils for planned and emergency projects at RCRA facilities, including both RCRA Corrective Action and facility construction and reconstruction activities.

It is the purpose of this policy to set minimum criteria (i.e., action levels, cover requirements, and restricted access) for an environmental medium contaminated by listed hazardous waste which must be met in order to preclude its management as hazardous waste. Otherwise, management as hazardous waste could trigger one or more of the following stringent land disposal requirements:

- minimum technology standards;
- groundwater monitoring;
- land disposal restrictions; and
- closure/post-closure standards.

<u>There is no intention within this policy to put forth a methodology for developing cleanup levels for contaminated environmental media</u>. Nor does this policy preclude the Department from requiring the facility to implement a remedy that will achieve environmental media cleanup levels which could be more stringent than the action levels tabulated in Appendix I of the "Contained-In" Guidance presented as Attachment A to this policy document. Also, compliance with action levels discussed in Section VI of this policy does not necessarily mean that the media is entirely decontaminated and acceptable for unrestricted use.

Technical
Administrative
Guidance
Memorandum

Technical Manual

Subject "Contained-In" Criteria for Environmental Media

Date: November 30, 1992

[X] New

[ ] Obsolete

[ ] Supercedes Memo No. ________

IV. Regulatory Requirements

Certain situations may require contaminated media be subject to treatment before achieving this policy's action levels. That treatment system will be subject to RCRA permitting unless addressed in a Article 27, Title 13 Order on Consent, 71-2727(3) Corrective Action Order or if subject to a specific Part 373 exemption (e.g., wastewater treatment units with a surface water discharge). In most instances permitting may be accomplished by addressing the treatment system in the Corrective Measures Implementation section of the Corrective Action Module (i.e., Module III) of the Part 373 permit.

Environmental media, i.e., soil or sediment, contaminated by listed hazardous waste or commercial chemical products listed in 6 NYCRR Part 371, and subject to treatment before land disposal, must meet the land disposal requirements (LDRs) established pursuant to 6 NYCRR Part 376. That treated soil or sediment meeting LDRs, and then subsequently subject to land disposal, need not be managed as hazardous waste if it meets the "contained-in" criteria.

A successful "contained-in" demonstration, as discussed in Attachment A-"Contained-In" Guidance, may still require the environmental media be regulated and actively managed as a waste material. This "contained-in" policy does not exempt solid or semi-solid media relocated off the facility property from being subject to regulation as a solid waste PURSUANT TO PAR.
NL[illegible] [illegible]ES THE "CONTAINED-IN" policy exempt aqueous waste from being subject to THE FULL PART 700 SERIES REQUIREMENTS REGULATING the discharges into the groundwater and surface waters of New York State.

V. Implementation

This policy cannot be self-implemented by the facility, but will be put into effect by the Department on a case-by-case basis with a "contained-in" demonstration. That demonstration shall be made by the facility and evaluated by the Department as discussed in Attachment A - "Contained-In" Guidance. Before a "contained-in" demonstration is implemented at any facility, a work plan for the demonstration must be submitted to and approved by the Department. This work plan may be a separate document focusing on a specific area of contamination at the facility or it could be part of a closure plan for a hazardous waste TSD unit undergoing closure, or part of a facility-wide remedial investigation work plan. Work plans will address all hazardous constituents from listed hazardous waste contained in each environmental medium. In addition to these hazardous constituents derived from listed hazardous waste, hazardous constituents from all other known or suspected sources of contamination shall be addressed in the work plan.

Environmental media contaminated by hazardous constituents from listed hazardous waste at or below action levels as discussed in Section VI of this policy, either on initial removal or after treatment, shall be managed as follows:

A. If a solid or semi-solid (i.e., sediment), it may be:

(1) disposed on the facility property as a non-hazardous solid waste in accordance with acceptable management practices identified in permits/orders/work plans, or

(2) shipped off the facility property as a non-hazardous industrial solid waste to a permitted Part 360 land disposal facility, and

B. If aqueous, it may be:

(1) discharged on the facility property as a non-hazardous waste in accordance with a SPDES permit or Department Order, or

(2) shipped or discharged off the facility property as a non-hazardous industrial solid wastes to a POTW or industrial wastewater treatment facility.

VI. <u>Action Level Concentrations</u>

The action levels to be used in the "contained in" demonstration are listed in Appendix I - "Action Levels for Groundwater and Soil/Sediment" and only focus on the direct human ingestion exposure pathway. The levels were developed using promulgated USEPA and

State standards protective of human health with recourse to USEPA health risk assessment data or State guidance values in the absence of standards. Refer to Attachment A - "Contained-In" Guidance for further information on the development of action levels.

The action levels tabulated in Appendix I that are not promulgated standards may change from time-to-time as new health risk assessment data becomes available. The Facility Compliance Region 2 Section, in the Bureau of Hazardous Waste Eastern Regions, has responsibility for updating the tabulation. These tables will be updated quarterly, if necessary.

Tables more than three (3) months old should not be used without first checking with the Section. That section should be contacted for information on action levels not found in Appendix I.

ATTACHMENT A

"Contained-In" Criteria Guidance

I. Basis for Action Levels

The "contained-in" criteria employs concentration levels for individual chemical constituents that are protective of public health through the direct ingestion pathway. The levels were developed from the following promulgated standards, USEPA health risk assessment data and New York State Department of Environmental Conservation (NYSDEC) guidance values.

A. Soil and Sediment Action Level Concentrations

The action levels to be used with the "contained-in" demonstration for soil and sediment are tabulated in Appendix I under the title "Soil/Sediment Action Levels." These levels are based on assuming human oral ingestion of soil or sediment. The soil/sediment tabulation lists action level concentrations calculated from USEPA, non-promulgated health risk assessment data (i.e., carcinogen slope factor (CSF) and the risk factor for carcinogens, and the chronic reference dose (RFD) for systemic toxicants) and oral intake assumptions (i.e., 0.1 g/day for a 70 kg. person/70 year exposure period for carcinogens, and 0.2g/day for a 16 kg. child/5 year exposure period for systemic toxicants). CSFs and RFDs are compiled from USEPA's Health Effects Assessment summary Tables (HEASTs) issued annually but updated periodically with supplements. The only soil/sediment action level representing a standard is the less than one (1) part per million (i.e., < 1.0 mg/kg) for polychlorinated biphenyls (PCBs). This standard was established under the TSCA PCB spill cleanup policy (i.e. 40 C.F.R. Part 761) for clean soil.

B. Groundwater Action Level Concentrations

Action levels to be used with the "contained in" demonstration for groundwater are tabulated in Appendix I under the title "Groundwater Action Levels." The tabulation lists for a particular constituent the most stringent level selected from promulgated New York State Part 703 Standards and USEPA MCLs. Recourse to non-promulgated USEPA health-based levels or more stringent New York State guidance values was considered appropriate only for constituents which do not have a State or USEPA Standard. The action level calculations based on USEPA health risk data included the same slope factor, risk factor, and reference dose used for soil/sediment action levels. The intake assumption of 2 l/day for a 70 kg. person/70 year exposure period was used for carcinogens and systemic toxicants. For a given chemical, non-promulgated health-based values or guidance values that are more stringent than promulgated standards were not selected as action levels.

II. Action Levels Are Not Always Cleanup Levels

No attempt was made through the "contained in" criteria to develop cleanup levels for hazardous constituents in contaminated environmental media either left in place or subject to a removal action. The development of media specific cleanup levels is a complex undertaking that takes into consideration available and applicable remedial technologies, the degree of contamination in an environmental medium, and site-specific factors. These factors may include, but not be limited to, potential impacts on off-site public and/or environmental receptors, future land use (e.g., unrestricted vs. industrial), and intermedia contaminant transport (e.g., the influence of heavily contaminated groundwater on unsaturated soils lying over the groundwater). In the RCRA Corrective Action program, the Corrective Measures Study (CMS) is the appropriate means for the facility to address media cleanup levels in the context of the remedy selection process. The CMS should provide the necessary exposure and risk assessments coupled to an evaluation of remedial alternatives to focus the development of site-specific cleanup levels. However, in the RCRA program the Department will make the final determination on selecting cleanup levels. That determination could result in a cleanup level for a contaminant in a specific environmental medium being equated to the contaminant's action level for that medium.

Such a situation can occur in the RCRA corrective action program when hazardous constituents contaminate groundwater. Under this scenario the target cleanup levels for contaminants in groundwater equate to respective action levels tabulated in Appendix I, if protection of public health is the only concern (i.e., there is no environmental impact from the contaminated groundwater).

The action levels tabulated in Appendix I for soil and sediment only consider protection of public health through the direct ingestion pathway. These ingestion levels were selected as one of several criteria that must be met by soil and sediment contaminated by listed hazardous waste in order not to require their management as hazardous waste. However, these specific action levels may not equate to target cleanup levels. Target cleanup levels for sediments must address impacts on environmental receptors (i.e., aquatic life forms). Target cleanup levels for soils should be established considering potential impacts through their exposure pathways (e.g., inhalation, drinking water, etc) and not be limited to only the direct ingestion pathway. Therefore, target cleanup levels for soil and sediment will be less than the direct ingestion action levels tabulated in Appendix I for the majority of hazardous constituents identified to RCRA facilities.

A subsequent TAGM will provide more details on the subject of cleanup levels to RCRA facilities. That document discusses the use of action levels, target cleanup levels and cleanup standards (i.e., final cleanup levels) in the context of RCRA corrective action and RCRA "remove and decontaminate" closures.

In Appendix I, action levels for several different groups of hazardous constituents have been identified.

Those groups include:

1. Total inorganic elements (e.g., total lead)
2. Total class of organic compounds (e.g., phenols)
3. Specific chemical species (e.g., total cyanide, hexavalent chromium); and
4. Specific chemical compounds (e.g., copper, cyanide, tetraethyl lead, phenol).

Several examples will serve to illustrate the use of Appendix I. Soil contaminated by the commercial chemical product tetraethyl lead would require soil and its leachate to be analyzed for the chemical compound itself and total lead. The compound can contribute lead to the contaminated media and Appendix I lists total lead with soil and groundwater action levels. A second example, soil contaminated by the commercial chemical product copper cyanide would require the soil to be analyzed for the chemical compound copper cyanide and total cyanide, a chemical species donated by the compound for which a soil action level exists. However, the soils' leachate would be analyzed for copper cyanide, total copper, and total cyanide because the latter two constituents donated by the compound have groundwater action levels. A third example illustrates the analysis required for a chemical compound which itself does not have a action level, but can transform to

III. "Contained In" Demonstration

In a "contained-in" demonstration, the facility will identify the source(s) of the environmental media contamination. If it can be conclusively established that the hazardous constituents in the media did not come from listed hazardous waste, or commercial chemical products, then the contaminated media need not be managed as hazardous waste, unless they exhibit one or more of the characteristics of a hazardous waste identified in 6 NYCRR Part 371, Section 3 or in the USEPA Toxicity Characteristic in 40 CFR 261.24.

Since a "contained-in" demonstration will be implemented through a work plan submitted by the facility, that plan should specify the source of the contamination including identification of the listed hazardous waste identified in 6 NYCRR Part 371 which contributed to the environmental contamination. For each listed waste identified the plan shall specify the hazardous constituents presented in 6 NYCRR Part 371, Appendix 22, which are the basis for listing the waste. Additionally, the plan will identify any hazardous constituent presented in 6 NYCRR 371, Appendix 23, and in 6 NYCRR 373, Appendix 33, which may be present in the contaminated media from sources other than listed hazardous waste.

A work plan for a "contained-in" demonstration applied to environmental media (i.e., soil or sediment) that will be subject to land disposal either before or after treatment, must address applicable land disposal restrictions (LDRs) established pursuant to 6 NYCRR Part 376. A facility may request a Treatability Variance from applicable LDRs through USEPA Region II and the NYSDEC for the

$$\begin{bmatrix}\text{constituent concentration} \\ \text{in soil or sediment} \\ \text{(ug/kg or ppb)}\end{bmatrix} \div 20 = \begin{bmatrix}\text{maximum possible constituent} \\ \text{concentration in the leachate} \\ \text{test (ug/l or ppb)}\end{bmatrix}$$

This calculation presumes that the entire mass weight of the hazardous constituent present in the soil or sediment will leach out during the test.

When the resultant analyses demonstrate that all hazardous constituents detected in the soil or sediment and in their respective leachates are at or below corresponding action levels, the environmental medium does not have to be managed as hazardous waste. However, if the medium is to be moved off the facility property it shall be managed in accordance with 6 NYCRR Part 360 and as directed by the Division of Solid Waste. If it is to be managed on the facility property, such management must be in accordance with an approved work plan.

Should the analyses for the soil or sediment and their respective leachates yield non-detectable measurements for hazardous constituents below approved detection limits, then unrestricted use of that medium will be approved. The constituents would be considered not present in the medium if not detected below approved analytical method detection limits (MDLs) for the matrix analyzed. The N.Y.S. RCRA QAPjP guidance addresses the issue of detection levels and their relationship to action levels. That guidance must be followed for the "contained-in" demonstration.

A. Soil and Sediment Evaluation

Solid or semi-solid environmental media (i.e., soil or sediment) shall be analyzed directly for total concentrations of each hazardous constituent expected to be contained in the medium. The resultant concentrations for each detected constituent will be compared against their corresponding "Soil/Sediment Action Level" in Appendix I.

Solid or semi-solid media must also have their respective leachate analyzed directly for each hazardous constituent expected to be contained in the contaminated environmental medium. The Synthetic Precipitation Leaching Procedure (SPLP) will be the preferred laboratory method employed to generate leachate for analysis when the excavated soil/sediment will remain on the facility property. Soil/sediment that will be excavated and relocated off the facility property will be subject to the Toxicity Characteristic Leaching Procedure (TCLP). The resultant concentrations for each detected constituent in leachate will be compared against their corresponding "Groundwater Action Level" in Appendix I.

The actual leaching test (i.e., SPLP or TCLP) may not have to be performed when the concentration of the hazardous constituent in the soil or sediment is accurately known, and when the following calculation shows that the constituent's concentration in the leachate to be equal to or less than its respective groundwater action level:

environmental media. A "contained-in" demonstration work plan shall address the LDR variance obtained from USEPA/NYSDEC for the environmental media subject to the "contained-in" criteria. Treated or untreated environmental media meeting LDR requirements and subsequently subject to land disposal need not be managed as hazardous waste when the "contained-in" criteria are met. A "contained-in" demonstration requires that environmental media be sampled and analyzed in accordance with a work plan approved by the Department. Such plans must be developed in a manner that clearly sets forth the project objectives and the procedures that will be followed to meet those objectives. This entails specification in the work plan of a sufficient number of samples, sampling protocols, appropriate analytical methods, proper Quality Assurance/Quality Control (QA/QC) procedures, detection limits, and applicable action level concentrations. Analytical methods must be capable of achieving hazardous constituent detection levels less than their corresponding action levels. Refer to the most recent version, dated March 29, 1991, of the NYSDEC RCRA Quality Assurance Project Plan Guidance for information on work plan requirements and detection levels.

A crucial element of a "contained in" demonstration is the evaluation of analytical data generated after implementation of approved work plans. This evaluation will be made by the Department including review of laboratory QA/QC data and comparison of action levels with analytical data.

B. Groundwater Evaluation

This aqueous medium shall be analyzed directly for the total concentration (without filtering) of each hazardous constituent expected to be contained in the medium. The resultant concentrations for each detected constituent will be compared against the corresponding "Groundwater Action Level" in Appendix I. When the resultant analyses demonstrate that all hazardous constituents detected in groundwater are at or below their corresponding action levels, the environmental medium does not have to be managed as hazardous waste. However, groundwater discharges must still be managed in accordance with any prevailing and more stringent SPDES limitations (e.g., aquatic water quality standards or guidance values).

C. Evaluation for all Hazardous Constituents

The comparison of hazardous constituent analytical data with corresponding action levels will be carried out using all applicable action levels. For solid and semi-solid media subject to leaching evaluations, both soil/sediment and groundwater action levels will be examined. The evaluation will address all possible groups of hazardous constituents including the specific chemical compound and all inorganic elements and chemical species contributed by the compound for which action levels are listed in Appendix I.

issues preclude focusing the demonstration in this manner. For example, analyzing only for a constituent component of a chemical compound because its action level is more stringent than the compound's level could result in a false negative determination (i.e., the contaminated medium passes the "contained in" evaluation). Such false results may occur when small differences exist between the action level of the compound and the more stringent action level of a constituent contributed by the compound. There is a reason for such erroneous results; the weight of a chemical compound always exceeds the weight of any of its individual parts taken separately and, therefore, the compound always contributes more mass of contamination per unit weight or volume to the media. Many listed hazardous wastes are not listed for a specific chemical compound, but only for metallic elements or for certain chemical species. For example, F006 waste is listed for cadmium, nickel, cyanide, and hexavalent chromium. Therefore, environmental media contaminated by only F006 waste would require analysis for all four constituents, including total cadmium, total nickel, total cyanide, and hexavalent chromium.

D. <u>Analytical Proposals and Petitions</u>

When a standard laboratory analytical procedure is not available for a hazardous constituent the facility will propose one. The proposed analytical method will be included in the work plan submitted by the facility for NYSDEC constituents with media specific action levels and which constituents have a total organic class medium action level. The chemical compound that best illustrates this example is the commercial chemical product creosote. This compound is a mixture of phenols, including the three isomers of cresol, if the creosote is derived from wood. The analysis of the contaminated environment medium may also indicate the presence of other phenolic compounds including phenol. Soil/sediment contaminated by creosote would require gas chromatographic (GC) analysis for phenolic compounds including phenol. However, analysis of the soils' leachate can be limited to total phenols since its groundwater action level is the most restrictive of all individual phenolic compounds including phenol.

The last example points to the only situation where the analysis would only be required for a constituent (i.e., total phenols), with the most restrictive action level. This approach which focuses the demonstration only on the constituent(s) with the most restrictive level is not always appropriate. The "contained in" criteria requires the contaminated media to be analyzed for residual concentrations of all hazardous constituents. Limiting the analysis only to a constituent with the most stringent action level would violate the criteria unless a petition, as discussed in Section III-D of this attachment, is submitted by the facility and approved by the NYSDEC. Also, certain technical approval, and it should be capable of detecting chemical compounds or chemical species below their respective action levels. The proposal will be examined and, if approved, it will become part of the work plan.

The facility may petition the NYSDEC through the work plan not to analyze for certain hazardous constituent chemical compounds that cannot be detected by practical analytical methods. Such a situation could arise when a chemical compound transforms into other constituents leaving only undetectable trace levels of the original compound in the sample matrix. The petition must include verified technical data, which can be taken from referenced literature, that clearly demonstrates the impact transformation processes have on the chemical compound in the environmental medium under evaluation. Such processes may include hydrolysis, photolysis, oxidation, dissociation, equilibria, and biotransformation. The petition will be examined and, if approved, it will become part of the work plan.

For chromium the most restrictive action level in soil is for the hexavalent species. When analyzing a solid or semi-solid matrix for chromium using SW-846 methodology the sample preparation step in the laboratory (i.e., digestion of the sample by acidification) converts by chemical reduction most, if not all, hexavalent chromium to the trivalent species which is

To mitigate other potential public health and environmental impacts through the air and surface water exposure pathways the approved on-site areas will be covered. Cover designs will be submitted by the facility to the Department for review and approval. The cover design submittal should occur simultaneously with the submittal of the "contained-in" work plan. However, if site-specific circumstances preclude such a simultaneous submittal, no placement of soil/sediment media must occur until a cover design is approved by the Department. Cover designs should demonstrate how wind blown particulate matter will be eliminated at the approved area and account for long term inspection and maintenance of the cover. If necessary, the cover design will address mitigating impacts on the air exposure pathway from volatilizing hazardous constituent residuals that remain in the approved area. This release mechanism may be important for volatile constituents with high soil/sediment ingestion action levels which do not readily leach out from the medium. Such a situation could allow large residual volatile contaminant concentrations in the soil/sediment which may result in negative air impacts. Cover designs should also demonstrate protection of adjacent surface waters from runoff.

reported as total chromium. Therefore, unless the facility proposes an approvable analytical method for hexavalent chromium, the "contained in" demonstration will compare the hexavalent chromium action level in soil/sediment with the sample's total chromium concentration.

IV. Acceptable Management Practices

Under the "contained-in" criteria soil/sediment must meet oral human ingestion action levels, and not leach out contaminants above groundwater action levels. However, that requirement may not be sufficient to mitigate potential impacts via other exposure pathways (e.g., inhalation) or site-specific exposure conditions (e.g., the additive impact from mixtures of hazardous constituents) either of which may threaten public health. Also, potential impacts on environmental receptors (e.g., leachate discharging to surface water) are not considered under the "contained in" demonstration. Therefore, to be fully protective of public health and the environment, soil/sediment at or below the action levels in Appendix I and above approved detection limits must be managed in a manner that affords restricted access to the media by the public and that provides cover for the medium, if unrestricted access is not granted by NYS Department of Health. These requirements will be satisfied by managing the media off the facility property in accordance with 6 NYCRR Part 360 and as directed by the Division of Solid Waste. Management on the facility property should be in approved areas at locations where public access is restricted. Such areas must be tracked and noticed in a legal instrument that will be examined when the property is sold or transferred.

NYSDEC
Contained-In Action Levels

Soil/Sediment "Contained-In" Criteria: cannot exceed ingestion action levels in media and media's leachate cannot adversely impact groundwater; see TAGM p. 13.

SUBSTANCE	CASNUM	Groundwater Action Level (ug/L)	REF	Soil/ Sediment Action Level (mg/kg)	REF
ACENAPHTHENE	83-32-9	2.0E+01	d	4.7E+03	C
ACENAPHTHYLENE	208-96-8	5.0E+01	a		
ACEPHATE	30560-19-1	5.0E+01	a	7.4E+01	C
ACETONE (2-PROPANONE)	67-64-1	5.0E+01	d	7.8E+03	C
ACETONE CYANOHYDRIN (2-METHYLLACTONITRILE)	75-86-5	2.8E+01	e	6.3E+01	C
ACETONITRILE (METHYL CYANIDE)	75-05-8	5.0E+01	a	4.7E+02	C
ACETOPHENONE (1-PHENYL-ETHANONE)	98-86-2	5.0E+01	a	7.8E+03	C
2-ACETYLAMINOFLUORENE (2-AAF)	53-96-3	5.0E+01	a		
ACROLEIN (2-PROPENAL)	107-02-8	5.0E+00	a	1.6E+03	C
ACRYLAMIDE	79-06-1	5.0E+00	a	1.4E-01	C
ACRYLIC ACID	79-10-7	5.0E+01	d	3.9E+04	C
ALACHLOR	15972-60-8	3.5E+01	a	7.9E+00	C
ALDICARB	116-06-3	7.0E+00	a	7.8E+01	C
ALDICARB & METHOMYL	116-06-3;16752-77-5	3.5E-01	a		
ALDRIN	309-00-2	ND	a	3.8E-02	C
ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE	68391-01-5	5.0E+01	d		
ALLYL ALCOHOL	107-18-6	5.0E+01	a	3.9E+02	C
ALLYL CHLORIDE (3-CHLORO-1-PROPENE)	107-05-1	5.0E+00	a	1.6E+02	C
INUM PHOSPHIDE	20859-73-8	1.4E+01	e	3.1E+01	C
AMETRYN	834-12-8	5.0E+01	a	7.0E+02	C
AMIBEN	133-90-4	8.6E+01	a		
4-AMINOBIPHENYL	92-67-1	5.0E+00	a		
m-AMINOPHENOL	591-27-5	*3	a	5.5E+03	C
4-AMINOPYRIDINE	504-24-5	1.0E+00	g	1.6E+00	C
AMMONIA	7664-41-7	<2.0E+03	a		
ANILINE (BENZENAMINE)	62-53-3	5.0E+00	a	1.1E+02	C
ANTHRACENE	120-12-7	5.0E+01	d	2.3E+04	C
ANTIMONY, TOTAL	*1	3.0E+00	a	3.1E+01	C
ARAMITE	140-57-8	5.0E+01	d	2.6E+01	C
ARSENIC, TOTAL	*1	2.50E+01	a	4.0E-01	C
ATRAZINE	1912-24-9	7.50E+00	a	2.7E+03	C
AZINPHOSMETHYL	86-50-0	4.40E+00	a		
AZOBENZENE	103-33-3	5.0E+00	a	5.8E+00	C
BARIUM, TOTAL	*1	1.00E+03	a	5.5E+03	C
BARIUM CYANIDE	542-62-1	2.5E+03	e	5.5E+03	C
BENEFIN	1861-40-1	3.50E+01	a	2.3E+04	C
BENZALDEHYDE	100-52-7	5.0E+01	d	7.8E+03	C
BENZ(a)ANTHRACENE (BENZANTHRACENE)	56-55-3	2.0E-03	d	9.0E-01	C
BENZENE	71-43-2	7.0E-01	a	2.2E+01	C
BENZIDINE	92-87-5	5.0E+00	a	2.8E-03	C
BENZISOTHIAZOLE	271-61-4	5.0E+01	d		
ZO(b)FLUORANTHENE	205-99-2	2.0E-03	d	9.0E-01	
ZO(k)FLUORANTHENE	207-08-9	2.0E-03	d	9.0E+00	

NYSDEC
Contained-In Action Levels

Soil/Sediment "Contained-In" Criteria: cannot exceed ingestion action levels in media and media's leachate cannot adversely impact groundwater; see TAGM p. 13.

SUBSTANCE	CASNUM	Groundwater Action Level (ug/L)	REF	Soil/ Sediment Action Level (mg/kg)	REF
BENZOIC ACID	65-85-0	5.0E+01	a	3.2E+05	C
BENZO(g,h,i)PERYLENE	191-24-2	5.0E+01	a		
BENZO(a)PYRENE	50-32-8	ND	a	9.0E-02	C
BENZOTRICHLORIDE	98-07-7	5.0E+01	a	4.9E-02	C
BENZYL ALCOHOL (BENZENEMETHANOL)	100-51-6	5.0E+01	a	2.3E+04	C
BENZYL CHLORIDE	100-44-7	5.0E+01	a	3.8E+00	C
BERYLLIUM, TOTAL	*1	4.0E+00	d	1.5E-01	C
alpha-BHC	319-84-6	ND	a	1.0E-01	C
beta-BHC	319-85-7	ND	a	3.6E-01	C
delta-BHC	319-86-8	ND	a		
1,1-BIPHENYL	92-52-4	5.0E+00	a	3.9E+03	C
BIS(2-CHLOROETHOXY)METHANE	111-91-1	5.0E+00	a		
BIS(2-CHLOROETHYL)ETHER	111-44-4	1.0E+00	a	5.8E-01	C
BIS(CHLOROMETHYL)ETHER (BCME)	542-88-1	5.0E+00	a	2.9E-03	C
BIS(2-CHLORO-1-METHYLETHYL)ETHER	108-60-1	5.0E+00	a	9.1E+00	C
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	5.0E+01	d	4.6E+01	C
BISPHENOL A	80-05-7	*3	a	3.9E+03	C
B'''PENTABROMOPHENYL)ETHER	1163-19-5	5.0E+00	a	7.8E+02	C
...C ACID, BORATES & METABORATES	11113-50-1;10043-35-3;1303-96-4	1.3E+02	a	7.0E+03	C
BORON, TOTAL	*1	1.0E+03	e	7.0E+03	C
BROMACIL	314-40-9	4.4E+00	a		
BROMIDES	NA	2.0E+03	e		
BROMOBENZENE	108-86-1	5.0E+00	a		
BROMOCHLOROMETHANE	74-97-5	5.0E+00	a		
BROMODICHLOROMETHANE	75-27-4	5.0E+01	d	1.0E+01	C
BROMOFORM (TRIBROMOMETHANE)	75-25-2	5.0E+01	d	8.1E+01	C
BROMOMETHANE (METHYL BROMIDE)	74-83-9	5.0E+00	a	1.1E+02	C
4-BROMOPHENYL PHENYL ETHER (1-BROMO-4-PHENOXYBENZENE)	101-55-3	5.0E+00	a		
BROMOPHOS	2104-96-3	5.0E+00	a	3.9E+02	C
BROMOXYNIL	1689-84-5	5.0E+00	a	1.6E+03	C
1-BUTANOL (BUTYL ALCOHOL)	71-36-3	5.0E+01	a	7.8E+03	C
BUTACHLOR	23184-66-9	3.5E+00	a		
BUTOXYETHOXYETHANOL	112-34-5	5.0E+01	d		
BUTOXYPROPANOL	5131-66-8	5.0E+01	d		
BUTYLATE	2008-41-5	5.0E+01	a	3.9E+03	C
n-BUTYLBENZENE	104-51-8	5.0E+00	a		
sec-BUTYLBENZENE	135-98-8	5.0E+00	a		
tert-BUTYLBENZENE	98-06-6	5.0E+00	a		
BUTYL BENZYL PHTHALATE	85-68-7	5.0E+01	d	1.6E+04	C
BUTYL ISOPROPYL PHTHALATE	NA	5.0E+01	d		
CACODYLIC ACID (AGENT BLUE)	75-60-5	5.0E+01	a	2.3E+02	C
...IUM, TOTAL	*1	5.0E+00	b	7.8E+01	C
...CIUM CYANIDE	592-01-8	1.4E+03	e	3.1E+03	C

NYSDEC
Contained-In Action Levels

Soil/Sediment "Contained-In" Criteria: cannot exceed ingestion action levels in media and media's leachate cannot adversely impact groundwater; see TAGM p. 13.

SUBSTANCE	CASNUM	Groundwater Action Level (ug/L)	REF	Soil/ Sediment Action Level (mg/kg)	REF
CAPROLACTAM	105-60-2	5.0E+01	a	3.9E+04	c
CAPTAFOL	2425-06-1	5.0E+01	a	7.4E+01	c
CAPTAN	133-06-2	1.8E+01	a	1.8E+02	c
CARBARYL	63-25-2	2.9E+01	a	7.8E+03	c
CARBAZOLE	86-74-8	5.0E+00	a	3.2E+01	c
CARBOFURAN	1563-66-2	1.5E+01	a	3.9E+02	c
CARBON DISULFIDE	75-15-0	5.0E+00	a	7.8E+03	c
CARBON TETRACHLORIDE (TETRACHLOROMETHANE)	56-23-5	5.0E+00	a	4.9E+00	c
CHLORAL (TRICHLOROACETALDEHYDE)	75-87-6	5.0E+01	a	1.6E+02	c
CHLORANIL	118-75-2	5.0E+00	a	1.6E+00	c
CHLORDANE	57-74-9	1.0E-01	a	4.9E-01	c
CHLORIDES	NA	2.5E+05	a		
CHLORINE CYANIDE	506-77-4	1.8E+03	e	3.9E+03	c
CHLOROACETIC ACID	79-11-8	5.0E+01	a	1.6E+02	c
p-CHLOROANILINE (4-CHLOROANILINE)	106-47-8	5.0E+00	a	1.8E+01	c
CHLOROBENZENE	108-90-7	5.0E+00	a	1.6E+03	c
CHLOROBENZILATE	510-15-6	5.0E+01	a	1.6E+03	c
p-CHLOROBENZOIC ACID	74-11-3	5.0E+00	a	1.6E+04	c
LOROBENZOTRIFLUORIDE	98-56-6	5.0E+00	a	1.6E+03	c
1-CHLOROBUTANE	109-69-3	5.0E+00	a	3.1E+04	c
p-CHLORO-m-CRESOL (4-CHLORO-3-METHYLPHENOL)	59-50-7	*3	a		
1-CHLORO-2,3-EPOXYPROPANE (EPICHLOROHYDRIN)	106-89-8	5.0E+00	a	6.5E+01	c
CHLOROETHANE (ETHYL CHLORIDE)	75-00-3	5.0E+00	a	4.9E+01	c
CHLOROFORM (TRICHLOROMETHANE)	67-66-3	7.0E+00	a	1.0E+02	c
CHLOROMETHYL METHYL ETHER (CMME)	107-30-2	5.0E+00	a	2.9E-03	c
2-CHLORONAPHTHALENE	91-58-7	1.0E+01	d		
o-CHLORONITROBENZENE	88-73-3	5.0E+00	a	2.6E+01	c
p-CHLORONITROBENZENE	100-00-5	5.0E+00	a	3.6E+01	c
2-CHLOROPHENOL	95-57-8	*3	a	3.9E+02	c
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	5.0E+01	a		
CHLOROPRENE (2-CHLORO-1,3-BUTADIENE)	126-99-8	5.0E+00	a	1.6E+03	c
CHLOROPROPHAM (CHLORPROPHAM)	101-21-3	5.0E+00	a	1.6E+04	c
CHLOROPYRIFOS (CHLORPYRIFOS)	2921-88-2	5.0E+01	a	2.3E+02	c
CHLOROTHALONIL (TETRACHLOROISOPHTHALONITRILE)	1897-45-6	5.0E+00	a	1.2E+03	c
CHLOROTHIOPHOS	21923-23-9	5.0E+01	a	6.4E+01	c
2-CHLOROTOLUENE (o-CHLOROTOLUENE)	95-49-8	5.0E+00	a	1.6E+03	c
4-CHLOROTOLUENE (p-CHLOROTOLUENE)	106-43-4	5.0E+00	a		
4-CHLORO-o-TOLUIDINE (4-CHLORO-2-METHYLANILINE)	95-69-2	5.0E+00	a	1.1E+00	c
4-CHLORO-o-TOLUIDINE HYDROCHLORIDE	3165-93-3	5.0E+00	a	1.4E+00	c
5-CHLORO-o-TOLUIDINE (3-CHLORO-6-METHYLANILINE)	95-79-4	5.0E+00	a		
CHROMIUM, TOTAL	*1	5.0E+01	a		
OMIUM, HEXAVALENT (CHROMIUM (VI))	18540-29-9	5.0E+01	a	3.9E+02	c
OMIUM, TRIVALENT (CHROMIUM (III))	16065-83-1	5.0E+01	a	7.8E+04	c

NYSDEC
Contained-In Action Levels

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SUBSTANCE	CASNUM	Groundwater Action Level (ug/L)	REF	Soil/ Sediment Action Level (mg/kg)	REF
CHRYSENE	218-01-9	2.0E-01	b	8.8E+01	
COPPER, TOTAL	*1	<200	a		
COPPER CYANIDE	544-92-3	1.8E+02	e	3.9E+02	C
m-CRESOL (3-METHYL PHENOL)	108-39-4	*3	a	3.9E+03	C
o-CRESOL (2-METHYL PHENOL)	95-48-7	*3	a	3.9E+03	C
p-CRESOL (4-METHYL PHENOL)	106-44-5	*3	a	3.9E+03	C
CRESOLS	1319-77-3	*3	a	3.9E+03	C
CROTONALDEHYDE (2-BUTENAL)	123-73-9	5.0E+00	a	3.4E-01	C
CYANAZINE	21725-46-2	7.0E+01	e	1.6E+02	C
CYANIDE, TOTAL	*1	<100	a	1.6E+03	C
CYANOGEN	460-19-5	1.4E+03	e	3.1E+03	C
CYANOGEN BROMIDE	506-68-3	5.0E+00	a	7.0E+03	C
CYCLOHEXYLAMINE	108-91-8	5.0E+01	a	1.6E+04	C
DACTHAL (DCPA)	1861-32-1	5.0E+00	a	3.9E+04	C
DALAPON (SODIUM SALT)	127-20-8	5.0E+01	a	2.3E+03	C
2,4-DB	94-82-6	5.0E+00	a	6.3E+02	C
4,4'-DDD	72-54-8	ND	a	2.7E+00	C
4,4'-DDE	72-55-9	ND	a	1.9E+00	C
-DDT	50-29-3	ND	a	1.9E+00	C
DEMETON (DEMETON-O & DEMETON-S)	8065-48-3	1.4E+00	e	3.1E+00	C
DEMETON-O	298-03-3	5.0E+01	a		
DEMETON-S	126-75-0	5.0E+01	a		
DIALLATE	2303-16-4	5.0E+01	a	1.0E+01	C
DIAZINON	333-41-5	7.0E-01	a	7.0E+01	C
DIBENZ(a,h)ANTHRACENE	53-70-3	2.0E-01	b	9.0E-02	C
DIBENZOFURAN	132-64-9	5.0E+01	a		
1,4-DIBROMOBENZENE (p-DIBROMOBENZENE)	106-37-6	5.0E+00	a	7.8E+02	C
DIBROMOCHLOROMETHANE (CHLORODIBROMOMETHANE)	124-48-1	5.0E+01	d	7.6E+00	C
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	96-12-8	2.0E-01	b	2.9E-02	C
DIBROMODICHLOROMETHANE	594-18-3	5.0E+00	a	7.6E+00	C
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	106-93-4	5.0E+00	a	7.5E-03	C
DIBROMOMETHANE (METHYLENE BROMIDE)	74-95-3	5.0E+00	a	7.8E+02	C
2,2-DIBROMO-3-NITRILOPROPIONAMIDE	10222-01-2	5.0E+01	a		
DI-n-BUTYL PHTHALATE	84-74-2	5.0E+01	a	7.8E+03	C
DICAMBA	1918-00-9	4.4E-01	a	2.3E+03	C
DICHLONE (2,3-DICHLORO-1,4-NAPHTHOQUINONE)	117-80-6	5.0E+00	a		
1,2-DICHLOROBENZENE (o-DICHLOROBENZENE)	95-50-1	4.7E+00	a	7.8E+03	C
1,3-DICHLOROBENZENE (m-DICHLOROBENZENE)	541-73-1	5.0E+00	a		
1,4-DICHLOROBENZENE (p-DICHLOROBENZENE)	106-46-7	4.7E+00	a	2.7E+01	C
3,3-DICHLOROBENZIDINE	91-94-1	5.0E+00	a	1.0E+00	C
1,4-DICHLORO-2-BUTENE	764-41-0	5.0E+00	a		
ns-1,4-DICHLORO-2-BUTENE	110-57-6	5.0E+00	a		
HLORODIFLUOROMETHANE (F-12)	75-71-8	5.0E+00	a	1.6E+04	C

NYSDEC
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SUBSTANCE	CASNUM	Groundwater Action Level (ug/L)	REF	Soil/ Sediment Action Level (mg/kg)	REF
1,1-DICHLOROETHANE	75-34-3	5.0E+00	a	7.8E+03	C
1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE)	107-06-2	5.0E+00	a,b	7.0E+00	C
1,1-DICHLOROETHYLENE	75-35-4	5.0E+00	a	1.1E+00	C
cis-1,2-DICHLOROETHYLENE	156-59-2	5.0E+00	a	7.8E+02	C
trans-1,2-DICHLOROETHYLENE	156-60-5	5.0E+00	a	1.6E+03	C
DICHLOROFLUOROMETHANE	75-43-4	5.0E+00	a		
2,4-DICHLOROPHENOL	120-83-2	*3	a	2.3E+02	C
2,6-DICHLOROPHENOL	87-65-0	*3	a		
2,4-DICHLOROPHENOXYACETIC ACID (2,4-D)	94-75-7	4.4E+00	a	7.8E+02	C
1,2-DICHLOROPROPANE	78-87-5	5.0E+00	a	9.4E+00	C
1,3-DICHLOROPROPANE	142-28-9	5.0E+00	a		
2,2-DICHLOROPROPANE	594-20-7	5.0E+00	a		
1,1-DICHLOROPROPENE	563-58-6	5.0E+00	a		
1,3-DICHLOROPROPENE	542-75-6	5.0E+00	a	3.6E+00	C
cis-1,3-DICHLOROPROPENE	10061-01-5	5.0E+00	a		
trans-1,3-DICHLOROPROPENE	10061-02-6	5.0E+00	a		
DICHLORVOS (DICHLOROVOS)	67-73-7	5.0E+00	a	2.2E+00	C
DICYCLOPENTADIENE	77-73-6	5.0E+01	a	2.3E+03	C
[illegible]RIN	60-57-1	ND	a	4.0E-02	C
DIETHYLENE GLYCOL MONOETHYL ETHER	111-90-0	5.0E+01	a	1.6E+05	C
DIETHYLFORMAMIDE	617-84-4	5.0E+01	a	8.6E+03	C
DIETHYLPHTHALATE	84-66-2	5.0E+01	d	6.3E+04	C
o,o-DIETHYL o-2-PYRAZINYL PHOSPHOROTHIOATE	297-97-2	5.0E+01	a		
DIETHYLSTILBESTROL (DES)	56-53-1	5.0E+01	a	1.3E-03	C
DIMETHOATE	60-51-5	7.0E+00	e	1.6E+01	C
3,3'-DIMETHOXYBENZIDINE	119-90-4	5.0E+00	a	4.6E+01	C
p-(DIMETHYLAMINO)AZOBENZENE	60-11-7	5.0E+00	a		
2,4-DIMETHYLANALINE (2,4-XYLIDINE)	95-68-1	5.0E+00	a	8.5E-01	C
n,n-DIMETHYLANILINE	121-69-7	5.0E+00	a	1.6E+02	C
7,12-DIMETHYLBENZ(a)ANTHRACENE	57-97-6	5.0E+01	a		
3,3'-DIMETHYLBENZIDINE	119-93-7	5.0E+00	a	7.0E-02	C
DIMETHYLFORMAMIDE (n,n-DIMETHYLFORMAMIDE)	68-12-2	5.0E+01	d	7.8E+03	C
1,1-DIMETHYLHYDRAZINE	57-14-7	5.0E+01	a	7.4E-02	C
1,2-DIMETHYLHYDRAZINE	540-73-8	5.0E+01	a	4.6E-04	C
alpha, alpha-DIMETHYLPHENETHYLAMINE	122-09-8	5.0E+00	a		
2,4-DIMETHYLPHENOL	105-67-9	*3	a	1.6E+03	C
2,6-DIMETHYLPHENOL	576-26-1	*3	a	4.7E+01	C
3,4-DIMETHYLPHENOL	95-65-8	*3	a	7.8E+01	C
DIMETHYL PHTHALATE	131-11-3	5.0E+01	d	7.8E+04	C
DIMETHYL-p-PHTHALATE	120-61-6	5.0E+01	a	7.8E+03	C
1,3-DINITROBENZENE (m-DINITROBENZENE)	99-65-0	5.0E+00	a	7.8E+00	C
[illegible]-DINITRO-o-CRESOL (2-METHYL-4,6-DINITROPHENOL)	534-52-1	*3	a	7.8E+00	C
[illegible]DINITROPHENOL	51-28-5	*3	a	1.6E+02	C

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SUBSTANCE	CASNUM	Groundwater Action Level (ug/L)	REF	Soil/ Sediment Action Level (mg/kg)	REF
2,4-DINITROTOLUENE	121-14-2	5.0E+00	a	9.4E-01	C
2,6-DINITROTOLUENE	606-20-2	5.0E+00	a	9.4E-01	C
DINOCAP	6119-92-2	5.0E+00	a		
DINOSEB (DNBP)	88-85-7	*3	a	7.8E+01	C
DI-n-OCTYL PHTHALATE	117-84-0	5.0E+01	d	1.6E+03	C
1,4-DIOXANE	123-91-1	5.0E+01	a	5.8E+01	C
DIPHENYLAMINE (N,N-DIPHENYLAMINE)	122-39-4	5.0E+00	a	2.0E+03	C
1,2-DIPHENYLHYDRAZINE	122-66-7	ND	a	8.0E-01	C
DISULFOTON	298-04-4	ND	a	3.1E+01	C
DITHANE D-14	142-59-6	1.8E+00	a		
DYPHYLLINE	479-18-5	5.0E+01	d		
ENDOSULFAN	115-29-7	5.0E+00	a	7.8E+00	C
ENDOSULFAN I	959-98-8	5.0E+00	a		
ENDOSULFAN II	33213-65-9	5.0E+00	a		
ENDOSULFAN SULFATE	1031-07-8	5.0E+00	a		
ENDOTHALL	145-73-3	5.0E+01	d	1.6E+03	C
ENDRIN	72-20-8	ND	a	2.3E+01	C
ENDRIN ALDEHYDE	7421-93-4	5.0E+00	a		
[illegible]ON	563-12-2	5.0E+01	a	3.9E+01	C
2-ETHOXYETHANOL	110-80-5	5.0E+01	a	3.1E+04	C
2-ETHOXYETHANOL ACETATE	111-15-9	5.0E+01	a	2.3E+04	C
ETHYL ACETATE	141-78-6	5.0E+01	a	7.0E+04	C
ETHYL ACRYLATE	140-88-5	5.0E+01	a	1.3E+01	C
ETHYLBENZENE	100-41-4	5.0E+00	a	7.8E+03	C
ETHYL DI-n-PROPYLTHIOCARBOMATE (EPTC)	759-94-4	5.0E+01	a	2.0E+03	C
ETHYLENE CHLOROHYDRIN	107-07-3	5.0E+01	d		
ETHYLENE CYANOHYDRIN	109-78-4	5.0E+01	a	2.3E+04	C
ETHYLENEDIAMINE	107-15-3	5.0E+01	a	1.6E+03	C
ETHYLENE GLYCOL	107-21-1	5.0E+01	d	1.6E+05	C
ETHYLENE OXIDE	75-21-8	5.0E-02	d	1.8E+00	C
ETHYLENETHIOUREA	96-45-7	ND	a	1.8E+01	C
ETHYL ETHER	60-29-7	5.0E+01	a	3.9E+04	C
ETHYL METHACRYLATE	97-63-2	5.0E+01	a	7.0E+03	C
ETHYL METHANESULFONATE	62-50-0	5.0E+01	a		
FAMPHUR	52-85-7	5.0E+01	a		
FERBAM	14484-64-1	4.2E+00	a		
FLUORANTHENE	206-44-0	5.0E+01	d	3.1E+03	C
FLUORENE	86-73-7	5.0E+01	d	3.1E+03	C
FLUORIDES	NA	<1500	a	4.7E+03	C
FOLPET	133-07-3	5.00E+01	a	1.8E+02	C
FORMALDEHYDE (METHYL ALDEHYDE)	50-00-0	5.0E+00	a	2.1E+01	C
F[illegible]MIC ACID	64-18-6	5.0E+01	a	1.6E+05	C
[illegible]N	110-00-9	3.5E+01	e	7.8E+01	C

NYSDEC
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FURAZOLIDONE	67-45-8	5.0E+01	a	1.7E-01	C
FURFURAL	98-01-1	5.0E+01	a	2.3E+02	C
FURIUM	531-82-8	7.0E-03	e	1.3E-02	C
GLYCIDALDEHYDE (2,3-EPOXYPROPANAL)	765-34-4	5.0E+01	a	3.1E+01	C
GROSS ALPHA RADIATION	NA	5Cpi/L	b		
GROSS BETA RADIATION	NA	1000pCi/L	d		
GUAIFENESIN	93-14-1	5.0E+01	d		
HEPTACHLOR	76-44-8	ND	a	1.4E-01	C
HEPTACHLOR EPOXIDE	1024-57-3	ND	a	7.0E-02	C
HEXABROMOBENZENE	87-82-1	5.0E+00	a	1.6E+02	C
HEXACHLOROBENZENE	118-74-1	3.5E-01	a	4.0E-01	C
HEXACHLORO-1,3-BUTADIENE	87-68-3	5.0E+00	a	8.2E+00	C
HEXACHLOROCYCLOPENTADIENE	77-47-4	5.0E+00	a	5.5E+02	
HEXACHLORODIBENZO-p-DIOXIN	19408-74-3	f	a	1.0E-03	C
HEXACHLOROETHANE	67-72-1	5.0E+00	a	4.6E+01	C
HEXACHLOROPHENE	70-30-4	7.0E+00	a	2.3E+01	C
HEXACHLOROPROPENE	1888-71-7	5.0E+00	a		
N-HEXANE	110-54-3	5.0E+01	a	4.7E+03	C
[illegible]ANONE	591-78-6	5.0E+01	d		
HYDRAZINE	302-01-2	1.2E-02	e	2.1E-01	C
HYDRAZINE SULFATE	10034-93-2	1.2E-02	e	2.1E-01	C
HYDROGEN CYANIDE	74-90-8	7.0E+02	e	1.6E+03	C
HYDROGEN SULFIDE	7783-06-4	1.1E+02	e	2.3E+02	C
HYDROQUINONE (p-HYDROQUINONE)	123-31-9	5.0E+01	d	3.1E+03	C
1-HYDROXYETHYLIDENE-1,1-DIPHOSPHONIC ACID	2809-21-4	5.0E+01	d		
2-(2-HYDROXY-3,5-DI-TERTPENTYLPHENYL)-BENZOTRIAZOLE	25973-55-1	5.0E+01	d		
INDENO(1,2,3-cd)PYRENE	193-39-5	2.0E-03	d	9.0E-01	C
IRON, TOTAL	*1	3.0E+02	a, *2		
ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL)	78-83-1	5.0E+01	a	2.3E+04	C
ISODECYL DIPHENYL PHOSPHATE	29761-21-5	5.0E+01	a		
ISODRIN	465-73-6	5.0E+00	a		
ISOPHORONE	78-59-1	5.0E+01	d	6.7E+02	C
ISOPROPALIN	33820-53-0	5.0E+00	a	1.2E+03	C
ISOPROPYLBENZENE (CUMENE)	98-82-8	5.0E+00	a	3.1E+03	C
p-ISOPROPYLTOLUENE	99-87-6	5.0E+00	a		
ISOSAFROLE	120-58-1	5.0E+01	a		
KARBUTILATE	4849-32-5	5.0E+00	a		
KEPONE	143-50-0	ND	a		
LEAD, TOTAL	*1	1.5E+01	b	4.0E+02	h
LINDANE (gamma-BHC)	58-89-9	ND	a	4.9E-01	C
LINURON	330-55-2	5.0E+00	a	1.6E+02	C
M[illegible]ESIUM, TOTAL	*1	3.5E+04	e		
[illegible]THION	121-75-5	7.0E+00	a	1.6E+03	C

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MALEIC ANHYDRIDE (2,5-FURANDIONE)	108-31-6	5.0E+01	a	7.8E+03	C
MALEIC HYDRAZIDE	122-33-1	5.0E+01	a	3.9E+04	C
MALONONITRILE	109-77-3	5.0E+01	a	1.6E+00	C
MANCOZEB (DITHANE M-45)	8018-01-7	5.0E+01	a	2.3E+03	C
MANEB	12427-38-2	1.8E+00	a	3.9E+02	C
MANGANESE, TOTAL	*1	3.0E+02	a, *2	1.1E+04	C
MCPA	94-74-6	4.4E-01	a	3.9E+01	C
MCPB	94-81-5	5.0E+00	a	8.6E+02	C
MCPP	93-65-2	5.0E+00	a	7.8E+01	C
MEPHOSFOLAN	950-10-7	5.0E+00	a	7.0E+00	C
MERCAPTOBENZOTHIAZOLE	149-30-4	5.0E+01	d		
MERCURY, TOTAL	*1	2.0E+00	a	2.3E+01	C
METHACRYLIC ACID	79-41-4	5.0E+01	d		
METHACRYLONITRILE (2-METHYL-2-PROPENENITRILE)	126-98-7	5.0E+00	a	7.8E+01	C
METHANOL	67-56-1	5.0E+01	a	3.9E+04	C
METHAPYRILENE	91-80-5	5.0E+01	d		
METHOMYL	16752-77-5	5.0E+01	a	2.0E+03	C
METHOXYCHLOR	72-43-5	3.5E+01	a	3.9E+02	C
:THOXYETHANOL	109-86-4	5.0E+01	a	7.8E+01	C
2-METHOXYETHANOL ACETATE	110-49-6	5.0E+01	a	1.5E+02	C
2-METHOXYETHYLBENZENE	3558-60-9	5.0E+01	d		
1-METHOXYETHYLBENZENE	4013-34-7	5.0E+01	d		
2-METHOXY-5-NITROANILINE	99-59-2	5.0E+00	a	1.4E+01	C
METHYL ACRYLATE	96-33-3	5.0E+01	a	2.3E+03	C
2-METHYLANILINE	100-61-8	5.0E+00	a	2.7E+00	C
2-METHYLANILINE HYDROCHLORIDE	636-21-5	5.0E+00	a	3.6E+00	C
METHYL CHLORIDE (CHLOROMETHANE)	74-87-3	5.0E+00	a	4.9E+01	C
3-METHYLCHOLANTHRENE	56-49-5	5.0E+01	a	6.8E-02	C
4,4-METHYLENE-BIS-(2-CHLOROANILINE)	101-14-4	5.0E+00	a	4.9E+00	C
4,4'-METHYLENEBIS(N,N'-DIMETHYL)ANALINE	1807-55-2	5.0E+00	a	1.4E+01	C
METHYLENE BISTHIOCYANATE	6317-18-6	5.0E+01	d		
METHYLENE CHLORIDE (DICHLOROMETHANE)	75-09-2	5.0E+00	a	8.5E+01	C
4-(1-METHYLETHOXY)-1-BUTANOL	31500-69-8	5.0E+01	d		
2-METHYLETHYL-1,3-DIOXOLANE	126-39-6	5.0E+01	a		
METHYL ETHYL KETONE (2-BUTANONE)	78-93-3	5.0E+01	d	4.7E+04	C
METHYL IODIDE (IODOMETHANE)	74-88-4	5.0E+00	a		
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108-10-1	5.0E+01	d	6.3E+03	C
METHYL MERCURY	22967-92-6	5.0E+01	a	2.3E+01	C
METHYL METHACRYLATE	80-62-6	5.0E+01	a	6.3E+03	C
METHYL METHANESULFONATE	66-27-3	5.0E+01	a		
2-METHYLNAPHTHALENE	91-57-6	5.0E+01	a		
'ETHYL-5-NITROANILINE (5-NITRO-o-TOLUIDINE)	99-55-8	5.0E+00	a	1.9E+02	C
HYL PARATHION	298-00-0	1.5E+00	a	2.0E+01	C

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SUBSTANCE	CASNUM	Groundwater Action Level (ug/L)	REF	Soil/ Sediment Action Level (mg/kg)	REF
METHYL STYRENE	25013-15-4	5.0E+00	a	4.7E+02	C
MEVINPHOS (PHOSDRIN)	7786-34-7	5.0E+00	a		
MIREX	2385-85-5	5.0E+00	a	3.6E-01	C
MOLINATE	2212-67-1	5.0E+01	a	1.6E+02	C
MOLYBDENUM, TOTAL	*1	1.8E+02	e	3.9E+02	C
NAPHTHALENE	91-20-3	1.0E+01	d	3.1E+02	C
1,4-NAPHTHOQUINONE	130-15-4	5.0E+01	a		
1-NAPHTHYLAMINE (1-NAPHTHALENAMINE)	134-32-7	5.0E+00	a		
2-NAPHTHYLAMINE (2-NAPHTHALENAMINE)	91-59-8	5.0E+00	a		
NIACINAMIDE	98-92-0	5.0E+01	a		
NICKEL, TOTAL	*1	1.0E+02	b	1.6E+03	C
NITRALIN	4726-14-1	3.5E+01	a		
NITRATES (as N)	NA	1.0E+04	b	1.3E+05	C
NITRIC OXIDE	10102-43-9	3.5E+03	e	7.8E+03	C
NITRITE	NA	1.0E+03	b	7.8E+03	C
NITRILOTRIACETIC ACID	139-13-9	3.0E+00	d		
m-NITROANILINE (3-NITROBENZENAMINE)	99-09-2	5.0E+00	a		
o-NITROANILINE (2-NITROBENZENAMINE)	88-74-4	5.0E+00	a		
TROANILINE (4-NITROBENZENAMINE)	100-01-6	5.0E+00	a		
NITROBENZENE	98-95-3	5.0E+00	a	3.9E+01	C
NITROFURANTOIN	67-20-9	5.0E+01	a	5.5E+03	C
NITROFURAZONE	59-87-0	5.0E+01	a	4.3E-01	C
NITROGEN DIOXIDE	10102-44-0	3.5E+04	e	7.8E+04	C
o-NITROPHENOL (2-NITROPHENOL)	88-75-5	*3	a		
p-NITROPHENOL (4-NITROPHENOL)	100-02-7	*3	a		
2-NITROPROPANE	79-46-9	5.0E+01	a	6.7E-02	C
4-NITROQUINOLINE 1-OXIDE	56-57-5	5.0E+01	a		
n-NITROSODI-n-BUTYLAMINE	924-16-3	5.0E+01	a	1.2E-01	C
n-NITROSODI-ETHANOLAMINE	1116-54-7	5.0E+01	a	2.3E-01	C
n-NITROSODIETHYLAMINE	55-18-5	5.0E+01	a	4.3E-03	C
n-NITROSODIMETHYLAMINE	62-75-9	5.0E+01	a	1.3E-02	C
n-NITROSODIPHENYLAMINE	86-30-6	5.0E+01	d	1.3E+02	C
n-NITROSO-n-DIPROPYLAMINE (DI-n-PROPYLNITROSAMINE)	621-64-7	5.0E+01	a	9.1E-02	C
n-NITROSOMETHYLETHYLAMINE	10595-95-6	5.0E+01	a	2.9E-02	C
n-NITROSO-n-METHYL UREA	684-93-5	5.0E+01	a	2.1E-02	C
n-NITROSOMORPHOLINE	59-89-2	5.0E+01	a		
n-NITROSOPIPERIDINE	100-75-4	5.0E+01	a		
n-NITROSOPYRROLIDINE	930-55-2	5.0E+01	a	3.0E-01	C
NITROTOLUENES, TOTAL	NA	5.0E+00	a	7.8E+02	C
OCTAMETHYLPYROPHOSPHORAMIDE	152-16-9	5.0E+00	a	1.6E+02	C
PARAQUAT	4685-14-7	3.0E+00	a	3.5E+02	C
PARATHION	56-38-2	1.5E+00	a	4.7E+02	C
ATE	1114-71-2	5.0E+01	a	3.9E+03	C

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SUBSTANCE	CASNUM	Groundwater Action Level (ug/L)	REF	Soil/ Sediment Action Level (mg/kg)	REF
PENDIMETHALIN	40487-42-1	5.0E+00	a	3.1E+03	C
PENTACHLOROBENZENE	608-93-5	5.0E+00	a	6.3E+01	C
PENTACHLOROETHANE	76-01-7	5.0E+00	a		
PENTACHLORONITROBENZENE	82-68-8	ND	a	2.5E+00	C
PENTACHLOROPHENOL	87-86-5	*3	a	3.0E+00	C
PHENACETIN	62-44-2	5.0E+00	a		
PHENANTHRENE	85-01-8	5.0E+01	d		
PHENOL	108-95-2	*3	a	4.7E+04	C
PHENOLS, TOTAL	NA	*3 1.0E+00	a		
o-PHENYLENEDIAMINE (1,2-BENZENEDIAMINE)	95-45-5	5.0E+00	a	1.4E+01	C
m-PHENYLENEDIAMINE (1,3-BENZENEDIAMINE)	108-45-2	5.0E+00	a	4.7E+02	C
p-PHENYLENEDIAMINE (1,4-BENZENEDIAMINE)	106-50-3	5.0E+00	a		
PHENYL ETHER	101-84-8	1.0E+01	d		
PHENYL MERCURIC ACETATE	62-38-4	5.0E+01	a	6.3E+00	C
2-PHENYL PHENOL	90-43-7	*3	a	3.4E+02	C
PHENYLPROPANOLAMINE	14838-15-4	5.0E+01	d		
PHORATE	298-02-2	ND	a		
PHOSPHINE	7803-51-2	1.1E+01	e	2.3E+01	C
...ALIC ANHYDRIDE	85-44-9	5.0E+01	a	1.6E+05	C
2-...COLINE (2-METHYL PYRIDINE)	109-06-8	5.0E+01	a		
POLYBROMINATED BIPHENYLS (PBBs)	59536-65-1	5.0E+00	a	7.2E-02	C
POLYCHLORINATED BIPHENYLS (PCBs)	1336-36-3	1.0E-01	a	1.0E+00	i,j
POTASSIUM CYANIDE	151-50-8	1.8E+03	e	3.9E+03	C
POTASSIUM SILVER CYANIDE	506-61-6	7.0E+03	e	1.6E+04	C
PROFLURALIN	26399-36-0	5.0E+00	a	4.7E+02	C
PRONAMIDE	23950-58-5	5.0E+01	a	5.9E+03	C
PROPACHLOR	1918-16-7	3.5E+01	a	1.0E+03	C
PROPANIL	709-98-8	7.0E+00	a	3.9E+02	C
PROPAZINE	139-40-2	1.6E+01	a	1.6E+03	C
PROPIONITRILE (ETHYL CYANIDE)	107-12-0	5.0E+01	a		
PROPOXUR	114-26-1	5.0E+01	a	3.1E+02	C
n-PROPYLBENZENE	103-65-1	5.0E+00	a		
PROPYLENE GLYCOL (1,2-PROPANEDIOL)	57-55-6	5.0E+01	a	1.6E+06	C
PROPYLENE GLYCOL MONOETHYL ETHER	19089-47-5	5.0E+01	a	5.5E+04	C
PROPYLENE GLYCOL MONOMETHYL ETHER	1589-49-7	5.0E+01	a	5.5E+04	C
PROPYLENE OXIDE	75-56-9	5.0E+01	a	2.7E+00	C
PYRENE	129-00-0	2.0E-01	b	2.3E+03	C
PYRIDINE	110-86-1	5.0E+01	a	7.8E+01	C
QUINOLINE	91-22-5	5.0E+01	a	5.1E-02	C
RADIUM 226	NA	3 pCi/L	d		
RADIUM 226 PLUS RADIUM 228	NA	5 pCi/L	b		
RDX (CYCLONITE)	121-82-4	5.0E+01	a	5.8E+00	C
...PINE	50-55-5	5.0E+01	a	6.1E-02	C

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SUBSTANCE	CASNUM	Groundwater Action Level (ug/L)	REF	Soil/ Sediment Action Level (mg/kg)	REF
RONNEL	299-84-3	5.0E+00	a	3.9E+03	C
ROTENONE	83-79-4	5.0E+01	a	3.1E+02	C
SAFROLE	94-59-7	5.0E+01	a		
SELENIOUS ACID	7783-00-8	1.8E+02	a	3.9E+02	C
SELENIUM, TOTAL	*1	1.0E+01	a	3.9E+02	C
SELENOUREA	630-10-4	1.8E+02	e	3.9E+02	C
SILVER, TOTAL	*1	5.0E+01	a	3.9E+02	C
SILVER CYANIDE	506-64-9	3.5E+03	e	7.8E+03	C
SIMAZINE	122-34-9	4.00E+00	b	5.3E+00	C
SODIUM, TOTAL	*1	<20000	a		
SODIUM CYANIDE	143-33-9	1.4E+03	e	3.1E+03	C
SODIUM DIETHYLDITHIOCARBAMATE	148-18-5	5.0E+01	a	2.4E+00	C
SODIUM METAVANADATE	13718-26-8	3.5E+01	e	7.8E+01	C
STRONTIUM 90	NA	10pCi/L	d		
STRYCHNINE AND SALTS	57-24-9	5.0E+01	a	2.3E+01	C
STYRENE (ETHENYLBENZENE)	100-42-5	5.0E+00	a	2.1E+01	C
SULFATES	NA	2.5E+05	a		
SULFIDES (as H2S)	NA	5.0E+01	d		
[illegible]PHOS	3383-96-8	5.0E+01	a	1.6E+03	C
T[illegible]UFOS	13071-25-6	9.0E-02	d	7.8E+00	C
1,2,4,5-TETRACHLOROBENZENE	95-94-3	5.0E+00	a	2.3E+01	C
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN (2,3,7,8-TCDD) *2	1746-01-6	3.50E-05	a	4.1E-06	C
1,1,1,2-TETRACHLOROETHANE	630-20-6	5.0E+00	a	2.5E+01	C
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.0E+00	a	3.2E+00	C
TETRACHLOROETHYLENE (PERCHLOROETHYLENE)	127-18-4	5.0E+00	a	1.2E+01	C
2,3,4,6-TETRACHLOROPHENOL	58-90-2	*3	a	2.3E+03	C
p,alpha,alpha,alpha-TETRACHLOROTOLUENE	5216-25-1	5.0E+00	a	3.2E-02	C
TETRACHLORVINPHOS (STIROFOS)	961-11-5	5.0E+00	a	2.7E+01	C
TETRAETHYL DITHIOPYROPHOSPHATE (SULFOTEPP)	3689-24-5	5.0E+01	a	3.9E+01	C
TETRAETHYL LEAD	78-00-2	3.5E-03	e	7.8E-03	C
TETRAHYDROFURAN	109-99-9	5.0E+01	d		
THALLIC OXIDE	1314-32-5	3.5E+00	e	7.8E+00	C
THALLIUM, TOTAL	*1	2.0E+00	b	7.8E+00	C
THALLIUM ACETATE	563-68-8	3.2E+00	e	7.0E+00	C
THALLIUM CARBONATE	6533-73-9	2.8E+00	e	6.3E+00	C
THALLIUM CHLORIDE	7791-12-0	2.8E+00	e	6.3E+00	C
THALLIUM NITRATE	10102-45-1	3.2E+00	e	7.0E+00	C
THALLIUM SELENITE	12039-52-0	3.5E+00	e	7.8E+00	C
THALLIUM SULFATE	10031-59-1	3.5E+00	e	7.8E+00	C
THEOPHYLLINE	58-55-9	4.0E+01	d		
2-(THIOCYANOMETHYLTHIO)-BENZOTHIAZOLE (TCMTB)	21564-17-0	5.0E+01	a	2.3E+03	C
THIOFANOX	39196-18-4	5.0E+01	a	2.3E+01	C
[illegible]REA	62-56-6	5.0E+01	a	3.3E-01	C

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THIRAM	137-26-8	1.8E+00	a	3.9E+02	C
TIN, TOTAL	7440-31-5	2.1E+04	e	1.6E+04	C
TOLUENE (METHYL BENZENE)	108-88-3	5.0E+00	a	1.5E+04	C
2,4-TOLUENEDIAMINE	95-80-7	5.0E+00	a	2.0E-01	C
2,5-TOLUENEDIAMINE	95-70-5	5.0E+00	a	4.7E+04	C
2,6-TOLUENEDIAMINE	823-40-5	5.0E+00	a	1.6E+04	C
TOLUENE DIISOCYANATE	584-84-9	5.0E+00	a		
o-TOLUIDINE (2-METHYL BENZENAMINE)	95-53-4	5.0E+00	a	2.7E+00	C
p-TOLUIDINE (4-METHYL BENZENAMINE)	106-49-0	5.0E+00	a	3.4E+00	C
TOLYLTRIAZOLE	29385-43-1	5.0E+01	d		
TOXAPHENE	8001-35-2	ND	a	5.8E-01	C
2,4,5-TP (SILVEX)	93-72-1	2.6E-01	a	6.3E+02	C
TRIALLATE	2303-17-5	4.6E+02	e	1.0E+03	C
1,2,4-TRIBROMOBENZENE	NA	5.0E+00	a	3.9E+02	C
TRIBUTYLTIN OXIDE	56-35-9	5.0E+01	d	2.3E+00	C
2,4,6-TRICHLOROANILINE	634-93-5	5.0E+00	a	1.9E+01	C
2,4,6-TRICHLOROANILINE HYDROCHLORIDE	NA	5.0E+00	a	2.2E+01	C
1,2,3-TRICHLOROBENZENE	87-61-6	5.0E+00	a		
[illegible]4-TRICHLOROBENZENE	120-82-1	5.0E+00	a	7.8E+02	C
[illegible],1-TRICHLOROETHANE (METHYL CHLOROFORM)	71-55-6	5.0E+00	a	7.0E+03	C
1,1,2-TRICHLOROETHANE	79-00-5	5.0E+00	a	1.1E+01	C
TRICHLOROETHYLENE (TRICHLOROETHENE)	79-01-6	5.0E+00	b	5.8E+01	C
TRICHLOROFLUOROMETHANE (F-11)	75-69-4	5.0E+00	a	2.3E+04	C
2,4,5-TRICHLOROPHENOL	95-95-4	*3	a	7.8E+03	C
2,4,6-TRICHLOROPHENOL	88-06-2	*3	a	5.8E+01	C
2,4,5-TRICHLOROPHENOXY ACETIC ACID (2,4,5-T)	93-76-5	1.0E+01	b	7.8E+02	C
1,1,2-TRICHLOROPROPANE	598-77-6	5.0E+00	a	3.9E+02	C
1,2,3-TRICHLOROPROPANE	96-18-4	5.0E+00	a	4.7E+02	C
1,2,3-TRICHLOROPROPENE	96-19-5	5.0E+00	a	3.9E+02	C
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	5.0E+00	a	2.3E+05	C
o,o,o-TRIETHYL PHOSPHOROTHIOATE	126-68-1	5.0E+01	a		
TRIFLURALIN	1582-09-8	3.5E+01	a	8.3E+01	C
1,2,4-TRIMETHYLBENZENE	95-63-6	5.0E+00	a		
1,3,5-TRIMETHYLBENZENE	108-67-8	5.0E+00	a		
TRIMETHYL PHOSPHATE	512-56-1	5.0E+01	a	1.7E+01	C
2,4,6-TRIMETHYLPYRIDINE (2,4,6-COLLIDINE)	108-75-8	5.0E+01	d		
2,3,6-TRIMETHYLPYRIDINE	1462-84-6	5.0E+01	d		
sym-TRINITROBENZENE (1,3,5-TRINITROBENZENE)	99-35-4	5.0E+00	a	3.9E+00	C
2,4,6-TRINITROTOLUENE (TNT)	118-96-7	5.0E+00	a	3.9E+01	C
TRITHION (CARBOPHENOTHION)	786-19-6	5.0E+01	a		
TRIPHENYLPHOSPHATE	115-86-6	5.0E+01	d		
VANADIUM, TOTAL	*1	2.5E+02	e	5.5E+02	C
[illegible]IUM PENTOXIDE	1314-62-1	3.2E+02	e	7.0E+02	C

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VANADYL SULFATE	27774-13-6	7.0E+02	e	1.6E+03	C
VERNOLATE	1929-77-7	3.5E+01	e	7.8E+01	C
VINYL ACETATE	108-05-4	5.0E+01	a	7.8E+04	C
VINYL CHLORIDE (CHLOROETHENE)	75-01-4	2.0E+00	b	3.4E-01	C
WARFARIN	81-81-2	5.0E+01	a	2.3E+01	C
XYLENE, TOTAL (DIMETHYL BENZENE)	1330-20-7	5.0E+00	a	1.6E+05	C
m-XYLENE (3-DIMETHYL BENZENE)	108-38-3	5.0E+00	a	1.6E+05	C
o-XYLENE (2-DIMETHYL BENZENE)	95-47-6	5.0E+00	a	1.6E+05	C
p-XYLENE (4-DIMETHYL BENZENE)	106-42-3	5.0E+00	a		
ZINC, TOTAL	*1	3.0E+02	e	2.3E+04	C
ZINC CYANIDE	557-21-1	1.8E+03	e	3.9E+03	C
ZINC PHOSPHIDE	1314-84-7	1.1E+01	e	2.3E+00	C
ZINEB	12122-67-7	1.8E+00	a	3.9E+03	C
ZIRAM	137-30-4	4.2E+00	a		

Footnotes

a Total concentration of iron and manganese should not exceed 500 ug/l.

b Total concentration of these four trihalomethanes shall not exceed 100 ug/l.

c All species in the groundwater and/or soil that contain this element are included in the total.

d Guidance value for total chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans is 0.0000002 µg/L equivalents of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). The 2,3,7,8-TCDD equivalent for a congener is obtained by multipling the concentration of that congener by its toxicity equivalence factor (TEF) from the table below. The Guidance value for Class GA waters does not include the congener 2,3,7,8-TCDD.

A guidance value for an idividual congener value can be calculated by dividing 0.0000002 µg/L by the TEF for that congener.

0.000035 µg/L applies only to 2,3,7,8-TCDD

Congener	TEF
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN	1
Other tetrachlorodibenzo-p-dioxins	0.01
2,3,7,8-PENTACHLORODIBENZO-p-DIOXIN	0.5
Other pentachlorodibenzo-p-dioxins	0.005
2,3,7,8-HEXACHLORODIBENZO-p-DIOXINS	0.05
Other hexachlorodibenzo-p-dioxins	0.0005
2,3,7,8-HEPTACHLORODIBENZO-p-DIOXIN	0.005
Other heptachlorodibenzo-p-dioxins	0.00005
OCTACHLORODIBENZO-p-DIOXIN	0.005
2,3,7,8-TETRACHLORODIBENZOFURAN	0.1
Other tetrachlorodibenzofurans	0.001
2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.5
1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.05
Other pentachlorodibenzofurans	0.005
2,3,7,8-HEXACHLORODIBENZOFURAN	0.1
Other hexachlorodibenzofurans	0.001
2,3,7,8-HEPTACHLORODIBENZOFURAN	0.005
Other heptachlorodibenzofurans	0.00005
OCTACHLORODIBENZOFURAN	0.005

e This value has been adopted by the New York State and USEPA Region II RCRA programs. USEPA promulgated under TSCA a clean soil standard of one (1) part per million for PCBs.

f All phenolic compounds (total phenols) shall not exceed 1 µg/L (NY TOGS (1.1.1)).

g Since 6NYCRR a Part 703 GA Standard does not exist for this constituent, Guidance value from NY T.O.G.S. 1.1.1 was used.

h Since 6NYCRR a Part 703 GA Standard and/or Guidance value does not exist for this constituent, a Health Based value from the EPA Health Effects Assessment Summary Tables was used.

i The effective date for these EPA MCLs is January 31, 1994

j Refer to footnotes in the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1.

k This is EPA's recommendation based on the Uptake/Biokinetic (UBK) model in assessing total lead exposure and developing a soil lead cleanup level at CERCLA and RCRA sites.

NA Not Available

ND Not Detectable by tests or analytical determinations. The groundwater protection concentration should be written as non-detectable (ND) with a footnote specifying the method detection limit (MDL) for the most sensitive analytical technique (e.g., benzene ND by USEPA Method 602 or 8020 with an MDL = 0.2 ug/l).

References

6 NYCRR Part 703.5(a)(3) - September 15, 1991
10 NYCRR Part 5 - January 6, 1993
EPA MCL - January 31, 1994
NY TOGS (1.1.1) - October 1, 1993
EPA HEAST - August 1,1994

APPENDIX C

SITE HEALTH AND SAFETY PLAN

REMEDIAL DESIGN WORK PLAN
APPENDIX C

SITE HEALTH AND SAFETY PLAN (HASP)

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

June 2005
Revised February 2006

0092-002-100

Prepared for:

Seneca Market I, LLC
Watkins Glen, New York

REMEDIAL DESIGN WORK PLAN
APPENDIX C

HEALTH AND SAFETY PLAN FOR RD ACTIVITIES
SENECA MARKET I, LLC SITE

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

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

Project Manager: Thomas H. Forbes, P.E.

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

REMEDIAL DESIGN WORK PLAN
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HEALTH AND SAFETY PLAN FOR RD ACTIVITIES
SENECA MARKET I, LLC SITE

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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 Remedial Design (RD) activities on the Seneca Market 1 Site located in the Village of Watkins Glen, New York.. This HASP presents procedures for Benchmark employees who will be involved with RD field activities; it does not cover the activities of other contractors, subcontractors or other 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.

1.2 Background

Seneca Market I, LLC owns approximately 2.28 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 (see Figures C-1 and C-2). Seneca Market intends to remediate and redevelop the property under the New York State Brownfield Cleanup Program (BCP).

Referring to the parcels outlined on Figure C-2, Seneca Market I owns the 0.20-acre and 0.13-acre parcels referred to as the inactive hazardous waste site. These parcels, together with the 1.76-acre and 0.19-acre[1] parcels within this same block, comprise those areas included in the BCP. The 0.2-acre parcel contains the former Glen Vintage Auto Museum (presently unoccupied). The 0.13-acre parcel contains a structure deemed the "former dry

[1] The 0.19-acre parcel along the railroad is currently owned by Schuyler County but will be purchased by Seneca Market I, LLC.

cleaning building." This is a two-story brick building that includes two unoccupied single-story brick sheds to the east. The former dry cleaning building is presently occupied by a real estate firm. The western portion of the 1.76-acre parcel contains a large block building that was formerly used as a bus garage and is currently leased to Seneca Hardwoods, a manufacturer of custom flooring. A building foundation, reputedly a remnant of a former Welch's Grape facility, also remains on the 1.76-acre parcel.

Seneca Market II, LLC owns the approximately 0.29-acre parcel located along North Franklin Street. This property, which contains the Seneca Market Building and a multipurpose shopping and office building, is not part of the BCP. The 0.21-acre property south of First Street will be leased by Seneca Market I for use as ancillary parking but is also not part of the BCP.

The parcels have a history of use that dates back to the 1860s. The Seneca Market building has formerly been used as a foundry; a flour and grist mill; and most recently retail shops on the first floor and professional office space on the second and third floors. A marble works building was formerly present just south of Seneca Market until it was destroyed in 1970. The former Auto Museum was previously used for miscellaneous storage, in particular auto parts. The dry cleaning building has mainly been used for retail businesses, a machine shop, and for dry cleaning operations.

Seneca Market intends to remediate the residual VOC contamination and redevelop the property under the New York State BCP. Given the extensive nature of the investigations performed to date, Seneca Market has elected to enter the BCP at the remedial design stage. The Remedial Design (RD) Work Plan identifies the means by which remedial measures will be undertaken, including remedial measures to be employed, target site-specific cleanup levels, confirmatory sampling requirements, and post-remediation soil management practices.

1.3 Known and Suspected Environmental Conditions

A 1991 Environmental Assessment of the Site revealed that groundwater under a portion of the property (i.e., 20 Franklin Street at the corner of North Franklin and First) was contaminated with chlorinated organic compounds associated with the former dry cleaning operations. The New York State Department of Environmental Conservation (NYSDEC) subsequently listed an approximate 0.3-acre portion of the property as a Class 2 inactive hazardous waste site (i.e., "the North Franklin Street Site" - NYSDEC Registry No.

8-49-002). The inactive hazardous waste site encompasses the 0.13-acre parcel, including the former dry cleaner building, and a portion of the 0.20-acre parcel (see Figure C-2). A Remedial Investigation/Feasibility Study (RI/FS) performed and completed in 1993 by URS Consultants under a Standby Contract with the NYSDEC delineated the extent of soil and groundwater contamination on and adjacent to the Franklin Street site. URS subsequently designed remediation systems to treat soil and groundwater, pursuant to a Record of Decision (ROD) signed in 1994. The remedial measures included a soil vapor extraction (SVE) system to treat shallow VOC-impacted soil, and a groundwater pump and treat system to extract and treat groundwater adjacent to the former dry cleaner building. The systems were placed into operation in 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, in the process of collecting the confirmatory soil samples, it was discovered that the soil 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 to cleanup objectives 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.

In 1998/1999, URS performed additional soil investigations and cleanup technology feasibility studies to evaluate deeper soil contamination. It was concluded that chlorinated organic compounds remained on-site in a small area directly adjacent to and outside the former dry cleaning building, as well as beneath the dry cleaner building at depths greater than 16 feet. A chemical oxidation pilot study conducted from March through May 2000 significantly reduced the mass of chlorinated contaminants in Site soils. Despite the reduction, localized areas of residual chlorinated organic contamination remain in soils and groundwater adjacent to and beneath the former dry cleaner building. In March 2004, an active venting system was installed within the former dry cleaner building to control the potential indoor migration of vapors from the residual contamination.

At the direction of NYSDEC, URS collected air samples within the Seneca Market Building and beneath the concrete floor slab in 2005. The air samples collected beneath the concrete slab contained elevated levels of tetrachloroethene (PCE). As a result, NYSDEC contracted URS to design and install an active subslab depressurization (SSD) system in the Seneca Market Building. The SSD system was installed by Geologic NY, Inc. in October 2005. The SSD system is comprised of the following elements:

- Two suction points, extending through the concrete slab in the Storage Room, with a 6-inch deep pit below each suction point.
- 4-inch diameter PVC piping connecting the suction points and exiting the building through a dormer on the roof. Gate valves to control the vacuum pressure and magnehelic gauges to measure vacuum are located at each suction point.
- A fan and exhaust system secured outdoors on the eastern side of the 3-story portion of the building.

URS performed post-mitigation testing consisting of running the system for 1 hour before drilling two test holes to confirm that the system was producing a negative pressure beneath the concrete slab. The SSD system is currently operating and being maintained by Seneca Harbor Wine Center.

A Phase I Environmental Site Assessment (ESA) was performed in November 1991 for the parcels on the eastern portion of the subject property. The ESA identified several potential environmental conditions including possible underground storage tanks, drums, an inoperable piston arrangement for a hydraulic lift, and oil spills near the corner of First and Decatur Streets. Petroleum hydrocarbons, lower levels of chlorinated hydrocarbons, and several elevated inorganic compounds related to the above described conditions were detected in the soil and groundwater during the RI/FS. Two areas on the larger parcel that contained soil heavily contaminated with benzene, toluene, ethylbenzene, and xylene (BTEX) were excavated and bioremediated off-site in the late 1990s. As such, residual BTEX contamination in soil and groundwater may exist proximate to these historic source areas. In addition, the RI identified BTEX contamination in soil/fill and groundwater beneath the former bus garage near the former dry cleaner building (i.e., monitoring well MW-8S). While SVE and/or in-situ oxidation treatment of the chlorinated organic impacted soils may have partially addressed the BTEX impacted soils, there is likely residual BTEX contamination in soil/fill beneath the former bus garage.

1.4 Parameters of Interest

Based on the investigative findings, constituents of potential concern (COPCs) at the site include:

- **Volatile Organic Compounds (VOCs)** – VOCs present at elevated concentrations in site soils and groundwater include chlorinated and petroleum hydrocarbons. The chlorinated organic contaminants 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 include benzene, toluene, ethylbenzene, and xylene (i.e., BTEX). The former source of petroleum contamination was underground storage tanks and reported oil spills. Secondary sources of chlorinated and petroleum hydrocarbons appear to have migrated on-site from apparent off-site sources.

1.5 Overview of RD Activities

Benchmark personnel will be on-site to observe and perform RD activities. The field activities to be completed as part of the RD are described below. Planned RD activities are more fully described in the RD Work Plan for the site (Reference 1).

1. **Soil Excavation:** Benchmark will direct soil excavation activities and coordinate disposal of excavated soil.

2. **Verification Soil Sampling:** Benchmark will collect verification soil samples from the side-walls and bottom of the excavations using a backhoe.

3. **Groundwater Management:** Benchmark will direct groundwater collection during soil excavation activities and coordinate disposal of the collected groundwater.

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. Thomas H. Forbes, P.E.*** 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 include the Drilling and Test Pit Contractors, who will be 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

Due to the presence of certain contaminants at the site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of fill/soils, 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., excavator) 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 C-1 identifies concentration ranges for constituents of potential concern (COPCs) detected in site soils during previous investigations at the site as identified in Section 1.4 of this HASP. Table C-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.

- **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 the anticipated RD activities discussed in Section 1.4, possible routes of exposure to the above-mentioned contaminants are presented in Table C-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

RD field 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 RD 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 RD activities at the site (such as, but not limited to, equipment operators, general laborers, and drillers) 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.
- 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 Appendix C-1 of this HASP, Emergency Response Plan.

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 C-4.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the site, the possibility 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 C-2), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon 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 (Reference 2) and attached as Appendix C-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 C-1 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 C-1 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 Attachment 1), 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 RD 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 C-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 (DEC) and Department of Health (DOH) 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.

- **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 C-1 of this HASP) 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 C-1 of this HASP.

- **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 C-1 of this HASP).

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-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 RD efforts.

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 Attachment H2 of this HASP will 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 will be completed during the summer 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

Personal protective equipment 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. Personal protective equipment 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 on-going remediation 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 visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

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 to complete the RD 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 C-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 attached to this HASP as Appendix C-1. The hospital route map is presented as Figure C-3.

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 C-1

CONSTITUENTS OF POTENTIAL CONCERN

Appendix C: Health and Safety Plan (HASP)
Seneca Market I, LLC Site
Watkins Glen, New York

Parameter	CAS No.	Maximum Detected Concentration[1]		
		Groundwater (mg/L)	Surface Soil/Fill (mg/kg)	Sub-Surface Soil/Fill (mg/kg)
Volatile Organic Compounds (VOCs):				
Benzene	71-43-2	10.0		0.019
1,2-Dichloroethene	540-59-0	35.2		0.46
Ethylbenzene	100-41-4	0.78		0.37
Tetrachloroethene	127-18-4	186	41.0	31.0
Toluene	108-88-3	37.0		0.04
Trichloroethene	79-01-6	27.1		7.70
Vinyl Chloride	75-01-4	16.0		0.43
Total Xylene	1330-20-7	2.70		1.80

Notes.

1. Maximum detected concentrations for soil and groundwater media from the RI, where available. The site has been partially remediated through post RI cleanup efforts. Accordingly, actual maximum concentrations may be lower.

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TABLE C-2

TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

Appendix C: 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	50	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	5	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 exceeded.
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

TABLE C-3

POTENTIAL ROUTES OF EXPOSURE TO THE CONSTITUENTS OF POTENTIAL CONCERN

Appendix C: 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. Soil Excavation	x	x	
2. Verification Soil Sampling	x	x	
3. Groundwater Management			x

Notes:
1. Activity as described in Section 1.5 of the Health and Safety Plan.

TABLE C-4

REQUIRED LEVELS OF PROTECTION FOR REMEDIAL DESIGN TASKS

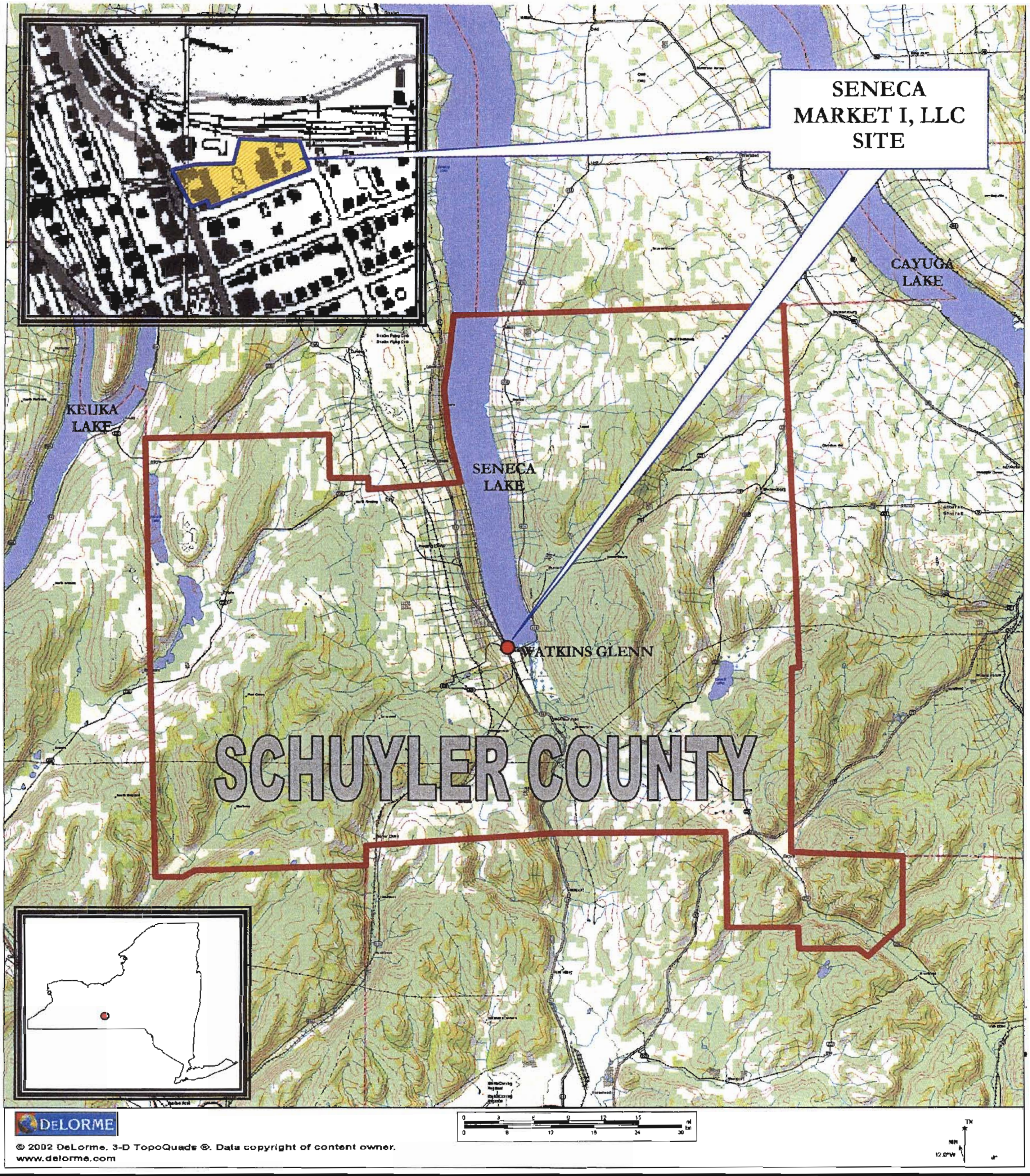
Appendix C: Health and Safety Plan (HASP)
Seneca Market I, LLC Site
Watkins Glen, New York

Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2,3]	Other Required PPE/Modifications [2,4]
1. Soil Excavation	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Verification Soil Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
3. Groundwater Management	Level D (upgrade to Level C if necessary)	Poly-coated Tyvek or S	L/N	outer: L inner: STSS	HH 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 C-1



FILEPATH:g:\cad\benchmark\krog\seneca harbor hotel - watkins glen\hasp\figure c-1) site location and vicinity map.dwg

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

PROJECT NO.: 0092-002-100

DATE: DECEMBER 2005

DRAFTED BY: BCH

SITE LOCATION AND VICINITY MAP

APPENDIX C - HEALTH AND SAFETY PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

COLOR CODE:

- PARCEL NOT PART OF BCP
- INACTIVE HAZARDOUS WASTE SITE (BCP)
- SENECA MARKET I, LLC SITE (BCP)
- BUILDING OR FOUNDATION (SEE BELOW)

LEGEND:

- BCP PROPERTY BOUNDARY
- PARCEL BOUNDARY
- MW-8S SHALLOW MONITORING WELL
- MW-8D DEEP MONITORING WELL

1. SENECA MARKET BUILDING & PROPERTY OWNED BY SENECA MARKET II, LLC
2. FORMER GLEN VINTAGE AUTO MUSEUM BUILDING (VACANT) PROPERTY OWNED BY SENECA MARKET I, LLC
3. FORMER DRY CLEANER BUILDING & PROPERTY OWNED BY SENECA MARKET I, LLC
4. FORMER BUS GARAGE (SENECA HARDWOODS BUILDING) & PROPERTY OWNED SENECA MARKET I, LLC
5. REPUTED FORMER WELCH'S GRAPE FACILITY FOUNDATION & PROPERTY OWNED BY SENECA MARKET I, LLC
6. FORMER ASPHALT COMPANY & PROPERTY OWNED BY SENECA MARKET I, LLC
7. OWNED BY SCHUYLER COUNTY (TO BE PURCHASED BY SENECA MARKET I, LLC)
8. LEASED PARCEL (TO BE DEVELOPED AS ADDITIONAL PARKING)

Note: Monitoring well locations are approximate.

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

JOB NO.: 0092-002-100

SITE PLAN

APPENDIX C - HEALTH AND SAFETY PLAN (HASP)

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FIGURE C-2

DATE: DECEMBER 2005
DRAFTED BY: BCH
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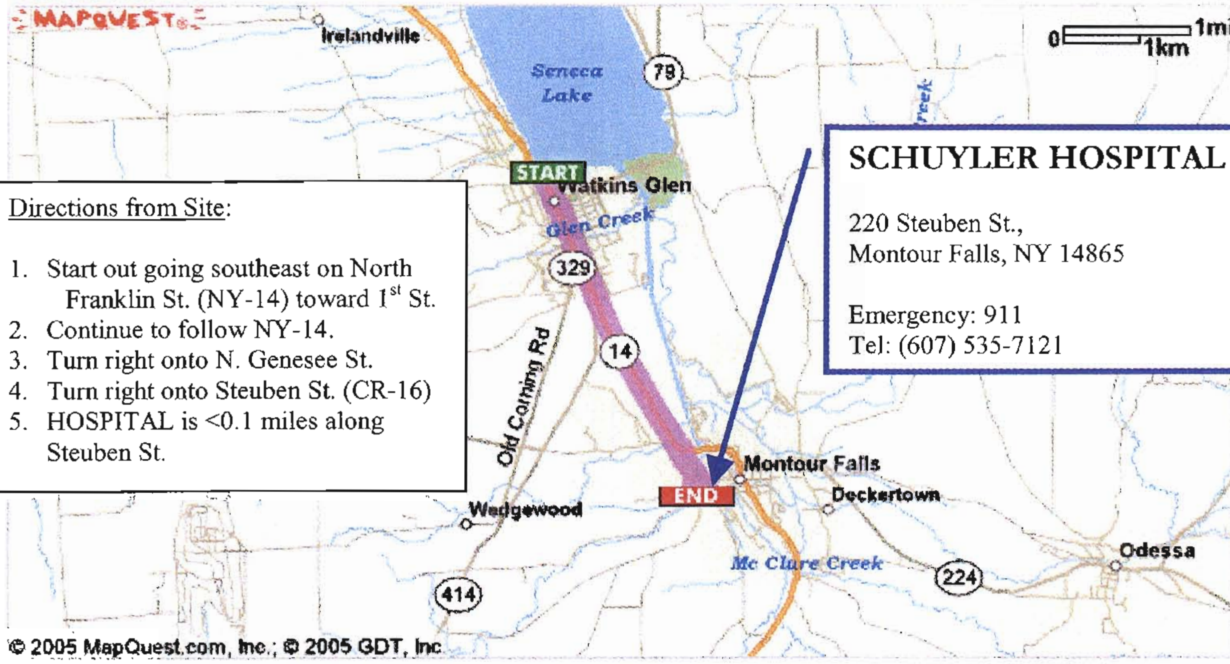
FIGURE C-3

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.

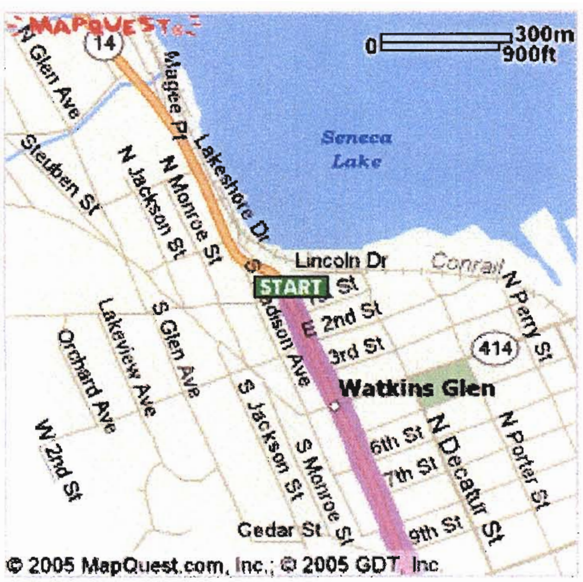
SCHUYLER HOSPITAL

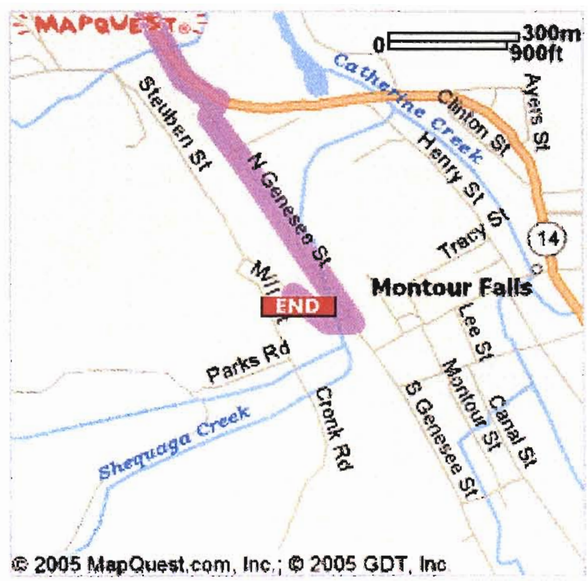
220 Steuben St.,
Montour Falls, NY 14865

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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DATE: DECEMBER 2005
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HOSPITAL ROUTE MAP

APPENDIX C - HEALTH AND SAFETY PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

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APPENDIX C-1

EMERGENCY RESPONSE PLAN

REMEDIAL DESIGN WORK PLAN
APPENDIX C

SITE HEALTH AND SAFETY PLAN (HASP)
APPENDIX C-1

EMERGENCY RESPONSE PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

May 2005
Revised February 2006

0092-002-100

Prepared for:

Seneca Market I, LLC
Watkins Glen, New York

HEALTH AND SAFETY PLAN FOR RD ACTIVITIES
APPENDIX C-1

EMERGENCY RESPONSE PLAN
SENECA MARKET I, LLC SITE

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1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for Remedial Design (RD) activities at the proposed Seneca Market I Site located in Watkins Glen, NY. 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

Source of Emergency:
1. Slip/trip/fall

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 in 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 this 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	Field Trailer
First Aid Kit	1	Site Vehicle
Chemical Fire Extinguisher	2 (minimurn)	All heavy equipment and Site Vehicle

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Seneca Market I area will be discussed on a daily basis during performance of field activities. 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 that could affect emergency response planning; however, the directions of prevailing winds/weather conditions have been marked on the map. The map will be posted at site-designated place of refuge and inside the Benchmark personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager: ***Thomas H. Forbes***
Work: (716) 856-0599
Mobile: (716) 864-1730

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

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

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

SCHUYLER HOSPITAL:	(607) 535-7121
FIRE:	911 or (607) 535-7700
AMBULANCE:	911
POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYS COUNTY HEALTH DEPARTMENT:	(607) 535-8140
NYSDEC PROJECT MANAGER:	(585) 226-5354
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7362

The site location is:
Seneca Market I, LLC Site
2-20 North Franklin Street
Watkins Glen, New York 14891
Site Phone Number: (Insert Cell Phone or Field Trailer): ____________

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 SSHO 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 SSHO 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 (***Bryan Hann*** or ***Richard Dubisz***) 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 (i.e., 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 C-3 of the HASP):

The following directions describe the best route to Schuyler Hospital:

- Travel south on North Franklin Street (NY-14) toward First Street and continue on NY-14 for approximately 2.4 miles.

- Turn right onto N. Genesee Street.

- Turn right onto Steuben Street (CR-16).

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this 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.

APPENDIX C-2

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

APPENDIX C-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.

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

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 C-3

HOT WORK PERMIT FORM

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

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: ___________

APPENDIX D

SOIL/FILL MANAGEMENT PLAN

REMEDIAL DESIGN WORK PLAN
APPENDIX D

SOIL/FILL MANAGEMENT PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NY

June 2005
Revised February 2006

0092-002-100

Prepared for:

Seneca Market I, LLC
Watkins Glen, New York

REMEDIAL DESIGN WORK PLAN
APPENDIX D

SOIL/FILL MANAGEMENT PLAN
SENECA MARKET I, LLC SITE

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SOIL/FILL MANAGEMENT PLAN
SENECA MARKET I, LLC SITE

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1.0 INTRODUCTION

1.1 Background and History

Seneca Market I, LLC owns approximately 2.28 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 (see Figures D-1 and D-2). Seneca Market intends to remediate and redevelop the property under the New York State Brownfield Cleanup Program (BCP).

Referring to the parcels outlined on Figure D-2, Seneca Market I owns the 0.20-acre and 0.13-acre parcels referred to as the inactive hazardous waste site. These parcels, together with the 1.76-acre and 0.19-acre[1] parcels within this same block, comprise those areas included in the BCP. The 0.2-acre parcel contains the former Glen Vintage Auto Museum (presently unoccupied). The 0.13-acre parcel contains a structure deemed the "former dry cleaning building." This is a two-story brick building that includes two unoccupied single-story brick sheds to the east. The former dry cleaning building is presently occupied by a real estate firm. The western portion of the 1.76-acre parcel contains a large block building that was formerly used as a bus garage and is currently leased to Seneca Hardwoods, a manufacturer of custom flooring. A building foundation, reputedly a remnant of a former Welch's Grape facility, also remains on the 1.76-acre parcel.

Seneca Market II, LLC owns the approximately 0.29-acre parcel located along North Franklin Street. This property, which contains the Seneca Market Building and a multipurpose shopping and office building, is not part of the BCP. The 0.21-acre property south of First Street will be leased by Seneca Market I for use as ancillary parking but is not part of the BCP.

The parcels have a history of use that dates back to the 1860s. The Seneca Market building has formerly been used as a foundry; a flour and grist mill; and most recently retail shops on the first floor and professional office space on the second and third floors. A marble works building was formerly present just south of Seneca Market until it was destroyed in 1970. The former Auto Museum was previously used for miscellaneous storage,

[1] The 0.19-acre parcel along the railroad is currently owned by Schuyler County but will be purchased by Seneca Market I, LLC.

in particular auto parts. The dry cleaning building has mainly been used for retail businesses, a machine shop, and for dry cleaning operations.

1.2 Environmental Investigations and Remedial Efforts

1.2.1 Chlorinated Organic-Impacted Area

A 1991 Environmental Assessment of the Site revealed that groundwater under a portion of the property (i.e., 20 Franklin Street at the corner of North Franklin and First) was contaminated with chlorinated organic compounds associated with the former dry cleaning operations. The New York State Department of Environmental Conservation (NYSDEC) subsequently listed an approximate 0.3-acre portion of the property as a Class 2 inactive hazardous waste site (i.e., "the North Franklin Street Site" - NYSDEC Registry No. 8-49-002). The inactive hazardous waste site encompasses the 0.13-acre parcel, including the former dry cleaner building, and a portion of the 0.20-acre parcel (see Figure D-2).

A Remedial Investigation/Feasibility Study (RI/FS) performed and completed in 1993 by URS Consultants under a Standby Contract with the NYSDEC delineated the extent of soil and groundwater contamination on and adjacent to the Franklin Street site. URS subsequently designed remediation systems to treat soil and groundwater, pursuant to a Record of Decision (ROD) signed in 1994. The remedial measures included a soil vapor extraction (SVE) system to treat shallow VOC-impacted soil, and a groundwater pump and treat system to extract and treat groundwater adjacent to the former dry cleaner building. The systems were placed into operation in 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, in the process of collecting the confirmatory soil samples, it was discovered that the soil 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 to cleanup objectives 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.

In 1998/1999, URS performed additional soil investigations and cleanup technology feasibility studies to evaluate deeper soil contamination. It was concluded that chlorinated organic compounds remained on-site in a small area directly adjacent to and outside the former dry cleaning building, as well as beneath the dry cleaner building at depths greater than 16 feet. A chemical oxidation pilot study conducted from March through May 2000 significantly reduced the mass of chlorinated contaminants in Site soils. Despite the reduction, localized areas of residual chlorinated organic contamination remain in soils and groundwater adjacent to and beneath the former dry cleaner building. In March 2004, an active venting system was installed within the former dry cleaner building to control the potential indoor migration of vapors from the residual contamination.

At the direction of NYSDEC, URS collected air samples within the Seneca Market Building and beneath the concrete floor slab in 2005. The air samples collected beneath the concrete slab contained elevated levels of tetrachloroethene (PCE). As a result, NYSDEC contracted URS to design and install an active subslab depressurization (SSD) system in the Seneca Market Building. The SSD system was installed by Geologic NY, Inc. in October 2005. The SSD system is comprised of the following elements:

- Two suction points, extending through the concrete slab in the Storage Room, with a 6-inch deep pit below each suction point.
- 4-inch diameter PVC piping connecting the suction points and exiting the building through a dormer on the roof. Gate valves to control the vacuum pressure and magnehelic gauges to measure vacuum are located at each suction point.
- A fan and exhaust system secured outdoors on the eastern side of the 3-story portion of the building.

URS performed post-mitigation testing consisting of running the system for 1 hour before drilling two test holes to confirm that the system was producing a negative pressure beneath the concrete slab. The SSD system is currently operating and being maintained by Seneca Harbor Wine Center.

1.2.2 Other Areas

A Phase I Environmental Site Assessment (ESA) was performed in November 1991 for the parcels on the eastern portion of the subject property. The ESA identified several potential environmental conditions including possible underground storage tanks, drums, an inoperable piston arrangement for a hydraulic lift, and oil spills near the corner of First and Decatur Streets. Petroleum hydrocarbons, lower levels of chlorinated hydrocarbons, and several elevated inorganic compounds related to the above described conditions were detected in the soil and groundwater during the RI/FS. Two areas on the larger parcel that contained soil heavily contaminated with benzene, toluene, ethylbenzene, and xylene (BTEX) were excavated and bioremediated off-site in the late 1990s. As such, residual BTEX contamination in soil and groundwater may exist proximate to these historic source areas. In addition, the RI identified BTEX contamination in soil/fill and groundwater beneath the former bus garage near the former dry cleaner building (i.e., monitoring well MW-8S). While SVE and/or in-situ oxidation treatment of the chlorinated organic impacted soils may have partially addressed the BTEX impacted soils, there is likely residual BTEX contamination in soil/fill beneath the former bus garage.

1.3 Purpose and Scope

The purpose of this Soil/Fill Management Plan (SFMP or Plan) is to protect both the environment and human health during redevelopment of the Site, subsequent to completion of Brownfield Cleanup activities to address the known and suspected areas of chlorinated organic and petroleum-impacted soil/fill.

While an assessment 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 completion of the Brownfield Cleanup (see Remedial Design Work Plan – Ref. 1). In particular, soil/fill impacts may be encountered during development activities such as infrastructure construction (i.e., roads, waterline, sewers, electric cable, etc.) or foundation excavation and site grading.

Compliance with this SFMP is required to properly manage any impacted subsurface soil/fill encountered during redevelopment 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 development activities, including:

- Excavation, grading, sampling and handling of site soils.

- Acceptability of soil/fill from off-site sources for backfill or subgrade fill.
- Erosion and dust control measures.
- Fencing and other access controls.
- Health and safety procedures for subsurface construction work and the protection of the surrounding community.
- Acceptability and placement of final cover.
- Deed restrictions.
- BCP responsibilities.
- Notification and reporting requirements.

1.4 Soil/Fill Management Program Responsibility

The developer and property owner, Seneca Market 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 soils, except as delineated in this Plan. The property owner(s) or their agents will be responsible for proper notification and reporting to regulatory agencies (i.e., NYSDEC Region 8, Division of Environmental Remediation and NYS Department of Health) prior to and following site development as described in Section 2.10 of this Plan.

The NYSDEC will provide periodic construction oversight and monitoring during site redevelopment activities to verify adherence to the requirements of this SFMP.

2.0 SOIL/FILL MANAGEMENT

2.1 Excavation and Handling of On-Site Soil/Fill

During both the initial site redevelopment by Seneca Market and during future excavation work on the Site (excluding minor landscaping maintenance), Benchmark Environmental Engineering & Science, PLLC 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 subject property owner. The soil/fill 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 D-1 of this Plan.

Generally, soil/fill at the Site is characterized as either impacted with chlorinated volatile organic compounds (CVOCs) or petroleum organics, specifically benzene, toluene, and xylenes (BTEX). The known and suspected CVOC soil/fill hot spots will be direct loaded into lined dump trailers and transported to a permitted off-site disposal facility in accordance with the remedial plan discussed in the Remedial Design (RD) Work Plan (Ref. 1). If, during redevelopment, soil/fill is encountered that is visibly stained, discolored or produces elevated PID readings (i.e., sustained readings of 5 ppm above background or greater), NYSDEC will be contacted and the excavation will be advanced to remove the impacted soils, to the extent feasible. Certain areas are known to potentially contain BTEX-impacted subsurface soils (see Figure D-3). Special precautions will be exercised during redevelopment activities that occur within these areas.

Impacted material, if encountered, will be placed in a hazardous waste roll-off or 55-gallon drums in an area away from the primary work activities, and managed to prevent the infiltration of precipitation and wind erosion. The impacted material will be sampled to determine whether it is subject to special disposal/reuse requirements[2]. The on-site storage

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[2] The presence of subsurface construction and demolition debris, such as brick, concrete, wood, miscellaneous metal products, etc. does not necessitate stockpiling in accordance with this SFMP.

of drummed and/or roll-off material will be limited to 90 days due to potential hazardous waste storage requirement concerns.

Sampling and analyses to verify excavation limits and analysis for disposal purposes will be in accordance with the protocols delineated in Section 2.3 of this Plan.

2.2 Subgrade Backfill Material

2.2.1 Use Criteria

Subgrade material used to backfill excavations or to increase site grades or elevations may be comprised of excavated on-site soil/fill or off-site soil/fill. The criteria under which these materials may be used as subgrade backfill are presented below.

- **Excavated, On-Site Soil/Fill:** Soil/fill that is excavated from the site, including soils excavated for the purpose of accessing impacted soils (e.g., shallow soils overlying deeper impacted soils) may be used on-site as subgrade backfill provided the analytical results meet the SSALs for VOCs and SVOCs (see Table D-2). On-site soils that exhibit visible or olfactory evidence of contamination, or elevated PID readings (i.e., >5 ppm) shall be staged on plastic sheeting or in roll-off containers covered with plastic sheeting while awaiting analytical results. Soil that does not exhibit evidence of staining, discoloration or elevated PID readings will not require special handling.

- **Off-Site Soil/Fill:** Off-site soil/fill material will 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 criteria identified on Table D-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.

2.2.2 Borrow Source Sampling Requirements

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 D-1. A tiered approach based on the volume of impacted soil/fill being excavated will be used to determine the frequency of characterization sampling. A minimum of one sample will be collected for each 250 cubic yards (CY) up to 1,000 CY of material excavated. If more than 1,000 CY of soil/fill are excavated from the same general vicinity and all samples of the first 1,000 CY meet the criteria listed in Table D-1, the sample collection frequency may be reduced to one sample for each additional 1,000 CY of soil/fill from the same general vicinity, up to 5,000 CY. For borrow sources greater than 5,000 CY, sampling frequency may be reduced to one sample per 5,000 CY, provided all earlier samples met Table D-1 criteria.

Grab samples will be collected for VOC analysis. 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 in accordance with USEPA SW-846 Methodology by a NYSDOH ELAP-certified laboratory.

2.3 Soil/Fill Sampling and Analysis Protocol

Excavated soil/fill that is designated for off-site disposal (i.e., soil/fill that exhibits evidence of staining, discoloration or elevated PID readings as described in Section 2.1 of this plan) shall be sampled in accordance with the requirements of the off-site disposal facility and the appropriate regulatory authorities. In addition, the resulting excavation following removal of impacted soil/fill will require verification sampling and analysis to determine the limits of impact. Both characterization and verification sampling and analysis are discussed in the following sections.

2.3.1 Impacted Soil/Fill Characterization

The following procedure represents a suggested method for determining off-site disposal requirements for impacted soil/fill designated for off-site disposal. The sampling procedures, frequency and parameter list must be coordinated with the off-site disposal facility prior to undertaking characterization work.

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 cubic yards following receipt of data from four 250 cubic yard stockpiles.

The grab samples will be analyzed by a NYSDOH ELAP-certified laboratory for Target Compound List (TCL) volatile organic compounds (VOCs). The results will be compared to TAGM 3028 and land disposal restrictions (LDR) underlying hazardous constituents (UHCs). Additional parameters may be required for disposal characterization purposes.

If TAGM 3028 and LDR criteria are exceeded, the soil/fill will be transported to a permitted Treatment Storage and Disposal Facility (TSDF). If the analytical results are below these criteria, the soil/fill may be disposed off-site at a permitted solid waste disposal facility.

2.3.2 Verification Sampling

Verification sampling will be performed on the excavation sidewalls and bottom of the excavation after lateral and vertical excavation limits have been achieved and visibly impacted soil/fill has been removed. Lateral and vertical excavation will continue until the Site-Specific Action Levels (SSALs) presented in Table D-2 are met, or NYSDEC agrees that no further excavation is required. All field decisions concerning the limits of excavation shall be approved by the NYSDEC site representative. In general, one sidewall sample will be collected on each of the four sides of the excavation and one sample will be collected from the bottom of the excavation. The samples will be collected by retrieving a discrete sample from across the excavation face. The backhoe bucket will be used to assist in sample collection and avoid the need for confined space entry. For excavations having lengths greater than 100 feet, an additional discrete sample will be collected for each additional 100 feet of excavation length. Verification samples will be analyzed for TCL VOCs and SVOCs in accordance with NYSDEC SW-846 Methodology with a 48-hour turnaround time. The laboratory will be required to furnish an equivalent ASP Category B deliverables package to facilitate data evaluation and preparation of a DUSR by a third-party validation expert. Accordingly, the samples will be analyzed by an NYSDOH ELAP-approved laboratory certified to perform CLP work.

2.4 Groundwater Management

Water removed from excavations and surface water run-in to excavations during redevelopment will be treated on-site prior to discharge to the storm sewer. In general, water removed from excavations will be stored/settled in a portable steel tank (Baker

Open/Closed Top Tank or equivalent), and pumped through a bag or cartridge filter prior to treatment using granular activated carbon (GAC). GAC vessels will be plumbed in series to allow for organic breakthrough monitoring between the lead and lag vessels. Upon completion of excavation work, settled solids remaining in the tank and spent filter bags will be containerized for off-site disposal. Spent GAC will be characterized (TCLP VOC testing) and regenerated off-site, or disposed at a permitted TSDF in accordance with applicable federal and state regulations. The tank will be decontaminated via pressure washing. The property owner will coordinate with the Village to obtain any necessary temporary discharge permits.

2.5 Final Surface Coverage

Vegetative or other (e.g., asphalt, buildings, concrete) surface coverage over the entire redeveloped parcel will be required by the developer or owner as a pre-condition of occupancy. Twelve inches of vegetative soil cover or a minimum of 4-inches of impervious material (e.g., concrete, asphalt) will be placed by the developer prior to occupancy, as per the RD Work Plan. A woven geotextile 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 cover is breached or found to be compromised (e.g., soil erosion) following redevelopment, it shall be replaced in kind. 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

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(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 D-1.

Grass seed used for the final soil cover shall be a perennial seed suitable for northeast climates, the soil type, and the location of the proposed grass area (e.g., full sun, shade). Non-grassed areas (e.g., landscape shrubs/beds) should be covered with chip mulch to mitigate erosion around plantings. Documentation of the source of the chip mulch shall be provided.

2.6 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 D-2 of this Plan.

2.7 Dust Controls

Particulate monitoring will be performed continuously at upwind and downwind locations of the Site during subgrade excavation, grading, and handling activities in accordance with the Community Air Monitoring Plan, presented in Appendix C of the RD Work Plan. 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 haul roads.
- 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.

2.8 Fencing, Access Control, and Signage

The Site is naturally separated from adjacent properties by active streets on three sides (i.e., Franklin, First, and Decatur) and a railroad spur on one side. The Veterans of Foreign Wars (VFW) Post building located on the same city block and southwest of the Site only allows street access to either Franklin or First Streets. Interior temporary fencing shall be erected and maintained as necessary by the property owner as remediation/ redevelopment proceeds to control access to open excavations and construction areas. Temporary fencing will be relocated by the property owner(s) as necessary as development proceeds. All temporary fencing will be posted with "No Trespassing" signs. 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 on-going remediation activities. Site information signs will include, at a minimum, the consultant's name and telephone number.

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 Glenn. 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 will be recorded with the county. The environmental easement will be binding for the current property owner and all subsequent property owners and occupants.

2.10 Notification and Reporting Requirements

The NYSDEC and NYSDOH will be notified that subgrade activities are being initiated a minimum of 5 working days in advance of construction. A NY State Licensed P.E. or his designated representative shall inspect all subsurface excavation work for conformance with this SFMP.

The site Owner shall complete and submit to the NYSDEC an annual report by January 15th of each year. Such annual report shall contain certification that: the institutional 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 shall include a certification that all work was performed in conformance with the SMP.

3.0 HEALTH AND SAFETY PROCEDURES

During redevelopment activities, the developer shall 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 redevelopment work. This will be accomplished through adherence to a written, parcel-specific worker Health and Safety Plan (HASP), prepared in accordance with the regulations contained in OSHA 29CFR 1910.120 and a Community Air Monitoring Plan (CAMP) prepared in conformance with NYSDOH requirements (see Appendix C to the RD Work Plan).

Although Brownfield Cleanup remedial measures are anticipated to reduce the potential for encountering parameters of concern above SSALs, the redevelopment 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 Health and Safety Plan 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.
- 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/parcel 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) as well as on-site receptors not directly involved in redevelopment activities (e.g. businesses or contractors occupying the site prior to final redevelopment). The CAMP will be implemented during redevelopment work involving disturbance or handling of Site soil/fill. The New York State Department of Health Generic CAMP has been included for reference as Appendix D-3 of this Plan.

4.0 REFERENCES

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

2. New York State Department of Environmental Conservation, *Technical and Administrative Guidance Memorandum #4046: Determination of Soil Cleanup Objectives and Cleanup Levels*, January 24, 1994.

TABLES

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TABLE D-1

CRITERIA FOR USE OF OFF-SITE BACKFILL AS SUBGRADE MATERIAL

Appendix D: Soil/Fill Management Plan
Seneca Market I, LLC Site
Watkins Glen, New York

Parameter	Individual Concentration (ppm)	Total Concentration (ppm)
TCL VOCs	-	10
Acetone	0.20	-
Benzene	0.06	-
2-Butanone (MEK)	0.30	-
Carbon Disulfide	2.70	-
Carbon Tetrachloride	0.60	-
Chlorobenzene	1.70	-
Chloroethane	1.90	-
Chloroform	0.30	-
1,1-Dichloroethane	0.20	-
1,1-Dichloroethene	0.40	-
1,2-Dichloroethane	0.10	-
1,2-Dichloroethene (Total)	0.30	-
Ethylbenzene	5.50	-
Methylene Chloride	0.10	-
4-Methyl-2-Pentanone	1.00	-
Tetrachloroethene	1.40	-
1,1,2,2-Tetrachloroethane	0.60	-
Toluene	1.50	-
1,1,1-Trichloroethane	0.80	-
Trichloroethene	0.70	-
Vinyl Chloride	0.20	-
Xylene (Total)	1.20	-
TCL SVOCs	50	500
RCRA Metals (8)		
Arsenic	7.5 or SB	-
Barium	300 or SB	-
Cadmium	1.0 or SB	-
Chromium	10 or SB	-
Lead	SB	-
Mercury	0.1	-
Selenium	2.0 or SB	-
Silver	SB	-
Pesticides/Herbicides	As per TAGM #4046	10
TCL PCBs		
Surface	-	1
Subsurface	-	10

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TABLE D-2

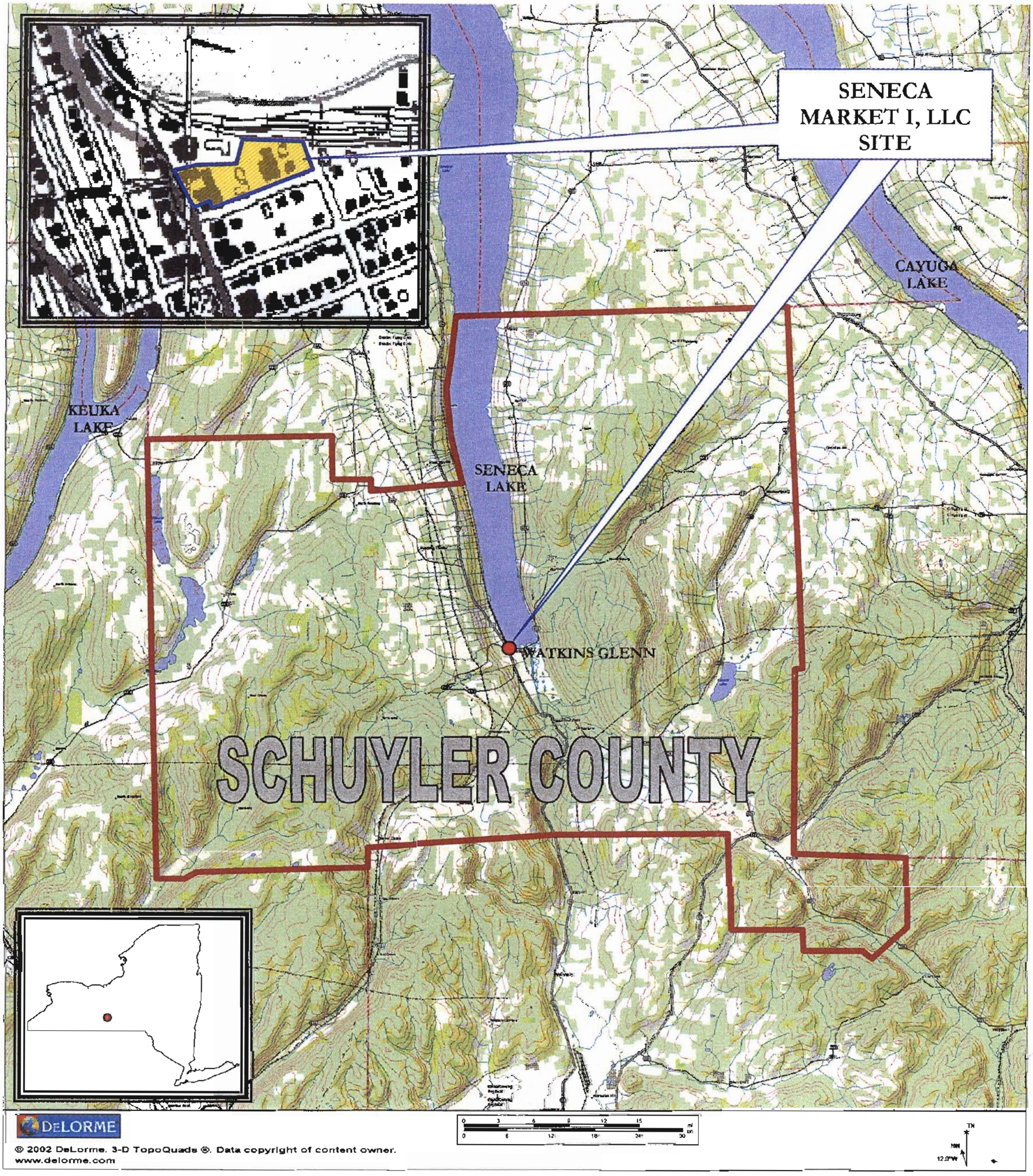
SITE SPECIFIC ACTION LEVELS (SSALs)

Remedial Design Work Plan
Seneca Market I, LLC
Watkins Glen, New York

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

FIGURES

FIGURE D-1



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

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

PROJECT NO.: 0092-002-100

DATE: DECEMBER 2005

DRAFTED BY: BCH

SITE LOCATION AND VICINITY MAP

APPENDIX D - SOIL/FILL MANAGEMENT PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FILEPATH:g:\cad\benchmark\krog\seneca harbor hotel - watkins glen\soil-fill management plan\figure d-1; site location and vicinity map.dwg

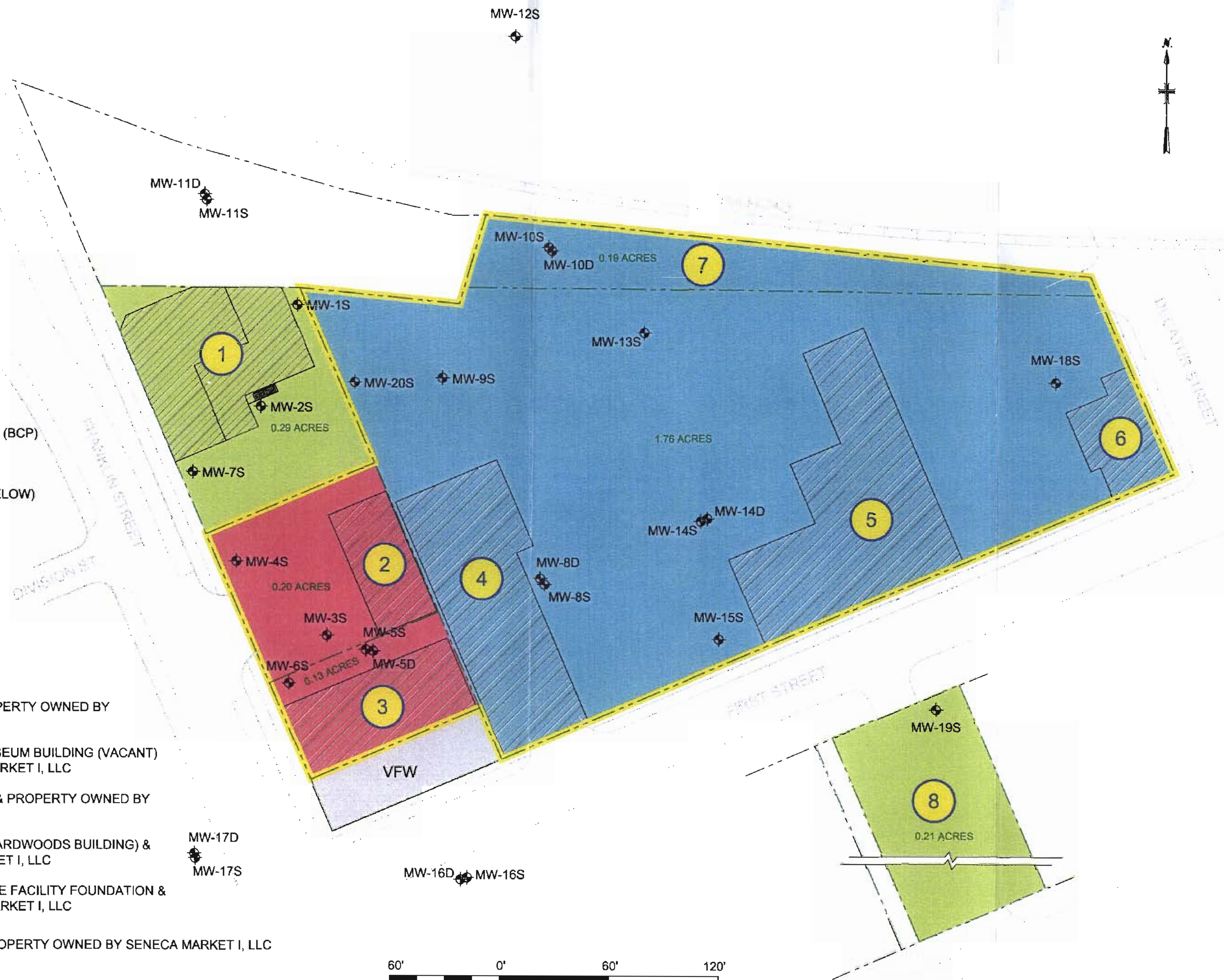
COLOR CODE:

- PARCEL NOT PART OF BCP
- INACTIVE HAZARDOUS WASTE SITE (BCP)
- SENECA MARKET I, LLC SITE (BCP)
- BUILDING OR FOUNDATION (SEE BELOW)

LEGEND:

- BCP PROPERTY BOUNDARY
- PARCEL BOUNDARY
- MW-8S SHALLOW MONITORING WELL
- MW-8D DEEP MONITORING WELL
- 1 SENECA MARKET BUILDING & PROPERTY OWNED BY SENECA MARKET II, LLC
- 2 FORMER GLEN VINTAGE AUTO MUSEUM BUILDING (VACANT) PROPERTY OWNED BY SENECA MARKET I, LLC
- 3 FORMER DRY CLEANER BUILDING & PROPERTY OWNED BY SENECA MARKET I, LLC
- 4 FORMER BUS GARAGE (SENECA HARDWOODS BUILDING) & PROPERTY OWNED SENECA MARKET I, LLC
- 5 REPUTED FORMER WELCH'S GRAPE FACILITY FOUNDATION & PROPERTY OWNED BY SENECA MARKET I, LLC
- 6 FORMER ASPHALT COMPANY & PROPERTY OWNED BY SENECA MARKET I, LLC
- 7 OWNED BY SCHUYLER COUNTY (TO BE PURCHASED BY SENECA MARKET I, LLC)
- 8 LEASED PARCEL (TO BE DEVELOPED AS ADDITIONAL PARKING)

Note: Monitoring well locations are approximate.



60' 0' 60' 120'

SCALE: 1 INCH = 60 FEET
SCALE IN FEET
(approximate)

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

JOB NO.: 0092-002-100

SITE PLAN

APPENDIX D - SOIL/FILL MANAGEMENT PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FIGURE D-2

DATE: DECEMBER 2005
DRAFTED BY: BCH
FILEPATH: g:\cad\benchmark\krog\seneca harbor hotel - watkins glen\soil-fill mongement plan\figure d-2; site plan.dwg

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APPENDIX D-1

FIELD OPERATING PROCEDURES

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SCIENCE, PLLC

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° 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

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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 D-2

MASTER EROSION CONTROL PLAN (MECP)

REMEDIAL DESIGN WORK PLAN
APPENDIX D

SOIL/FILL MANAGEMENT PLAN
APPENDIX D-1

MASTER EROSION CONTROL PLAN (MECP)

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

June 2005
Revised February 2006

0092-002-100

Prepared for:

Seneca Market I, LLC
Watkins Glen, New York

SOIL/FILL MANAGEMENT PLAN
APPENDIX D-1

MASTER EROSION CONTROL PLAN
SENECA MARKET I, LLC SITE

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SOIL/FILL MANAGEMENT PLAN
APPENDIX D-1

MASTER EROSION CONTROL PLAN
SENECA MARKET I, LLC SITE

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Figure D-1-2 Site Plan

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Appendix D-1-a Erosion Control Details

Appendix D-1-b Monitoring, Inspection, and Maintenance Plan

1.0 INTRODUCTION

1.1 Background and History

Seneca Market I, LLC owns approximately 2.28 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 (see Figures D-1-1 and D-1-2). Seneca Market intends to remediate and redevelop the property under the New York State Brownfield Cleanup Program (BCP).

Referring to the parcels outlined on Figure D-1-2, Seneca Market I owns the 0.20-acre and 0.13-acre parcels referred to as the inactive hazardous waste site. These parcels, together with the 1.76-acre and 0.19-acre[1] parcels within this same block, comprise those areas included in the BCP. The 0.2-acre parcel contains the former Glen Vintage Auto Museum (presently unoccupied). The 0.13-acre parcel contains a structure deemed the "former dry cleaning building." This is a two-story brick building that includes two unoccupied single-story brick sheds to the east. The former dry cleaning building is presently occupied by a real estate firm. The western portion of the 1.76-acre parcel contains a large block building that was formerly used as a bus garage and is currently leased to Seneca Hardwoods, a manufacturer of custom flooring. A building foundation, reputedly a remnant of a former Welch's Grape facility, also remains on the 1.76-acre parcel.

Seneca Market II, LLC owns the approximately 0.29-acre parcel located along North Franklin Street. This property, which contains the Seneca Market Building and a multipurpose shopping and office building, is not part of the BCP. The 0.21-acre property south of First Street will be leased by Seneca Market I for use as ancillary parking but is not part of the BCP.

The parcels have a history of use that dates back to the 1860s. The Seneca Market building has formerly been used as a foundry; a flour and grist mill; and most recently retail shops on the first floor and professional office space on the second and third floors. A marble works building was formerly present just south of Seneca Market until it was destroyed in 1970. The former Auto Museum was previously used for miscellaneous

[1] The 0.19-acre parcel along the railroad is currently owned by Schuyler County but will be purchased by Seneca Market I, LLC.

storage, in particular auto parts. The dry cleaning building has mainly been used for retail businesses, a machine shop, and for dry cleaning operations.

1.2 Purpose and Scope

A Soil/Fill Management Plan (SFMP) was prepared as part of the Remedial Design (RD) Work Plan that describes protocols for the proper handling of site soil/fill during development activities. The property owner at the time of development will be responsible for all monitoring, implementation and reporting requirements of the SFMP.

Since erosion control will be a critical component of preventing the potential migration of contaminants onto developed property or off-site during development 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

Redevelopment of the Site will be in accordance with the SFMP and Brownfields Cleanup Agreement (BFA). Since development activities at the Site will not disturb more than five acres 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) does not apply.

3.0 POTENTIAL EROSION CONTROL CONCERNS

Following remediation, redevelopment activities will proceed for commercial uses of the property. Design measures regarding erosion control measures will need to be determined at that time after the development approach of the site has been determined.

Potential areas and items of concern during site re-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 and development 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 developer and will be maintained until they are either no longer needed or until such time as permanent measures are installed and become effective. 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

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. All perimeter silt fences will remain in place until construction activities in an area are completed and vegetative cover has been established. Silt fences will be installed in accordance with the details presented in Appendix D-1-a.

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 of on-site. Bales that have become laden with sediment or that have lost their structural integrity or effectiveness due to the weather will be replaced. Bales should be installed in accordance with the details presented in Appendix D-1-a.

4.2.3 Cautious Placement of Stockpiles

As development occurs, 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 fifty 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. Impacted stockpiles will be underlain and covered with secured polyethylene tarpaulin until proper disposal has been secured.

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. Since the detailed development approach for the site has not been determined, specific design features are yet to be selected. 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 site 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 within 24 hours of a heavy rainfall event and repaired or modified as necessary to effectively control erosion of turbidity problems. 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 D-1-b.

FIGURES

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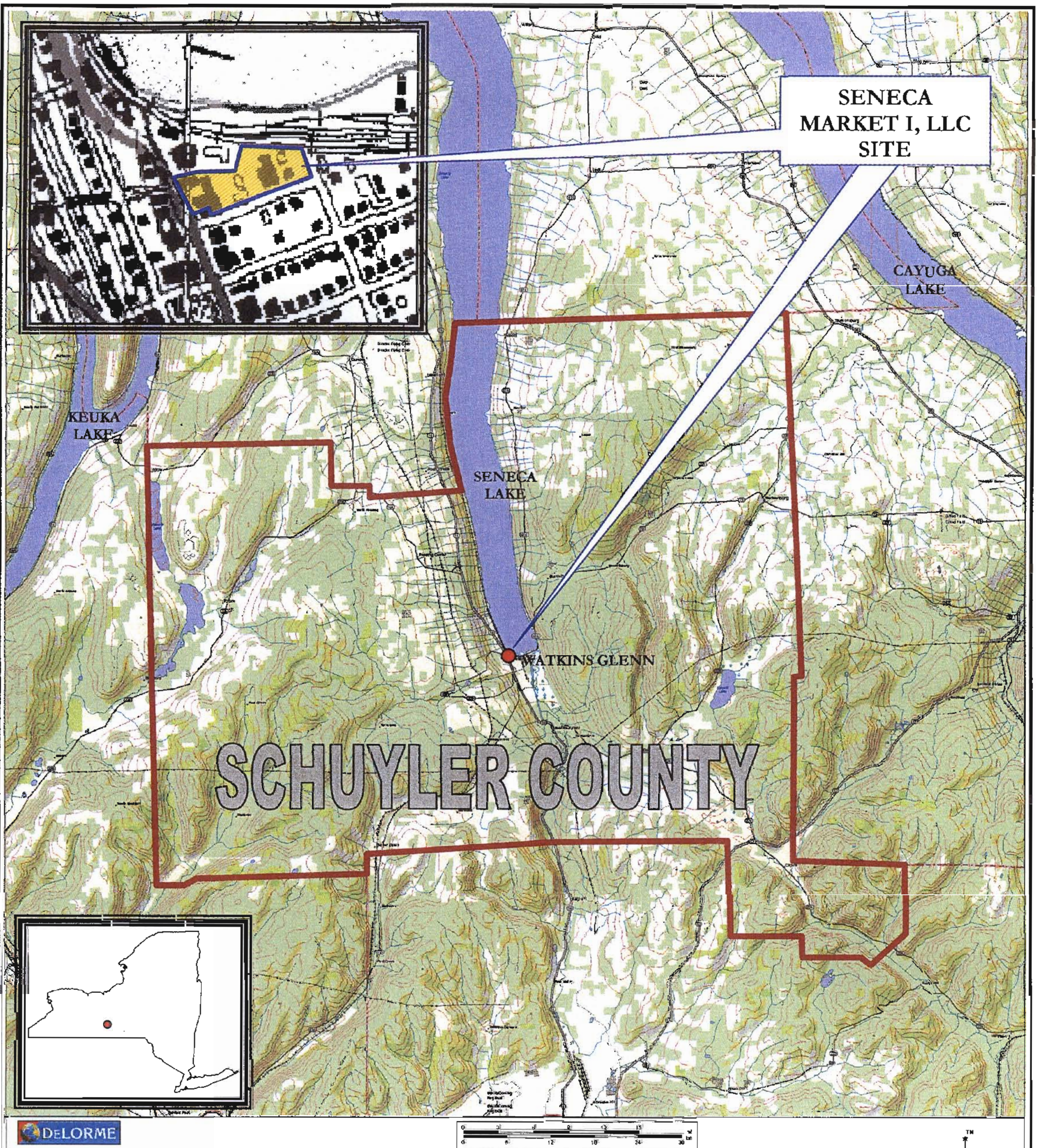
FIGURE D-1-1



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BENCHMARK
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SCIENCE, PLLC

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

PROJECT NO.: 0092-002-100

DATE: DECEMBER 2005

DRAFTED BY: BCH

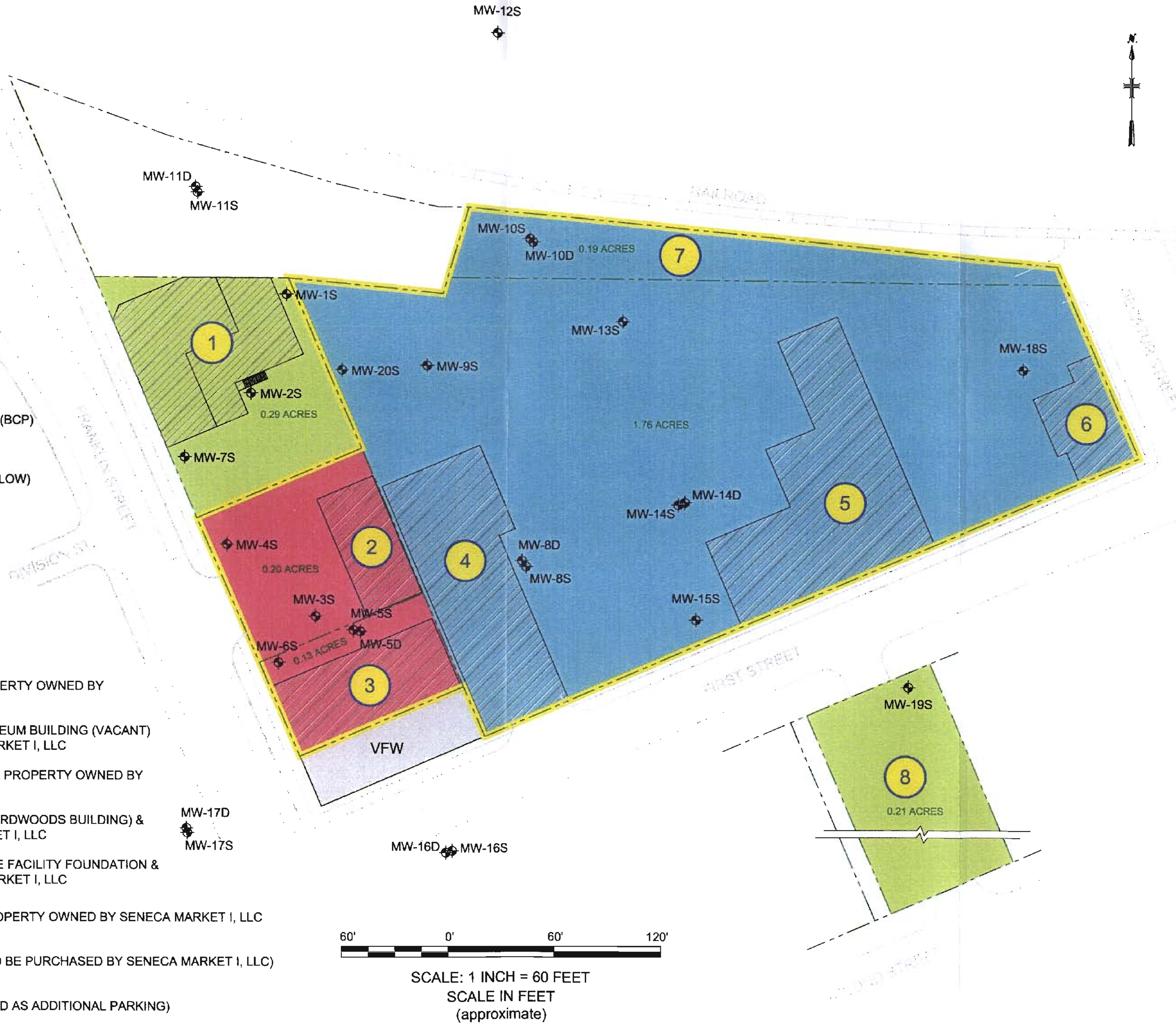
SITE LOCATION AND VICINITY MAP

APPENDIX D-1 - MASTER EROSION CONTROL PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FILEPATH:g:\cad\benchmark\krog\seneca harbor hotel - watkins glenn\soil-fill management plan\master erosion control plan\figure d-1-1) site location and vicinity map.dwg



COLOR CODE:

- PARCEL NOT PART OF BCP
- INACTIVE HAZARDOUS WASTE SITE (BCP)
- SENECA MARKET I, LLC SITE (BCP)
- BUILDING OR FOUNDATION (SEE BELOW)

LEGEND:

- BCP PROPERTY BOUNDARY
- PARCEL BOUNDARY
- MW-8S SHALLOW MONITORING WELL
- MW-8D DEEP MONITORING WELL

1. SENECA MARKET BUILDING & PROPERTY OWNED BY SENECA MARKET II, LLC
2. FORMER GLEN VINTAGE AUTO MUSEUM BUILDING (VACANT) PROPERTY OWNED BY SENECA MARKET I, LLC
3. FORMER DRY CLEANER BUILDING & PROPERTY OWNED BY SENECA MARKET I, LLC
4. FORMER BUS GARAGE (SENECA HARDWOODS BUILDING) & PROPERTY OWNED SENECA MARKET I, LLC
5. REPUTED FORMER WELCH'S GRAPE FACILITY FOUNDATION & PROPERTY OWNED BY SENECA MARKET I, LLC
6. FORMER ASPHALT COMPANY & PROPERTY OWNED BY SENECA MARKET I, LLC
7. OWNED BY SCHUYLER COUNTY (TO BE PURCHASED BY SENECA MARKET I, LLC)
8. LEASED PARCEL (TO BE DEVELOPED AS ADDITIONAL PARKING)

Note: Monitoring well locations are approximate.

60' 0' 60' 120'

SCALE: 1 INCH = 60 FEET
SCALE IN FEET
(approximate)

DATE: DECEMBER 2005
DRAFTED BY: BCH
FILEPATH: g:\cad\benchmark\krog\seneca harbor hotel - watkins glen\soil-fill mongement plan\appendix d\master erosion control plan\figure d-1-2; site plan.dwg

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ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
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BUFFALO, NEW YORK 14210
(716) 856-0599

JOB NO.: 0092-002-100

SITE PLAN

APPENDIX D-1 - MASTER EROSION CONTROL PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FIGURE D-1-2

APPENDIX D-1-a

EROSION CONTROL DETAILS

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

BENCHMARK
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STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition

A temporary barrier of geotextile fabric (filter cloth) 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.

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 are:

Slope Steepness	Maximum Slope Length (Ft)
2:1	50
3:1	75
4:1	125
5:1	175
Flatter than 5:1	200

2. Maximum drainage area for overland flow to a silt fence shall not exceed 1/2 acre per 100 feet of 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. All silt fences shall be placed as close to the area as possible, and the area below the fence must be undisturbed or stabilized.

A detail of the silt fence shall be shown on the plan, and contain the following minimum requirements:

1. The type, size, and spacing of fence posts.
2. The size of woven wire support fences. (OPTIONAL)
3. The type of filter cloth used.
4. The method of anchoring the filter cloth.
5. The method of fastening the filter cloth to the fencing support.

Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. See Figure 4.4 on page 4.12 for details.

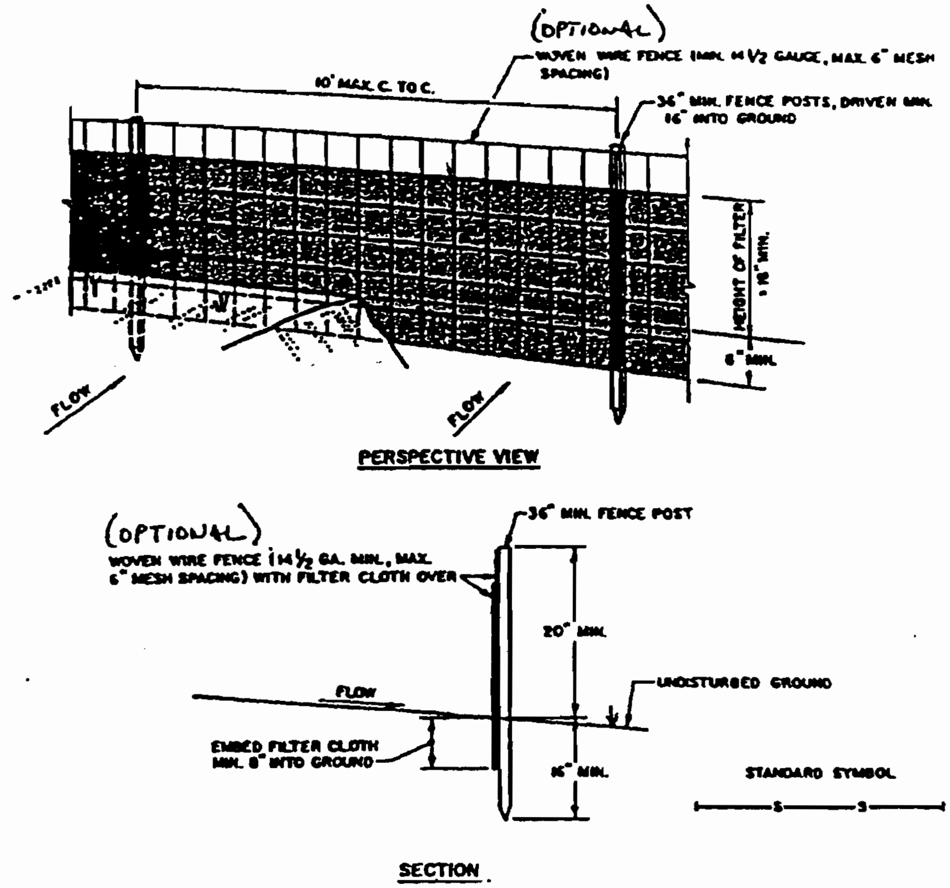
Criteria for Silt Fence Materials

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. Statewide acceptability shall depend on in field and/or laboratory observations and evaluations.

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 Sizw	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 14-1/2 gage with a maximum 6 in. mesh opening, or as approved. (OPTIONAL)
4. Prefabricated Units: Envirofence or approved equal may be used in lieu of the above method providing the unit is installed per manufacturer's instructions.

Figure 4.4
Silt Fence Details



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. (OPTIONAL) WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD

FENCE: WOVEN WIRE, 14½ GA. 6" MAX. MESH OPENING (OPTIONAL)

FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	SILT FENCE	STANDARD DRAWING SF-1

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 are to be used for no more than 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 (feet)
2:1	50	25
2-1/2:1	40	50
3:1	33	75
3-1/2:1	30	100
4:1	25	125

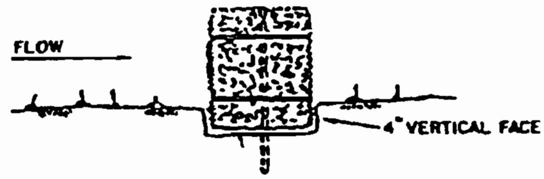
Where slope gradient changes through the drainage area, steepness refers to the steepest slope section contributing to the straw bale dike.

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

Design Criteria

A design is not required. All bales shall be placed on the contour with cut edge of bale adhering to the ground. See Figure 4.3 on page 4.10 or details.

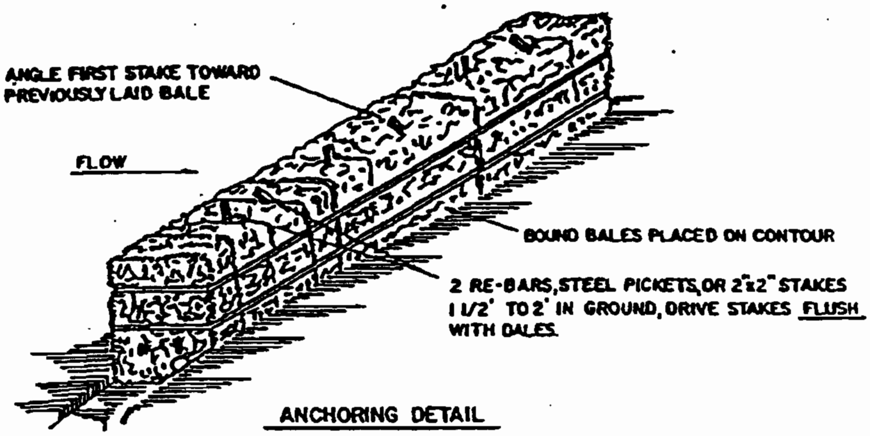
Figure 4.3
Straw Bale Dike Details



BEDDING DETAIL

STANDARD SYMBOL

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



ANCHORING DETAIL

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 PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	STRAW BALE DIKE	STANDARD DRAWING SBD-1

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 4.16 on page 4.34 for details.

The perimeter dike/swale shall not be constructed outside the property lines without obtaining legal easements from effected 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; 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.

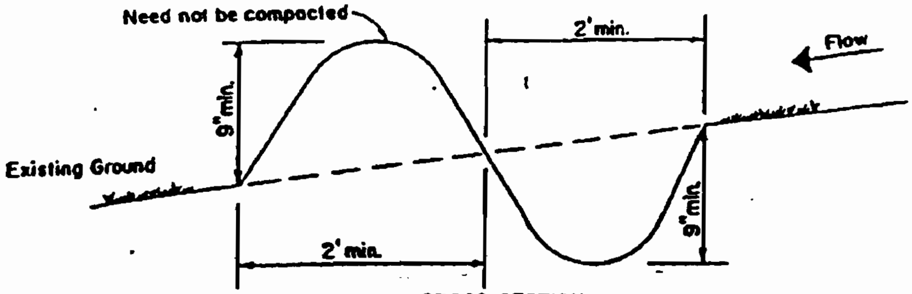
Grade - Dependent upon topography, but shall have positive drainage (sufficient grade to drain) to an adequate outlet. Maximum allowable grade not to exceed 20 percent.

Stabilization - The disturbed area of the dike and swale shall be stabilized within 10 days of installation, in accordance with the standard and specifications for seed and straw mulch or straw mulch only if not in the seeding season.

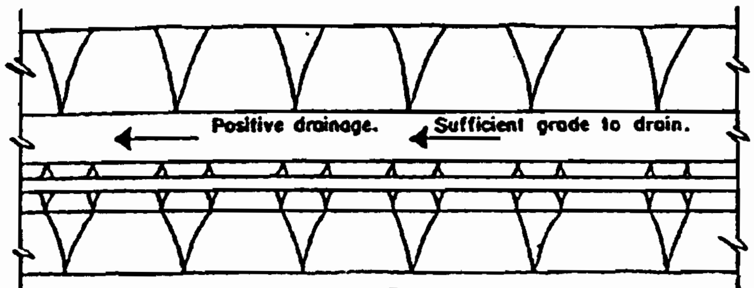
Outlet

1. Perimeter dike/swale shall have an outlet that functions with a minimum of erosion.
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.

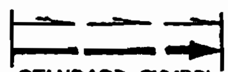
Figure 4.16
Perimeter Swale Dike Detail



CROSS SECTION



PLAN VIEW



STANDARD SYMBOL

<u>CONSTRUCTION SPECIFICATIONS</u>

1. ALL PERIMETER DIKE/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTRUBED 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 SPECIFICATION FOR SEED AND STRAW MULCH, 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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PERIMETER DIKE/SWALE	Standard Drawing PDS-1

STANDARD AND SPECIFICATION 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 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 4.5 on page 4.14 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. 20% Max.	0.5% Min. 20% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specifications for Waterways on page 4.91.

Stabilization

Stabilization of the swale shall be completed within 10 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	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 Jute or Excelsior; Sod, or lined with 2 in. stone
3	5.1-8.0%	Seed and cover with Jute or Excelsior, Sod line with 2 in. stone	Line with 4-8 in. stone or Recycled Concrete Equivalent
4	8.1-20%	Line with 4-8 in. stone or Recycled Concrete Equivalent[1]	Engineering Design

In highly erodible soils, as defined by local approving agency, refer to the next higher slope grade for type of stabilization.

[1] Recycled Concrete Equivalent shall be concrete broken into the required size, and shall contain no steel reinforcement.

Outlet

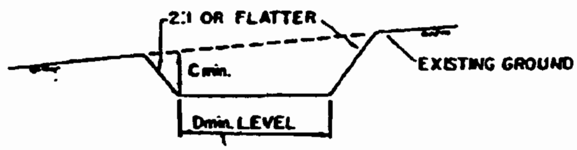
Swale shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

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

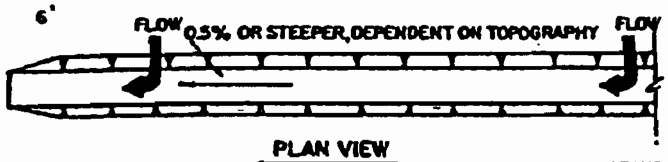
Figure 4.5
Temporary Swale Detail



CROSS SECTION

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

OUTLET AS REQUIRED
SEE ITEM 8 BELOW



PLAN VIEW

STANDARD SYMBOL
A-2 B-3

CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY SWALES 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 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 ON CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE SWALE.
8. STABILIZATION SHALL BE AS PER THE CHART BELOW:

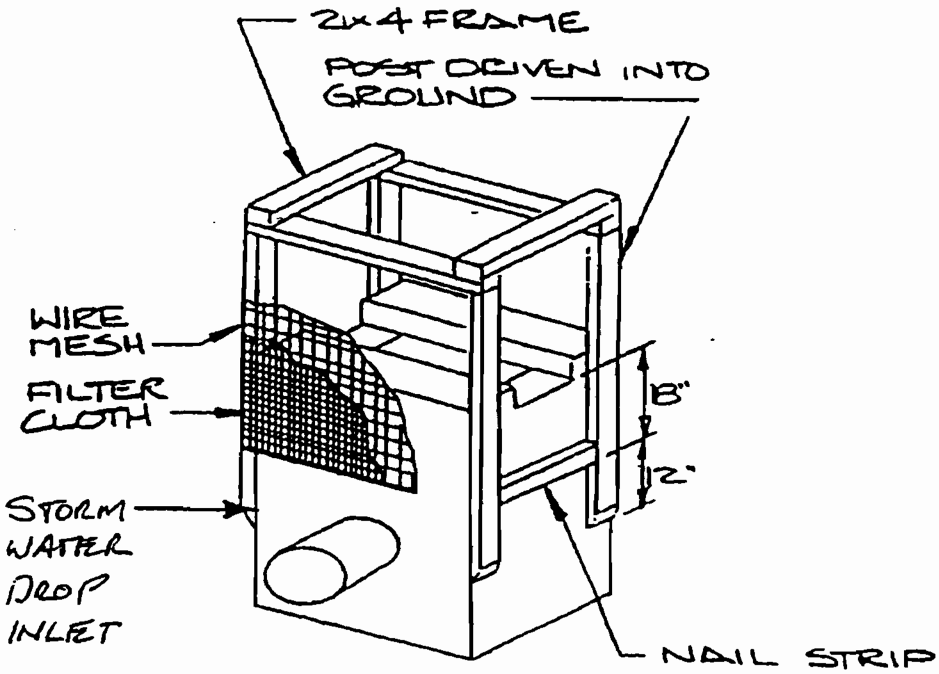
FLOW CHANNEL STABILIZATION

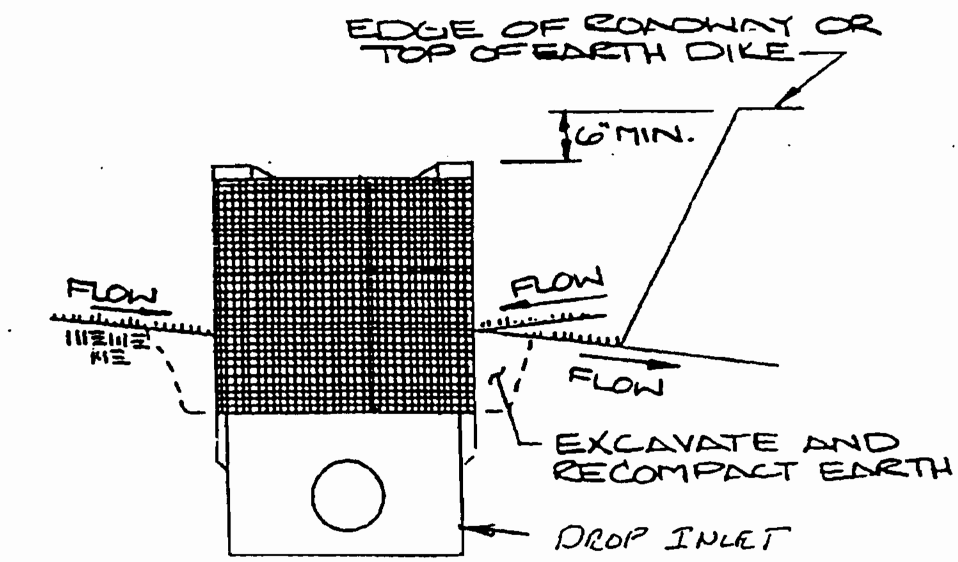
TYPE OF TREATMENT	CHANNEL GRADE	A (5 AC OR LESS)	B (5 AC - 10 AC)
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED USING JUTE OR EXCELSIOR
3	5.1-8.0%	SEED WITH JUTE OR EXCELSIOR; SOD	LINED RIP-RAP 4-8" RECYCLED CONCRETE EQUIVALENT
4	8.1-20%	LINED 4-8" RIP-RAP	ENGINEERED DESIGN

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	TEMPORARY SWALE	STANDARD DRAWING TS-1

SEDIMENT TRAP FOR DROP INLETS





APPENDIX D-1-b

MONITORING, INSPECTION, AND MAINTENANCE PLAN

BENCHMARK
ENVIRONMENTAL
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REMEDIAL DESIGN WORK PLAN
APPENDIX D

SOIL/FILL MANAGEMENT PLAN
APPENDIX D-1

MASTER EROSION CONTROL PLAN
APPENDIX D-1-b

MONITORING, INSPECTION, & MAINTENANCE PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

May 2005
Revised February 2006

0092-002-100

Prepared for:

Seneca Market I, LLC
Watkins Glen, New York

MASTER EROSION CONTROL PLAN
APPENDIX D-1-b

MONITORING, INSPECTION, & MAINTENANCE PLAN
SENECA MARKET I, LLC SITE

IMPLEMENTATION

A. The Contractor at this site shall at all times, properly construct, operate and maintain all erosion controls and features, as part of the construction activities, in accordance with regulatory requirements, and with good construction practices. Erosion control measures and activities will be in accordance with the Master Erosion Control Plan (MECP).

B. This erosion control monitoring, inspection, and maintenance plan has been developed to achieve compliance with the requirements of the MECP. The key elements of the monitoring effort are described herein and include the following:

- Site Inspections and Maintenance;
- BMPs Monitoring;
- Record keeping;
- Review and Modifications; and
- Certification of Compliance.

SITE INSPECTIONS AND MAINTENANCE PRACTICES

A. The temporary erosion control features installed by the Contractor will be maintained by the contractor until no longer needed or permanent erosion control methods are installed.

Site inspections are required every seven days or within 24 hours of a rainfall of 0.5 inches or greater. All disturbed areas, areas for material storage, locations where vehicles enter or exit the site, and all of the erosion and sediment controls that are identified as part of this site's construction storm water and erosion control plan must be inspected. Controls must be in good operating condition until the affected area they protect has been completely stabilized and the construction activity is complete. If a repair is necessary, it must be completed within seven (7) days of receipt of a report or notice, if practical. Inspection for specific erosion and sediment controls will include the following:

- Silt fence will be inspected to determine the following:

  1) Depth;

  2) Condition of fabric;

  3) That the fabric is attached to the posts; and

  4) That the fence posts are firmly in the ground.

- The silt fences will be inspected weekly and within 24 hours of a 0.5-inch or greater storm event.

- Diversion berms, if used, will be inspected and any breaches promptly repaired.

- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and other potential erosion control problems.

- The Contractor shall designate individual(s) that will be responsible for erosion control, maintenance, and repair activities. The designated individual will also be responsible for inspecting the site and filling out the inspection and maintenance report.

MASTER EROSION CONTROL PLAN
APPENDIX D-1-b

MONITORING, INSPECTION, & MAINTENANCE PLAN
SENECA MARKET I, LLC SITE

- Personnel selected for inspection and maintenance responsibilities will receive training. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order.

B. The individual inspecting the site must record any damages or deficiencies on an inspection form (Attachment 1). These forms can be used to request maintenance and repair and to document inspection and maintenance activities. Damages or deficiencies must be corrected as soon as possible after the inspection. Any changes that may be required to correct deficiencies in the MECP should also be made as soon as possible, but in no case later than seven days after the inspection.

C. An Inspection and Maintenance Report Form is attached to record the inspection and assessment (see Attachment 1).

D. A Stabilization Measures Report Form is attached (see Attachment 2) to record the effects of any corrective measures implemented as reported in the Inspection and Maintenance Report Form.

RECORDKEEPING

A. Records Retention

A copy of the MECP and inspection, maintenance and amendment records must be kept at the construction site from the time construction begins until the site is stabilized.

Inspection records shall be retained for a minimum of three years, as detailed in the General Permit.

MASTER EROSION CONTROL PLAN
APPENDIX D-1-b

MONITORING, INSPECTION, & MAINTENANCE PLAN
SENECA MARKET I, LLC SITE

The Plan and related records will be made available upon request to any regulatory agency representatives or members of the public.

REVIEW AND MODIFICATIONS

A. During the course of construction, unanticipated changes may occur which affect this plan such as schedule changes, phasing changes, staging area modifications, offsite drainage impacts and repeated failures of designed controls. Any changes to the activities and controls identified in this plan must be documented and the Plan revised accordingly. An Amendment Report must be completed and attached to the plan (see Attachment 3).

B. Certification of revisions to this plan shall be included at the end of the document.

ATTACHMENT D-1-b-1

INSPECTION & MAINTENANCE REPORT FORM
(SAMPLE)

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

MECP: INSPECTION & MAINTENANCE REPORT FORM

TO BE COMPLETED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL EVENT OF 0.5-INCHES OR MORE

Project: Date:
Client: Report No.:
Job No.: Personnel:
Rainfall (approx. inches): Rainfall Event Personnel:

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 stockpiles of construction materials in approved areas?				
Is there any evidence of spills and resulting cleanup procedures?				
GENERAL EROSION & SEDIMENT CONTROLS				
Are sediment and erosion BMPs installed in the proper location and according to the specifications set out in the SWPPP?				
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				
Is the gravel clean or is it filled with sediment?				
Does all traffic use the perimter road to leave the site?				
Is maintenance or repair required for the perimeter road?				
REFER TO STABILIZATION MEASURES REPORT				

PREPARED BY: **DATE:**

MECP = Master Erosion Control Plan
Appendix D1b-1; Inspection and Maintenance Report Form

ATTACHMENT D-1-b-2

STABILIZATION MEASURES REPORT FORM (SAMPLE)

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

MECP: STABILIZATION MEASURES REPORT FORM

TO BE COMPLETED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL EVENT OF 0.5-INCHES OR MORE

Project: Date:
Client: Report No.:
Job No.: Personnel:
Rainfall (approx. inches): Rainfall Event Personnel:

STABILIZATION MEASURES

Area	Date Since Last Disturbed	Date of Next Disturbance	Stabilized? Yes/No	Stabilized With	Condition

SAMPLE

STABILIZATION REQUIRED:

TO BE PERFORMED BY: **ON OR BEFORE:**

PREPARED BY: **DATE:**

MECP = Master Erosion Control Plan
Appendix D1b-2; Stabilization Measures Report Form

ATTACHMENT D-1-b-3

AMENDMENT REPORT
(SAMPLE)

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

MECP: AMMENDMENT REPORT

Project:	Date:
Client:	Report No.:
Job No.:	Personnel:
Rainfall (approx. inches):	Rainfall Event Personnel:

CHANGES REQUIRED TO THE SWPPP:

REASONS FOR CHANGES:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are signification penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PREPARED BY: **DATE:**

APPENDIX D-3

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

APPENDIX D-3

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.

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

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 E

CITIZEN PARTICIPATION PLAN

New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan
for
Seneca Market I, LLC Site
Seneca Harbor Hotel

Site #8-49-002
2-20 North Franklin Street
Watkins Glen
Schuyler County, New York

February 2006

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* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's remedial process.

Applicant: **Seneca Market I, LLC and Seneca Market II, LLC ("Applicant")**
Site Name: **Seneca Harbor Hotel ("Site")**
Site Number: **8-49-002**
Site Address: **2-20 North Franklin Street, Watkins Glen, NY 14891**
Site County: **Schuyler**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) is designed to encourage the private sector to investigate, remediate (cleanup) and redevelop brownfields. A brownfield is any real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal and financial burdens on a community. If the brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants accepted into the BCP as they conduct brownfield site remedial activities. The BCP contains strict investigation and remediation (cleanup) requirements, ensuring that cleanups protect public health and the environment based on the intended use of the brownfield site. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use. For more information about the BCP, go online at: www.dec.state.ny.us/website/der/bcp.

2. Citizen Participation Plan Overview

A Citizen Participation (CP) Plan provides members of the affected and interested public with information about how NYSDEC will inform and involve them during the investigation and remediation of a site under the BCP.

This CP Plan has been developed for the site under the BCP. Appendix D contains a map locating the site. NYSDEC is committed to informing and involving the public concerning the investigation and remediation of the site. This CP Plan describes the public information and involvement program that will be carried out with assistance from the Applicant.

Appendix A of this CP Plan identifies NYSDEC project contact to whom the public may address questions or request information about the site's remedial program. The locations of the site's document repositories also are identified in Appendix A. The document repositories provide convenient access to important project documents for public review and comment.

Appendix B contains the brownfield site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and remediation process. The brownfield site contact list includes, at a minimum:

- Chief executive officer and zoning board of each county, city, town and village in which the site is located.

- Residents on and/or adjacent to the site.

- The public water supplier that services the area in which the site is located.

- Any person who has requested to be placed on the site contact list.

- The administrator of any school or day care facility located on and/or adjacent to the site for purposes of posting and/or dissemination at the facility.

- Document repositories and their contacts.

The brownfield site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project, including notifications of upcoming remedial activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

The brownfield site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact identified in Appendix A.

Appendix C identifies the CP activities that have been and will be conducted during the site's remedial program.

The CP activities are designed to achieve the following objectives:

- Help the interested and affected public to understand contamination issues related to a brownfield site, and the nature and progress of an Applicant's efforts, under State oversight, to investigate and, if appropriate, remediate a brownfield site.

- Ensure open communication between the public and project staff throughout a brownfield site's remedial process.

- Create opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a brownfield site's investigation and remediation.

This CP Plan may be revised due to changes in major issues of public concern or in the nature and scope of remedial activities. Modifications may include additions to the site contact list, updates to major issues of concern to the public, and changes in planned citizen participation activities. The public is encouraged to discuss its ideas and suggestions about the citizen participation program with the project contact listed in Appendix A.

3. Site Information

Site Description

Seneca Market I, LLC owns approximately 2.28 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 intends to remediate and redevelop the property under the New York State Brownfield Cleanup Program (BCP).

Referring to the parcels outlined on the site map in Appendix D, Seneca Market I owns the 0.20-acre and 0.13-acre parcels referred to as the inactive hazardous waste site. These parcels, together with the 1.76-acre and 0.19-acre[1] parcels within this same block, comprise those areas included in the BCP. The 0.2-acre parcel contains the former Glen Vintage Auto Museum (presently unoccupied). The 0.13-acre parcel contains a structure deemed the "former dry cleaning building." This is a two-story brick building that includes two unoccupied single-story brick sheds to the east. The former dry cleaning building is presently occupied by a real estate firm. The western portion of the 1.76-acre parcel contains a large block building that was formerly used as a bus garage and is currently leased to Seneca Hardwoods, a manufacturer of custom flooring. A building foundation, reputedly a remnant of a former Welch's Grape facility, also remains on the 1.76-acre parcel.

Seneca Market II, LLC owns the approximately 0.29-acre parcel located along North Franklin Street. This property, which contains the Seneca Market Building and a multipurpose shopping and office building, is not part of the BCP. The 0.21-acre property south of First Street will be leased by Seneca Market I for use as ancillary parking but is not part of the BCP.

The Site is located in an urban setting and is surrounded by a mixture of residential and commercial properties. The commercial properties include retail, medical, service, recreational, and professional uses.

Site History

The parcel along North Franklin Street currently contains three structures: the Seneca Market building, the former Glen Vintage Auto Museum (currently unoccupied), and a vacant building (formerly a dry cleaner. A larger building further east was previously used as a bus maintenance garage and is currently leased to Seneca Hardwoods.

Seneca Market I (hereafter referred to as Seneca Market) plans to redevelop the approximately 2.57-acre site as a hotel complex. An additional 0.21-acre property south of First Street will also be incorporated in the plan to provide space for ancillary parking. With the exception of the Seneca

1 The 0.19-acre parcel along the railroad is currently owned by Schuyler County but will be purchased by Seneca Market I, LLC.

Market building, all buildings and foundations within this entire site will be demolished to facilitate redevelopment efforts. Areas within the site that are not incorporated into the hotel or related structures will be covered by asphalt parking areas, driveway and landscaping.

The parcels have a history of use that dates back to the 1860s. The Seneca Market building has formerly been used as a foundry; a flour and grist mill; and most recently retail shops on the first floor and professional office space on the second and third floors. A marble works building was formerly present just south of Seneca Market until it was destroyed in 1970. The former Auto Museum was previously used for miscellaneous storage, in particular auto parts. The vacant building has mainly been used for retail businesses, an automobile parking garage, a machine shop, and for dry cleaning operations.

Despite the remedial activities completed to-date, residual chlorinated organic contaminant concentrations exceeding remedial action objectives remain. In particular, three such areas exist beneath and to the east of the side (north) door of the former dry cleaning building; one outside the building at a depth of 0-4 feet below ground surface (bgs), another is located beneath the building at a depth of 4-6 feet bgs, and one is located beneath and adjacent to the building at depths greater than 6 feet bgs. In light of the site hydrogeology, it is likely that other small, isolated pockets with high levels of contamination may exist elsewhere beneath and outside the building.

In addition, petroleum-related contamination in soil and groundwater is suspected to exist beneath the former bus garage on the Site. Petroleum contamination may also exist on the eastern portion of the Site proximate to the potential source areas that were excavated in the late 1990s. These potential petroleum-impacted areas meet site-specific action levels (SSALs) and therefore will not be remediated except to the extent that they are encountered in the course of subgrade preparation, foundation excavation, and/or subgrade utility excavation associated with site redevelopment.

Environmental History

A 1991 Environmental Assessment of the Site revealed that groundwater under the Site (i.e., 20 Franklin Street at the corner of North Franklin and First) was contaminated with chlorinated organic compounds. Therefore, the NYSDEC added the site to its official list of inactive hazardous waste sites as a Class 2 site. A classification of 2 means the site poses a significant threat to public health and/or the environment and action is required. The inactive hazardous waste site encompasses the 0.13-acre parcel, including the former dry cleaner building, and a portion of the 0.20-acre parcel. A Remedial Investigation/Feasibility Study (RI/FS) performed and completed in 1993 by URS Consultants under a Standby Contract with the NYSDEC delineated the extent of soil and groundwater contamination as a result of former dry cleaning operations on-site from 1976 to 1988 and on surrounding parcels.

URS subsequently designed remediation systems to treat soil and groundwater, as required by the Record of Decision (ROD) signed in 1994. The remediation system included a soil vapor extraction (SVE) system to treat the shallow soil and a groundwater treatment system to extract and treat groundwater adjacent to the former dry cleaner. The subsequent remediation was performed from

1996 to 2001. Treatment systems at the site have been discontinued as the ROD called for the SVE System to operate until soil cleanup objectives were achieved, and for the Groundwater Extraction System to operate for five years or until asymptotic contaminant concentrations were detected in monitoring wells. Low levels of chlorinated solvents still exist in soil and groundwater across the site and higher levels beneath existing buildings proximate to the source area.

In 1998/1999, URS performed additional soil investigations and cleanup technology feasibility studies to evaluate the deeper soil contamination. It was concluded that chlorinated organic compounds remained on-site in a small area directly adjacent to and outside the former dry cleaning building, as well as beneath the dry cleaners at depths greater than 16 feet. A chemical oxidation pilot study conducted from March through May 2000 significantly reduced the mass of chlorinated contaminants in Site soils. Despite the reduction, localized areas with residual contamination still remain concentrated at the depth of 4 to 6 feet within the subsurface clay below the building. In March 2004, an active venting system was installed within the former dry cleaner building to control the potential indoor migration of vapors from the residual contamination. As well, deed restrictions were placed on the property to prevent usage of groundwater and contact with residual soil contamination.

In addition, a Phase I Environmental Site Assessment (ESA) was performed in November 1991 for the parcels on the eastern portion of the subject property. The ESA identified several potential environmental conditions including possible underground storage tanks, drums, an inoperable piston arrangement for a hydraulic lift, and oil spills near the corner of First and Decatur Streets. Petroleum hydrocarbons, lower levels of chlorinated hydrocarbons, and several elevated inorganic compounds related to the above described conditions were detected in the soil and groundwater during the RI/FS. Two areas on the larger parcel that contained soil heavily contaminated with benzene, toluene, ethylbenzene, and xylene (BTEX) were excavated and bioremediated off-site in the late 1990s. As such, residual BTEX contamination in soil and groundwater may exist proximate to these historic source areas. In addition, the RI identified BTEX contamination in soil/fill and groundwater beneath the former bus garage near the former dry cleaner building (i.e., monitoring well MW-8S). While SVE and/or in-situ oxidation treatment of the chlorinated organic impacted soils may have partially addressed the BTEX impacted soils, there is likely residual BTEX contamination in soil/fill beneath the former bus garage.

4. Remedial Process

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants.

The Applicant in its Application proposes that the Site will be used for restricted purposes. To achieve this goal, the Applicant will conduct remedial activities at the Site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement provides the responsibilities of each party in conducting a remedial program at the Site.

NYSDEC determines whether the Site poses a significant threat to public health and/or the environment. If NYSDEC determines that the Site is a "significant threat," a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying community group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the Site and the development/implementation of a remedy.

For more information about the TAG Program and the availability of TAGs, go online at: www.dec.state.ny.us/website/der.

After NYSDEC approves the RI Report, the Applicant will be able to develop a Remedial Work Plan. The Remedial Work Plan describes how the Applicant would address the contamination related to the Site.

The public would have the opportunity to review and comment on the remediation proposal. The Site contact list would be sent a fact sheet that describes the Remedial Work Plan and announces a 45-day public comment period. NYSDEC would factor this input into its decision to approve, reject or modify the Remedial Work Plan.

Approval of the Remedial Work Plan by NYSDEC would allow the Applicant to design and construct the alternative selected to remediate the Site. The Site contact list would receive notification before the start of Site remediation. When the Applicant completes remedial activities, it will prepare a Remedial Action Report that certifies that remediation activities have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the remediation is protective of public health and the environment for the intended use for the Site. The Site contact list would receive a fact sheet that announces the completion of remedial activities and the review of the Remedial Action Report.

NYSDEC would then issue the Applicant a Certificate of Completion. This Certificate states that remediation goals have been achieved, and relieves the Applicant from future remedial liability, subject to statutory conditions. If the Applicant used institutional controls or engineering controls to achieve remedial objectives, the Site contact list would receive a fact sheet discussing such controls.

An institutional control is a non-physical means of enforcing a restriction on the use of real property that limits human or 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 site management at or pertaining to a brownfield site. An example of an institutional control is an environmental easement.

An engineering control is a 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.

Examples include caps and vapor barriers.

Site management will be conducted by the Applicant as required with appropriate NYSDEC oversight.

Activities required to be conducted to inform and involve the public during the site's remedial process are introduced in Section 5 and identified in the chart in Appendix C.

5. Citizen Participation Activities

CP activities that have already occurred and are planned during the investigation and remediation of the site under the BCP are included in Appendix C: Summary of Citizen Participation Activities. NYSDEC will ensure that these CP activities are conducted, with appropriate assistance from the Applicant.

All CP activities seek to provide the public with significant information about site findings and planned remedial activities, and some activities announce comment periods and request public input about important draft documents such as the Proposed Remedial Work Plan.

The CP Plan for the site may be revised based on changes in the site's remedial program or major issues of public concern.

All written materials developed for the public will be reviewed and approved by NYSDEC for clarity and accuracy before they are distributed.

6. Major Issue of Public Concern

This section of the CP Plan identifies major issues of public concern as they relate to the site. Additional major issues of public concern may be identified during the site's remedial process.

Local Residents

The Site Remediation will be carried out by professionals experienced in performing cleanup activities in densely populated areas. All work will be conducted under a site-specific Health and Safety Plan and Community Air Monitoring Program approved by the NYSDEC and NYSDOH. The Site Remediation will be conducted over a limited duration and during normal business hours. Soil excavations will be secured to eliminate the risk of injury. The Site Remediation will be performed with minimal equipment; hence, there will be no change in traffic patterns.

Stakeholders

The Site Remediation must be completed during the spring 2006 construction season so that development can proceed. The sequencing of events is important to the timely redevelopment of the Site.

Appendix A – Project Contacts and Document Repositories

Project Contacts

For information about the site's remedial program, the public may contact the following NYSDEC project contacts:

Mr. David Chiusano
Project Manager
NYSDEC Region 8
625 Broadway, 12th Floor
Albany, NY 12233-7013
(518) 402-9813

Ms. Lisa LoMaestro Silvestri
Citizen Participation Specialist
NYSDEC Region 8
6274 East Avon-Lima Road
Avon, NY 14414
(585) 226-5326

Document Repositories

The document repositories identified below have been established to provide the public with convenient access to important project documents:

Watkins Glen Public Library
610 S. Decatur Street
Watkins Glen NY 14891
Phone: (607) 535-2346
Hours: M, W, F 12-5 & 7-9
T, Th 10-5 & 7-9
Sat. 11-3, Sun. 2-4

NYSDEC Region 8 Office
6274 East Avon-Lima Road
Avon, NY 14414-9519
Attn: Ms. Lisa LoMaestro Silvestri
Phone: (585) 226-5326
(Call for appointment)

Appendix B – Identification of Citizen Participation Activities

Required Citizen Participation Activity	CP activity(ies) occur at this point	Date Completed
Application Process:		
• Prepare brownfield site contact list (BSCL) • Establish document repositories • Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day comment period • Publish above ENB content in local newspaper • Mail above ENB content to BSCL	At time of preparation of application to participate in BCP. When NYSDEC determines that BCP application is complete. The 30-day comment period begins on date of publication of notice in ENB. End date of comment period is as stated in ENB notice. Therefore, ENB, newspaper, and BSCL notices should be provided to the public at the same time.	**May 2005** **May 2005** **Date Published** **Date Published** **Date Mailed**
After Execution of Brownfield Site Cleanup Agreement:		
• Prepare citizen participation (CP) plan	Draft CP Plan must be submitted within 20 days of entering Brownfield Site Cleanup Agreement. CP Plan must be approved by NYSDEC before distribution.	**December 13, 2005**
After Remedial Investigation (RI) Work Plan Received:		
• Mail fact sheet to BSCL about proposed RI activities and announcing 30-day public comment period on draft RI Work Plan	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, comment periods will be combined and public notice will include fact sheet. 30-day comment period begins/ends as per dates identified in fact sheet.	**N/A**
After RI Completion:		
• Mail fact sheet to BSCL describing results of RI	Before NYSDEC approves RI Report	**N/A**
After Remedial Work Plan (RWP) Received:		
• Mail fact sheet to BSCL about proposed RWP and announcing 45-day comment period • Public meeting by NYSDEC about proposed RWP (if requested by public)	Before NYSDEC approves RWP. 45-day comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day comment period.	**July 19, 2005** **Date of Public Meeting**
After Approval of RWP:		
• Mail fact sheet to BSCL summarizing upcoming remedial construction	Before the start of remedial construction	**Date Mailed**
After Remedial Action Completed:		
• Mail fact sheet to BSCL announcing that remedial construction has been completed • Mail fact sheet to BSCL announcing issuance of Certificate of Completion (COC)	At the time NYSDEC approves Final Engineering Report. These two fact sheets should be combined when possible if there is not a delay in issuance of COC	**Date Mailed** **Date Mailed**

Appendix C – Brownfield Site Contact List

(Provided by NYSDEC Region 8 Citizen Participation Specialist – updated April 30, 2004)

LAWRENCE & DOMINIC ROMEO
PO BOX 285
112 BROADWAY
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WATKINS GLEN NY 14891

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T LEFEVER OR CURRENT RESIDENT
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WATKINS GLEN NY 14891

JOYCE VANAMBURG OR CURRENT RESIDENT
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CAROL PETERS OR CURRENT RESIDENT
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PHILADELPHIA PA 19101-1419

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THOMAS & MARY CLIFFORD OR CURRENT RESIDENT
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WATKINS GLEN NY 14891

HI-LITES
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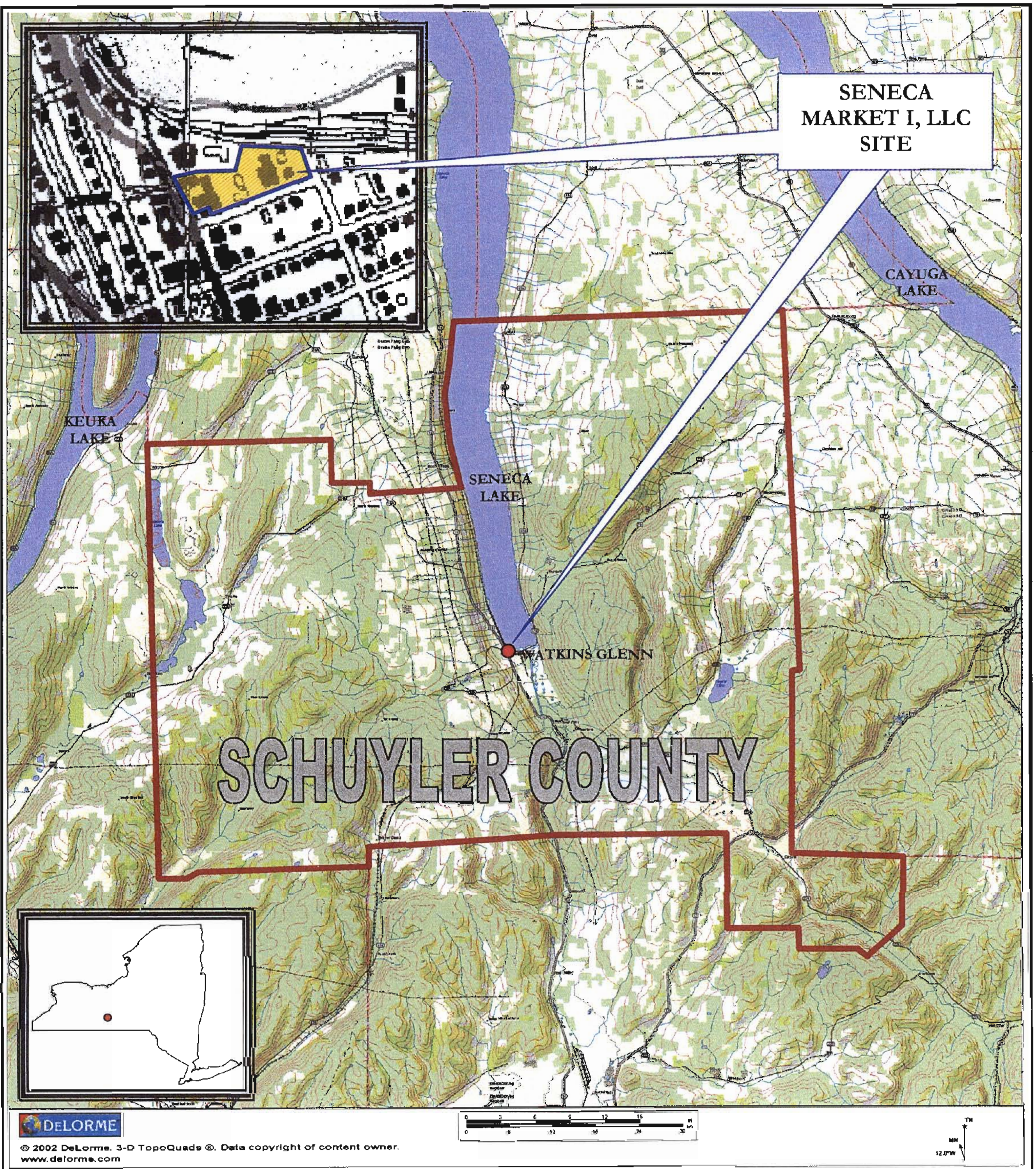
WATKINS GLEN, NY 14891

CHESTER HOLMES
SENECA LAKE JEWELRY & POTTERY
22 NORTH FRANKLIN STREET
WATKINS GLEN, NY 14891

Appendix D – Site Location Maps

Figure D-1; Site Vicinity and Location Map
Figure D-2; Site Plan

FIGURE E-1



FILEPATH:g:\cad\benchmark\krog\seneca harbor hotel - watkins glen\cp plan\figure E-1; site location and vicinity map.dwg

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
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PROJECT NO.: 0092-002-100

DATE: DECEMBER 2005

DRAFTED BY: BCH

SITE LOCATION AND VICINITY MAP

APPENDIX E - CITIZEN PARTICIPATION PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR

SENECA MARKET I, LLC

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

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(716) 856-0599

JOB NO.: 0092-002-100

SITE PLAN

APPENDIX E - CITIZEN PARTICIPATION PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FIGURE E-2

APPENDIX F

OCTOBER/DECEMBER 2004
GROUNDWATER MONITORING RESULTS SUMMARY

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

TABLE 1
SUMMARY OF DETECTED GROUNDWATER ANALYTICAL RESULTS
NORTH FRANKLIN ST. SITE

Location ID			MW-01	MW-03	MW-04	MW-05D	MW-07S
Sample ID			MW-01	MW-03	MW-04	MW-05D	MW-07S
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/22/04	10/21/04	10/21/04	10/21/04	10/21/04
Parameter	Units	Criteria*					
Volatiles							
Vinyl Chloride	UG/L	2	10 U	310 J	10 U	200 U	10 U
Trichloroethene	UG/L	5	4 J	98 J	10	1,100	10 U
Benzene	UG/L	1	10 U	400 U	10 U	200 U	10 U
Tetrachloroethene	UG/L	5	15	50 J	17	2,900	10 U
Ethylbenzene	UG/L	5	10 U	400 U	10 U	200 U	10 U
Xylene (Total)	UG/L	5	10 U	400 U	10 U	200 U	10 U
cis-1,2-Dichloroethene	UG/L	5	30	5,000	12	480	7 J
Methyl tert-Butyl Ether	UG/L	10	10 U	400 U	20	200 U	5 J
Methylcyclohexane	UG/L	-	10 U	400 U	10 U	200 U	10 U
Cyclohexane	UG/L	-	10 U	400 U	10 U	200 U	2 J
Isopropylbenzene	UG/L	-	10 U	400 U	10 U	200 U	10 U

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.Revised April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - The analyte was analyzed for, but not detected. The associated numerical value is at or below the method detection limit.

J - The analyte was positively identified, the quantitation is an estimation.

Only Detected Results Reported

Detection Limits shown are MDL

N:\11173258.00000\DB\PROGRAM\program.mdb
Printed: 04/08/05 12:02:03 PM
[MATRIX] = WG AND [LOGDATE] >= #10/21/04# AND [LOGDATE] <= #12/29/04#

TABLE 1
SUMMARY OF DETECTED GROUNDWATER ANALYTICAL RESULTS
NORTH FRANKLIN ST. SITE

Location ID			MW-08S	MW-09S	MW-12S	MW-16S	MW-19S
Sample ID			MW-08S	MW-09S	MW-12S	MW-16S	MW-19S
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/22/04	10/22/04	12/29/04	10/22/04	10/22/04
Parameter	Units	Criteria*					
Volatiles							
Vinyl Chloride	UG/L	2	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	5	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	1	5 J	10 U	10 U	10 U	10 U
Tetrachloroethene	UG/L	5	10 U	10 U	10 U	10 U	6 J
Ethylbenzene	UG/L	5	49	10 U	10 U	10 U	10 U
Xylene (Total)	UG/L	5	67	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	UG/L	5	10 U	10 U	10 U	10 U	10 U
Methyl tert-Butyl Ether	UG/L	10	10 U	10 U	10 U	10 U	10 U
Methylcyclohexane	UG/L	-	76	10 U	10 U	10 U	10 U
Cyclohexane	UG/L	-	68	10 U	10 U	10 U	10 U
Isopropylbenzene	UG/L	-	8 J	10 U	10 U	10 U	10 U

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.Revised April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - The analyte was analyzed for, but not detected. The associated numerical value is at or below the method detection limit.

J - The analyte was positively identified, the quantitation is an estimation.

Only Detected Results Reported.

Detection Limits shown are MDL

TABLE 1
SUMMARY OF DETECTED GROUNDWATER ANALYTICAL RESULTS
NORTH FRANKLIN ST. SITE

Location ID			MW-20S
Sample ID			MW-20S
Matrix			Groundwater
Depth Interval (ft)			-
Date Sampled			10/22/04
Parameter	**Units**	**Criteria***	
Volatiles			
Vinyl Chloride	UG/L	2	1 J
Trichloroethene	UG/L	5	20
Benzene	UG/L	1	10 U
Tetrachloroethene	UG/L	5	73
Ethylbenzene	UG/L	5	10 U
Xylene (Total)	UG/L	5	10 U
cis-1,2-Dichloroethene	UG/L	5	170
Methyl tert-Butyl Ether	UG/L	10	2 J
Methylcyclohexane	UG/L	-	10 U
Cyclohexane	UG/L	-	10 U
Isopropylbenzene	UG/L	-	10 U

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.Revised April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - The analyte was analyzed for, but not detected. The associated numerical value is at or below the method detection limit.

J - The analyte was positively identified, the quantitation is an estimation.

Only Detected Results Reported

Detection Limits shown are MDL

APPENDIX G

LONG-TERM GROUNDWATER MONITORING PLAN

REMEDIAL DESIGN WORK PLAN
APPENDIX G

LONG-TERM GROUNDWATER MONITORING PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

February 2006 0092-002-100

Prepared for:

Seneca Market I, LLC
Watkins Glen, New York

REMEDIAL DESIGN WORK PLAN
APPENDIX G

LONG-TERM GROUNDWATER MONITORING PLAN
SENECA MARKET I, LLC SITE

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1.2 Intended Future Use of Site 1
1.3 Purpose 1

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REMEDIAL DESIGN WORK PLAN
APPENDIX G

LONG-TERM GROUNDWATER MONITORING PLAN
SENECA MARKET I, LLC SITE

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LIST OF FIGURES

Figure G-1	Site Location and Vicinity Map
Figure G-2	Site Plan
Figure G-3	Proposed Redevelopment Plan & Long-Term Groundwater Monitoring Network

APPENDICES

Appendix G-1	Field Operating Procedures (FOPs)

1.0 INTRODUCTION

1.1 Background and History

Seneca Market I, LLC owns approximately 2.28 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 (see Figures G-1 and G-2). Seneca Market intends to remediate and redevelop the property under the New York State Brownfield Cleanup Program (BCP).

Referring to the parcels outlined on Figure G-2, Seneca Market I owns the 0.20-acre and 0.13-acre parcels referred to as the inactive hazardous waste site. These parcels, together with the 1.76-acre and 0.19-acre[1] parcels within this same block, comprise those areas included in the Brownfield Cleanup Program (BCP).

Seneca Market II, LLC owns the approximately 0.29-acre parcel located along North Franklin Street. This property, which contains the Seneca Market Building and a multipurpose shopping and office building, is not part of the BCP. The 0.21-acre property south of First Street will be leased by Seneca Market I for use as ancillary parking but is also not part of the BCP.

1.2 Intended Future Use of Site

Seneca Market I (hereafter referred to as Seneca Market) plans to redevelop the approximately 2.57-acre site as a hotel complex (see Figure G-3). An additional 0.21-acre property south of First Street will also be incorporated in the plan to provide space for ancillary parking. With the exception of the Seneca Market building, all buildings and foundations within this entire site will be demolished to facilitate redevelopment efforts. Areas within the site that are not incorporated into the hotel or related structures will be covered by asphalt parking areas, driveway and landscaping.

1.3 Purpose

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

[1] The 0.19-acre parcel along the railroad is currently owned by Schuyler County but will be purchased by Seneca Market I, LLC.

- 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 two downgradient monitoring wells with respect to the Superfund drycleaner parcel identified on Figure G-3.

2.0 GROUNDWATER MONITORING PROGRAM

2.1 Monitoring Network

The long-term groundwater monitoring network includes one upgradient monitoring well, designated as MW-16S, and two downgradient monitoring wells, designated as MW-7S and MW-10S (see Figure G-3). Network water level monitoring wells MW-4S, MW-6S, and MW-15S will be used to improve isopotential map resolution. All six wells will be retrofitted with new flush mount surface completions. If any network monitoring well becomes damaged or unusable during remedial construction, it will be replaced within 30 days of completion of remedial construction. The remaining 21 monitoring wells shown on Figure G-3 will be decommissioned in accordance with Benchmark and NYSDEC protocol. Benchmark's Field Operating Procedure (FOP) for well decommissioning is provided in Appendix G-1.

2.2 Groundwater Quality Monitoring

Upon completion of remedial activities, the three monitoring wells identified in Section 2.1 will be sampled semi-annually (i.e., twice per year) for the first two years and annually thereafter. 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.

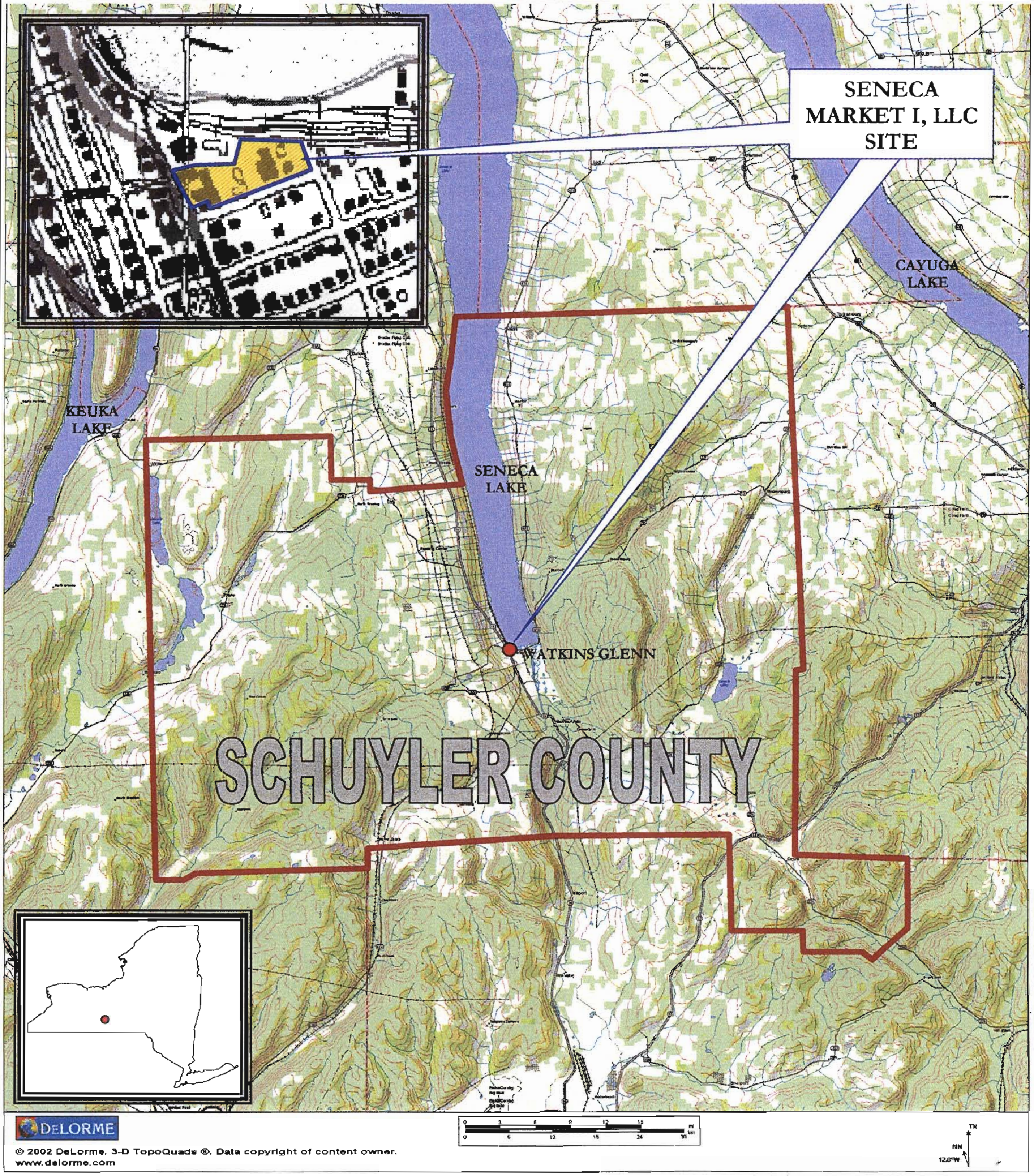
2.3 Reporting

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

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

FIGURES

FIGURE G-1



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PROJECT NO.: 0092-002-100

DATE: FEBRUARY 2006

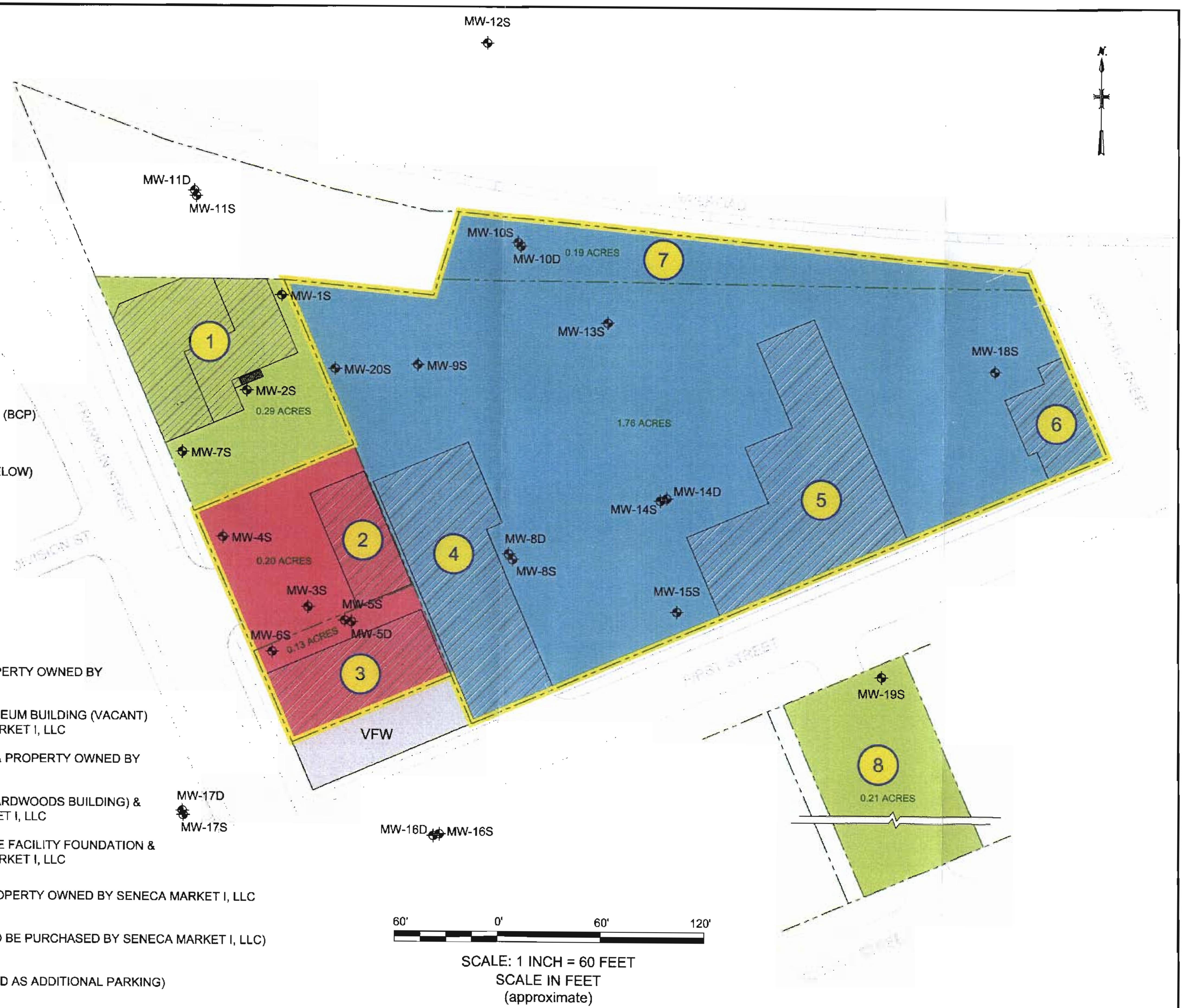
DRAFTED BY: BCH

SITE LOCATION AND VICINITY MAP

APPENDIX G - LONG-TERM GROUNDWATER MONITORING PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC



COLOR CODE:

- PARCEL NOT PART OF BCP
- INACTIVE HAZARDOUS WASTE SITE (BCP)
- SENECA MARKET I, LLC SITE (BCP)
- BUILDING OR FOUNDATION (SEE BELOW)

LEGEND:

- BCP PROPERTY BOUNDARY
- PARCEL BOUNDARY
- MW-8S SHALLOW MONITORING WELL
- MW-8D DEEP MONITORING WELL

1. SENECA MARKET BUILDING & PROPERTY OWNED BY SENECA MARKET II, LLC
2. FORMER GLEN VINTAGE AUTO MUSEUM BUILDING (VACANT) PROPERTY OWNED BY SENECA MARKET I, LLC
3. FORMER DRY CLEANER BUILDING & PROPERTY OWNED BY SENECA MARKET I, LLC
4. FORMER BUS GARAGE (SENECA HARDWOODS BUILDING) & PROPERTY OWNED SENECA MARKET I, LLC
5. REPUTED FORMER WELCH'S GRAPE FACILITY FOUNDATION & PROPERTY OWNED BY SENECA MARKET I, LLC
6. FORMER ASPHALT COMPANY & PROPERTY OWNED BY SENECA MARKET I, LLC
7. OWNED BY SCHUYLER COUNTY (TO BE PURCHASED BY SENECA MARKET I, LLC)
8. LEASED PARCEL (TO BE DEVELOPED AS ADDITIONAL PARKING)

Note: Monitoring well locations are approximate.

DATE: FEBRUARY 2008
DRAFTED BY: BCH

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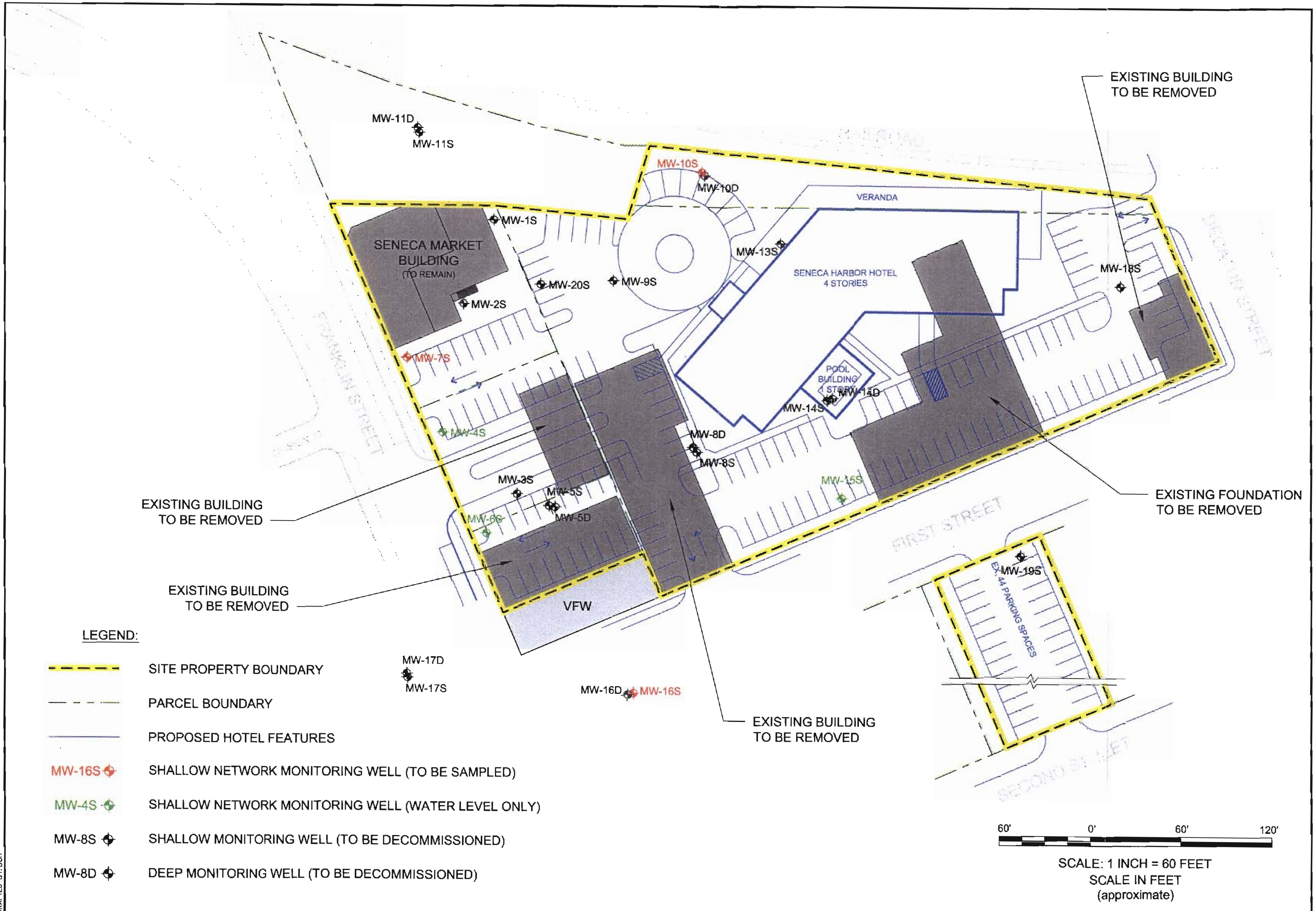
SITE PLAN

APPENDIX G - LONG-TERM GROUNDWATER MONITORING PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FIGURE G-2



G:\CAD\Benchmark\Krog\Seneca Harbor Hotel - Watkins Glen\Remedial Design Work Plan\Appendix G; Long-Term Groundwater Monitoring Plan\Figure G-3; Proposed Redevelopment Plan & Long-Term GWM Network.dwg

DATE: FEBRUARY 2006
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PROPOSED REDEVELOPMENT PLAN & LONG-TERM GROUNDWATER MONITORING NETWORK

APPENDIX G - LONG-TERM GROUNDWATER MONITORING PLAN

SENECA MARKET I, LLC SITE
WATKINS GLEN, NEW YORK

PREPARED FOR
SENECA MARKET I, LLC

FIGURE G-3

APPENDIX G-1

FIELD OPERATING PROCEDURES (FOPS)

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FIELD OPERATING PROCEDURES

Abandonment of Monitoring Wells Procedure

FOP 002.0

ABANDONMENT OF MONITORING WELLS PROCEDURE

PURPOSE

This guideline presents a method for the abandonment and decommissioning of wells that are no longer reliable as competent monitors of formation groundwater. Well abandonment and decommissioning is required in order to remove a potential pathway for the vertical migration of impacted groundwater and/or surface water.

PROCEDURE

1. Examine the existing well to be abandoned/decommissioned and review well construction detail information (if applicable) to determine well depth,, screened interval, diameter, material of composition and other construction details. Establish appropriate equipment requirements for removal of the well.

2. Determine the most suitable seal materials as discussed in the next section.

3. Attempt to remove the well using a drilling rig, by using the following procedures:
   - Attaching the winch line to the well to see if it can be removed by pulling;
   - Using the rig's hydraulics to advance casing incrementally;
   - If a cable tool rig is available, bump back the casing using the cathead and drive block.

3. Upon removal of the well, ream the borehole by advancing the augers approximately one foot beyond the total depth of the well. Rotate the augers at a speed sufficient to remove the construction materials (i.e., filter pack, bentonite seal, etc.) from the borehole annulus (if possible). Backfill the resulting borehole with cement/bentonite grout, by tremie method, to approximately one foot below ground surface. Fill the remaining borehole to match the existing grade elevation and material of construction (i.e., clean native soil, concrete or asphalt, as necessary). Go to Step 10.

4. If the well cannot be removed from the borehole over-drill the borehole and well to approximately two (2) feet below the well depth. Upon reaching the desired depth, remove the well from within the augers and go back to Step 3.

5. If the borehole cannot be reamed out using conventional drilling techniques (i.e., over-drilled), remove or puncture the base plate of the well screen using the drill rig and associated equipment by pounding with the drill rods. Upon filling the well with grout by tremie method, slowly pull the well from the ground surface to allow the grout to evacuate through the bottom of the well to fill the void space created by removal of the well casing. Continue adding grout mix to the well casing, as necessary, to fill the void space to approximately one foot below ground surface. Fill the remaining borehole to match the existing grade elevation and material of construction (i.e., clean native soil, concrete or asphalt, as necessary). Go to Step 10.

   If the driller is unsuccessful at removing or puncturing the base plate of the well due, in part, to well construction materials (i.e., stainless steel or black iron), go to Step 6.

6. Insert a tremie pipe down the well to the bottom and pump a cement/bentonite grout mixture to a depth one to two feet above the top of the screen.

7. Perform a hydraulic pressure test on the portion of the well casing above the grouted screen section. Allow the grout to set up for a period not less than 72 hours before pressure testing of the grouted interval. Place a pneumatic packer a maximum of 4.5 feet above the top of the slotted screen section of the well. The infiltration pressure applied to the packer shall not exceed the pressure rating of the well casing material. If the interval between the top of the grout and the bottom of the packer is not saturated, potable water will be used to fill the interval. A gauge pressure of 5 psig at the well head shall be applied to the interval for a period of 5 minutes to allow for temperature stabilization. After 5 minutes, the pressure will be maintained at 5 psig for 30 minutes. The grout seal shall be considered acceptable if the total loss of water to the seal does not exceed 0.5 gallons over a 30-minute period.

8. If the grout seal is determined to be unacceptable, tremie grout an additional 5 feet of well riser above the failing interval and retest as specified above (see Step 7).

9. If the grout seal is determined to be acceptable, tremie grout the remainder of the well until grout displaces all formation water and a grout return is visible in the well at the surface. Cut off well casing at a depth of five feet or greater below ground surface and backfill the remaining borehole to match the existing grade elevation and material of construction (i.e., clean native soil, concrete or asphalt, as necessary).

10. Record all well construction details and abandonment procedures on the **Well Abandonment/Decommissioning Log** (sample attached).

CEMENT/BENTONITE GROUT MIXTURE

The cement/bentonite grout mixture identified below is generally considered the most suitable seal material for monitoring well advancement and abandonment. Grout specifications generally have mixture ratios as follows:

Grout Slurry Composition (% Weight)

1.5 to 3.0%	-	Bentonite (Quick Gel)
40 to 60%	-	Cement (Portland Type I)
40 to 60%	-	Potable Water

MISCELLANEOUS

All removed well materials (PVC, stainless steel, steel pipe) should be decontaminated (if necessary) as per the project specific **Drilling and Excavation Equipment Decontamination FOP** and removed from the site. The project manager will determine the destination of final disposal for all well materials. All drill cuttings (depending on site protocol) should be placed in DOT-approved 55-gallon drums, labeled and sampled in accordance with Benchmark's field operating procedure **Management of Investigation-Derived Waste** in order to determine proper removal and disposal procedures. The drilling subcontractor will provide any potable water utilized during this field activity from a known and reliable source (see Notes section).

ATTACHMENTS

Well Abandonment/Decommissioning Log (sample)

REFERENCES

New York State Department of Environmental Conservation, July 1988, *Drilling and Monitoring Well Installation Guidance Manual.*

Driscoll, F.G., 1987, *Groundwater and Wells*, Johnson Division, St. Paul, Minnesota, p. 1089.

Benchmark FOPs:
018 Drilling/Excavation Equipment Decontamination Protocols
032 Management of Investigation-Derived Waste

NOTES

Tap water may be used from any municipal water treatment system. The use of an untreated potable water supply is not an acceptable substitute.

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WELL ABANDONMENT/ DECOMMISSIONING LOG

PROJECT INFORMATION	WELL INFORMATION
Project Name:	WELL I.D.:
Client:	Stick-up (fags):
Project Job Number:	Total Depth (fbgs):
Date:	Screen Interval (fbgs):
Weather:	Well Material:
	Diameter (inches):
BM/TK Personnel:	
Drilling Company:	Drilling Company Personnel:
Drill Rig Type:	

DECOMMISSIONING PROCEDURES	
Time	Description of Field Activities

BENCHMARK
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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 Well Purge & Sample Collection Log 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 Well Purge & Sample Collection Log (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*

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LOW FLOW METHOD GROUNDWATER PURGE & SAMPLE COLLECTION LOG

Project Name:	WELL LOCATION:
Project Number:	Sample Matrix: groundwater
Client:	Weather:

WELL DATA:

DATE:	TIME:
Casing Diameter (inches):	Casing Material:
Screened interval (fbTOR):	Screen Material:
Static Water Level (fbTOR):	Bottom Depth (fbTOR):
Elevation Top of Well Riser (fmsl):	Ground Surface Elevation (fmsl):
Elevation Top of Screen (fmsl):	Stick-up (feet):
Standing volume in gallons: [(bottom depth - static water level) x vol calculation in table per well diameter]:	

Volume Calculation

Well Diameter	Volume gal/ft
1"	0.041
2"	0.163
3"	0.367
4"	0.653
5"	1.020
6"	1.469

PURGING DATA: Pump Type:

Is equipment dedicated to location? yes no	Is tubing dedicated to location? yes no
Depth of Sample (i.e. Level of Intake) (fbTOR):	Approximate Purge Rate (gal/min):

Time	Water Level (fbTOR)	Accumulated Volume (gallons)	pH (units)	Temperature (degrees C)	Specific Conductance (uS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Appearance & Odor
	Initial								

SAMPLING DATA:

DATE:	START TIME:	END TIME:
Method: low-flow with dedicated pump	Was well sampled to dryness? yes no	
Initial Water Level (fbTOR):	Was well sampled below top of sand pack? yes no	
Final Water Level (fbTOR):	Field Personnel:	

PHYSICAL & CHEMICAL DATA:

	WATER QUALITY MEASUREMENTS					
Appearance:	pH (units)	TEMP. (°C)	SC (uS)	TURB. (NTU)	DO (ppm)	ORP (mV)
Color:						
Odor:						
Sediment Present?						

REMARKS:

PREPARED BY: