Prepared for:
City of Fulton and Oswego County
Fulton, New York




Work Plan for Remedial Investigation/ Remedial Alternatives Report

ERP Site ID #E7-38-038

60/62 North Fifth Street, City of Fulton, New York

ENSR Corporation
April 2008
Document No.: 10683-007

ENSR | AECOM

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60/62 North Fifth Street, City of Fulton, New York

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Contents

List of Tables

List of Figures

List of Appendices

1.0 Introduction

The City of Fulton (City) was recently awarded funding to conduct a remedial investigation at 60/62 North 5th Street in Fulton, New York (Site), through the New York State Department of Environmental Conservation's (NYSDEC) Environmental Restoration Program (ERP). The purpose of the grant is to provide funding to further investigate the property, characterize the environmental conditions and evaluate remediation alternatives. An additional funding source for the brownfield project is through Oswego County's (County) United States Environmental Protection Agency (USEPA) Brownfields Assessment Grant. The County's and the City's eventual goal for the Site is to eliminate any identified environmental concerns via appropriate remedial action(s), to allow redevelopment of the property. ENSR was selected to conduct the remedial investigation, which will identify environmental concerns, and to provide and evaluate remedial alternatives, if necessary.

The project site is located at 60/62 North Fifth Street (ERP Site ID#E7-38-038) in the City of Fulton, New York. A Site Location Map is included as Figure 1. The site is approximately a quarter acre in size, and consists of gravel and grassy areas. A concrete pad exists on the southeast corner of the property (See Figure 2). The site is located in a residential neighborhood, and is currently vacant.

As part of Oswego County's USEPA Brownfield Assessment Program, ENSR conducted a Phase I Environmental Site Assessment (ESA) in June 2005, in an effort to develop an initial understanding of the environmental conditions associated with the property. The Phase I ESA was conducted in accordance with the scope and limitations of the ASTM Standard Practice E 1527-00 for ESAs and USEPA's Proposed All Appropriate Inquiries (AAI), as described in 40 CFR Part 312. The Phase I study identified the environmental conditions described above and ENSR recommended a Phase II Environmental Site Assessment be completed to further investigate the site as well as to verify that the appropriate closure documentation could be obtained for the subject site.

In August 2003, the subject property was acquired by the City of Fulton as the result of non-payment of taxes. A deteriorated single story concrete block building previously on site was demolished in 2004. During the demolition, the City discovered a 700-gallon underground storage tank (UST), which contained approximately 200 gallons of gasoline product. The UST was removed, along with a limited amount of petroleum-impacted soils. Confirmatory sampling in the tank excavation indicated gasoline impacts remained in the subsurface soils. A spill number was obtained from the NYSDEC (Spill # 0310334). The gasoline-impacted soils that were excavated at the time of the UST removal were reportedly properly disposed of and the excavation was backfilled with clean fill. ENSR could not obtain a copy of the formal tank closure report and it is our understanding that the NYSDEC Spill number remains open for this site.

In September 2004, Strategic Environmental Management, Inc. (SEM) conducted a subsurface investigation to determine if petroleum impacts had migrated to a downgradient property, located on the east side of North Fifth Street. Eight (8) direct-push soil borings were advanced along the eastern edge of North Fifth Street at approximately 25 foot intervals. Continuous soil samples were collected, logged in the field, and screened for volatile organic compounds (VOCs) using a photoionization detector (PID). According to the SEM Subsurface Investigation Report October, 2004 (Appendix A), no visible staining or obvious indicators of contamination was noted. PID readings indicated no detectable concentrations of VOCs. Groundwater samples were collected from four of the eight borings and submitted for VOC analysis; however, no detectable concentrations of petroleum were identified in the groundwater samples.

ENSR understands that this Work Plan and subsequent reports will be required to be consistent with the guidance provided in 6 NYCRR Part 375.4, NYSDEC Division of Environmental Remediation (DER) Municipal Assistance for Environmental Restoration Projects Procedures Handbook and Draft DER-10 Technical Guidance for Site Investigation and Remediation issued by the Division of Environmental Restoration, Brownfield Program.

2.0 Site history and description

2.1 Property characteristics

2.1.1 Land areas

The vacant property is situated in a residential property area. The subject property is approximately 33 feet wide and 100 feet in depth. A small concrete and asphalt pad, approximately 3 feet by 5 feet in dimension, is located in the southeast corner of the property. This is reportedly the former location of the 700-gallon UST. During ENSR's Phase I ESA site inspection, ENSR observed four abandoned tires within a pile of gravel along the southwest corner of the subject property. A Site Plan is included as Figure 2 which indicates the location of the former UST.

According to ENSR's Phase I ESA (June 2005), a structure on the property was demolished in January 2004. The former structure was constructed of concrete block materials and was approximately 30-feet by 60-feet in size.

2.1.2 Utilities

During ENSR's Phase I ESA site inspection, no potable water supply wells, groundwater monitoring wells, pits, ponds, or lagoons were observed on the subject site. The site was serviced by municipal water and municipal sewer. Niagara Mohawk (National Grid) provided the subject property with electricity and natural gas for power and heating purposes. Telephone service was provided by Alltel, Inc of New York. The date of connection to the municipal sewer is unknown.

ENSR also observed one utility pole on the southeast corner of the subject property. No pole-mounted or pad-mounted electrical transformers were located at the subject property during the inspection.

2.1.3 Physical characteristics

Topography on site is relatively flat with a gentle slope to the east-northeast. A United States Geologic Survey (USGS) topographic map is included as Figure 1. Vegetation observed on the site during ENSR's Phase I site inspection was limited to small patches of grass and a tree along the northwest corner of the subject property. ENSR reviewed the Flood Insurance Rate Map for the City of Fulton (Community Panel Number 360649 0002 B) as part of the Phase I ESA. According to ENSR's Phase I ESA Report (June 2005), the subject site is located within Zone C, an area of minimal flooding.

Based on topographic information, ENSR's Phase I ESA Report (2005), and the Site Investigation conducted by SEM (2004) on an adjacent property, groundwater is estimated to be at a depth of four (4) to six (6) feet below ground surface (ft bgs). Local groundwater flow beneath the site is inferred to be in a northwesterly direction toward the Oswego Canal and surface flow is inferred to be in a northeasterly direction towards Waterhouse Creek, which is located approximately 900 feet northeast of the subject site.

ENSR reviewed US Department of Agriculture – Soil Conservation Service's Publication, Soil Survey of Oswego County as part of their Phase I ESA. According ENSR's Phase I ESA Report (2005), the subject property is located upon Amboy series soils. These soils are well-drained soil with a high content of silt and

very find sand. Site soils were categorized as very fine sandy loam, with 2 to 6 percent slopes. The local bedrock formation is Lower Silurian (Medina Group and Queenston Formation).

2.1.4 Surrounding properties

Surrounding property information is derived from ENSR's Phase I ESA Report (June 2005). The subject site is located in a mixed commercial/residential area in the City of Fulton, New York. The site is bounded to the north by a residential property, beyond which is Erie Street and other residential properties. To the east, the site is abutted by North Fifth Street, beyond which are residential properties. The site is bordered to the south by a residential property, beyond which is Seneca Street. An aerial photograph, showing the subject property and surrounding properties, is included as Figure 3.

2.2 Historical review

ENSR conducted a Phase I ESA of the property for Oswego County in June 2005. The Phase I ESA was conducted in accordance with American Society for Testing and Materials (ASTM) Standard Practice E 1527-00 and included a review of available historical and environmental documentation and an on-site inspection of the property and neighboring properties. The Phase I ESA was provided to the NYSDEC in the City's ERP Grant Application.

ENSR's historical review included Sanborn Maps, aerial photographs, city directories and newspaper articles. According to the Phase I ESA Report, previous operations at the site included a brass and metal works facility, a foundry, an automobile paint shop, an automobile warehouse and a construction materials warehouse.

Interviews with key personnel were also conducted during ENSR's Phase I site investigation. Such interviews revealed the discovery of one UST during a building demolition conducted on the property in 2004. Reportedly, the 700-gallon UST was approximately one-quarter full of gasoline and the subject tank leaked, impacting soil at the site. The NYSDEC was notified immediately and the subject property was issued a Spill Reporting Number of NYSDEC Spill # 0310334. Limited amounts of the contaminated soil was removed and replaced with clean fill; however, the petroleum constituent levels, revealed during the UST confirmatory soil sampling event, indicated that further remediation was warranted at the site. Records pertaining to the sampling event were unavailable; furthermore, ENSR was unable to obtain a copy of the formal tank closure report. It is our understanding that the NYSDEC Spill # 0310334 remains open for this site.

In September 2004, SEM conducted a subsurface investigation to determine if petroleum impacts had migrated to a downgradient property, located on the east side of North Fifth Street. Eight (8) direct-push soil borings were advanced along the eastern edge of North Fifth Street at approximately 25 foot intervals. Continuous soil samples were collected, logged in the field, and screened for volatile organic compounds (VOCs) using a photoionization detector (PID). According to the Subsurface Investigation Report (Appendix A), no visible staining or obvious indicators of contamination was noted. PID readings indicated no detectable concentrations of VOCs. Groundwater samples were collected from four of the eight borings and submitted for VOC analysis; however, no detectable concentrations were identified.

3.0 Work plan objectives, scope and rationale

3.1 Key project personnel

Daniel M. Shearer, P.E. of ENSR's Albany, New York office will be assigned as the Project Manager. He will be responsible for delivery of ENSR services and be the prime contact for communication with the City of Fulton and Oswego County. This project will be managed and staffed from ENSR's Syracuse office with management, technical, and support personnel located throughout the Mid-Atlantic Client Service Center, including Syracuse, Albany, and Ithaca, New York. ENSR is licensed to provide professional engineering services in the State of New York by the New York State Education Department.

The following table identifies key personnel assigned to the project and provides contact information.

Table 3-1 Key project personnel

Name	Address	Responsibilities
Jenny Tsolisos, USEPA Brownfields Program Manager	290 Broadway, 18th Floor New York, NY 10007 Ph: (212) 637-4349 tsolisos.jenny@epa.gov	Ms. Tsolisos will represent the USEPA in its review and oversight function, in their financial sponsorship and arbiter on technical matters
Christopher F. Mannes, III PE, NYSDEC Project Manager	615 Erie Blvd. West Syracuse, NY 13204 Ph: (315) 426-7515 cfmannes@gw.dec.state	Mr. Mannes will represent the NYSDEC in its review and oversight function, in its financial sponsorship, and as arbiter on technical matters
Katie Comerford, Public Health Specialist NYSDOH Project Manager	217 S. Salina Street Syracuse, New York 13202 Ph: 315-477-8566 kjc05@health.state.ny.us	Ms. Comerford will represent NYSDOH in its review and oversight function, in its financial sponsorship, and as arbiter on technical matters
Ronald C. Edick, City Engineer	Municipal Building 141 South First Street Fulton, New York 13069-1717 Ph: (315) 592-3454 redick@cityoffulton.com	Mr. Edick will represent the City in the review and oversight of the project, participate in citizen participation activities, and serve as the point of contact for the City
Karen Noyes, Oswego County Senior Planner	46 East Bridge Street Oswego, NY 13126 Ph: (315) 349-8295 knoyes@co.oswego.ny.us	Ms. Noyes will represent the City in the review and oversight of the project, participate in citizen participation activities, and serve as the point of contact for the County
Daniel M. Shearer, PE, ENSR Corporation, Brownfields Program Manager	3 Marcus Boulevard Albany, NY 12205 Ph. (518)453-6444 ext. 222 dshearer@ensr.aecom.com	Mr. Shearer will oversee the project, provide quality control on documents and determinations and mentor the daily task manager.

Name	Address	Responsibilities
Sean Hart, ENSR Corporation, IH Project Manager	5015 Campuswood Drive, Suite 104 East Syracuse, New York 13057 Ph. (315) 432-0506 shart@ensr.aecom.com	Mr. Hart will review contractor and subcontractor compliance with the SAMP and will provide project support where applicable..
Bruce Coulombe, ENSR Corporation, ISC Geologist	1001 West Seneca Street, Ithaca, New York 14850 Ph. (607) 277-5716 bcoulombe@ensr.aecom.com	Mr. Coulombe will provide senior technical oversight to the project and ENSR field staff during investigation activities.
Kathleen Harvey Regional Health and Safety Manager	2 Technology Park Drive Westford, MA 01886 Ph. (978) 589-3000 kharvey@ensr.aecom.com	Ms. Harvey will prepare the site-specific Health and Safety Plan and serve as the Health and Safety point of contact for ENSR staff.
Waverly Braunstein, ENSR Corporation, Senior Project Chemist	2 Technology Park Drive Westford, MA 01886 Ph. (978) 589-3000	Ms. Braunstein will act as Quality Assurance Officer (QAO) and will conduct data validation activities.
Richard Lafond TestAmerica Project Manager	118 Boss Road Syracuse, NY 13211 Ph. (315) 431-0171 Richard.Lafond@testamericainc.com	Mr. Lafond will act as ENSR's point of contact with the contracted laboratory.

Resumes for ENSR personnel have been provided in Appendix B. ENSR will provide subcontractor contact information as an Addendum once the subcontractors have been selected.

3.2 Remedial investigation site activities

3.2.1 Objectives

During the Phase I Investigation, it was noted that a 700-gallon gasoline UST was previously located on-site. The UST was discovered during the demolition of a concrete block warehouse which was previously located on the Site. The UST was approximately one-quarter full of gasoline and the tank exhibited signs of leaking. The NYSDEC was immediately notified, and the subject property was issued NYSDEC Spill# 0310334. The UST was removed by Op-Tech, Inc., and a limited amount of petroleum-impacted soil was removed. However, confirmatory soil sampling revealed that petroleum-impacted soils remained at the site. In addition, the confirmatory soil samples did not include analysis of solvents and metals that may be related to previous site usage as a foundry. A site investigation conducted across North Fifth Street did not reveal any evidence of off-site migration of petroleum impacts associated with the former UST; however, migration along buried utility line pathways may have occurred.

As part of the Environmental Restoration Program, soil vapor must be assessed as an environmental medium at the site. Soil vapor is air existing in void spaces in the soil between the groundwater table and the ground surface. These gases may include vapor of hazardous chemicals such as VOCs. Petroleum-impacted soils remaining at the site, and other potentially impacted soils not presently identified, may be acting as a source area for VOCs in soil gas. VOC vapors in soil gas can enter and accumulate in structures, adversely affecting indoor air quality. Soil vapor sampling and analysis at the Site will confirm or deny the presence of contaminated soil vapors to evaluate the potential for current off-site exposures.

The Remedial Investigation will consist of the installation of soil borings, monitoring wells, and soil vapor sampling points, and the collection of soil, groundwater, and soil vapor samples for analysis. Proposed sampling locations are presented on Figure 2.

Soil and groundwater samples will be will be submitted to an off-site NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory for analysis of the following:

- Target compound list (TCL) volatile organic compounds (VOCs) and Methyl-Tert-Butyl-Ether (MTBE), via USEPA method 8260,
- TCL semi-volatile organic compounds (SVOCs) via USEPA method 8270,
- Target compound list (TAL) metals (including cyanide) via USEPA Methods 6010, 6020, 7470/7471, and 9012A, and
- Polychlorinated biphenyls (PCBs) via USEPA Method 8082.

Soil vapor samples will be submitted to an off-site NYSDOH ELAP certified laboratory for analysis of VOCs via USEPA Method TO-15. Quality Assurance/Quality Control samples will be collected and analyzed in accordance with the site-specific Sampling and Analysis Plan (SAMP).

Prior to the start of subsurface work at the site, ENSR will contact Dig Safely NY to locate public utilities present at the site. Final determination of the location of the borings, monitoring wells, and soil vapor sampling points will be dependent upon the confirmed utility locations.

3.2.2 Soil investigation

As part of the remedial investigation, seventeen (17) subsurface soil samples will be collected from the sampling points indicated in Figure 2 at intervals to be selected at the discretion of the ENSR geologist/engineer. The specific intervals will be dependent on field observations during sampling (odors, discoloration, etc) or elevated photoionization detector (PID) field screening results. Subsurface soil samples will be identified with the following designation: SB-(##) (depth interval in feet below grade) (e.g., SB-01 (2-4')).

One soil sample from each soil boring location will be submitted to an off-site NYSDOH ELAP certified laboratory for analysis of the following:

- TCL VOCs and MTBE via USEPA Method 8260,
- TCL SVOCs via USEPA method 8270,
- Metals (including cyanide) by USEPA Methods 6010, 6020, 7470/7471, and 9012A, and
- PCBs via USEPA Method 8082.

Samples, including Quality Assurance/Quality Control samples, will be collected and analyzed in accordance with the SAMP.

Each soil boring will be advanced utilizing a direct-push soil sampling method (e.g., Geoprobe™); to a depth of approximately 15 feet below ground surface (ft bgs) (anticipated depth to groundwater is 4 to 6 ft bgs) or refusal. If a sampling location is not suitable for direct push methods (due to access limitations or low overhead obstructions) alternate hand sampling methods (i.e., hand auger) will be used; however the depth of such soil borings may be limited. During advancement of each soil boring, continuous samples will be

collected. Once the soil sample has been extracted from the ground, the core tube will be cut along the length to expose the soil.

Representative soil samples from along the core will be collected using disposable plastic trowels into clean, laboratory-supplied soil jars pre-labeled with the soil boring number and depth interval. These sample jars will be staged in a cooler on ice while a portion of the soil sample is collected into a zipper-lock bag for screening with a PID. The PID will be calibrated daily following instructions provided with the unit, and calibration details will be recorded in the field notebook. The soil samples, previously collected in the appropriate sampling containers, corresponding to the highest PID response (or based on other criteria at the discretion of the ENSR field geologist) will be submitted to the laboratory for analysis. The soil sample selected for analysis will be labeled with the date and time of collection and placed in cooler. The soil samples intended for laboratory analysis will be logged onto a chain of custody record, and the custody-sealed cooler will be delivered via overnight courier to a NYSDOH ELAP-certified laboratory for analysis.

3.2.3 Soil vapor investigation

ENSR will conduct a soil vapor investigation at the site, following the soil boring investigation. Results from the soil investigation will be considered in determining the location and depth of soil vapor sampling points. In general, the soil vapor sampling points will be installed around the perimeter of the property to evaluate the potential for current off-site exposure or of-site soil vapor contamination.

Soil vapor samples will be collected in accordance with the NYSDOH Center for Environmental Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (October 2006). Soil vapor probes will be installed at six locations at the site to a depth of 5 ft bgs, to prevent infiltration of outdoor air. An additional soil vapor sample may be collected from beneath the concrete pad associated with the former UST. This sample point is contingent upon the results of the soil investigation. The probes will be installed using direct push technology, and porous backfill material will be used to create a sampling zone of one to two feet in length. The probes will be fitted with inert tubing to the surface, and the probes will be sealed above the sampling zone to prevent outdoor air infiltration. At least 24 hours after soil vapor probes are installed, one to three implant volumes (i.e., the volume of the sample probe and tube) will be purged prior to sample collection, to ensure representative samples. Flow rates for purging and collection will not exceed 0.2 liters per minute, to minimize outdoor air infiltration during sampling. Samples will be collected using Summa® canisters, and a tracer gas will be used at all sampling points to monitor potential outside air infiltration. The area where the sampling point intersects the ground surface will be enclosed in a sealed vessel, and the atmosphere surrounding the sampling point will be enriched with helium gas. A vapor sample from the probe will be analyzed with a portable monitoring device before and after sampling for the compounds of concern. If the tracer gas is present in the field samples at unacceptable concentrations (> 10 % as per NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*) during pre-sampling, the probe seal will be enhanced to reduce the infiltration of outdoor air. As an additional quality control measure, the tracer gas can be added to the list of target analytes reported by the laboratory.

During sampling, weather conditions, sampling depth, purge volumes, volume of vapor extracted, canisters used, vacuum before and after collection, and other observations will be recorded. After sample collection, canisters will be properly packed and shipped under chain of custody to the off-site NYSDOH ELAP certified laboratory for analysis of VOCs via USEPA Method TO-15.

3.2.4 Groundwater investigation

Well Installation

Four (4) groundwater monitoring wells will be constructed of 2-inch diameter Schedule 40 PVC riser, and will be installed via 4.25" diameter hollow stem auger drilling methods with continuous split-spoon sampling. One soil sample, corresponding to the highest PID response (or other criteria at the discretion of the field geologist) will be submitted for laboratory analysis as described in Section 3.2.2.

The wells will be completed with a 10-foot PVC 0.010-inch slot screen; attempts will be made to construct each well so that the screened interval will begin two to three feet above the water table and extend seven to eight feet into the water table. The annular space of the monitoring wells will be filled with a silica sand pack, approximately 2 feet of hydrated granular bentonite, and cement/bentonite grout to 0.5 feet below ground surface in accordance with the SAMP.

The wells will be finished with a protective steel riser and locking cap or flush-mounted manhole-type road box. Soil cuttings will be containerized on-site until waste characterization is completed. After the proper waste characterization has been completed, the soil cuttings will be transported for off-site disposal at appropriate facilities. A licensed surveyor will survey the horizontal and vertical locations of the monitoring wells.

After a minimum of 24 hours after installation (for grout curing), the monitoring wells will be developed in accordance with the SAMP in order to ensure that the wells are in good hydraulic connection with the surrounding water bearing unit, and to ensure that they are suitable for obtaining representative groundwater samples with a minimum of turbidity (suspended fine-grained materials). Development water will be containerized on-site until analytical results are available.

Groundwater Sampling and Analysis

Groundwater purging will be conducted with an adjustable rate peristaltic pump, in accordance with the SAMP. Monitoring wells will be purged using low flow techniques, and groundwater quality parameters (pH, temperature, conductivity, oxidation-reduction potential and dissolved oxygen) will be recorded using an in-line instrument with continuous readout display. Turbidity will be measured either using an in-line instrument or with a separate turbidity meter. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings (±0.1 SU for pH, ±3% for specific conductivity, ±10 mv for oxidation-reduction potential, and ±10% for turbidity and dissolved oxygen). One groundwater sample will be collected from each monitoring well and will be identified with the designation of the well from which the sample was collected (i.e., MW-4).

Samples will be analyzed by an off-site NYSDOH ELAP-certified laboratory for:

- TCL VOCs and MTBE via USEPA Method 8260,
- TCL SVOCs via USEPA Method 8270, TAL metals (including cyanide) by USEPA Methods 6010, 6020, 7470/7471, and 9012A , and
- PCBs via USEPA Method 8082.

Quality Assurance/Quality Control samples will be collected and analyzed in accordance with the SAMP.

Groundwater Level Measurements

Groundwater level measurements will be collected on at least two separate occasions following installation and development: once immediately following development, and once immediately prior to groundwater sampling. Groundwater elevation measurements will be used with well elevation data to determine direction of groundwater flow.

3.2.5 Investigation derived waste (idw)

Investigation Derived Waste (IDW) generated during the investigation will include soil cuttings, purge water, decontamination water, and personal protective equipment (PPE). During investigation activities, the waste will be contained in DOT approved 55-gallon drums pending results of a waste characterization analysis. A sample will be collected from each waste stream (2 samples anticipated) and analyzed for waste characterization parameters, such as corrosivity, flammability, reactive cyanide and sulfide, metals, VOCs, etc. All IDW will be inventoried and properly stored on site for transportation and disposal to the appropriate facility.

3.2.6 Site survey

Following installation, each soil boring and monitoring well will be surveyed for both vertical and horizontal location by a New York State licensed surveyor. Horizontal location will be measured to the nearest 0.10 of a foot and the vertical location will be measured to the nearest 0.01 of a foot. A Metes and Bounds survey will also be prepared for the property.

3.3 Proposed sampling and analysis

The following table presents a summary of the proposed sampling and analysis plan. Proposed sample locations are presented on Figure 2.

Table 3-2 Summary of sampling and analysis plan

Summary of Sampling and Analysis Program 60/62 North Fifth Street Fulton, New York						
Sample Matrix	**Laboratory Analyses**	**Number of Investigative Samples**	**Number of Field QC Samples**		**MS/MSD[c] Samples**	**Total Samples**
			Duplicates [a]	**Rinse Blanks[b]**		
Subsurface Soil [d]	TCL[e] VOCs and MTBE (USEPA 8260)	21	2	2	4	29
	TCL SVOCs (USEPA 8270)	21	2	2	4	29
	PCBs (USEPA 8082)	21	2	2	4	29
	TAL[f] Metals and Cyanide (USEPA 6010B, 7470A and 9012A)	21	2	2	4	29
Soil Vapor	TCL[e] VOCs (TO-15)	6[g]	1	NA	NA	7
Groundwater[h] (~15' bgs)	TCL[e] VOCs and MTBE (USEPA 8260)	4	1	1	2	8
	TCL SVOCs (USEPA 8270)	4	1	1	2	8
	TAL Metals and Cyanide (USEPA 6010B, 7470A and 9012A)	4	1	1	2	8
	PCBs (USEPA 8082)	4	1	1	2	8

Notes:

(a) Field duplicate samples will be collected at a frequency of 1 duplicate per 20 environmental samples.
(b) Rinse blanks will be collected at a frequency of one for each type of equipment used each day a decontamination event is carried out. (~1 per 10 environmental samples).

(c) MS/MSD - Matrix Spikes and Matrix Spike Duplicates will be collected at a frequency of 1 pair (2 samples) per 20 environmental samples.
The number given reflects the total number of samples.

(d) Sample depth/location based on highest PID reading or other location as determined by ENSR field geologist

(e) TCL - Target Compound List excluding pesticides and herbicides.

(f) TAL - Target Analyte List

(g) If the soil investigation reveals impacts around the former UST, an additional soil vapor sample will be collected from beneath the concrete pad.
(h) Trip Blanks will be included with aqueous VOC samples

3.3.1 Sampling rationale

Proposed sample locations are depicted on Figure 2. The sample identifications, depths (if applicable), analytical parameters, and detailed sampling rationale are presented on Table 1. It should be noted that, because this is the initial investigation phase at the property and no previous laboratory analytical data is available, a broad spectrum of analyses will be performed for each sample. This will ensure the most complete characterization of environmental conditions at the site.

Table 3-3 Summary of samples and analysis rationale

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SB-1	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-2	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-3	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SB-4	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-5	Soil	Highest PID or other location as determined by ENSR field geologist	Through concrete pad in area of former UST	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST.	COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-6	Soil	Highest PID or other location as determined by ENSR field geologist	Southeastern corner of the property, adjacent to concrete pad	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST.	COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-7	Soil	Highest PID or other location as determined by ENSR field geologist	East-central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former use of the property for metalworking, automobile painting, and as a foundry.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-8	Soil	Highest PID or other location as determined by ENSR field geologist	Northeast portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the north. Historic uses of properties to the northeast include engine and boat manufacture, and laundry operations.	COCs associated with former site use include VOCs, SVOCs, and metals. COCs associated with the historic use of nearby properties include chlorinated VOCs and metals.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SB-9	Soil	Highest PID or other location as determined by ENSR field geologist	Northern perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the north.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-10	Soil	Highest PID or other location as determined by ENSR field geologist	Northwest perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the west.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-11	Soil	Highest PID or other location as determined by ENSR field geologist	Western perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the west.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-12	Soil	Highest PID or other location as determined by ENSR field geologist	Southwestern perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the west. Characterize vertical and horizontal impacts associated with historic use of the property to the southwest as a tin shop	COCs associated with former site use include VOCs, SVOCs, and metals. COCs associated with former adjacent property use include metals.
SB-13	Soil	Highest PID or other location as determined by ENSR field geologist	Southwestern area of the property.	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the west. Characterize vertical and horizontal impacts associated with historic use of the property to the southwest as a tin shop	COCs associated with former site use include VOCs, SVOCs, and metals. COCs associated with former adjacent property use include metals.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SB-14	Soil	Highest PID or other location as determined by ENSR field geologist	Southern perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the south.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-15	Soil	Highest PID or other location as determined by ENSR field geologist	Southeast portion of the property, adjacent to the concrete pad and location of former UST	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST.	COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-16	Soil	Highest PID or other location as determined by ENSR field geologist	Central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-17	Soil	Highest PID or other location as determined by ENSR field geologist	Central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site.	COCs associated with former site use include VOCs, SVOCs, and metals.
MW-1	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
MW-2	Soil	Highest PID or other location as determined by ENSR field geologist	East-central portion of the property.	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST and former site usage.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead
MW-3	Soil	Highest PID or other location as determined by ENSR field geologist	Southeastern perimeter of property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess upgradient groundwater quality.	Ideally, no COCs will be associated with the upgradient well location; historic uses of properties to the south do not represent RECs.
MW-4	Soil	Highest PID or other location as determined by ENSR field geologist	North-central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST and former site usage.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead
SV-1	Soil Vapor	5 ft bgs	Northeastern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the northeastern portion of the site, as well as determine the potential for off-site migration of any impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SV-2	Soil Vapor	5 ft bgs	Northwestern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the northwestern portion of the site, as well as determine the potential for off-site migration of any impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.
SV-3	Soil Vapor	5 ft bgs	Northwestern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the northwestern portion of the site, as well as determine the potential for off-site migration of any impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.
SV-4	Soil Vapor	5 ft bgs	Southern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the southern portion of the site, as well as determine the potential for off-site migration of any impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.
SV-5	Soil Vapor	5 ft bgs	Eastern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the southern portion of the site, as well as determine the potential for off-site migration of any impacts, particularly along underground utility pathways.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.
SV-6	Soil Vapor	5 ft bgs	Southwestern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the southwestern portion of the site, as well as determine the potential for off-site migration of any impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SV-7 (Contingent)	Soil Vapor	2 inches below slab material	Southeastern portion of the property, below the concrete slab	VOCs	Assess the presence of contaminated soil vapors beneath the concrete pad associated with the UST. Sampling is contingent upon the results of the soil investigation.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern. VOCs associated with the UST would include BTEX and MTBE
MW-1	Ground water	NA	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of groundwater impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.
MW-2	Ground water	NA	East-central portion of the property.	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts to groundwater associated with the former UST and former site usage.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead
MW-3	Ground water	NA	Southeastern perimeter of property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess upgradient groundwater quality.	Ideally, no COCs will be associated with the upgradient well location; historic uses of properties to the south do not represent RECs.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
MW-4	Ground water	NA	North-central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts to groundwater associated with the former UST and former site usage.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead

4.0 Site-specific sampling, analysis and monitoring plan

All work described in this Work Plan for Remedial Investigation/Remedial Alternatives Report will be done in accordance with the Site-Specific Sampling, Analysis and Monitoring Plan (SAMP). The SAMP contains quality assurance/quality control protocols for field sampling, chain of custody, laboratory analysis, and reporting. Data validation requirements are also specified in the SAMP. The SAMP has been provided in Appendix C.

5.0 Health and safety plan

The site-specific Health and Safety Plan (HASP), which addresses remedial investigation activities, was prepared in accordance with the requirements of the Occupational Safety and Health Administration's (OSHA) Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) and incorporates, as appropriate, other OSHA General Industry and Construction Standard requirements. In addition, the HASP includes a Community Air Monitoring Program (CAMP).

The HASP was prepared following an assessment of known physical and chemical hazards present at the site and an evaluation of the risks associated with the assessment. Available site information was examined and adequate warnings and safeguards for field personnel were selected and implemented. All ENSR field personnel and ENSR subcontractors are required to review and sign the HASP before entering the field. The HASP has been provided in Appendix D.

6.0 Citizen participation activities

The Brownfield Program includes an active role for Citizen Participation during the execution of the project. As part of that effort, ENSR has developed a Citizen Participation Plan (CPP). The CPP enables citizens to become informed and participate more fully in the decision making process that may affect their neighborhood. NYSDEC requires several opportunities for citizen involvement during the investigation and cleanup of brownfield sites. The CPP has been provided as Appendix E.

7.0 Reporting and scheduling

7.1 Reporting

Remedial Investigation Report

A Remedial Investigation Report (RI Report) will be prepared summarizing the information generated during implementation of this Work Plan, including tank closures. The report will be prepared in accordance with 6 NYCRR Part 375.4, the NYSDEC Environmental Restoration Projects Procedures Handbook and Draft DER-10 Technical Guidance for Site Investigation and Remediation.

The report will also include the following information and data pertaining to the Site:

- Boring /test pit/field sampling logs;
- Analytical data tables presenting the analytical results for the soil, groundwater, and soil vapor samples including comparisons to appropriate standards, criteria, and guidance (e.g., 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives and NYSDEC Groundwater Standards; New York State does not have any standards, criteria, or guidance values for concentrations of volatile chemicals in subsurface vapors);
- A narrative that summarizes the results of the investigation including a discussion of the physical and analytical results;
- A qualitative human health exposure assessment;
- Figures showing isoconcentrations of groundwater contamination;
- Spider diagrams (small boxes showing contaminant concentrations with arrows pointing to each sample location) showing the concentrations of contaminants of concern;
- Color (or other shading technique) figures showing soil (or soil vapor) contamination concentrations;

In addition, the analytical data for characterization soil samples, groundwater samples and soil vapor samples will be reviewed and a Data Usability Summary Report (DUSR) will be prepared. The DUSR will be incorporated as an appendix to the Remedial Investigation Report.

Remedial Alternatives Report

If the Remedial Investigation data confirms that contamination exists on site, then remedial alternatives will be developed and evaluated as a next step. Alternatives could include excavation and disposal, in-situ treatment, containment, or engineered/institutional controls such as environmental easements. The alternatives will then be evaluated according to 6 NYCRR Part 375.4, NYSDEC DER Municipal Assistance for Environmental Restoration Projects Procedures Handbook and Draft DER-10 Technical Guidance for Site Investigation and Remediation. Based on that evaluation, recommendations will be developed for the site, considering the intended end re-use of the site.

The detailed analysis of alternatives will consider such things as:

- Overall Protection of Human Health and the Environment
- Compliance with Standards, Criteria and Guidance (SCG)
- Short and Long Term Effectiveness

- Reduction of Toxicity, Mobility and Volume
- Feasibility
- Community Acceptance

In any particular area of concern (AOC), there may be a need for further site investigation to allow for a more detailed evaluation of the alternatives. A Remedial Alternatives Report (RAR) will be prepared to document this portion of the project. Depending on the findings of the Remedial Investigation, the RAR may be combined with the Remedial Investigation Report.

7.2 Schedule

The following schedule has been developed assuming Agencies' approval of the IRM and Remedial Investigation Work Plan is received by May 15, 2008. ENSR has allotted for a 45-day Agency review period of the Remedial Investigation and Remedial Alternatives Report.

Table 7-1 Project Schedule

Task	Start Date	Completion Date	Notes
Mail a fact sheet to the Mailing List and announce through local news media the availability of the Work Plan at local repositories.	June 2, 2008	June 6, 2008	To commence within two weeks of receipt of USEPA and NYSDEC approval of Work Plans
Conduct Remedial Investigation	June 9, 2008	June 27, 2008	To commence within four weeks of receipt of USEPA and NYSDEC approval of Work Plans. Estimated up to three weeks in the field.
Prepare and Submit Draft Remedial Investigation Report	August 4, 2008	August 15, 2008	To be submitted within six weeks following the completion of field activities
Prepare and Submit Draft Remedial Alternatives Report	August 18, 2008	September 5, 2008	To be submitted within four weeks of submittal of Draft Remedial Investigation Report
Prepare and Submit Final Remedial Investigation and Remedial Alternatives Report	October 20, 2008	October 31, 2008	Assumed 45-day USEPA and NYSDEC review period. Final RI/RAR to be submitted within two weeks of receipt of USEPA and NYSDEC comments

7.3 Budget

Budget

Based on the scope of work described in this work plan, the following table provides a summary of estimated project costs. ENSR's budget estimates are based on our extensive site investigation and remediation experience and preliminary cost estimates provided by prospective subcontractors. Table 7-2 includes a detailed breakdown of ENSR's tasks by labor, subcontractors and other direct costs.

Table 7-2 Budget

Tasks	Labor	Other Direct Costs	Subcontractors	Subtotals
Environmental Consultant Project Management Tasks and Work Plan Preparation	$22,000	$2,000		$24,000
Site Investigation Activities	$15,000	$2,000	$46,000	$63,000
Site Investigation/Remedial Alternative Report Preparation	$23,000	$2,000		$25,000
Project Totals	**$60,000**	**$6,000**	**$46,000**	**$112,000**
			Original SAC Amount	**$76,500**
			SAC Amendment Request	**$24,300**
			City of Fulton 10% Match	**$11,200**

8.0 References

ENSR Corporation, Phase I Environmental Site Assessment, June 2005.

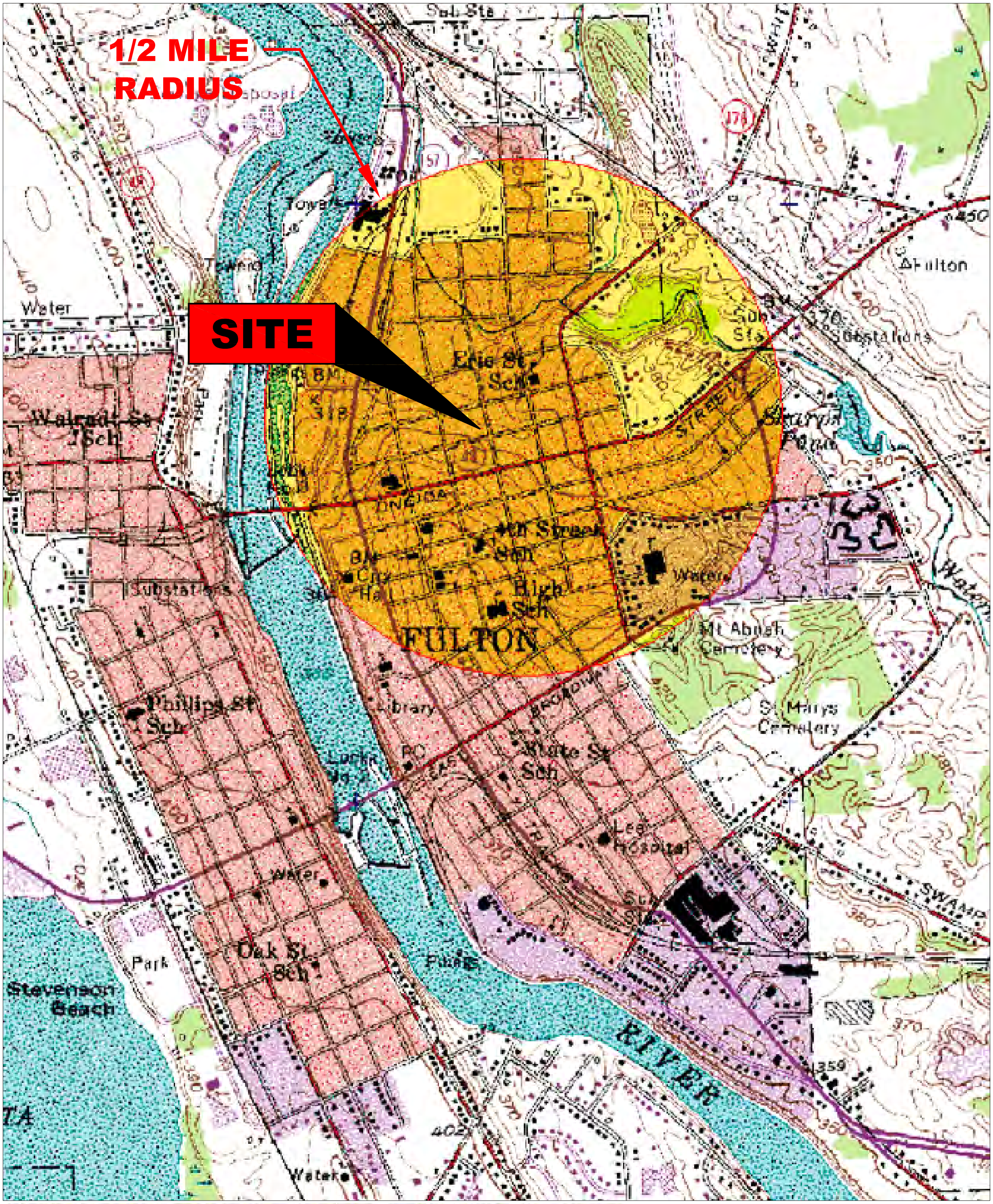
6 NYCRR Part 375.4 Environmental Remedial Program, December 14, 2006

NYSDOH Center for Environmental Health, Bureau of Environmental Exposure Investigation, *Guidance for Evaluating Soil Vapor Intrusion in the State of New York,* October 2006

Municipal Assistance for Environmental Restoration Projects: Procedures Handbook, NYSDEC DER, July 2004

Draft DER-10; Technical Guidance for Site Investigation and Remediation, NYSDEC DER, December 2004

Figures



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SCALE IN FEET

N

ENSR | AECOM

ENSR CORPORATION
5015 Campuswood Drive, Suite 104
East Syracuse, New York 13057
PHONE: (315) 432-0506
FAX: (315) 437-0509
WEB: HTTP://WWW.ENSR.AECOM.COM

SITE LOCATION MAP
ERP SITE ID #E7-38-038
60/62 N. FIFTH STREET
FULTON, NEW YORK

FIGURE NUMBER: 1

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NUMBER:	DRAWING NUMBER:
LLM	CR	8/15/06	10683-007	1 of 1

LEGEND

UST	UNDERGROUND STORAGE TANK
SB-1	PROPOSED SOIL BORING LOCATION (17)
MW-1	PROPOSED GROUNDWATER MONITORING WELL (4)
SV-1	PROPOSED SOIL VAPOR SAMPLING POINT (6)
SV-7	CONTINGENT SOIL VAPOR SAMPLING POINT

NOT TO SCALE

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ENSR | AECOM

ENSR CORPORATION
5015 Campuswood Drive, Suite 104
East Syracuse, New York 13057
PHONE: (315) 432-0506
FAX: (315) 437-0509
WEB: HTTP://WWW.ENSR.AECOM.COM

SITE PLAN WITH PROPOSED SAMPLING LOCATIONS

ERP SITE ID #E7-38-038

60/62 N. FIFTH STREET
FULTON, NEW YORK

FIGURE NUMBER: 2

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NUMBER:	DRAWING NUMBER:
LLM	CR	9/19/06	10683-007	1 of 1

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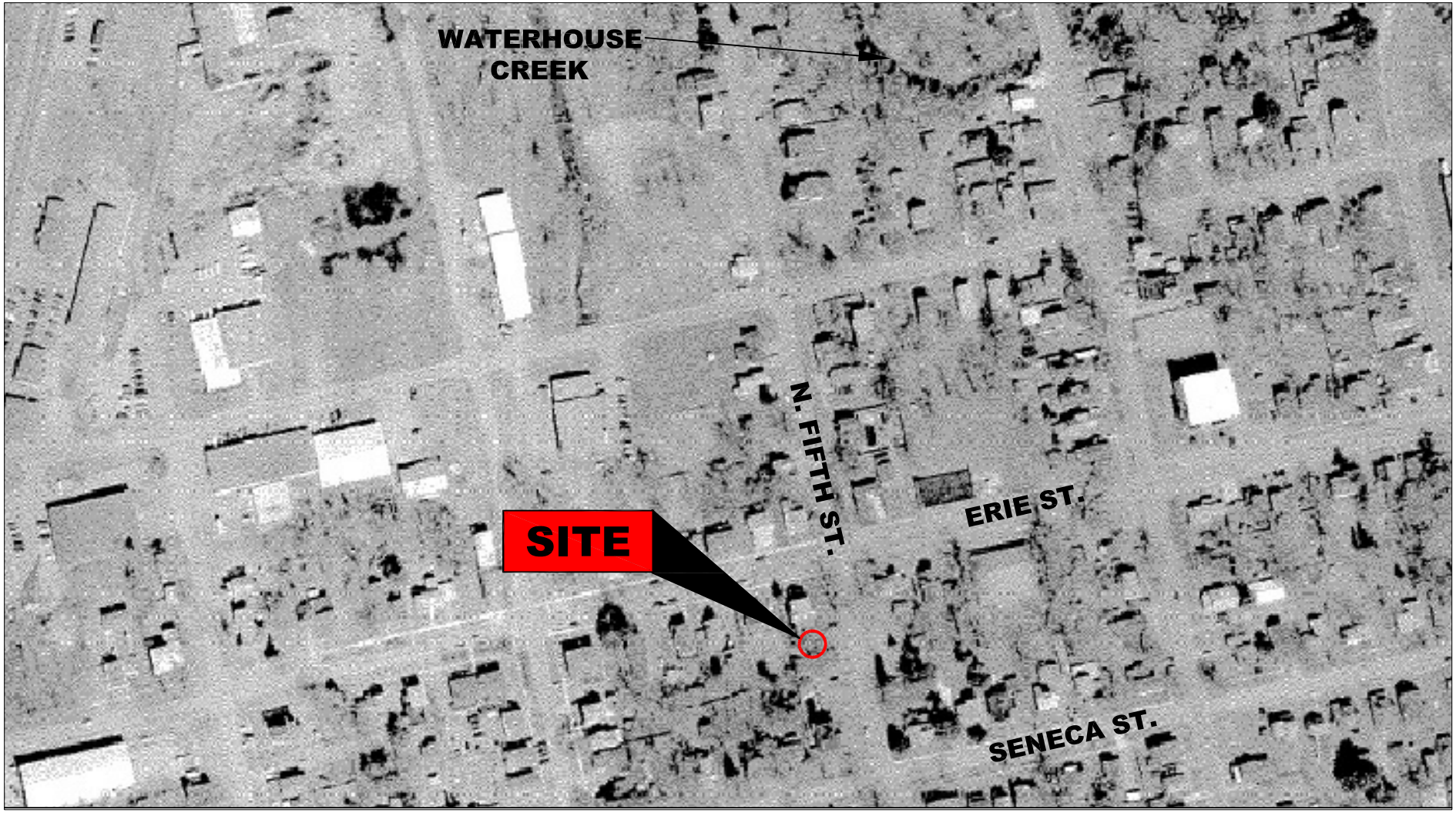

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NOT TO SCALE

ENSR | AECOM

ENSR CORPORATION
5015 Campuswood Drive, Suite 104
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PHONE: (315) 432-0506
FAX: (315) 437-0509
WEB: HTTP://WWW.ENSR.AECOM.COM

AERIAL MAP

ERP SITE ID #E7-38-038

60/62 N. FIFTH STREET
FULTON, NEW YORK

FIGURE NUMBER: 3

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LLM	CR	8/16/06	10683-007	1 OF 1

Appendix A

Strategic Environmental Management, Inc (SEM) Subsurface Investigation Report

Strategic Environmental Management, Inc.

September 2, 2004

Transmitted Via Facsimile
(315)592-3413

Mr. Stephen C. Lunn
CITY OF FULTON
Code Enforcement Office
Municipal Building
Fulton, New York 13069-1717

Reference: Proposed Site Investigation
"Cobb" Property, North Fifth Street, Fulton, New York
SEM File: 3215.001.09.04

Dear Mr. Lunn:

As a follow-up to our meeting of August 31, 2004, the following represents our proposal for the investigation of soil and groundwater conditions at the above-referenced site. Your consideration of our firm is appreciated.

SCOPE OF WORK

It is our understanding that the scope of work to be completed at the site is intended to determine whether evidence of petroleum migration from an upgradient property located across North Fifth Street from the subject site exists, and, if so, whether the concentration of petroleum constituents exceed currently recognized soil and groundwater standards established by the New York State Department of Environmental Conservation (NYSDEC). Toward that end, the specific scope of work that is proposed will consist of the following elements:

1. Prior to initiating the investigation, SEM will notify Dig Safely New York (formerly the Underground Facilities Protection Organization or UFPO) to arrange for identification and markout of buried utilities at the site. It is noted that the utility markout process requires an advance notification of three (3) full business days prior to beginning the sampling program.

The City of Fulton shall identify the nature and location of buried utilities at the site that are not registered with Dig Safely New York. SEM will assume no responsibility or liability associated with damage to unidentified or incorrectly marked utilities.

3 Remington Avenue, Suite D, Canton, New York 13617
Telephone: (315) 386-2736 Facsimile: (315) 386-4736

25½ Water Street, Baldwinsville, New York 13027
Telephone: (315) 635-8936 Facsimile: (315) 635-2380

2. A series of soil borings will be advanced along the western side of the subject property, adjacent to the inside edge of the existing sidewalk, using a truck-mounted direct-push (i.e., "Geoprobe®") sampling unit. The soil borings will extend from the area of the intersection of North Fifth Street and Erie Street, at approximately twenty-five (25) feet intervals, to the southern border of the property.

3. Continuous soil samples will be collected from each boring using Geoprobe Systems' Macro-Core® soil samplers. The recovered soil samples will be classified with respect to predominant soil types and texture (i.e., gravel, sand, silt, and clay) and relative moisture content (i.e., moist, wet, saturated); examined for staining and/or obvious indicators of impact; and subjected to headspace screening using a portable photo-ionization detector (PID) equipped with a 10.6 eV lamp. The headspace screening will be performed by placing samples of the soil into re-sealable plastic bags, and subsequently screening the air surrounding the soil within the bags with the portable PID. The screening is intended to determine the relative concentration of volatile petroleum constituents that are released from the respective soil sample into the airspace of the bag.

4. At locations in which staining, odors, or elevated PID headspace screening results indicate petroleum impact in the soil, the sampling will continue to depths at which such conditions no longer persist, if possible. At locations at which no obvious staining, petroleum odors, or elevated PID readings are encountered in the soil, the soil sampling will continue to below the depth at which saturated soil (indicative of the groundwater table) is encountered, if possible.

5. In the event that staining, petroleum odors, and/or elevated PID headspace readings (i.e., above 5 parts-per-million or ppm) are recorded in the soil samples, a grab sample of the soil from the two (2) locations at which the highest PID screening results are recorded will be retained for laboratory analysis. At locations in which no such evidence of soil impact is noted, soil samples will not be collected for laboratory analysis.

The soil samples, if any, retained from the borings will be laboratory analyzed by EPA Method 8021, to document the concentration of target volatile organic compounds/petroleum constituents listed in the NYSDEC's *Spill Technology and Remediation Series Memorandum No. 1: Petroleum-Contaminated Soil Guidance Policy (STARS No. 1).*

6. Following the soil sampling described above, groundwater samples will be collected from three (3) select and representative boreholes. The samples will be collected from borings, if any, in which field observations and screening results suggest the potential for petroleum impact, or, in the absence of such conditions, from three (3) borings spaced across the length of the investigation area.

The groundwater samples will be obtained from the selected boreholes by advancing a Geoprobe® Screen Point 15® groundwater sampling probe into the borehole to intercept the groundwater table or desired sampling depth. The sampler consists of a retractable stainless steel screen that will be positioned to intercept the groundwater table. The sampling screen (0.004-inch slot wound stainless steel screen, 41-inches in length) will be initially purged using a peristaltic pump and polyethylene tubing, and samples for laboratory analysis will be collected using a disposable mini-bailer.

7. The samples of groundwater (and soil, if collected) will be laboratory analyzed by a laboratory that is certified under the New York State Department of Health's Environmental Laboratory Approval Program, on a standard two-week laboratory turn-around schedule.

8. All down-the-hole-sampling tools will be decontaminated between samples, using phosphate-free detergent and tap water wash, tap water rinse, and distilled water rinse.

9. Waste soil from the samplers will be returned to the corresponding borehole.

10. Following the completion of the field tasks described above, SEM will provide a report summarizing the methods and findings of the investigation program. The report will include a narrative summary of investigation methodologies; investigation logs documenting the soil stratigraphy, field observations, and PID headspace screening results encountered at each boring location; a site sketch depicting prominent/pertinent site structures, and sampling locations; a discussion of field data and laboratory analysis data; and copies of laboratory analysis results and sample custody documentation; and a discussion as to whether the laboratory results indicate contaminant concentrations above recognized regulatory standards and guidelines.

Fee

The services to be provided by SEM will be subject to the following fees:

Estimated Quantity	Description of Services	Unit Rate	Amount
1	Utility Clearance/Mobilization	$150.00/Lump Sum	$150.00
1	Geoprobe Unit and Operator, PID	$1,150.00/8-Hr. Day	$1,150.00
10	Geologist	$70.00/Hour	$700.00
3	Groundwater Sample Collection	$25.00/Each	$75.00
	Laboratory Analyses (2-week TAT):		
--	-EPA Method 8021 (Soil)	$100.00/Each	If Required
3	-EPA Method 8021 (Groundwater)	$100.00/Each	$300.00
12	Project Scientist/Geologist (Data Compilation and Review, Report Preparation)	$70.00/Hour	$840.00
		TOTAL ESTIMATED BUDGET:	**$3,215.00***

*The project estimate does not reflect work tasks (including additional field time and extended report preparation time, additional/alternative laboratory analyses) relating to an expanded investigation that would serve to further define the extent of contamination beyond the areas encompassed by the proposed borings.

**The fees for laboratory services included above reflect a standard laboratory turn-around time of two (2) weeks following receipt of the samples by the laboratory. Should expedited laboratory turn-around be required, such services will be subject to surcharges, depending upon the desired turn-around time. Expedited turn-around times are not guaranteed, and will be subject to advance laboratory approval.

Terms and Conditions

Payment is due at the time of invoice submittal. Account balances that remain unpaid beyond thirty (30) days of the invoice date will be subject to interest charges at a rate of 1.5% per month. In the event that it becomes necessary to commence action to collect payment of our invoices, the CLIENT agrees to pay any and all costs, including attorney fees, court expenses, or arbitration costs, associated with such action. Further, SEM reserves the right to discontinue services and withhold unpaid work product, at our sole discretion, at any time our invoices are not paid within 30 days.

Payment to SEM for services provided under this agreement shall not, under any circumstances, be contingent upon the CLIENT's acquisition of the subject property or ability to obtain financing for same, nor shall payment be delayed in anticipation of closing or by other events.

The foregoing proposal will be valid for a period of 90 days, after which time it will require approval and written confirmation by SEM.

The conditions set forth herein shall constitute the entire agreement relating to services to be provided by SEM. Any amendment or modification shall not be binding unless in writing and executed by both parties. SEM shall assume no liability for any claims, losses, damages, and other costs, whether actual or consequential, resulting from services provided, or interpretation of data, by others.

Acceptance

Acceptance of, and therefore authorization to proceed with, the scope of services described above shall be signified by signing in the space provided below, and returning one copy of this agreement to our office.

Please feel free to contact me at our Baldwinsville office if you have any questions or concerns regarding this matter, or if additional information is required. Once again, thank you for your consideration of our firm.

Respectfully,
STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

H. Nevin Bradford, III
Principal

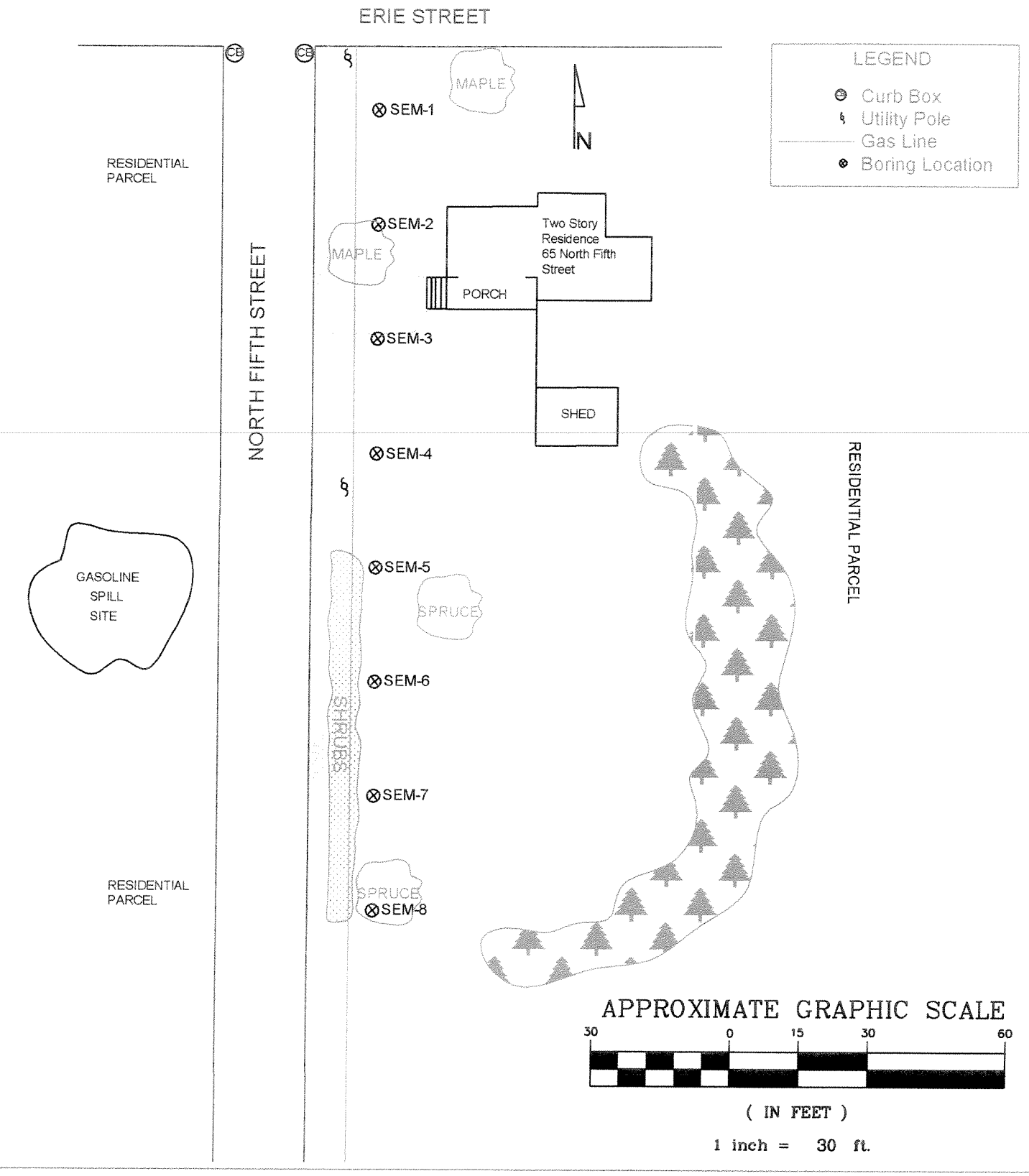
HNB/jcd

Acceptance:
CITY OF FULTON

Authorized Signature: _____

Printed Name/Title: _____

Date: _____



MAP NOTES

Strategic Environmental Management, Inc.

1 Remington Ave., Suite D, Canton, NY 13617
Telephone: (315) 386-2756 Fax: (315) 386-4756

25 1/2 Water Street, Baldwinsville, NY 13027
Telephone: (315) 635-8956 Fax: (315) 635-2530

Geoprobe Investigation
Site Plan
65 North Fifth Street
City of Fulton, New York

Figure

SEM File No.

Date: September 2004

Drawn By: SEM

Reference: Geoprobe Data

STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

PROJECT: City of Fulton
PROJECT NO.: 3215.0001.09.04
LOCATION: North Fifth Street

DATE STARTED : 9/13/04
DATE COMPLETED : 9/13/04
GEOLOGIST : John Pecori
DRILLING COMPANY : SEM
NAME OF DRILLER : C. Bradford

DRILLING METHOD : Geoprobe
RIG TYPE : 5400
TOTAL DEPTH : 8 Feet
APPOX. GW DEPTH : 4 Feet
SAMPLING METHOD : Macro Core

BORING LOG: SEM-1

Depth in (feet)	Blow Count	RECOVERY (inches)	USCS	GRAPHIC	DESCRIPTION	Depth of Change	DATE	MAX PID (ppm)	Core I.D.	COMMENTS
0					0.0-3.8 Feet: Dark Brown fine SAND, trace Organics (Grass); moist; no noticeable petroleum odor.					
1					3.8-4.0 Feet: Light Brown fine SAND; moist; no noticeable petroleum odor.					
2		10"					9-13-04	ND		
3										
4					4.0-4.5 Feet: Dark Brown medium to fine SAND, trace Silt; saturated at 4.0 feet; no noticeable petroleum odor.					
5					4.5-7.0 Feet: Light Brown fine SAND, some coarse Gravel; saturated; no noticeable petroleum odor.					
6		18"			7.0-8.0 Feet: Dark Brown coarse to fine SAND, trace fine Gravel; saturated; no noticeable petroleum odor.		9-13-04	ND		
7										
8					**Bottom of Borehole at 8.0 Feet**					

Note: Bgs. = Below Ground Surface.
Soil classifications are based on visual and manual field observations only.
PID screening performed by headspace analysis methods with MiniRae Model 2000 with 10.6 eV lamp, calibrated to 100 ppm isobutylene/air.
ND=None Detected

ppm=parts-per-million
Depths noted are approx.
Depth of groundwater recorded on this log represents approx. depth at which saturated soil was encountered.

10-05-2004 C:\MTECH5\JAMES~1\CITYOF~1\SEM-1.BOR

STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

PROJECT: City of Fulton
PROJECT NO.: 3215.0001.09.04
LOCATION: North Fifth Street

DATE STARTED : 9/13/04
DATE COMPLETED : 9/13/04
GEOLOGIST : John Pecori
DRILLING COMPANY : SEM
NAME OF DRILLER : C. Bradford

DRILLING METHOD : Geoprobe
RIG TYPE : 5400
TOTAL DEPTH : 8 Feet
APPOX. GW DEPTH : 5 Feet
SAMPLING METHOD : Macro Core

BORING LOG: SEM-2

Depth in (feet)	Blow Count	RECOVERY (inches)	USCS	GRAPHIC	DESCRIPTION	Depth of Change	DATE	MAX PID (ppm)	Core I.D.	COMMENTS
0					0.0-1.5 Feet: Dark Brown fine SAND, trace Organics; moist; no noticeable petroleum odor.					
1					1.5-2.0 Feet: Tan fine SAND, trace Silt; moist; no noticeable petroleum odor.					
					2.0-3.0 Feet: Dark Brown fine SAND and SILT, trace organics; moist; no noticeable petroleum odor.					
2		19"			3.0-3.5 Feet: Light Tan medium to fine SAND, trace Cobble and Brick; moist; no noticeable petroleum odor.		9-13-04	ND		
3					3.5-4.0 Feet: Reddish-Brown fine SAND and SILT; moist; no noticeable petroleum odor.					
4					4.0-4.5 Feet: Reddish-Brown fine SAND and SILT; moist; no noticeable petroleum odor.					Grab groundwater sample collected from borehole for laboratory analysis by EPA Method 524.2.
5					4.5-8.0 Feet: Light Brown fine SAND; saturated at 5.0 feet; no noticeable petroleum odor.					
6		35"					9-13-04	ND		
7										
8					**Bottom of Borehole at 8.0 Feet**					

Note: Bgs. = Below Ground Surface.
Soil classifications are based on visual and manual field observations only.
PID screening performed by headspace analysis methods with MiniRae Model 2000 with 10.6 eV lamp, calibrated to 100 ppm isobutylene/air.
ND=None Detected

ppm=parts-per-million
Depths noted are approx.
Depth of groundwater recorded on this log represents approx. depth at which saturated soil was encountered.

C:\MTECH5\JAMIES~1\CITYOF~1\SEM-2.BOR
10-05-2004

STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

PROJECT: City of Fulton
PROJECT NO.: 3215.0001.09.04
LOCATION: North Fifth Street

DATE STARTED : 9/13/04
DATE COMPLETED : 9/13/04
GEOLOGIST : John Pecori
DRILLING COMPANY : SEM
NAME OF DRILLER : C. Bradford

DRILLING METHOD : Geoprobe
RIG TYPE : 5400
TOTAL DEPTH : 8 Feet
APPOX. GW DEPTH : 5.5 Feet
SAMPLING METHOD : Macro Core

BORING LOG: SEM-3

Depth in (feet)	Blow Count	RECOVERY (inches)	USCS	GRAPHIC	DESCRIPTION	Depth of Change	DATE	MAX PID (ppm)	Core I.D.	COMMENTS
0					0.0-0.2 Feet: Dark Brown coarse to fine SAND, some fine Gravel, trace medium Gravel and Organics (roots, grass); moist; no noticeable petroleum odor.					
1					0.2-3.5 Feet: Reddish-Brown coarse to fine SAND, some medium to fine Gravel, trace coarse Gravel; moist; no noticeable petroleum odor.					
2		13"			3.5-4.0 Feet: Light Brown medium to fine SAND, trace fine Gravel; moist; no noticeable petroleum odor.		9-13-04	ND		
3										
4					4.0-4.5 Feet: Red-Brown fine SAND, trace Silt; moist; no noticeable petroleum odor.					Grab groundwater sample collected from borehole for laboratory analysis by EPA Method 524.2.
5					4.5-8.0 Feet: Light Brown fine SAND; saturated at 5.5 feet; no noticeable petroleum odor.					
6		36"					9-13-04	ND		
7										
8					**Bottom of Borehole at 8.0 Feet**					

Note: Bgs. = Below Ground Surface.
Soil classifications are based on visual and manual field observations only.
PID screening performed by headspace analysis methods with MiniRae Model 2000 with 10.6 eV lamp, calibrated to 100 ppm isobutylene/air.
ND=None Detected

ppm=parts-per-million
Depths noted are approx.
Depth of groundwater recorded on this log represents approx. depth at which saturated soil was encountered.

10-05-2004 C:\MTECH5\JAMIES~1\CITYOF~1\SEM-3.BOR

STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

PROJECT: City of Fulton
PROJECT NO.: 3215.0001.09.04
LOCATION: North Fifth Street

DATE STARTED : 9/13/04
DATE COMPLETED : 9/13/04
GEOLOGIST : John Pecori
DRILLING COMPANY : SEM
NAME OF DRILLER : C. Bradford

DRILLING METHOD : Geoprobe
RIG TYPE : 5400
TOTAL DEPTH : 8 Feet
APPOX. GW DEPTH : 4 Feet
SAMPLING METHOD : Macro Core

BORING LOG: SEM-4

Depth in (feet)	Blow Count	RECOVERY (inches)	USCS	GRAPHIC	DESCRIPTION	Depth of Change	DATE	MAX PID (ppm)	Core I.D.	COMMENTS
0					0.0-1.0 Feet: Dark Brown fine SAND, trace Silt and Organics; moist; no noticable petroleum odor.					
1					1.0-2.0 Feet: Light Brown fine SAND, trace medium Sand, 1.5 inch Black Coal layer; moist; no noticable petroleum odor. 2.0-3.5 Feet: Red-Brown coarse to fine SAND, some coarse Gravel; moist; no noticable petroleum odor.					
2		24"			3.5-4.0 Feet: Yellow-Brown fine SAND; saturated at 4.0 feet; no noticable petroleum odor.		9-13-04	ND		
3										
4					4.0-8.0 Feet: Light Brown-Tan fine SAND, trace Silt; saturated at 4.0 feet; no noticeable petroleum odor.					Grab groundwater sample collected from borehole for laboratory analysis by EPA Method 524.2.
5										
6		33"					9-13-04	ND		
7										
8					**Bottom of Borehole at 8.0 Feet**					

Note: Bgs. = Below Ground Surface.
Soil classifications are based on visual and manual field observations only.
PID screening performed by headspace analysis methods with MiniRae Model 2000 with 10.6 eV lamp, calibrated to 100 ppm isobutylene/air.
ND=None Detected

ppm=parts-per-million
Depths noted are approx.
Depth of groundwater recorded on this log represents approx. depth at which saturated soil was encountered.

C:\MTECH5\JAMIES~1\CITYOF~1\SEM-4 BOR
10-05-2004

STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

PROJECT: City of Fulton
PROJECT NO.: 3215.0001.09.04
LOCATION: North Fifth Street

DATE STARTED : 9/13/04
DATE COMPLETED : 9/13/04
GEOLOGIST : John Pecori
DRILLING COMPANY : SEM
NAME OF DRILLER : C. Bradford

DRILLING METHOD : Geoprobe
RIG TYPE : 5400
TOTAL DEPTH : 8 Feet
APPOX. GW DEPTH : 4.5 Feet
SAMPLING METHOD : Macro Core

BORING LOG: SEM-5

Depth in (feet)	Blow Count	RECOVERY (inches)	USCS	GRAPHIC	DESCRIPTION	Depth of Change	DATE	MAX PID (ppm)	Core I.D.	COMMENTS
0					0.0-1.0 Feet: Dark Brown fine SAND, trace Organics; moist; no noticeable petroleum odor.					
1					1.0-3.0 Feet: Light Brown FILL, coarse to fine Sand and Gravel; moist; no noticeable petroleum odor. 3.0-3.5 Feet: Red-Brown fine SAND, trace fine Gravel; moist; no noticeable petroleum odor.					
2		23"			3.5-4.0 Feet: Light Brown fine SAND; moist; no noticeable petroleum odor.		9-13-04	ND		
3										
4					4.0-6.0 Feet: Red-Brown fine SAND, trace Silt; saturated at 4.5 feet; no noticeable petroleum odor.					Grab groundwater sample collected from borehole for laboratory analysis by EPA Method 524.2.
5					6.0-8.0 Feet: Light Brown fine SAND, some Silt; saturated; no noticeable petroleum odor.					
6		39"					9-13-04	ND		
7										
8					**Bottom of Borehole at 8.0 Feet**					

Note: Bgs. = Below Ground Surface.
Soil classifications are based on visual and manual field observations only.
PID screening performed by headspace analysis methods with MiniRae Model 2000 with 10.6 eV lamp, calibrated to 100 ppm isobutylene/air.
ND=None Detected

ppm=parts-per-million
Depths noted are approx.
Depth of groundwater recorded on this log represents approx. depth at which saturated soil was encountered.

C:\MTECH5\JAMIES~1\CITYOF~1\SEM-5.BOR 10-05-2004

STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

PROJECT: City of Fulton
PROJECT NO.: 3215.0001.09.04
LOCATION: North Fifth Street

DATE STARTED : 9/13/04
DATE COMPLETED : 9/13/04
GEOLOGIST : John Pecori
DRILLING COMPANY : SEM
NAME OF DRILLER : C. Bradford

DRILLING METHOD : Geoprobe
RIG TYPE : 5400
TOTAL DEPTH : 8 Feet
APPOX. GW DEPTH : 6 Feet
SAMPLING METHOD : Macro Core

BORING LOG: SEM-6

Depth in (feet)	Blow Count	RECOVERY (inches)	USCS	GRAPHIC	DESCRIPTION	Depth of Change	DATE	MAX PID (ppm)	Core I.D.	COMMENTS
0					0.0-1.5 Feet: Dark Brown fine SAND, trace Organics; moist; no noticable petroleum odor.					
1					1.5-4.0 Feet: Light Brown-Tan fine SAND, trace fine Gravel and Silt; moist; no noticeable petroleum odor.					
2		24"					9-13-04	ND		
3										
4					4.0-8.0 Feet: Light Brown fine SAND, trace Silt; saturated at 6.0 feet; no noticeable petroleum odor.					
5										
6		37"					9-13-04	ND		
7										
8					**Bottom of Borehole at 8.0 Feet**					

Note: Bgs. = Below Ground Surface.
Soil classifications are based on visual and manual field observations only.
PID screening performed by headspace analysis methods with MiniRae Model 2000 with 10.6 eV lamp, calibrated to 100 ppm isobutylene/air.
ND=None Detected

ppm=parts-per-million
Depths noted are approx.
Depth of groundwater recorded on this log represents approx. depth at which saturated soil was encountered.

10-05-2004 C:\MTECH5\JAMIES~1\CITYOF~1\SEM-6.BOR

STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

PROJECT: City of Fulton
PROJECT NO.: 3215.0001.09.04
LOCATION: North Fifth Street

DATE STARTED : 9/13/04
DATE COMPLETED : 9/13/04
GEOLOGIST : John Pecori
DRILLING COMPANY : SEM
NAME OF DRILLER : C. Bradford

DRILLING METHOD : Geoprobe
RIG TYPE : 5400
TOTAL DEPTH : 8 Feet
APPOX. GW DEPTH : 6 Feet
SAMPLING METHOD : Macro Core

BORING LOG: SEM-7

Depth in (feet)	Blow Count	RECOVERY (inches)	USCS	GRAPHIC	DESCRIPTION	Depth of Change	DATE	MAX PID (ppm)	Core I.D.	COMMENTS
0					0.0-1.5 Feet: Dark Brown fine SAND, trace Organics; moist; no noticeable petroleum odor.					
1					1.5-2.5 Feet: FILL (Dark Brown coarse to fine SAND, Coal fragments); moist; no noticeable petroleum odor. 2.5-4.0 Feet: Light Brown-Tan fine SAND, trace Silt; moist; no noticable petroleum odor.					
2		23"					9-13-04	ND		
3										
4					4.0-8.0 Feet: Light Brown fine SAND and SILT; saturated at 6.0 feet; no noticable petroleum odor.					
5										
6		34"					9-13-04	ND		
7										
8					**Bottom of Borehole at 8.0 Feet**					

Note: Bgs. = Below Ground Surface.
Soil classifications are based on visual and manual field observations only.
PID screening performed by headspace analysis methods with MiniRae Model 2000 with 10.6 eV lamp, calibrated to 100 ppm isobutylene/air.
ND=None Detected

ppm=parts-per-million
Depths noted are approx.
Depth of groundwater recorded on this log represents approx. depth at which saturated soil was encountered.

10-05-2004 C:\M4TECH5\JAMIES~1\CITYOF~1\SEM-7.BOR

STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

PROJECT: City of Fulton
PROJECT NO.: 3215.0001.09.04
LOCATION: North Fifth Street

DATE STARTED : 9/13/04
DATE COMPLETED : 9/13/04
GEOLOGIST : John Pecori
DRILLING COMPANY : SEM
NAME OF DRILLER : C. Bradford

DRILLING METHOD : Geoprobe
RIG TYPE : 5400
TOTAL DEPTH : 8 Feet
APPOX. GW DEPTH : 6.5 Feet
SAMPLING METHOD : Macro Core

BORING LOG: SEM-8

Depth in (feet)	Blow Count	RECOVERY (inches)	USCS	GRAPHIC	DESCRIPTION	Depth of Change	DATE	MAX PID (ppm)	Core I.D.	COMMENTS
0					0.0-1.5 Feet: Dark Brown fine SAND, trace Silt; moist; no noticeable petroleum odor.					
1					1.5-4.0 Feet: Red-Brown fine SAND, trace Silt; moist; no noticeable petroleum odor.					
2		17"					9-13-04	ND		
3										
4					4.0-8.0 Feet: Light Brown fine SAND, trace SILT; saturated at 6.5 feet; no noticeable petroleum odor.					
5										
6		32"					9-13-04	ND		
7										
8					**Bottom of Borehole at 8.0 Feet**					

Note: Bgs. = Below Ground Surface.
Soil classifications are based on visual and manual field observations only.
PID screening performed by headspace analysis methods with MiniRae Model 2000 with 10.6 eV lamp, calibrated to 100 ppm isobutylene/air.
ND=None Detected
ppm=parts-per-million
Depths noted are approx.
Depth of groundwater recorded on this log represents approx. depth at which saturated soil was encountered.

C:\MTECH5\JAMIES~1\CITYOF~1\SEM-8.BOR
10-05-2004

Strategic Environmental Management, Inc.

October 4, 2004

Mr. Stephen C. Lunn
CITY OF FULTON
Code Enforcement Office
Municipal Building
Fulton, New York 13069-1717

Reference: Subsurface Investigation
"Cobb" Property, North Fifth Street, Fulton, New York
SEM File: 3215.001.10.04

Dear Mr. Lunn:

Pursuant to our proposal of September 2, 2004, Strategic Environmental Management, Inc. (SEM) has conducted an investigation of subsurface conditions at the former "Cobb" property, located at the southeast corner of the intersection of North Fifth and Erie Streets in the City of Fulton. The following provides a summary of the investigation methodologies and findings.

The investigation was intended to determine whether evidence of petroleum migration from an upgradient property located across North Fifth Street from the subject site exists, and, if so, whether the concentration of petroleum constituents exceed currently recognized soil and groundwater standards established by the New York State Department of Environmental Conservation (NYSDEC). The upgradient property of concern consists of a vacant parcel on the western side of North Fifth Street that had previously been occupied by a concrete block garage. During the demolition of the structure, an abandoned underground gasoline storage tank was discovered. The soil surrounding the tank was found to be impacted by gasoline.

A series of eight (8) soil borings were advanced along the western side of the subject property, using a truck-mounted direct-push (i.e., "Geoprobe®") sampling unit. The borings were positioned as close to the inside (eastern) edge of the sidewalk as allowed by a buried natural gas pipe that traverses the western edge of the property. The soil borings extended from the area of the intersection of North Fifth Street and Erie Street, at approximately twenty-five (25) feet intervals, to the southern border of the property. The approximate locations of these borings, identified as SEM-1 through SEM-8, are depicted on attached Figure 1.

3 Remington Avenue, Suite D, Canton, New York 13617
Telephone: (315) 386-2736 Facsimile: (315) 386-4736

25 1/2 Water Street, Baldwinsville, New York 13027
Telephone: (315) 635-8936 Facsimile: (315) 635-2380

Continuous soil samples were collected from each boring using Geoprobe Systems' Macro-Core® soil samplers. The recovered soil samples were classified with respect to predominant soil types and texture (i.e., gravel, sand, silt, and clay) and relative moisture content (i.e., moist, wet, saturated); examined for staining and/or obvious indicators of impact; and subjected to headspace screening using a portable photo-ionization detector (PID) equipped with a 10.6 eV lamp.

The headspace screening was performed by placing samples of the soil into re-sealable plastic bags, and subsequently screening the air surrounding the soil within the bags with the portable PID. The screening is intended to determine the relative concentration of volatile petroleum constituents, if any, that are released from the respective soil sample into the airspace of the bag. The borings were advanced to a depth of eight (8) feet below grade, to extend below the depth at which soil saturation was encountered.

The soil encountered in the course of the investigation consisted predominantly of medium to fine sand with lesser and varying amounts of silt, coarse sand and gravel. Saturation, suggestive of the local groundwater table, was encountered at depths of four (4) to six (6) feet below grade. Examination of the recovered soil samples revealed no visible staining or obvious indicators of petroleum impact, and field screening with the PID indicated no detectable concentrations of volatile organic compounds (VOC). The soil lithology, pertinent observations, and PID screening results for each individual boring are documented on the attached Investigation Logs.

Following completion of the soil sampling, samples of groundwater were collected from the borings identified as SEM-2; SEM-3; SEM-4; and SEM-5, for laboratory analysis. The groundwater samples were obtained from the selected boreholes by advancing a dedicated, single use/disposable PVC well screen having 0.010-inch slots into the respective borehole to depths sufficient to intercept the groundwater table. The sampling screen was initially purged using a peristaltic pump and polyethylene tubing, and samples for laboratory analysis were subsequently collected using dedicated, single use/disposable mini-bailers. No free-phase product or surface sheens were observed on the water extracted from the boreholes at the time of the sampling.

All down-the-hole-sampling tools were decontaminated between samples, using phosphate-free detergent and tap water wash, tap water rinse, and distilled water rinse. Waste soil from the samplers was returned to the corresponding borehole.

The samples of groundwater collected from the selected boreholes were submitted to Life Science Laboratories, Inc. of East Syracuse (New York State Department of Health Environmental Laboratory Approval Program Certification Number 10248) for analysis by EPA Method 524.2. These analyses were intended to document dissolved-phase concentrations of volatile petroleum constituents for comparison to currently accepted groundwater standards established under *6NYCRR Part 703*, and groundwater guidance values established in the NYSDEC's *Technical and Operational Guidance Series 1.1.1 (TOGS 1.1.1)*. The analyses identified no detectable concentrations of the target compounds. Copies of the laboratory analysis results and sample custody documentation are attached for your records.

In summary, the field conditions, soil screening results, and groundwater laboratory analysis results compiled in the course of this investigation have revealed no indication of petroleum migration onto the subject property from the west as of the time of the investigation.

Please feel free to contact me at our Baldwinsville office if you have any questions or concerns regarding this matter, or if we may be of further assistance. Thank you for your selection of our firm.

Respectfully,
STRATEGIC ENVIRONMENTAL MANAGEMENT, Inc.

H. Nevin Bradford, III
Principal

HNB/jed

Attachments:

Attachment A:	Site Sketch
Attachment B:	Investigation Logs
Attachment C:	Laboratory Analysis Results and Sample Custody Documentation

Nevin Bradford
Strategic Environmental Management
25 1/2 Water Street
Baldwinsville, NY 13027

Phone: (315) 635-8936
FAX: (315) 635-2380

Laboratory Analysis Report

For

Strategic Environmental Management

Client Project ID:

3215.001.09.04 Fulton, NY

LSL Project ID: **0415965**

Receive Date/Time: 09/13/04 13:01

Project Received by: RD

Life Science Laboratories, Inc.

LSL Central Lab
5854 Butternut Drive
East Syracuse, NY 13057
Tel. (315) 445-1105
Fax (315) 445-1301
NYS DOH ELAP #10248
PA DEP #68-2556

LSL North Lab
131 St. Lawrence Avenue
Waddington, NY 13694
Tel. (315) 388-4476
Fax (315) 388-4061
NYS DOH ELAP #10900

LSL Finger Lakes Lab
16 N. Main St., PO Box 424
Wayland, NY 14572
Tel. (585) 728-3320
Fax (585) 728-2711
NYS DOH ELAP #11667

LSL Southern Tier Lab
30 East Main Street
Cuba, NY 14727
Tel. (585) 968-2640
Fax (585) 968-0906
NYS DOH ELAP #10760

LSL MidLakes Lab
699 South Main Street
Canandaigua, NY 14424
Tel. (585) 396-0270
Fax (585) 396-0377
NYS DOH ELAP #11369

This report was reviewed by: _____ *Date:* 9-27-04

Life Science Laboratories, Inc.

A copy of this report was sent to:

COPY

Date Printed: 9/27/04

-- LABORATORY ANALYSIS REPORT --

Strategic Environmental Management *Baldwinsville, NY*

Sample ID: Trip Blank **LSL Sample ID:** 0415965-001

Location:

Sampled: 09/13/04 7:30 **Sampled By:** CB

Sample Matrix: TB

Analytical Method / Analyte	Result	Units	Prep Date	Analysis Date & Time	Analyst Initials
(1) EPA 524.2 VOC's + MTBE					
t-Butyl alcohol	<200	ug/l		9/23/04	BD
Benzene	<1	ug/l		9/23/04	BD
Bromobenzene	<1	ug/l		9/23/04	BD
Bromochloromethane	<1	ug/l		9/23/04	BD
Bromomethane	<1	ug/l		9/23/04	BD
sec-Butylbenzene	<1	ug/l		9/23/04	BD
n-Butylbenzene	<1	ug/l		9/23/04	BD
tert-Butylbenzene	<1	ug/l		9/23/04	BD
Carbon tetrachloride	<1	ug/l		9/23/04	BD
Chlorobenzene	<1	ug/l		9/23/04	BD
Chloroethane	<1	ug/l		9/23/04	BD
Chloromethane	<1	ug/l		9/23/04	BD
2-Chlorotoluene	<1	ug/l		9/23/04	BD
4-Chlorotoluene	<1	ug/l		9/23/04	BD
Dibromomethane	<1	ug/l		9/23/04	BD
1,2-Dichlorobenzene	<1	ug/l		9/23/04	BD
1,3-Dichlorobenzene	<1	ug/l		9/23/04	BD
1,4-Dichlorobenzene	<1	ug/l		9/23/04	BD
Dichlorodifluoromethane	<1	ug/l		9/23/04	BD
1,1-Dichloroethane	<1	ug/l		9/23/04	BD
1,2-Dichloroethane	<1	ug/l		9/23/04	BD
cis-1,2-Dichloroethene	<1	ug/l		9/23/04	BD
1,1-Dichloroethene	<1	ug/l		9/23/04	BD
trans-1,2-Dichloroethene	<1	ug/l		9/23/04	BD
1,2-Dichloropropane	<1	ug/l		9/23/04	BD
1,3-Dichloropropane	<1	ug/l		9/23/04	BD
2,2-Dichloropropane	<1	ug/l		9/23/04	BD
1,1-Dichloropropene	<1	ug/l		9/23/04	BD
cis-1,3-Dichloropropene	<1	ug/l		9/23/04	BD
trans-1,3-Dichloropropene	<1	ug/l		9/23/04	BD
Ethyl benzene	<1	ug/l		9/23/04	BD
Hexachlorobutadiene	<1	ug/l		9/23/04	BD
Isopropylbenzene (Cumene)	<1	ug/l		9/23/04	BD
4-Isopropyl toluene (Cymene)	<1	ug/l		9/23/04	BD
Methylene chloride	<1	ug/l		9/23/04	BD
Naphthalene	<1	ug/l		9/23/04	BD
N-Propylbenzene	<1	ug/l		9/23/04	BD
Styrene	<1	ug/l		9/23/04	BD
1,1,1,2-Tetrachloroethane	<1	ug/l		9/23/04	BD
1,1,2,2-Tetrachloroethane	<1	ug/l		9/23/04	BD
Tetrachloroethene	<1	ug/l		9/23/04	BD
Toluene	<1	ug/l		9/23/04	BD
1,2,3-Trichlorobenzene	<1	ug/l		9/23/04	BD
1,2,4-Trichlorobenzene	<1	ug/l		9/23/04	BD
1,1,1-Trichloroethane	<1	ug/l		9/23/04	BD
1,1,2-Trichloroethane	<1	ug/l		9/23/04	BD
Trichloroethene	<1	ug/l		9/23/04	BD

-- LABORATORY ANALYSIS REPORT --

Strategic Environmental Management *Baldwinsville, NY*

Sample ID: Trip Blank **LSL Sample ID:** 0415965-001

Location:

Sampled: 09/13/04 7:30 **Sampled By:** CB

Sample Matrix: TB

Analytical Method / Analyte	Result	Units	Prep Date	Analysis Date & Time	Analyst Initials
(1) EPA 524.2 VOC's + MTBE					
Trichlorofluoromethane (Freon 11)	<1	ug/l		9/23/04	BD
1,2,3-Trichloropropane	<1	ug/l		9/23/04	BD
1,2,4-Trimethylbenzene	<1	ug/l		9/23/04	BD
1,3,5-Trimethylbenzene	<1	ug/l		9/23/04	BD
Vinyl chloride	<1	ug/l		9/23/04	BD
Bromodichloromethane	3.5	ug/l		9/23/04	BD
Bromoform	<1	ug/l		9/23/04	BD
Chloroform	6.9	ug/l		9/23/04	BD
o-Xylene	<1	ug/l		9/23/04	BD
m-Xylene	<1	ug/l		9/23/04	BD
p-Xylene	<1	ug/l		9/23/04	BD
Dibromochloromethane	1.1	ug/l		9/23/04	BD
MTBE	<1	ug/l		9/23/04	BD
Surrogate (1,2-DCA-d4)	111	%R		9/23/04	BD
Surrogate (4-BFB)	103	%R		9/23/04	BD

-- LABORATORY ANALYSIS REPORT --

Strategic Environmental Management *Baldwinsville, NY*

Sample ID: SEM-3 **LSL Sample ID:** 0415965-002

Location:

Sampled: 09/13/04 9:30 **Sampled By:** CB

Sample Matrix: NPW

Analytical Method / Analyte	Result	Units	Prep Date	Analysis Date & Time	Analyst Initials
(1) EPA 524.2 VOC's + MTBE					
t-Butyl alcohol	<200	ug/l		9/23/04	BD
Benzene	<1	ug/l		9/23/04	BD
Bromobenzene	<1	ug/l		9/23/04	BD
Bromochloromethane	<1	ug/l		9/23/04	BD
Bromomethane	<1	ug/l		9/23/04	BD
sec-Butylbenzene	<1	ug/l		9/23/04	BD
n-Butylbenzene	<1	ug/l		9/23/04	BD
tert-Butylbenzene	<1	ug/l		9/23/04	BD
Carbon tetrachloride	<1	ug/l		9/23/04	BD
Chlorobenzene	<1	ug/l		9/23/04	BD
Chloroethane	<1	ug/l		9/23/04	BD
Chloromethane	<1	ug/l		9/23/04	BD
2-Chlorotoluene	<1	ug/l		9/23/04	BD
4-Chlorotoluene	<1	ug/l		9/23/04	BD
Dibromomethane	<1	ug/l		9/23/04	BD
1,2-Dichlorobenzene	<1	ug/l		9/23/04	BD
1,3-Dichlorobenzene	<1	ug/l		9/23/04	BD
1,4-Dichlorobenzene	<1	ug/l		9/23/04	BD
Dichlorodifluoromethane	<1	ug/l		9/23/04	BD
1,1-Dichloroethane	<1	ug/l		9/23/04	BD
1,2-Dichloroethane	<1	ug/l		9/23/04	BD
cis-1,2-Dichloroethene	<1	ug/l		9/23/04	BD
1,1-Dichloroethene	<1	ug/l		9/23/04	BD
trans-1,2-Dichloroethene	<1	ug/l		9/23/04	BD
1,2-Dichloropropane	<1	ug/l		9/23/04	BD
1,3-Dichloropropane	<1	ug/l		9/23/04	BD
2,2-Dichloropropane	<1	ug/l		9/23/04	BD
1,1-Dichloropropene	<1	ug/l		9/23/04	BD
cis-1,3-Dichloropropene	<1	ug/l		9/23/04	BD
trans-1,3-Dichloropropene	<1	ug/l		9/23/04	BD
Ethyl benzene	<1	ug/l		9/23/04	BD
Hexachlorobutadiene	<1	ug/l		9/23/04	BD
Isopropylbenzene (Cumene)	<1	ug/l		9/23/04	BD
4-Isopropyl toluene (Cymene)	<1	ug/l		9/23/04	BD
Methylene chloride	<1	ug/l		9/23/04	BD
Naphthalene	<1	ug/l		9/23/04	BD
N-Propylbenzene	<1	ug/l		9/23/04	BD
Styrene	<1	ug/l		9/23/04	BD
1,1,1,2-Tetrachloroethane	<1	ug/l		9/23/04	BD
1,1,2,2-Tetrachloroethane	<1	ug/l		9/23/04	BD
Tetrachloroethene	<1	ug/l		9/23/04	BD
Toluene	<1	ug/l		9/23/04	BD
1,2,3-Trichlorobenzene	<1	ug/l		9/23/04	BD
1,2,4-Trichlorobenzene	<1	ug/l		9/23/04	BD
1,1,1-Trichloroethane	<1	ug/l		9/23/04	BD
1,1,2-Trichloroethane	<1	ug/l		9/23/04	BD
Trichloroethene	<1	ug/l		9/23/04	BD

-- LABORATORY ANALYSIS REPORT --

Strategic Environmental Management *Baldwinsville, NY*

Sample ID: SEM-3 **LSL Sample ID:** 0415965-002

Location:

Sampled: 09/13/04 9:30 **Sampled By:** CB

Sample Matrix: NPW

Analytical Method / Analyte	Result	Units	Prep Date	Analysis Date & Time	Analyst Initials
(1) EPA 524.2 VOC's + MTBE					
Trichlorofluoromethane (Freon 11)	<1	ug/l		9/23/04	BD
1,2,3-Trichloropropane	<1	ug/l		9/23/04	BD
1,2,4-Trimethylbenzene	<1	ug/l		9/23/04	BD
1,3,5-Trimethylbenzene	<1	ug/l		9/23/04	BD
Vinyl chloride	<1	ug/l		9/23/04	BD
Bromodichloromethane	<1	ug/l		9/23/04	BD
Bromoform	<1	ug/l		9/23/04	BD
Chloroform	<1	ug/l		9/23/04	BD
o-Xylene	<1	ug/l		9/23/04	BD
m-Xylene	<1	ug/l		9/23/04	BD
p-Xylene	<1	ug/l		9/23/04	BD
Dibromochloromethane	<1	ug/l		9/23/04	BD
MTBE	<1	ug/l		9/23/04	BD
Surrogate (1,2-DCA-d4)	106	%R		9/23/04	BD
Surrogate (4-BFB)	100	%R		9/23/04	BD

-- LABORATORY ANALYSIS REPORT --

Strategic Environmental Management *Baldwinsville, NY*

Sample ID: SEM-2 **LSL Sample ID:** 0415965-003

Location:

Sampled: 09/13/04 9:55 **Sampled By:** CB

Sample Matrix: NPW

Analytical Method / Analyte	Result	Units	Prep Date	Analysis Date & Time	Analyst Initials
(1) EPA 524.2 VOC's + MTBE					
t-Butyl alcohol	<200	ug/l		9/23/04	BD
Benzene	<1	ug/l		9/23/04	BD
Bromobenzene	<1	ug/l		9/23/04	BD
Bromochloromethane	<1	ug/l		9/23/04	BD
Bromomethane	<1	ug/l		9/23/04	BD
sec-Butylbenzene	<1	ug/l		9/23/04	BD
n-Butylbenzene	<1	ug/l		9/23/04	BD
tert-Butylbenzene	<1	ug/l		9/23/04	BD
Carbon tetrachloride	<1	ug/l		9/23/04	BD
Chlorobenzene	<1	ug/l		9/23/04	BD
Chloroethane	<1	ug/l		9/23/04	BD
Chloromethane	<1	ug/l		9/23/04	BD
2-Chlorotoluene	<1	ug/l		9/23/04	BD
4-Chlorotoluene	<1	ug/l		9/23/04	BD
Dibromomethane	<1	ug/l		9/23/04	BD
1,2-Dichlorobenzene	<1	ug/l		9/23/04	BD
1,3-Dichlorobenzene	<1	ug/l		9/23/04	BD
1,4-Dichlorobenzene	<1	ug/l		9/23/04	BD
Dichlorodifluoromethane	<1	ug/l		9/23/04	BD
1,1-Dichloroethane	<1	ug/l		9/23/04	BD
1,2-Dichloroethane	<1	ug/l		9/23/04	BD
cis-1,2-Dichloroethene	<1	ug/l		9/23/04	BD
1,1-Dichloroethene	<1	ug/l		9/23/04	BD
trans-1,2-Dichloroethene	<1	ug/l		9/23/04	BD
1,2-Dichloropropane	<1	ug/l		9/23/04	BD
1,3-Dichloropropane	<1	ug/l		9/23/04	BD
2,2-Dichloropropane	<1	ug/l		9/23/04	BD
1,1-Dichloropropene	<1	ug/l		9/23/04	BD
cis-1,3-Dichloropropene	<1	ug/l		9/23/04	BD
trans-1,3-Dichloropropene	<1	ug/l		9/23/04	BD
Ethyl benzene	<1	ug/l		9/23/04	BD
Hexachlorobutadiene	<1	ug/l		9/23/04	BD
Isopropylbenzene (Cumene)	<1	ug/l		9/23/04	BD
4-Isopropyl toluene (Cymene)	<1	ug/l		9/23/04	BD
Methylene chloride	<1	ug/l		9/23/04	BD
Naphthalene	<1	ug/l		9/23/04	BD
N-Propylbenzene	<1	ug/l		9/23/04	BD
Styrene	<1	ug/l		9/23/04	BD
1,1,1,2-Tetrachloroethane	<1	ug/l		9/23/04	BD
1,1,2,2-Tetrachloroethane	<1	ug/l		9/23/04	BD
Tetrachloroethene	<1	ug/l		9/23/04	BD
Toluene	<1	ug/l		9/23/04	BD
1,2,3-Trichlorobenzene	<1	ug/l		9/23/04	BD
1,2,4-Trichlorobenzene	<1	ug/l		9/23/04	BD
1,1,1-Trichloroethane	<1	ug/l		9/23/04	BD
1,1,2-Trichloroethane	<1	ug/l		9/23/04	BD
Trichloroethene	<1	ug/l		9/23/04	BD

-- LABORATORY ANALYSIS REPORT --

Strategic Environmental Management *Baldwinsville, NY*

Sample ID: SEM-2 **LSL Sample ID:** 0415965-003

Location:

Sampled: 09/13/04 9:55 **Sampled By:** CB

Sample Matrix: NPW

Analytical Method / Analyte	Result	Units	Prep Date	Analysis Date & Time	Analyst Initials
(1) EPA 524.2 VOC's + MTBE					
Trichlorofluoromethane (Freon 11)	<1	ug/l		9/23/04	BD
1,2,3-Trichloropropane	<1	ug/l		9/23/04	BD
1,2,4-Trimethylbenzene	<1	ug/l		9/23/04	BD
1,3,5-Trimethylbenzene	<1	ug/l		9/23/04	BD
Vinyl chloride	<1	ug/l		9/23/04	BD
Bromodichloromethane	<1	ug/l		9/23/04	BD
Bromoform	<1	ug/l		9/23/04	BD
Chloroform	<1	ug/l		9/23/04	BD
o-Xylene	<1	ug/l		9/23/04	BD
m-Xylene	<1	ug/l		9/23/04	BD
p-Xylene	<1	ug/l		9/23/04	BD
Dibromochloromethane	<1	ug/l		9/23/04	BD
MTBE	<1	ug/l		9/23/04	BD
Surrogate (1,2-DCA-d4)	118	%R		9/23/04	BD
Surrogate (4-BFB)	101	%R		9/23/04	BD

-- LABORATORY ANALYSIS REPORT --

Strategic Environmental Management *Baldwinsville, NY*

Sample ID: SEM-4 **LSL Sample ID:** 0415965-004

Location:

Sampled: 09/13/04 10:10 **Sampled By:** CB

Sample Matrix: NPW

Analytical Method / Analyte	Result	Units	Prep Date	Analysis Date & Time	Analyst Initials
(1) EPA 524.2 VOC's + MTBE					
t-Butyl alcohol	<200	ug/l		9/23/04	BD
Benzene	<1	ug/l		9/23/04	BD
Bromobenzene	<1	ug/l		9/23/04	BD
Bromochloromethane	<1	ug/l		9/23/04	BD
Bromomethane	<1	ug/l		9/23/04	BD
sec-Butylbenzene	<1	ug/l		9/23/04	BD
n-Butylbenzene	<1	ug/l		9/23/04	BD
tert-Butylbenzene	<1	ug/l		9/23/04	BD
Carbon tetrachloride	<1	ug/l		9/23/04	BD
Chlorobenzene	<1	ug/l		9/23/04	BD
Chloroethane	<1	ug/l		9/23/04	BD
Chloromethane	<1	ug/l		9/23/04	BD
2-Chlorotoluene	<1	ug/l		9/23/04	BD
4-Chlorotoluene	<1	ug/l		9/23/04	BD
Dibromomethane	<1	ug/l		9/23/04	BD
1,2-Dichlorobenzene	<1	ug/l		9/23/04	BD
1,3-Dichlorobenzene	<1	ug/l		9/23/04	BD
1,4-Dichlorobenzene	<1	ug/l		9/23/04	BD
Dichlorodifluoromethane	<1	ug/l		9/23/04	BD
1,1-Dichloroethane	<1	ug/l		9/23/04	BD
1,2-Dichloroethane	<1	ug/l		9/23/04	BD
cis-1,2-Dichloroethene	<1	ug/l		9/23/04	BD
1,1-Dichloroethene	<1	ug/l		9/23/04	BD
trans-1,2-Dichloroethene	<1	ug/l		9/23/04	BD
1,2-Dichloropropane	<1	ug/l		9/23/04	BD
1,3-Dichloropropane	<1	ug/l		9/23/04	BD
2,2-Dichloropropane	<1	ug/l		9/23/04	BD
1,1-Dichloropropene	<1	ug/l		9/23/04	BD
cis-1,3-Dichloropropene	<1	ug/l		9/23/04	BD
trans-1,3-Dichloropropene	<1	ug/l		9/23/04	BD
Ethyl benzene	<1	ug/l		9/23/04	BD
Hexachlorobutadiene	<1	ug/l		9/23/04	BD
Isopropylbenzene (Cumene)	<1	ug/l		9/23/04	BD
4-Isopropyl toluene (Cymene)	<1	ug/l		9/23/04	BD
Methylene chloride	<1	ug/l		9/23/04	BD
Naphthalene	<1	ug/l		9/23/04	BD
N-Propylbenzene	<1	ug/l		9/23/04	BD
Styrene	<1	ug/l		9/23/04	BD
1,1,1,2-Tetrachloroethane	<1	ug/l		9/23/04	BD
1,1,2,2-Tetrachloroethane	<1	ug/l		9/23/04	BD
Tetrachloroethene	<1	ug/l		9/23/04	BD
Toluene	<1	ug/l		9/23/04	BD
1,2,3-Trichlorobenzene	<1	ug/l		9/23/04	BD
1,2,4-Trichlorobenzene	<1	ug/l		9/23/04	BD
1,1,1-Trichloroethane	<1	ug/l		9/23/04	BD
1,1,2-Trichloroethane	<1	ug/l		9/23/04	BD
Trichloroethene	<1	ug/l		9/23/04	BD

-- LABORATORY ANALYSIS REPORT --

Strategic Environmental Management *Baldwinsville, NY*

Sample ID: SEM-4 **LSL Sample ID:** 0415965-004

Location:

Sampled: 09/13/04 10:10 **Sampled By:** CB

Sample Matrix: NPW

Analytical Method / Analyte	Result	Units	Prep Date	Analysis Date & Time	Analyst Initials
(I) EPA 524.2 VOC's + MTBE					
Trichlorofluoromethane (Freon 11)	<1	ug/l		9/23/04	BD
1,2,3-Trichloropropane	<1	ug/l		9/23/04	BD
1,2,4-Trimethylbenzene	<1	ug/l		9/23/04	BD
1,3,5-Trimethylbenzene	<1	ug/l		9/23/04	BD
Vinyl chloride	<1	ug/l		9/23/04	BD
Bromodichloromethane	<1	ug/l		9/23/04	BD
Bromoform	<1	ug/l		9/23/04	BD
Chloroform	<1	ug/l		9/23/04	BD
o-Xylene	<1	ug/l		9/23/04	BD
m-Xylene	<1	ug/l		9/23/04	BD
p-Xylene	<1	ug/l		9/23/04	BD
Dibromochloromethane	<1	ug/l		9/23/04	BD
MTBE	<1	ug/l		9/23/04	BD
Surrogate (1,2-DCA-d4)	114	%R		9/23/04	BD
Surrogate (4-BFB)	104	%R		9/23/04	BD

-- LABORATORY ANALYSIS REPORT --

Strategic Environmental Management *Baldwinsville, NY*

Sample ID: SEM-5 **LSL Sample ID:** 0415965-005

Location:

Sampled: 09/13/04 10:30 **Sampled By:** CB

Sample Matrix: NPW

Analytical Method / Analyte	Result	Units	Prep Date	Analysis Date & Time	Analyst Initials
(1) EPA 524.2 VOC's + MTBE					
Trichlorofluoromethane (Freon 11)	<1	ug/l		9/23/04	BD
1,2,3-Trichloropropane	<1	ug/l		9/23/04	BD
1,2,4-Trimethylbenzene	<1	ug/l		9/23/04	BD
1,3,5-Trimethylbenzene	<1	ug/l		9/23/04	BD
Vinyl chloride	<1	ug/l		9/23/04	BD
Bromodichloromethane	<1	ug/l		9/23/04	BD
Bromoform	<1	ug/l		9/23/04	BD
Chloroform	<1	ug/l		9/23/04	BD
o-Xylene	<1	ug/l		9/23/04	BD
m-Xylene	<1	ug/l		9/23/04	BD
p-Xylene	<1	ug/l		9/23/04	BD
Dibromochloromethane	<1	ug/l		9/23/04	BD
MTBE	<1	ug/l		9/23/04	BD
Surrogate (1,2-DCA-d4)	115	%R		9/23/04	BD
Surrogate (4-BFB)	102	%R		9/23/04	BD

SURROGATE RECOVERY CONTROL LIMITS FOR ORGANIC METHODS

Method	Surrogate(s)	Water Limits, %R	SHW Limits, %R
EPA 504	TCMX	80-120	NA
EPA 508	DCB	70-130	NA
EPA 515.4	DCAA	70-130	NA
EPA 524.2	1,2-DCA-d4, 4-BFB	80-120	NA
EPA 525.2	1,3-DM-2-NB, TPP, Per-d12	70-130	NA
EPA 526	1,3-DM-2-NB, TPP	70-130	NA
EPA 528	2-CP-3,4,5,6-d4, 2,4,6-TBP	70-130	NA
EPA 551.1	Decafluorobiphenyl	60-120	NA
EPA 552.2	2,3-DBPA	80-120	NA
EPA 601	1,2-DCA-d4, Tol-d8, 4-BFB	70-130	NA
EPA 602	1,2-DCA-d4, Tol-d8, 4-BFB	70-130	NA
EPA 608	DCB	30-150	NA
EPA 624	1,2-DCA-d4, Tol-d8, 4-BFB	70-130	NA
EPA 625, AE	2-Fluorophenol	21-110	NA
EPA 625, AE	Phenol-d5	10-110	NA
EPA 625, AE	2,4,6-Tribromophenol	10-123	NA
EPA 625, BN	Nitrobenzene-d5	35-114	NA
EPA 625, BN	2-Fluorobiphenyl	43-116	NA
EPA 625, BN	Terphenyl-d14	33-141	NA
EPA 8010	1,2-DCA-d4, Tol-d8, 4-BFB	70-130	70-130
EPA 8020	1,2-DCA-d4, Tol-d8, 4-BFB	70-130	70-130
EPA 8021	1,2-DCA-d4, Tol-d8, 4-BFB	70-130	70-130
EPA 8081	TCMX, DCB	30-150	30-150
EPA 8082	DCB	30-150	30-150
EPA 8151	DCAA	30-130	30-120
EPA 8260	1,2-DCA-d4, Tol-d8, 4-BFB	70-130	70-130
EPA 8270, AE	2-Fluorophenol	21-110	25-121
EPA 8270, AE	Phenol-d5	10-110	24-113
EPA 8270, AE	2,4,6-Tribromophenol	10-123	19-122
EPA 8270, BN	Nitrobenzene-d5	35-114	23-120
EPA 8270, BN	2-Fluorobiphenyl	43-116	30-115
EPA 8270, BN	Terphenyl-d14	33-141	18-137
DOH 310-13	Dodecane	40-110	40-110
DOH 310-14	Dodecane	40-110	40-110
DOH 310-15	Dodecane	40-110	40-110
DOH 310-34*	4-BFB	50-150	50-150
8015M_GRO*	4-BFB	50-150	50-150
8015M_DRO	Terphenyl-d14	50-150	50-150

*Run by GC/MS.

Units Key:	ug/l = microgram per liter ug/kg = microgram per kilogram mg/l = milligram per liter mg/kg = milligram per kilogram %R = Percent Recovery

STRATEGIC ENVIRONMENTAL MANAGEMENT, INC.

SAMPLE CUSTODY RECORD

BALDWINSVILLE OFFICE
25 ½ Water Street
Baldwinsville, New York 13027
Telephone: (315) 635-8936
Facsimile: (315) 635-2380

SEM Project Number: 3215.001.09.04
SEM Contact Person: NEVIN BRADFORD
Project Location: FULTON, NEW YORK

CANTON OFFICE
3 Remington Avenue, Suite D
Canton, New York 13617
Telephone: (315) 386-2736
Facsimile: (315) 386-4736

Laboratory: LIFE SCIENCE LABS
Project Identification: ______
Page 1 of 1

Facsimile Reports to: N. BRADFORD - BVILLE
Mail Reports to: N. BRADFORD - BVILLE
Mail Invoice to: J. DAMBOISE - BVILLE

Laboratory Identification	Date	Collection Time	Sample Location	Number of Containers	Comp or Grab	Preservatives	Sample Matrix	Parameters: EPA METHOD 524.2 w/ MTBE TBA				Notes/Comments
001	9/13/04	0730	TRIP BLANK	2	GRAB	1:1 HCl / 4°C	WATER	X				0415965 SEM_Bvills
002		0930	SEM-3	2	GRAB	1:1 HCl / 4°C	WATER	X				
003		0955	SEM-2	2	GRAB	1:1 HCl / 4°C	WATER	X				
004		1010	SEM-4	2	GRAB	1:1 HCl / 4°C	WATER	X				
005	↓	1030	SEM-5	1 (2) one*	GRAB	1:1 HCl / 4°C	WATER	X				

Sample Custody SAMPLE COLLECTION	Sample Custody RELINQUISH SAMPLE CUSTODY	Sample Custody ACCEPT AND RECEIVE SAMPLE CUSTODY
Name: Chris Bradford	Name: Chris Bradford Time: 1302	Name: ______ Time: ______
Signature: Chris Bradford	Signature: Chris Bradford Date: 9/13/04	Signature: ______ Date: ______
Sample TAT: STD	Name: ______ Time: ______	Laboratory: KD 09-13-04 Time: RCVD
	Signature: ______ Date: ______	Signature: 11.9°C on ice Date: ______

* only one vial was received

Appendix B

Resumes

Daniel M. Shearer, P.E.

Brownfields Program Manager

Years Experience: 17

Technical Specialties

- Waste Disposal
- Site Characterization and Closure Plans
- Permitting
- Dredging/Sediment Excavation
- Landfarming
- Cost Estimating
- Stormwater Management Design
- Specifications - Design
- Remedial Design
- Civil Engineering
- Bioremediation
- Design of Remedial Actions
- Construction Management
- Feasibility Studies
- Field Construction Supervision
- Lead Based Paint Management
- PCB Management
- Petroleum Spills Management
- UST
- Waste Stabilization
- Demolition
- Evaluation of Remediation Alternatives

Professional History

- ENSR International
- SLC Environmental Services
- The RETEC Group, Inc.
- Peer Consultants, P.C.
- Buck Environmental Services

Education

- BE (Mechanical Engineering) Stony Brook University, Stony Brook, NY

Professional Registrations and Affiliations

- Professional Engineer, New York
- National Society of Professional Engineers
- New York State Society of Professional Engineers

Representative Project Experience

ITT, Site Restoration, Seneca Falls, NY. Project Manager for restoration of area - capping via placement of asphalt - that was subject to Interim Remedial Measure. Management responsibilities included management of field oversight, coordination of subcontractors, solicitation and selection of bidders, contract negotiation and serving as owner representative during project.

ITT IBG, Sitewide Groundwater Survey, Seneca Falls, NY. Project manager during site-wide groundwater investigation of 40-acre facility. Tasks managed in association with project included review of historical information, a survey of of all monitoring wells onsite, development of a site-wide sampling plan, coordination of all field efforts, and selection of subcontractors. After field activities were completed, managed evaluation of field and laboratory data to determine client's next steps to achieve their overall long term objectives for the site.

City of Amsterdam, Brownfields Remediation, Amsterdam, NY. ENSR was selected to complete the tasks associated with remediating and restoring a 23-acre former manufacturing site in Amsterdam, NY as part of the New York State Department of Environmental Conversation's (NYSDEC's) Environmental Restoration Program. The remedy called for asbestos abatement of four buildings at the site, demolition of four structures – including the demolition of a 240 ft. high smoke stack, excavation, transport and disposal of impacted soils, removal and disposal of hazardous materials, stream remediation and restoration, site grading and capping, and site restoration activities associated with redevelopment plans for the site. ENSR's negotiating efforts with the state on the client's behalf defrayed overall project costs – which totaled nearly $3,000,000 - by more than 70%. Field activities were completed in 2006.

On behalf of their client, ENSR:
• Negotiated acceptance of site into the NYSDEC's Environmental Restoration Program.
• Coordinated and conducted Project Scoping meetings with City and regulatory agencies.
• Prepared Remedial Design and coordinated activities with NYSDEC; as part of this task, ENSR conducted a site-wide survey, conducted pre-design data collection including building asbestos and lead surveys, designed the engineering aspects of the remedial alternative, including building demolition, impacted material excavation, groundwater dewatering and treatment system, and waste disposal.
• Prepared all technical design specifications and other contract documents, and facilitated all local and state permit submittals.
• Assisted City with the public bidding and bid evaluation components of the contract.
• Provided on-site Construction Administration and Construction Management to verify contractor's conformance with the plans and specifications, reviewed contractor invoices, and to address site issues.
• Prepared a Final Report that will become the basis for the Certificate of Completion report. This report will include an operations and maintenance plan and as-built drawings.

Saratoga Associates, Brownfields Remediation Project, Amsterdam, NY.
Serving as project manager for ENSR during this project, in which ENSR is serving as the environmental consultant to Saratoga Associates, which was contracted directly to the City of Amsterdam to conduct a site-wide site characterization of the former Chalmers Knitting Factory in Amsterdam, NY as part of the New York State Department of Environmental Conservation's Environmental Restoration Program.

Responsibilities included procurement of funds through State Assistance Contract Amendments, establishing site investigation schedule, successfully negotiated addition of other site concerns into current State Assitance Contract to expedite schedule for completion, and successfully contributed to grant applications that will defray more than 80% of the overall project costs. As part of this project, ENSR's responsibilities include: • Coordinated and conducted Project Scoping meetings with City and regulatory agencies.

- Prepared Site Characterization Plan and Interim Remedial Measure Amendment and coordinated activities with NYSDEC; as part of this task, ENSR conducted a site-wide survey, conducted pre-design data collection including building asbestos and lead surveys, designed the engineering aspects of the IRM, including building demolition, impacted material excavation, excavation of two 20,000-gallon USTs, and removal and appropriate disposal of six electrical transformers.
- Prepare all technical design specifications and other contract documents, and facilitated all local and state permit submittals.
- Assist City with the public bidding and bid evaluation components of the contract.
- Provide on-site Construction Administration and Construction Management to verify contractor's conformance with the plans and specifications, reviewed contractor invoices, and to address site issues.
-

SNC Lavalin, Ozone Pilot Study, Quebec, Canada. Project manager during unique pilot study for client in Northern Quebec, Canada. Pilot study was conducted to determine efficacy of introduction of ozone into vadose zone to treat fuel-oil related residuals. Findings of pilot study were presented at an international remediation conference and a white paper was written. Topics discussed in this paper include the comparison and optimization of oxidant introduction techniques, real-time monitoring results, and lessons learned regarding data requirements prior to implementing this technology full scale.

Confidential Client, In-Situ Solidification (ISS) Pilot Study, Massachusetts. Project Manager during an In-Situ Solidification (ISS) Pilot Study at a former pesticide manufacturing facility. Purpose of study was to determine if treatability study results were applicable to existing site conditions. As the Prime Contractor, responsibilities included planning and management of construction progress, and coordination of field activities with client, consultant and subcontractors.

Columbia Gas of Virginia, a NiSource Company, MGP/Utility, Portsmouth, Virginia. Design Engineer and Field Manager during $2 million remediation of approximately 8,000 tons of MGP-impacted materials in a residential neighborhood. Responsibilities included development of engineering controls to minimize neighborhood disturbance, designing vapor barrier systems beneath residences, and designing excavation plans that safeguarded the structural integrity of homes. On-site tasks included contractor supervision, management of noise, vibration and soil density testing, and project cost tracking. Developed engineering controls to minimize neighborhood disturbance and management of noise and fugitive emissions. Developed and oversaw plans for vibration and soil density testing and site restoration including drainage, landscaping, and hardscaping. Managed all environmental, health, and safety during field activities including community and work zone air monitoring.

Bay State Gas, a NiSource Company, MGP/Utility, Exeter, New Hampshire. Site Project Manager for $2.3 million In-Situ Solidification of approximately 9,000 cubic yards of impacted material at a former MGP facility. Responsibilities included planning and management of construction progress, managing client accessible web site with daily progress, cost tracking and public relations with neighbors. Managed weekly meetings between client, regulatory authorities and Contractor. Participated in monthly neighborhood meetings regarding Project. Designed site restoration plan and site water (ground and storm) management plan.

Orange and Rockland Utilities, MGP/Utility, Nyack, New York. Lead Design Engineer and Cost Estimator for Feasibility Studies. Responsibilities included evaluation of remedial alternatives, cost projections, client and regulator communications, and authoring the feasibility study.

Confidential Client, MGP/Utility, New York. Site Project Manager during numerous soil vapor intrusion surveys at former MGP facilities. Responsibilities included planning, scheduling and managing of field activities in sensitive residential areas. Developed and authored work plans to assess the indoor air quality within multiple residential and commercial structures built on top of or adjacent to former manufactured gas plants in urban and residential areas. Managed the budget, client relations, and field activities during these indoor air quality assessments.

Confidential Client, Utility, New York. Project Manager for the abatement and demolition of a former utility's process structure. Authored all work and health safety plans, and procured all necessary permits and notifications prior to field activities. Responsibilities included managing and coordinating abatement of lead and asbestos containing materials prior to building demolition. Coordinated and managed all construction debris and hazardous waste disposal Part 360 permitted facilities while adhering to all applicable federal and state waste transport and disposal regulations.

Internal, Regulatory Review, New York. Reviewed and provided comments to New York State Department of Health regarding NYSDOH's February 2005 Draft Document, "Guidance for Evaluating Soil Vapor Intrusion in the State of of New York". Attended joint NYSDOH and NYSDOH Vapor Intrusion Training seminar, July 2005. Conducted internal WEBEX presentation on NYSDOH / NYSDEC's updated Soil Vapor Intrusion regulatory policies and procedures, November 2005.

Confidential Clients, Gas Station Remediations, New York. Oversaw UST removals and monitoring well installations. Managed remedial groundwater, soil and soil vapor investigations. Designed, installed and managed various types of groundwater and soil vapor remediation systems.

National Fuel Gas, MGP/Utility, Buffalo, New York. Site Project Manager and Design Engineer during $2.5 million excavation, rendering and capping project of a former MGP facility. Oversaw the excavation, rendering and disposal of more than 30,000 tons of hazardous and non-hazardous wastes. The non-hazardous soils were designated as Beneficial Use Determinations (BUD) soils by the Part 360 permitted disposal facility, thereby reducing disposal costs. Managed the application of different types of capping methods over more than ten acres of impacted soils. Designed and managed implementation of design for dredging, capping and site-wide storm water management plans for facility. Designed and managed site restoration plan. Managed

weekly site meetings between client, contractor, sub-contractors and state regulatory officials.

AGLC, MGP/Utility, Georgia. Authored corporate-wide guidance document for control of dust, noise and fugitive volatile emissions generated during Remediation Projects. Document included recommended stages of implementation of engineering and process controls in the event of offsite exceedances.

Confidential Client, MGP/Utility, New Jersey. Designed soil vapor characterization plans and developed mitigation strategy to assess the indoor air quality within multiple commercial structures built on top of a former manufactured gas plant in an urban area.

Bay State Gas, a NiSource Company, MGP/Utility, Rochester, New Hampshire. Site Project Manager during $3 million soil remediation project. Project included excavation, amending and shipment of 18,000 tons of MGP impacted soil to allow shipment of soils to a thermal desorption facility. Managed, evaluated and optimized soil rendering activities. Managed weekly meetings between client, regulatory authorities and Contractor. Designed and managed implementation of site restoration plan. Authored project close-out documents

AFCEE, Military Base, New York. Project Engineer for soil and groundwater site investigations. Managed and
designed geoprobe, soil vapor, split spoon and groundwater surveys. Authored technical reports and performed drafting.

AGLC, MGP/Utility, Rome, Georgia. Site Engineer, Site Office Manager and Health and Safety Officer during the $2.8 million remediation of 25,000 tons of MGP impacted soil from a city lot. Tasks performed included air monitoring; confirmation soil sampling and review of analytical data; health and safety monitoring and management for all personnel onsite; and field office management.

National Fuel Gas, MGP/Utility, Buffalo, New York. Project Engineer and Site Construction Manager during the $6 million remediation of MGP-impacted river sediments. Tasks performed included site management, contractor supervision and health and safety monitoring. Activities managed included dredging and site rendering of more than 20,000 tons of impacted sediments along a 1600 feet section of the river.

Confidential Client, Soil/Sediment Remediation, New York. Project Manager during remediation of metals-impacted soils and sediments at a manufacturing facility. Coordinated and managed all debris and hazardous waste disposal while adhering to all applicable federal and state waste transport and Part 360 disposal permitting requirements. Managed storm drain construction and oversaw all restoration activities.

AGLC, MGP/Utility, Macon, Georgia. Design Engineer and Site Construction Manager for $2 million remediation of MGP-impacted river sediments. Responsibilities included designing and planning of dredging and capping activities.

On-site tasks included site management, contractor supervision and health and safety monitoring. Authored technical specifications for sediment remediation. Authored community air monitoring and water quality monitoring plans as well as site work plan and closeout reports including the final engineering report and the operation and maintenance plan. Managed field operations, including meetings with the Georgia Environmental Protection Division and local water authority. Oversaw water treatment operations and water monitoring program of river and treated water.

Confidential Client, Wood Treating Facility, New York. Project Manager for the rehabilitation of process operations at a wood treating facility. Based on federal requirements to cease the use of chromated copper arsenate (CCA), this facility was required to decontaminate their process line that included eight ASTs, piping, and the interior and exterior of the building that housed the ASTs. Coordinated and managed permitting for waste disposal to 6NYCRR Part 360 permitted landfill.

AFCEE, MIlitary Base, New York. Design Engineer for the design of culvert systems and site-wide storm water modeling, encompassing nearly 80 acres.

AFCEE, Military Base, New York. Site Engineer and Construction Manager for removal of USTs and ASTs. Directed source removal of contamination and supervised proper disposal of impacted soil. Site Engineer for the construction and start-up of a bio-venting technology pilot study. Performed site monitoring and optimization of the venting system.

Publications

"Advanced Oxidation Process/Biostimulation Process to Remediate Vadose Zone Hydrocarbon Contamination", D.Shearer and K.Reimer - ENSR, presentation at the 1st International Conference on Challenges in Site Remediation, Chicago, IL, October 2005.

"Urban Rebirth in an Old Mill City: The Amsterdam, New York Brownfields Story", D. Shearer and D. Sero - ENSR, poster presentation at the Engineers Society of Western Pennsylvania's Business of Brownfields Conference,Pittsburgh, PA, April 2007.

Sean M. Hart

Sr. Project Manager

Years Experience: 22

Technical Specialties

- Industrial Hygiene Sampling, Monitoring & Consulting
- Occupational Exposure Monitoring
- Indoor Air Quality Studies
- Environmental Site Assessments
- Asbestos Consulting and Management
- Regulatory Compliance Auditing
- Construction Cost Estimating
- Remedial Design
- Site Safety Consulting
- Microbial Investigations

Professional History

- ENSR
- Environmental Compliance Management Corp.
- Abscope Environmental, Inc.
- Watts Engineers, PC
- Oneida Asbestos Removal, Inc.

Education

- BS (Environmental Studies) State University of New York at Buffalo

Professional Registrations and Affiliations

- USEPA/NYSDOL Asbestos Building Inspector, New York
- USEPA/NYSDOL Asbestos Project Monitor, New York
- USEPA/NYSDOL Asbestos Air Sampling Technician, New York
- USEPA/NYSDOL Asbestos Project Designer, New York
- New York State Department of Health Approved Asbestos Trainer, New York
- Pro-Lab Certified Mold Inspector, New York

Representative Project Experience

Private Client, Comprehensive Asbestos Building Survey, former Hotel Syracuse Complex, Syracuse, New York. Mr. Hart managed and let a team of 6 Asbestos Building Inspectors during performance of a comprehensive asbestos building survey of the former Hotel Syracuse complex, comprised of more than 1,000,000 square feet, on more than 35 floors, and four separate buildings built between 1920 and 1990. The project was completed within four weeks, and provided the owner with documentation to be used for compliance with the OSHA Haz-Com Standard.

Haseley Construction Co., Site Safety Officer/Air Sampling and Analysis, Cherry Farm/River Road Site, Tonawanda, New York. Mr. Hart developed and implemented the Site-Specific Health and Safety Plan for a 100 acre Inactive Hazardous Waste Site. He acted as full-time Site Safety Officer on the site for the three year project duration. He managed two Air Sampling Technicians in collection and analysis of air samples for Metals, VOCs and other airborne hazardous substances. He assessed Air Sample Data, Meteorological Data, Physical Hazard Data and atmospheric conditions within confined spaces. He provided environmental characterization sampling, analysis and assessment of aqueous and non-aquous waste materials, provided site security and communication of hazards to employees and off-site interests. Mr. Hart also engaged in communications with regulatory personnel with regard to exposure to hazardous substances at the site.

Conrail/CSX Companies, Asbestos Survey, Abatement Design Monitoring, Various Locations across New York State. Mr. Hart acquired, managed and performed comprehensive asbestos management services for Conrail including survey, design and oversight of more than 50 buildings across New York State. Many of the buildings were in very remote areas accessible only from the railways. The work facilitated complete removal of many obsolete and decrepit buildings reducing the client's liability and improving the landscape across New York State.

Private Client, Pre-Demolition Building Inspection/Survey, Camillus Mall, Camillus New York. Mr. Hart led a team of five asbestos building inspectors during the course of per-demolition building inspection of more than 800,000 square feet of retail space within 6 separate buildings and 100s of tenants. The inspection was performed during full occupancy of the buildings, and was completed in three weeks. The survey included mapping out the structures, collection and analysis of bulk samples, assessment of asbestos containing materials, lead based paint, PCBs and other potentially dangerous/hazardous materials. The effort resulted in a comprehensive report which allowed for the safe and legal demolition of the structures, prior to re-development of the site by the largest retailer in the United States.

Town of Tonawanda, Pre-Demolition Building Inspection/Survey/Abatement Design and Oversight, former Agway Gain Mill, Tonawanda, New York. Mr. Hart managed a team of asbestos building inspectors, and consultants through the performance of comprehensive asbestos building survey, abatement design and oversight. The site was comprised of four different buildings including a 200,000 square foot grain mill, 50 gain silos, and support and maintenance buildings. The project was completed within a six-month timeframe, and allowed for the successful re-development of an abandoned industrial site.

United State Army, Indoor Air Quality Investigation/Fungal Spore Monitoring, Friends Settlement Apartments, Philadelphia, New York. Mr. Hart developed and implemented a sampling and analysis program to address an indoor air quality concern at an apartment complex consisting of 30 buildings each with four residential dwellings each. The consultation was performed for United States Army-Fort Drum Housing Authority following indoor fungal spore contamination as a result of faulty building construction. The work was performed over a period of nine months, and allowed for the re-occupation of each residential dwelling following complete rehabilitation and repair to the units.

Onondaga Community College, Hazardous Materials Building Survey, Abatement Design and Oversight, Ferrante Hall, Syracuse, New York. Mr. Hart provided full survey, design and oversight services for the science laboratory rehabilitation within the three-storey on-campus educational structure. The project included identification and inventory of asbestos containing materials, lead based paint, VOCs, PCBs, Heavy Metals, and other hazardous materials which may have been impacted during construction. The project was performed during four phases over a period of two years allowing for occupancy within the building during construction activities.

State University Construction Fund, Hazardous Materials Survey and Abatement Design, Upstate Medical University, Syracuse, New York. As lead consultant, Mr. Hart directed the complete survey and design for the Hazardous Materials Abatement portion of the 6th, 7th and 8th floor Vivarium project. The work included the complete survey and assessment of asbestos containing materials, lead based paint, heavy metals, Volatile Organic Compounds, Polychlorinated Biphenyls, and radioactive materials.

AES Corporation, Asbestos Survey, Hickling Power Plant, Corning, New York. Mr. Hart managed the comprehensive survey of an out-of-service coal-fired electrical generation power plant for asbestos containing building materials. The survey included the complete inspection of over 100,000 square feet of building space including two five story coal-fired boilers.

Appendix C

Site-Specific Sampling, Analysis, and Monitoring Plan

Prepared for:
City of Fulton and Oswego County
Fulton, New York




Site-Specific Sampling, Analysis, and Monitoring Plan

ERP Site ID #7-38-038

60/62 North Fifth Street

City of Fulton, New York

ENSR Corporation
March 2008
Document No.: 10683-007

Prepared for:
City of Fulton and Oswego County
Fulton, New York

Site-Specific Sampling, Analysis, and Monitoring Plan

ERP Site ID #7-38-038

60/62 North Fifth Street

City of Fulton, New York

Prepared By

Reviewed By

ENSR Corporation
March 2008
Document No.: 10683-007

Contents

List of Tables

List of Figures

List of Appendices

1.0 Project organization and responsibility

1.1 Project organization and responsibilities

- USEPA Review and Oversight — Jennifer Tsolisos
- NYSDEC Review and Oversight — Christopher F. Mannes, III PE
- NYSDOH Review and Oversight — Katie Comerford
- City of Fulton Review and Oversight — Ron Edick
- Oswego County Review and Oversight — Karen Noyes
- Overall Project Coordination — Luke P. McKenney
- Overall QA — Luke P. McKenney
- Systems Auditing — Luke P. McKenney
- Performance Auditing — Luke P. McKenney
- Sampling Operations — Denise Sero
- Sampling QC — Ray Smith
- Laboratory Analyses — TestAmerica
- Laboratory QC — Ray Smith
- Data Processing Activities — Denise Sero
- Data Processing QC — Denise Sero
- Data Quality Review — Waverly Braunstein

1.2 Personnel information

Name	Address	Responsibilities
Jenny Tsolisos, USEPA Brownfields Program Manager	290 Broadway, 18th Floor New York, NY 10007 Ph: (212) 637-4349	Ms. Tsolisos will represent the USEPA in its review and oversight function, in their financial sponsorship and arbiter on technical matters
Christopher F. Mannes, III PE, NYSDEC Project Manager	615 Erie Blvd. West Syracuse, NY 13204 Ph: (315) 426-7515	Mr. Mannes will represent the NYSDEC in its review and oversight function, in its financial sponsorship, and as arbiter on technical matters
Katie Comerford, Public Health Specialist NYSDOH Project Manager	217 S. Salina Street Syracuse, New York 13202 Ph: 315-477-8566	Ms. Comerford will represent NYSDOH in its review and oversight function, in its financial sponsorship, and as arbiter on technical matters

Name	Address	Responsibilities
Ronald C. Edick, City Engineer	Municipal Building 141 South First Street Fulton, New York 13069-1717 Ph: (315) 592-3454	Mr. Edick will represent the City in the review and oversight of the project, participate in citizen participation activities, and serve as the point of contact for the City
Karen Noyes, Oswego County Senior Planner	46 East Bridge Street Oswego, NY 13126 Ph: (315) 349-8295	Ms. Noyes will represent the City in the review and oversight of the project, participate in citizen participation activities, and serve as the point of contact for the County
Daniel M. Shearer, P.E. ENSR Corporation, Brownfields Program Manager	3 Marcus Boulevard Albany, NY 12205 Ph. (518) 453-6444	Mr. Shearer will oversee the project, provide quality control on documents and determinations and mentor the daily task manager.
Sean Hart, ENSR Corporation, IH Section Manager	5015 Campuswood Drive, Suite 104 East Syracuse, New York 13057 Ph. (315) 432-0506	Mr. Hart will review contractor and subcontractor compliance with the SAMP.
Bruce Coulombe, ENSR Corporation, ISC Senior Geologist	5015 Campuswood Drive,Suite 104 East Syracuse, New York 13057 Ph. (315) 432-0506	Mr. Coulombe will provide senior technical assistance during field investigation activities.
Kathleen Harvey ENSR Corporation, Regional Health and Safety Manager	2 Technology Park Drive Westford, MA 01886 Ph. (978) 589-3000 kharvey@ensr.aecom.com	Ms. Harvey will prepare the site-specific Health and Safety Plan and serve as the health and safety point of contact for ENSR staff.
Waverly Braunstein, ENSR Corporation, Senior Project Chemist	2 Technology Park Drive Westford, MA 01886 Ph. (978) 589-3000	Ms. Braunstein will act as Quality Assurance Officer (QAO) and will conduct data validation activities.

1.3 Laboratory information

Name	Contact and telephone number	Sample Analyses
TestAmerica	Richard Lafond W: (315) 431-0171 F: (315) 431-0151 Richard.Lafond@testamericainc.com	Soil and groundwater samples: TCL VOCs + MTBE via USEPA Method 8260B, TCL SVOCs via USEPA Method 8270C, TAL metals and cyanide via USEPA Methods 6010, 6020, 7470, and 9012A, and PCBs via USEPA Method 8082. Soil vapor samples: VOCs via USEPA Method TO-15.

2.0 Project definition

2.1 Site background

This Site-specific Brownfields Sampling, Analysis, and Monitoring Plan (SAMP) for the project site, located at 60/62 North Fifth Street (Site ID#7-38-038) in the City of Fulton, County of Oswego, New York contains a Historical Data Review and Site Reconnaissance reports. These reports contain extractions from the Phase I Environmental Site Assessment conducted on the property on behalf of Oswego County, as part of their USEPA Brownfield Program.

As part of Oswego County's USEPA Brownfield Assessment Program, ENSR conducted a Phase I Environmental Site Assessment (ESA) in June 2005, in an effort to develop an initial understanding of the environmental conditions associated with the property. The Phase I ESA was conducted in accordance with the scope and limitations of the ASTM Standard Practice E 1527-00 for ESAs and USEPA's Proposed All Appropriate Inquiries (AAI), as described in 40 CFR Part 312. A summary of ENSR's historical review and site reconnaissance is included below. The Phase I ESA was previously provided to the NYSDEC and USEPA and is available upon request.

2.2 Historical data review report

The project site is located at 60/62 North Fifth Street (Site ID#7-38-038) in the City of Fulton, County of Oswego, New York. The site is approximately a half acre in size, and consists of gravel and grassy areas. A concrete pad exists on the southeast corner of the property. The site is located in a residential neighborhood, and is currently vacant.

In June 2005, ENSR conducted a Phase I Environmental Site Assessment (ESA) of the property on behalf of Oswego County, as part of their USEPA Brownfield Program, in an effort to develop an initial understanding of the environmental conditions associated with the property. The Phase I study identified the closure issues and ENSR recommended a Phase II Environmental Site Assessment be completed to further investigate and remediate the site as well as to verify the appropriate closure documentation could be obtained for the subject site, as this is a residential area. A more detailed summary of the findings of the Phase I ESA is included in the Remedial Investigation Work Plan.

During the Phase I Investigation, ENSR learned that a 700-gallon gasoline UST had been present on-site. During demolition of a concrete block warehouse previously located on the Site, the UST was discovered. The UST was approximately one-quarter full of gasoline and the tank exhibited signs of leaking. The NYSDEC was immediately notified, and the subject property was issued NYSDEC Spill# 0310334. The UST was removed by Op-Tech, Inc., and limited quantities of petroleum-contaminated soil were removed. However, confirmatory soil sampling revealed that some petroleum-impacted soils remained at the site. In addition, the confirmatory soil samples did not include analysis of solvents and metals that may be related to previous site usage as a foundry.

2.3 Site reconnaissance report

2.3.1 Land areas

The vacant property is located in a residential area. Dimensions of the subject property are approximately 33 feet wide by 100 feet in depth. A small concrete and asphalt pad, approximately 3 feet by 5 feet in dimension, is located in the southeast corner of the property. This is reportedly the former location of the 700-gallon UST. During ENSR's Phase I ESA site inspection, ENSR observed four abandoned tires within a pile of gravel along the southwest corner of the subject property.

According to ENSR's Phase I ESA (June 2005), a structure on the property was demolished in January 2004. The former structure was constructed of concrete block materials and was approximately 30-feet by 60-feet in size.

2.3.2 Utilities

During ENSR's Phase I ESA site inspection, no potable water supply wells, groundwater monitoring wells, pits, ponds, or lagoons were observed on the subject site. The site was serviced by municipal water and municipal sewer. National Grid provided the subject property with electricity and natural gas for power and heating purposes. Telephone service was provided by Alltel, Inc of New York. The date of connection to the municipal sewer is unknown.

ENSR also observed one utility pole on the southeast corner of the subject property. No pole-mounted or pad-mounted electrical transformers were located at the subject property during the inspection.

2.3.3 Physical characteristics

Topography on site is relatively flat with a gentle slope to the east-northeast. Vegetation observed on the site during ENSR's Phase I site inspection was limited to small patches of grass and a tree along the northwest corner of the subject property. ENSR reviewed the Flood Insurance Rate Map for the City of Fulton (Community Panel Number 360649 0002 B) as part of the Phase I ESA. According to ENSR's Phase I ESA Report (June 2005), the subject site is located within Zone C, an area of minimal flooding.

Based on topographic information, ENSR's Phase I ESA Report (2005), and the Site Investigation conducted by Strategic Environmental Management, Inc. (2004) on an adjacent property, groundwater is estimated to be at a depth of 4 to 6 feet below ground surface (ft bgs). Local groundwater flow beneath the site is inferred to be in a northwesterly direction toward Oswego Canal and surface flow is inferred to be in a northeasterly direction towards Waterhouse Creek, which is located approximately 900 feet northeast of the subject site.

ENSR reviewed US Department of Agriculture – Soil Conservation Service's Publication, Soil Survey of Oswego County as part of their Phase I ESA. According ENSR's Phase I ESA Report (2005), the subject property is located upon Amboy series soils. These soils are well-drained with a high content of silt and very find sand. Site soils were categorized as very fine sandy loam, with 2 to 6 percent slopes. The local bedrock formation is Lower Silurian (Medina Group and Queenston Formation).

2.3.4 Surrounding properties

Surrounding property information is derived from ENSR's Phase I ESA Report (June 2005). The subject site is located in a mixed commercial/residential area in the City of Fulton, New York. The site is bounded to the north by a residential property, beyond which is Erie Street and other residential properties. To the east, the site is abutted by North Fifth Street, beyond which are residential properties. The site is bordered to the south by a residential property, beyond which is Seneca Street.

2.4 Project definition

The objective of the Remedial Investigation (RI) for the site is to characterize the nature and extent of contamination to soils surrounding the former UST location and to determine whether the UST may have impacted groundwater at the site. The Remedial Investigation Work Plan describes in detail the specific tasks to be completed at the site. A brief summary is provided below.

To characterize the vertical and horizontal extent of impacts associated with the UST and to confirm or deny the presence of other contaminants of concern (COCs) related to previous site usage, ENSR will advance seventeen soil borings. To determine the presence of groundwater impacts resulting from the former UST and/or from previous site usage, four groundwater monitoring wells will be installed on the subject property. Additionally, five soil vapor probes will be installed to evaluate COCs in soil vapor. Soil and groundwater samples will be submitted to an off-site NYSDOH ELAP certified laboratory for analysis of target compound list (TCL) volatile organic compounds (VOCs) and Methyl-Tert-Butyl-Ether (MTBE) via USEPA Method 8260B, TCL semi-volatile organic compounds (SVOCs) via USEPA Method 8270C, target analyte list (TAL) metals and cyanide via USEPA Methods 6010, 6020, 7470/7471, and 9012A, and polychlorinated biphenyls (PCBs) via USEPA Method 8082. Soil vapor samples will be analyzed for VOCs by USEPA Method TO-15.

2.4.1 Scope of work

The detailed scope of work at the site is described in the project Work Plan. Samples will be collected from soil borings and monitoring wells. These samples will be analyzed using the USEPA SW-846 "Test Methods for Evaluating Solid Waste," November 1986, 3rd edition (and subsequent updates) and by USEPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air.

3.0 Project description

3.1 Data use objectives

The following items are the objectives of this site-specific SAMP for the project site, located at 60/62 North Fifth Street (Site ID#7-38-038) in the City of Fulton, County of Oswego, New York.

- Delineate horizontal and vertical soil and/or groundwater contaminant concentrations associated with the former UST (see Section 2.2), and identify clean areas.
- Locate and identify any other sources of contamination associated with historic usage of the site.
- Ascertain if there is a threat to public health or the environment, including fish and wildlife resources
- Determine if additional remediation is required.

3.2 Brownfield Site Investigation Reports

Upon the completion of the Brownfields Remedial Investigation sampling project, the Remedial Investigation Report (RIR) will be developed. The RIR will include one or more of the following recommendations to summarize the environmental condition of the property:

- Additional sampling is required.
- Undertake remediation.
- No additional actions are required.

The Remedial Investigation Report will base any of the aforementioned recommendations on the data collected during the Remedial Investigation, and on other data or facts that have been collected on the subject property.

3.3 Quality of data needed for environmental data measuring

The sampling results must be of sufficient quality to ensure that the sampling results accurately characterize site conditions, as these sampling results may be used to make important and potentially costly decisions concerning the re-development of Brownfields sites. To ensure an accurate characterization of environmental conditions for the subject property, this site-specific Brownfields SAMP is based on the following procedures:

- Logical evaluation of available site information.
- Selection of an appropriate sampling design.
- Selection and utilization of suitable analytical field screening and sampling techniques.
- Proper sample collection, preservation, and transportation techniques are planned.
- Collection and analysis of appropriate quality assurance/quality control (QA/QC) samples.
- Planning of proper fixed laboratory analyses.
- Logical presentation and interpretation of analytical data.
- Definition of data usability criteria.

3.4 Project description

A more detailed description of the work to be performed at the site is included in the Remedial Investigation Work Plan. To characterize the vertical and horizontal extent of impacts associated with the UST and to confirm or deny the presence of other contaminants of concern (COCs) related to previous site usage, ENSR will advance seventeen soil borings. To determine the presence of groundwater impacts resulting from the former UST and/or from previous site usage, four groundwater monitoring wells will be installed on the subject property. Additionally, six soil vapor probes will be installed to evaluate COCs in soil vapor. An additional soil vapor sample may be collected from beneath the concrete pad associated with the former UST. This sample point is contingent upon the results of the soil investigation. Soil and groundwater samples will be submitted to an off-site NYSDOH ELAP certified laboratory for analysis of TCL VOCs and MTBE via USEPA Method 8260B, TCL SVOCs via USEPA Method 8270C, TAL metals via USEPA Methods 6010, 6020, 7470/7471, and 9012A and PCBs via USEPA Method 8082. Soil vapor samples will be will be submitted to an off-site NYSDOH ELAP certified laboratory and analyzed for VOCs by USEPA Method TO-15.

Soil samples will be screened in the field using a photoionization detector (PID) to detect the presence of volatile organic compounds (VOCs). Subsurface soil samples will be collected using disposable plastic trowels for analysis from an interval, at the discretion of the ENSR geologist/engineer, dependent on observations during sampling (odors, discoloration, etc) or elevated photoionization detector (PID) field screening results.

Soil vapor sampling points will be tested to ensure that no outside air is infiltrating the sample by utilizing a tracer gas (helium). The area where the sampling point intersects the ground surface will be enclosed in a sealed vessel, and the atmosphere surrounding the sampling point will be enriched with helium gas. A vapor sample from the probe will be analyzed with a portable monitoring device before and after sampling for the compounds of concern.

Groundwater samples will be collected in accordance with EPA Region 2 Low Flow Sampling SOP; therefore, during sampling, groundwater quality parameters (pH, temperature, conductivity, oxidation-reduction potential, turbidity and dissolved oxygen) will be recorded periodically using a water-quality meter with a flow-through cell (such as a Horiba U-22 meter). The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings (±0.1 SU for pH, ±3% for specific conductivity, ±10 mv for oxidation-reduction potential, and ±10% for turbidity and dissolved oxygen).

3.5 Project time line

The following schedule has been developed assuming Agencies' approval of the IRM and Remedial Investigation Work Plan is received by April 30, 2008. ENSR has allotted for a 45-day Agency review period of the Remedial Investigation and Remedial Alternatives Report.

Table 3-1 Project schedule

Task	Start Date	Completion Date	Notes
Mail a fact sheet to the mailing list and announce through local news media the availability of the Work Plan at local repositories.	June 2, 2008	June 6, 2008	To commence within two weeks of receipt of USEPA and NYSDEC approval of Work Plans
Conduct Remedial Investigation	June 9, 2008	June 27, 2008	To commence within four weeks of receipt of USEPA and NYSDEC approval of Work Plans. Estimated up to four weeks in the field.
Prepare and submit draft Remedial Investigation report	August 4, 2008	August 15, 2008	To be submitted within six weeks following the completion of field activities
Prepare and submit draft Remedial Alternatives report	August 18, 2008	September 5, 2008	To be submitted within four weeks of submittal of draft Remedial Investigation report
Prepare and submit final Remedial Investigation and Remedial Alternatives report	October 20, 2008	October 31, 2008	Assumed 45-day USEPA and NYSDEC review period. Final RI/RAR to be submitted within two weeks of receipt of USEPA and NYSDEC comments

4.0 Sampling design

4.1 Sampling and analysis

The purpose of performing a Brownfields site investigation is to determine the presence and identity of contaminants, as well as the extent to which they have become integrated into the surrounding environment. The objective of this effort will be to collect and analyze environmental samples that are representative of the media under investigation. The methods and equipment used for collecting environmental matrices of concern will vary with the associated physical and chemical properties of each media designated for sampling.

To ensure sampling and analytical protocols are appropriate, it is necessary to describe the objectives and details comprising these activities. As a result, the design of a proper sampling scheme, including protocols for collecting rinse blanks, trip blanks, duplicates, and background samples should be derived from an accepted guidance. As such, the *USEPA Superfund Program Representative Sampling Guidances, Volume 1: Soil; Volume 5: Water and Sediment, Part II - Ground Water*, and the New York State Department of Health's *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* are included as attachments to this site-specific Brownfields SAMP. These media specific guides are formal sampling guidances that outline protocols for the collection of representative samples to ensure the accurate characterization of site conditions. Therefore, following these guides will assist in the design of a fitting sampling network that is thoroughly justified and documented in this Site-Specific Brownfields SAMP.

4.2 Sampling design

The sampling program will provide data concerning the presence and the nature and extent of contamination of groundwater, soil and soil vapor, if any. Sample locations, analytical parameters, and collection rationale are provided in Table 4-1. One soil field duplicate sample, one groundwater field duplicate sample, and one soil gas field duplicate will be collected. One equipment blank sample will be collected for each type of sampling equipment used, except soil gas, as no sampling equipment is applicable to soil gas sample collection. A trip blank will accompany each shipment of aqueous samples analyzed for VOCs.

Table 4-1 Summary of samples and analysis

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SB-1	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-2	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-3	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SB-4	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-5	Soil	Highest PID or other location as determined by ENSR field geologist	Through concrete pad in area of former UST	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST.	COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-6	Soil	Highest PID or other location as determined by ENSR field geologist	Southeastern corner of the property, adjacent to concrete pad	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST.	COCs associated with the UST include BTEX, possibly MTBE or lead.
SB-7	Soil	Highest PID or other location as determined by ENSR field geologist	East-central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former use of the property for metalworking, automobile painting, and as a foundry.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-8	Soil	Highest PID or other location as determined by ENSR field geologist	Northeast portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the north.	COCs associated with former site use include VOCs, SVOCs, and metals.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SB-8	Soil				Historic uses of properties to the northeast include engine and boat manufacture, and laundry operations.	COCs associated with the historic use of nearby properties include chlorinated VOCs and metals.
SB-9	Soil	Highest PID or other location as determined by ENSR field geologist	Northern perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the north.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-10	Soil	Highest PID or other location as determined by ENSR field geologist	Northwest perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the west.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-11	Soil	Highest PID or other location as determined by ENSR field geologist	Western perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the west.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-12	Soil	Highest PID or other location as determined by ENSR field geologist	Southwestern perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the west.	COCs associated with former site use include VOCs, SVOCs, and metals. COCs associated with former adjacent property use include metals.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SB-12	Soil				Characterize vertical and horizontal impacts associated with historic use of the property to the southwest as a tin shop	
SB-13	Soil	Highest PID or other location as determined by ENSR field geologist	Southwestern area of the property.	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the west. Characterize vertical and horizontal impacts associated with historic use of the property to the southwest as a tin shop	COCs associated with former site use include VOCs, SVOCs, and metals. COCs associated with former adjacent property use include metals.
SB-14	Soil	Highest PID or other location as determined by ENSR field geologist	Southern perimeter of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site and assess the possibility of off-site migration to the south.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-15	Soil	Highest PID or other location as determined by ENSR field geologist	Southeast portion of the property, adjacent to the concrete pad and location of former UST	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST.	COCs associated with the UST include BTEX, possibly MTBE or lead.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SB-16	Soil	Highest PID or other location as determined by ENSR field geologist	Central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site.	COCs associated with former site use include VOCs, SVOCs, and metals.
SB-17	Soil	Highest PID or other location as determined by ENSR field geologist	Central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Characterize vertical and horizontal impacts associated with former usage of the site.	COCs associated with former site use include VOCs, SVOCs, and metals.
MW-1	Soil	Highest PID or other location as determined by ENSR field geologist	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.
MW-2	Soil	Highest PID or other location as determined by ENSR field geologist	East-central portion of the property.	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST and former site usage.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
MW-3	Soil	Highest PID or other location as determined by ENSR field geologist	Southeastern perimeter of property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess upgradient groundwater quality.	Ideally, no COCs will be associated with the upgradient well location; historic uses of properties to the south do not represent RECs.
MW-4	Soil	Highest PID or other location as determined by ENSR field geologist	North-central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts associated with the former UST and former site usage.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead
SV-1	Soil Vapor	5 ft bgs	Northeastern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the northeastern portion of the site, as well as determine the potential for off-site migration of any impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.
SV-2	Soil Vapor	5 ft bgs	Northwestern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the northwestern portion of the site, as well as determine the potential for off-site migration of any impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SV-3	Soil Vapor	5 ft bgs	Northwestern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the northwestern portion of the site, as well as determine the potential for off-site migration of any impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.
SV-4	Soil Vapor	5 ft bgs	Southern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the southern portion of the site, as well as determine the potential for off-site migration of any impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.
SV-5	Soil Vapor	5 ft bgs	Eastern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the southern portion of the site, as well as determine the potential for off-site migration of any impacts, particularly along underground utility pathways.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.
SV-6	Soil Vapor	5 ft bgs	Southwestern perimeter of the property	VOCs	Assess the presence of soil vapor impacts in the southwestern portion of the site, as well as determine the potential for off-site migration of impacts.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern.

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
SV-7 (Contingent)	Soil Vapor	2 inches below slab material	Southeastern portion of the property, below the concrete slab	VOCs	Assess the presence of contaminated soil vapors beneath the concrete pad associated with the UST. Sampling is contingent upon the results of the soil investigation.	Soil vapor impacts would be restricted to VOCs; no other COCs are a soil vapor concern. VOCs associated with the UST would include BTEX and MTBE
MW-1	Ground water	NA	East of the property boundary, in N. 5th Street	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the possibility for migration of groundwater impacts associated with the UST or historic site usage along underground utility pathways.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead.
MW-2	Ground water	NA	East-central portion of the property.	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts to groundwater associated with the former UST and former site usage.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Site Investigation Samples						
MW-3	Ground water	NA	Southeastern perimeter of property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess upgradient groundwater quality.	Ideally, no COCs will be associated with the upgradient well location; historic uses of properties to the south do not represent RECs.
MW-4	Ground water	NA	North-central portion of the property	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Assess the presence of impacts to groundwater associated with the former UST and former site usage.	COCs associated with historic use of the site for metalworking, automobile paint, and as a foundry include VOCs, SVOCs, and metals. COCs associated with the UST include BTEX, possibly MTBE or lead

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Quality Assurance/Quality Control Samples						
QA/QC Duplicate	Soil	Location to be determined by ENSR field geologist	Determined by ENSR field geologist	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Field duplicates ensure that laboratory analyses are accurate.	NA
QA/QC Duplicate	Ground water	NA	Determined by ENSR field geologist	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Field duplicates ensure that laboratory analyses are accurate.	NA
MS/MSD	Soil	Location to be determined by ENSR field geologist	Determined by ENSR field geologist	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	MS/MSD samples are analyzed by the laboratory to ensure that the material sampled does not have qualities that cause interference with the analysis.	NA
MS/MSD	Ground water	NA	Determined by ENSR field geologist	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	MS/MSD samples are analyzed by the laboratory to ensure that the material sampled does not have qualities that cause interference with the analysis.	NA

Sample ID	Matrix	Sample Depth	Sample Location	Analytical Parameters	Rationale	Contaminants of Concern
Quality Assurance/Quality Control Samples						
Rinse Blank	Water	NA	NA	TCL VOCs + MTBE, TCL SVOCs, TAL Metals + Cyanide, PCBs	Rinse blanks are collected by pouring clean, deionized water over field sampling equipment to ensure that sampling equipment is not contaminating samples.	NA
Trip Blank	Water	NA	NA	TCL VOCs + MTBE	Trip blanks are 40 mL vials containing clean, deionized, VOCs-free water, which accompany sample bottles to ensure that ambient VOCs sources are not impacting samples.	NA

5.0 Method and SOP reference table

5.1 Standard Operating Procedures (SOP)

Often many routine laboratory and field operations are cataloged to form Standard Operating Procedures (SOPs). Whenever SOPs are applicable and available, they should always be incorporated into the overall data collection activities inherent to performing a Brownfields site investigation. Site-specific Brownfields SAMPs should delineate all activities that could directly or indirectly influence data quality. This should include a determination of all operations that can be covered by SOPs. Therefore, all Site-specific Brownfields SAMPs should contain, at a minimum, SOPs for the following operations:

- Sampling and analytical methodologies.
- Field equipment selection and use.
- Field equipment calibration and standardization.
- Field equipment preventive maintenance.
- QC procedures for intra-laboratory and intra-field activities.
- Data validation.
- Document control procedures.

5.2 Sampling SOPs

To ensure environmental sample collection efforts are representative of site conditions, it is customary to utilize accepted SOPs to optimize sampling activities. Sampling SOPs are typically proven protocols that may be varied or changed, as required, depending upon site conditions and/or equipment limitations imposed by the procedure. In all instances, those sampling procedures which will be employed to collect environmental samples for a given site investigation must be documented in the Site-Specific Brownfields SAMP.

To facilitate the selection of appropriate sample collection techniques, it is advantageous that the sampling SOPs employed for a site-specific Brownfields investigation be derived from an accepted guide. As such, the *U.S.USEPA Compendia of Emergency Response Team (ERT) Sampling Procedures* including *Soil Sampling and Surface Geophysics Procedures*, and *Groundwater Sampling Procedures,* and the New York State Department of Health's *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* are included as attachments to this Site-specific Brownfields SAMP. These media-specific sampling protocols are the USEPA's accepted SOPs for collecting potentially contaminated environmental matrices of concern such as soil and water. Therefore, to optimize sample collection efforts, these protocols are to be used in conjunction with the *Superfund Program Representative Sampling Guidances*.

5.3 SOP reference table

Table 5-1 SOP reference table

Project Sampling SOPs
1a. Contract Laboratory Program Guidance for Field Samplers (Attachment A)
2a. NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (Attachment B)
3a. Superfund Program Representative Sampling Guidances –(Attachment C)
4a. MiniRAE 2000 Instrument Manual, May 2000, prepared by RAE Systems (manufacturer) – (Attachment D)
5a. ENSR SOP #7315 – Operation/Calibration of a Photoionization Detector (PID) (2002) – (Attachment E)
6a. Horiba U-22XD Water Quality Meter Instrument Manual, (no date) – (Attachment F)
7a. GasCheck 5000I Instruction Manual – (Attachment G)
8a. U.S.EPA Compendia of Emergency Response Team (ERT) Sampling Procedures (Attachment H)
9a. ENSR SOP # 7115 – Subsurface Soil Sampling by Split Spoon (1994) – (Attachment I)
10a. ENSR SOP #7116 – Subsurface Soil Sampling by Geoprobe Methods (2006) – (Attachment J)
11a. EPA Region 2 Low Flow Sampling SOP – (Attachment K)
12a. ENSR SOP #7220 – Monitoring Well Construction and Installation (2006) – (Attachment L)
13a. ENSR SOP #7221 – Monitoring Well Development (2006) – (Attachment M)
14a. ENSR SOP #7510 – Packaging and Shipment of Samples (1999) – (Attachment N)
15a. ENSR SOP #7600 – Decontamination of Equipment (1994) – (Attachment O)
16a. Example ENSR Field Data Sheets – Boring Log, Well Installation Log, Test Pit Log, Monitoring Well/Piezometer Development Record, Low-Flow Groundwater Sample Collection Record (Attachment P)
17a. Example Sample Label – (Attachment Q)
18a. Example of Laboratory Chain of Custody Record and Custody Seal – (Attachment R)
Analytical Method Reference
1b. Volatile Organic Compounds – SW-846 Method 8260B
2b. Semi-Volatile Organic Compounds – SW-846 Method 8270C
3b. Polychlorinated Biphenyls as Aroclors – SW-846 Method 8082
4b. Target Analyte List Metals – SW-846 Methods 6010B//6020/7470A/7471A
5b. Cyanide – SW-846 9012A
6b. Volatile Organic Compounds in Air – USEPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Method TO-15

Project Analytical SOPs
1c. Laboratory Quality Manual – SevernTrent (Currently TestAmerica) Laboratories: Buffalo (2005), New York and Knoxville, Tennessee (2006) – (Attachment S)
2c. Laboratory Standard Operating Procedures for Analytic Methods – SevernTrent (Currently TestAmerica) Laboratories: EPA Methods 8260B (2006), 8270C (2005), 6010B (2006), 9012A (2006), 7470A (2006), 7471A (2006), 8082 (2003) – (Attachment T)
3c. Laboratory Standard Operating Procedures for Support Equipment Maintenance, Record Keeping, and Corrective Actions of Analytical Balances, Temperature Control Devices, and Reagent Water (2006) – SevernTrent (Currently TestAmerica) Laboratories – (Attachment U)
4c. Laboratory Control Limits for Organics and Inorganics (2007) – SevernTrent (Currently TestAmerica) Laboratories – (Attachment V)
5c. NYS DEC Analytical Service Protocol Exhibit B, Reporting and Deliverables Requirement (2005) – (Attachment W)

6.0 Sampling and analytical methods requirements

6.1 Sample container preparation and sample preservation

Only new, certified clean (as per OSWER directive 9240.0-05A), sample containers will be used to collect samples for this project. The laboratory will maintain certificates of analysis for each lot of sample containers used and canisters, copies of which will be provided by the laboratory upon request. The appropriate preservatives will be added to each container by the laboratory just prior to shipment to the site. The types of containers are shown in Tables 6-1, 6-2, and 6-3. TCLP container types and holding times are presented as contingency samples, in the event that TCLP analysis is required (i.e., waste characterization samples).

Samples shall be preserved according to the preservation techniques given in Tables 6-1, 6-2, and 6-3. Preservatives will be added to the sample bottles by the laboratory prior to their shipment in sufficient quantities to ensure that proper sample pH is met. Following sample collection, the sample bottles used for collection of water and soil/solid waste samples should be placed on ice in the shipping cooler, cooled to 4^{o}C with ice or "blue ice," and delivered to the laboratory within 24 hours of collection. Chain-of-custody procedures are described in Section 9.0. [Note: soil vapor samples do not require cooling, and should be shipped at ambient temperature.]

Table 6-1 Water sample containerization, preservation, and holding times

Five groundwater samples (including one field duplicate) will be collected for analysis, one rinse blank and one trip blank (VOC only) will be analyzed:

Analysis	Bottle Type	Preservation [(a)]	Holding Time [(b)]
Volatile Organic Compounds (VOCs) and MTBE	2-40 mL glass vial w/ Teflon septum	Cool to 4^{o}C HCl to pH <2	10 days
Semi-volatile Organics Compounds (SVOCs)	1000 mL glass w/ Teflon lined cap	Cool to 4^{o}C	5 days*
Metals	1000 mL plastic bottle Cool to 4^{o}C	Nitric Acid to pH < 2	6 months, except mercury (26 days)
Cyanide	500 mL plastic bottle	NaOH to pH > 12 Cool to 4^{o}C	12 days

(a) All samples to be preserved in ice during collection and transport.
(b) Days from validated time of sample receipt (VTSR), or 2 days after collection, whichever is less.
(c) Semi-volatile organic compounds or PCBs.
* Holding time to extraction; extracts must be analyzed within 40 days of extraction.

Table 6-2 Soil and waste sample containerization and holding times

Twenty-eight soil samples (including three field duplicates) will be collected for analysis (TCLP analysis presented in the event that waste characterization samples are required):

Analysis	**Bottle Type**	**Preservation** (a)	**Holding Time** (b)
Volatile Organic Compounds (VOCs) and MTBE	Wide-mouth glass w/ Teflon lined cap	Cool to 4°C	10 days
Other Organic Compounds (c)	Wide-mouth glass w/ Teflon lined cap	Cool to 4°C	10 days*
Metals	Wide-mouth plastic or glass	Cool to 4°C	6 months, except mercury (26 days)
Cyanide	Wide-mouth plastic	Cool to 4°C	12 days
TCLP Organic Compounds	Wide-mouth glass w/ Teflon lined cap	Cool to 4°C	See Table 6-4
TCLP Metals	Wide-mouth plastic or glass	Cool to 4°C	See Table 6-4

(a) All samples to be preserved in ice during collection and transport.
(b) Days from date of VTSR or 2 days after sample collection whichever is less.
(c) Semivolatile organic compounds and PCBs.
(d) Contingency – TCLP analysis may be required if waste characterization samples are necessary.
* Extracts of soil samples must be analyzed within 40 days of extraction.

Table 6-3 Soil vapor sample containerization, preservation, and holding times

Seven soil vapor samples (including one field duplicate) will be collected for analysis:

Analysis	**Bottle Type**	**Preservation**	**Holding Time** (a)
Volatile Organic Compounds (VOCs)	6 L pre-cleaned SUMMA® canister	None	30 days

(a) Days from time of sample collection.

6.2 Sample holding times

The sample holding times for organic and inorganic parameters are given in Tables 6-1, 6-2, and 6-3 and must be in accordance with the NYSDEC ASP requirements. Holding times for Toxicity Characteristic Leaching Procedure (TCLP) samples are given in Table 6-4. The NYSDEC ASP holding times must be strictly adhered to by the laboratory. Any holding time exceedances must be reported. As discussed above, TCLP analysis may be required if waste characterization sampling becomes necessary. No samples are currently planned for TCLP analysis.

Table 6-4 TCLP sample holding times

Analytical Parameter	From: VSTR To: TCLP Extraction	From: TCLP Extraction To: Preparative Extraction	From: Preparative Extraction To: Determinative Analysis
Volatiles	7 days	NA	7 days
Semivolatiles	5 days	7 days	40 days
Mercury	5 days	NA	28 days
Metals (except Mercury)	180 days	NA	180 days

TCLP - Toxicity Characteristic Leaching Procedure
NA - Not Applicable

All NYSDEC holding times are presented as time elapsed from validated time of sample receipt (VTSR) at the laboratory. Note that NYSDEC requires samples to be delivered to the laboratory within 48 hours of sample collection. While every attempt will be made to deliver samples within 48 hours, this may not always be possible. In those cases, holding times will begin two days after sample collection.

7.0 Preventative maintenance – – laboratory and field equipment

7.1 Preventive maintenance procedures

Equipment, instruments, tools, gauges, and other items requiring preventive maintenance will be serviced in accordance with the manufacturer's specified recommendations and written procedure developed by the operators. SOPs 4a, 5a, 6a, and 7a discuss the calibration and operation of field equipment, (See Section 5.3; these SOPs are provided as Attachments D, E, F, and G) and will be used to ensure proper functioning.

A list of critical spare parts will be established by the operator. These spare parts will be available for use in order to reduce the downtime. A service contract for rapid instrument repair or backup instruments may be substituted for the spare part inventory.

Preventative maintenance of laboratory equipment is discussed in Section 5.4.2 of the laboratory-provided Laboratory Quality Manual, Attachment S.

7.2 Schedules

Written procedures will establish the schedule for servicing critical items in order to minimize the downtime of the measurement system. The laboratory will adhere to the maintenance schedule, and arrange any necessary and prompt service. Required service will be performed by qualified personnel.

7.3 Records

Logs shall be established to record and control maintenance and service procedures and schedules. All maintenance records will be documented and traceable to the specific equipment, instruments, tools, and gauges. The field team will maintain and file all logs related to field equipment, and the logs will be reviewed periodically during the project by the QAO.

Laboratory records produced shall be reviewed, maintained, and filed by the operators at the laboratory. The Laboratory Quality Manual (Attachment S) details the processes for reviewing, maintaining, and filing these records (Section 4). The QAO may audit these records to verify complete adherence to these procedures.

8.0 Calibration and corrective action

8.1 Calibration

8.1.1 Field instruments

All field analytical equipment will be calibrated immediately prior to each day's use. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. Records of all instrument calibration will be maintained by the Field Team Leader. Copies of all the instrument manuals will be maintained on-site by the Field Team Leader.

Calibration procedures for instruments used for monitoring health and safety hazards (e.g., photoionization detector and explosimeter) are provided in the Health and Safety Plan.

8.1.2 Laboratory instruments

The laboratory will follow all calibration procedures and schedules as specified in the sections of the USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods given in Section 6.0. Laboratory SOPs relating to laboratory instruments are presented in Attachment U.

8.2 Internal quality control checks and frequency

8.2.1 Field sample collection

The assessment of field sampling precision will occur through the collection and analysis of field duplicate and MS/MSD samples. The accuracy of field sampling will be evaluated by trip blanks, equipment blanks, and matrix spikes. The procedures associated with the collection of these samples, and the frequency of collection, are defined in Section 11.0 of this SAMP.

8.2.2 Field measurement

QC procedures for pH, temperature, turbidity, specific conductance, water level measurements, and soil VOC headspace measurements will include one or more of the following QC procedures: checking the reproducibility of the measurement by obtaining duplicate readings on a single sample, calibrating the instrument or by comparing it to a known standard, and analyzing QC check samples.

8.2.3 Laboratory analysis

Precision and accuracy determinations for laboratory measurements will be in accordance with the methodologies cited in Section 10.0 of this SAMP. These parameters will be assessed through the use of method blanks, surrogate spikes, internal standard areas, gas chromatograph/mass spectrometer tuning, gas chromatograph/flame ionization detector tuning, laboratory duplicates, LCS, MS, and MS/MSD samples. The types of QC samples for each analytical method are presented in Table 9-1. Corrective action is discussed in Section 8.0 of this SAMP. Qualification of the data based on the QC results is discussed in Section 17 of this SAMP.

8.3 Corrective action

8.3.1 Introduction

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected.

8.3.2 Procedure description

When a significant condition adverse to quality is noted at site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, Project Manager, Field Team Leader and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action. Section 4.10 of the laboratory-provided Laboratory Quality Manual (Attachment T) describes the laboratory's internal Corrective Action process.

All project personnel have the responsibility, as part of the normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality. Corrective actions will be initiated as follows:

- When predetermined acceptance standards are not attained;
- When procedure or data compiled are determined to be deficient;
- When equipment or instrumentation is found to be faulty;
- When samples and analytical test results are not clearly traceable;
- When quality assurance requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits;
- As a result of a management assessment;
- As a result of laboratory/field comparison studies; and
- As required by USEPA SW-846, and subsequent updates, the USEPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, or by the NYSDEC ASP.

Project management and staff, such as field investigation teams, remedial response planning personnel, and laboratory groups monitor on-going work performance in the normal course of daily responsibilities. Project audits are not anticipated to occur during the completion of the Remedial Investigation; however, if conditions adverse to quality are detected, or if the Project Manager requests, audits may occur. Activities or documents ascertained to be noncompliant with quality assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings will be logged and maintained in hard copy, and controlled by the Task Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 8-1 or similar). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Project Manager.

The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken.

The QA personnel maintain the log for status of CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file for the records.

Any project personnel may identify noncompliance issues; however, the designated QA personnel are responsible for documenting, numbering, logging, and verifying the close out action. The Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

9.0 Sample handling and chain of custody requirements

9.1 Sample documentation and handling

An essential element of any Brownfields sampling/analytical scheme is to maintain sample integrity from collection to data reporting. This involves tracing the possession and handling of samples from the time of collection through analysis and final disposition. The documentation used to track a sample's history is referred to as the "chain-of-custody." To facilitate sample chain-of-custody efforts, it is essential to record all inspections, investigations, and photographs that are taken, as well as perform a thorough review of all notes before leaving the site.

To promote the management of sample integrity, it is important that all parties involved understand that a sample is considered to be under a person's custody if; (a) it is in a person's physical possession, (b) in view of that person after he/she has taken possession, (c) secured by that person so that no one can tamper with the sample, or (d) secured by that person in an area which is restricted to authorized personnel. A person who has samples under their custody must always comply with these procedures in order to assure sample integrity.

9.2 Sample documentation

All sample documents should always be legibly written in ink. Any corrections or revisions to sample documentation shall be made by lining through the original entry, initialing, and dating any changes. To elaborate on these requirements, the following sub-sections are provided to outline sample documentation procedures, which should be employed when conducting a Brownfields investigation.

9.2.1 Field logbook

The field logbook is a descriptive notebook detailing site activities and observations so that an accurate and factual account of field procedures may be reconstructed. All entries should be signed by the individuals who are making them. Nonetheless, all field logbook entries should always document the following specific information:

- Site name and project number.
- Contractor name and address.
- Names of personnel on site.
- Dates and times of all entries.
- Descriptions of all site activities, including site entry and exit times.
- Noteworthy events and discussions.
- Weather conditions.
- Site observations.
- Identification and description of samples and locations.
- Subcontractor information and names of on-site personnel.
- Dates and times of sample collections and chain of custody information.
- Records of photographs.
- Site sketches.

- All relevant and appropriate information delineated in field data sheets and sample labels.

9.2.2 Field data sheets and sample labels

Field data sheets, along with corresponding sample labels, are routinely used to identify samples and document field sampling conditions and activities. Examples of the following field data sheets are included as Attachment P: boring log, monitoring well construction log, test pit log, monitoring well/piezometer development log, and low-flow groundwater sample collection record.

Field data sheets should be completed at the time of sample collection and should always include the following information:

- Site name.
- Contractor name and address.
- Samplers name.
- Sample location and sample identification number.
- Date and time the sample was collected.
- Type of sample collected.
- Brief description of the site.
- Weather conditions.
- Analyses to be performed.
- Sample container, preservation, and storage information.

Sample labels are always to be securely affixed to the sample container. They must always clearly identify the particular sample, and delineate the following information:

- Site name and designated project number.
- Sample identification number.
- Date and time the sample was collected.
- Sample preservation method.
- Sample pH.
- Analysis requested.
- Sampling location.

A representative example of a sample label from the selected laboratory is provided in Attachment Q.

9.2.3 Chain of custody record

A chain-of-custody record must always be maintained from the time of sample collection until final deposition. Every transfer of custody will be noted and signed for with a copy of the record being kept for each individual that endorsed it. It is integral that the chain-of-custody record should always include the following information:

- Contractor name and address.
- Sample identification number.

- Sample location.
- Sample collection date and time.
- Sample information (matrix type, number of bottles collected, container type, etc).
- Names and signatures of samplers.
- Signatures of all individuals who have had custody of the samples.

An example of the laboratory chain-of-custody is provided in Attachment R.

9.2.4 Custody seals

Custody seals are used to demonstrate that a sample container has not been opened or tampered with. The individual who has sample custody shall always sign, date, and affix the custody seal to the sample container in such a manner that it cannot be opened unless it is broken. When samples are not under direct control of the individual currently responsible for them, they will be stored in a locked container, which is also to be affixed with a custody seal. An example is shown in Attachment R.

9.2.5 Sample handling and shipment

It is customary for field sampling personnel to transport environmental samples directly to the laboratory within 24 hours of sample collection. To assist in these efforts, field sampling personnel should consider utilizing an overnight delivery service within 24 hours of sample collection.

When preparing sample containers for shipment they should always be securely closed with a custody seal affixed to each cap. All sample containers will be labeled as described above. Subsequently, they are to be placed in an appropriate transport container and packed with an absorbent material such as vermiculite. All sample containers will be packed with ice to maintain a temperature of 4 C. All sample documentation will then be affixed to the underside of each transport container lid. The transport container lid will then be closed and affixed with a custody seal accordingly.

Regulations for packaging, marking/labeling, and shipping hazardous materials and wastes are issued by the U.S. Department of Transportation (U.S. DOT). Air carriers that transport hazardous materials, such as Federal Express, may also require compliance with the current edition of the International Air Transport Association (IATA) Dangerous Goods Regulations. The IATA protocol details the procedures for the shipment and transportation of hazardous materials by a common air carrier. It is important to note that following all current IATA regulations will ensure compliance with U.S. DOT protocol.

9.3 Site-specific sample handling and chain of custody requirements

This section presents sample custody procedures for both the field and laboratory. Implementation of proper custody procedures for samples generated in the field is the responsibility of field personnel. Both laboratory and field personnel involved in the Chain-of-custody (COC) and transfer of samples will be trained as to the purpose and procedures prior to implementation.

Evidence of sample traceability and integrity is provided by COC procedures. These procedures document the sample traceability from the selection and preparation of the sample containers by the laboratory, to sample collection, to sample shipment, to laboratory receipt and analysis. The sample custody flowchart is shown in Figure 9.1. A sample is considered to be in a person's custody if the sample is:

- In a person's possession.
- Maintained in view after possession is accepted and documented.

- Locked and tagged with Custody Seals so that no one can tamper with it after having been in physical custody or
- In a secured area which is restricted to authorized personnel.

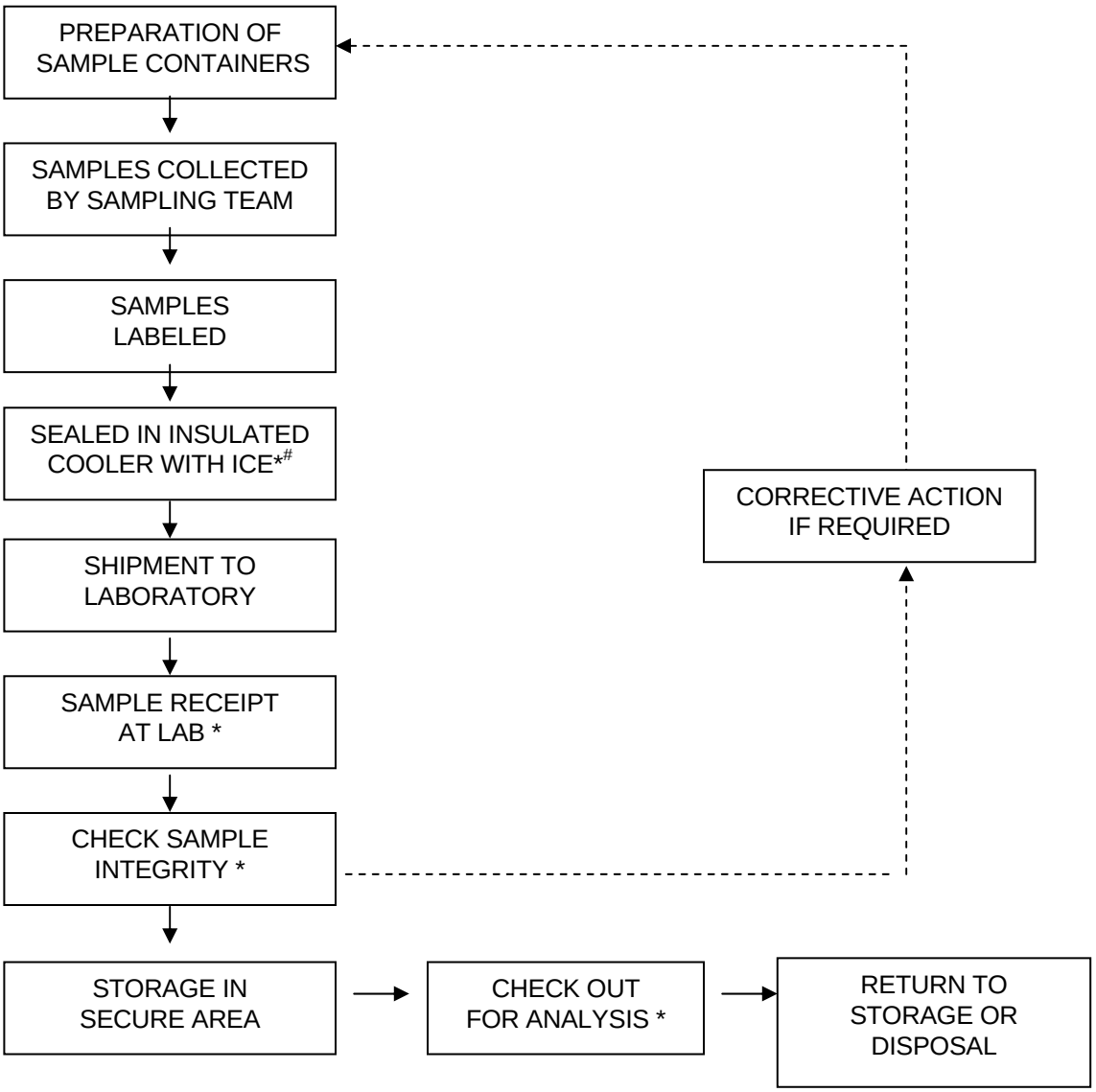
9.3.1 Field sample custody

A COC record accompanies the sample containers from selection and preparation at the laboratory, during shipment to the field for sample containment and preservation, and during return to the laboratory. Triplicate copies of the COC must be completed for each sample set collected.

The COC lists the field personnel responsible for taking samples, the project name and number, the name of the analytical laboratory to which the samples are sent, and the method of sample shipment. The COC also lists a unique description of every sample bottle in the set. If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample.

The REMARKS space on the COC is used to indicate if the sample is a matrix spike, matrix spike duplicate, or any other sample information for the laboratory. Once all bottles are properly accounted for on the form, a sampler will write his or her signature and the date and time on the first RELINQUISHED BY space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper air bill number on the top of the COC. Mistakes will be crossed out with a single line in ink, initialed, and dated by the author.

Figure 9-1 Sample custody flowchart



*Requires sign-off on chain-of-custody form

Ice not used for soil vapor samples

One copy of the COC is retained by sampling personnel and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody seals provided by the laboratory are affixed to the latch and across the back and front lids of the cooler, and the person relinquishing the samples signs their name across the seal. The seal is taped, and the cooler is wrapped tightly with clear packing tape. It is then relinquished by field personnel to personnel responsible for shipment, typically an overnight carrier. The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the sample will not be analyzed.

9.4 Laboratory sample custody

The Project Manager or Field Team Leader will notify the laboratory of upcoming field sampling activities, and the subsequent shipment of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped as well as the anticipated date of arrival.

The following laboratory sample custody procedures will be used:

- The laboratory will designate a sample custodian who will be responsible for maintaining custody of the samples, and for maintaining all associated records documenting that custody.
- Upon receipt of the samples, the custodian will check cooler temperature, and check the original COC documents and compare them with the labeled contents of each sample container for correctness and traceability. The sample custodian will sign the COC record and record the date and time received.
- Care will be exercised to annotate any labeling or descriptive errors. In the event of discrepant documentation, the laboratory will immediately contact the Project Manager or Field Team Leader as part of the corrective action process. A qualitative assessment of each sample container will be performed to note any anomalies, such as broken or leaking bottles. This assessment will be recorded as part of the incoming chain-of-custody procedure.
- The samples will be stored in a secured area at a temperature of 4 ± 2ºC (except soil vapor samples) until analyses commence.
- A laboratory tracking record will accompany the sample or sample fraction through final analysis for control.
- A copy of the tracking record will accompany the laboratory report and will become a permanent part of the project records.

10.0 Analytical precision and accuracy

10.1 Analytical data quality requirements and assessments

An important aspect in the Brownfields project planning process is to define what levels of data are required. These data quality requirements are to be based on a common understanding of its intended use, the complexity of the measurement process, and the availability of resources. Once data quality requirements are clearly determined, QC protocols are to be defined for measuring whether these environmental monitoring acceptance/performance criteria are being met.

10.2 Data acceptance/performance criteria

When conducting a Brownfields site investigation, it is essential to collect data that are of sufficient quantity and quality to support accurate decision-making. The most effective way to accomplish these objectives is to determine the type, quantity, and quality of environmental measurement data that are necessary to achieve monitoring goals prior to the commencement of sampling. To assure the level of detail is commensurate with the objectives of a Brownfields site investigation, a common sense “systematic planning” approach should be followed. This process is useful in promoting the development of “acceptance and/or performance criteria” for gauging the collection, evaluation, and use of environmental measurement data.

Data “acceptance and/or performance criteria” are prerequisites established to specify the quality of Brownfields site investigation environmental monitoring results required to support decisions. Data acceptance/performance criteria are predicated in accordance with the anticipated end uses of the information that are to be collected. The establishment of data acceptance/performance criteria is applicable to all phases and aspects of the remediation process including site investigation, design, construction, and clean up operations. It is important to note that the level of detail and quality needed will often vary with the intended use of the data. Consequently, in most instances QA/QC activities involving precision and accuracy determinations are relied upon to assess acceptance/performance criteria.

10.3 Analytical precision

Analytical precision measurements are typically determined when performing instrumental analyses to assess the errors associated with analyte interferences, sample heterogeneity, and poor laboratory practices. They are commonly undertaken by incorporating matrix spike, matrix spike duplicate, and/or matrix duplicate quality control sample analyses into the analytical scheme. Precision measures are often best expressed by calculating the Relative Percent Difference (RPD) between a sample and its duplicate determination. The Relative Percent Difference (RPD) between the two results will be calculated as follows and used as an indication of the precision of the analyses performed:

$$RPD = \frac{|S - D| \times 100}{(S+D)/2}$$

S = Sample
D = Duplicate
| | = Indicates absolute value of the difference to express RPD as a positive value.

10.4 Analytical accuracy

Analytical accuracy determinations are typically undertaken when performing instrumental analyses to assess the proficiency of the measurement process. They are commonly undertaken by incorporating calibration verification, method blank, calibration blank, method control, surrogate spike, and/or matrix spike quality control sample analyses into the analytical scheme. Accuracy measures are often best expressed by calculating the Percent Recovery (%R) between true and found values as follows:

$$\% R = A/B \times 100$$

A = The found analyte concentration determined experimentally.
B = The true analyte concentration.

10.5 Analytical precision and accuracy requirements

The quality assurance and quality control objectives for all measurement data include precision, accuracy, representativeness, completeness, and comparability. These objectives are defined in following subsections. The analytical methods and their Contract Required Quantitation Limits (CRQLs) are given in Section 10.0.

10.5.1 Precision

Precision is an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Specifically, it is a quantitative measurement of the variability of a group of measurements compared to their average value (USEPA, 1987). Precision is usually stated in terms of standard deviation, but other estimates such as the coefficient of variation (relative standard deviation), range (maximum value minus minimum value), relative range, and relative percent difference (RPD) are common.

For this project, field sampling precision will be determined by analyzing coded duplicate samples (labeled so that the laboratory does not recognize them as duplicates) for the same parameters, and then, during data validation (Section 12.0), calculating the RPD for duplicate sample results.

Field duplicate samples will be collected at a frequency of one for every twenty or fewer investigative samples of each matrix. Therefore, one field duplicate will be collected from the soil boring samples, one field duplicate will be collected from the monitoring well samples, and one field duplicate will be collected for the soil vapor samples.

Field duplicates for solid samples should have an RPD of less than or equal to 50%; field duplicates for aqueous samples should have an RPD of less than or equal to 30%; field duplicates for soil vapor samples should have an RPD of less than or equal to 50%. These criteria apply only when analyte concentrations in both the sample and duplicate are greater than five times the detection limit. If the analyte concentration in the sample and/or duplicate is less than five times the detection limit, but greater than the detection limit, the criteria will be doubled. These criteria apply to both inorganic and organic analyses.

Analytical precision will be determined by the laboratory by calculating the RPD for the results of the analysis of internal QC duplicates (inorganics) and matrix spike duplicates (organics). The formula for calculating RPD is as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

Where:

RPD = Relative Percent Difference.
V1, V2 = The two values to be compared.
|V1 - V2| = The absolute value of the difference between the two values.

The precision (RPD) and accuracy (percent recovery) criteria for inorganics are defined in the respective methods and are therefore presented in the text. In accordance with section 9.7 of SW-846 Method 8000C, criteria for organic analyses are developed by the laboratory and are statistically derived values based on historical data. As such, they may vary over time. ENSR has provided a copy of the laboratory's current limits in Attachment V. It will be the responsibility of ENSR's QAO to determine if variations in the laboratory's acceptance limits are reasonable. If the QAO determines that the changes are significant, the laboratory will be required to submit an explanation for the changes, and ENSR may require that the laboratory use the limits provided at the time this SAMP is approved. The RPD criteria for inorganic analytes are 20% for aqueous samples, 50% for solid samples, and 25% for soil vapor samples.

10.5.2 Accuracy

Accuracy is a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern (Taylor, 1987), or the difference between a measured value and the true or accepted reference value. The accuracy of an analytical procedure is best determined by the analysis of a sample containing a known quantity of material, and is expressed as the percent of the known quantity that is recovered or measured. The recovery of a given analyte is dependent upon the sample matrix, method of analysis, and the specific compound or element being determined. The concentration of the analyte relative to the detection limit of the analytical method is also a major factor in determining the accuracy of the measurement. Concentrations of analytes that are close to the detection limits are less accurate because they are more affected by such factors as instrument "noise." Higher concentrations will not be as affected by instrument noise or other variables and thus will be more accurate.

Sampling accuracy may be determined through the assessment of the analytical results of equipment blanks and trip blanks for each sample set. Analytical accuracy is typically assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks. Additionally, initial and continuing calibrations must be performed and accomplished within the established method control limits to define the instrument accuracy before analytical accuracy can be determined for any sample set.

Accuracy in the laboratory can be measured as the percent recovery (%R) of a known amount of analyte, called a spike, added to a sample (matrix spike [MS]) or to a blank (blank spike or laboratory control sample [LCS]). The %R is calculated as follows:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:

- %R = Percent recovery.
- SSR = Spike sample result: concentration of analyte obtained by analyzing the sample with the spike added.
- SR = Sample result: the background value, i.e., the concentration of the analyte obtained by analyzing the sample.
- SA = Spiked analyte: concentration of the analyte spike added to the sample.

The precision (RPD) and accuracy (percent recovery) criteria for inorganics are defined in the respective methods and are therefore presented in the text. In accordance with Section 9.7 of SW-846 Method 8000C, criteria for organic analyses are developed by the laboratory and are statistically derived values based on historical data. As such, they may vary over time. ENSR has provided a copy of the laboratory's current limits in Attachment V.

It will be the responsibility of ENSR's QAO to determine if variations in the laboratory's acceptance limits are reasonable. If the QAO determines that the changes are significant, the laboratory will be required to submit an explanation for the changes, and ENSR may require that the laboratory use the limits provided at the time this SAMP is approved. The lower acceptance limit must be greater than or equal to 10% for all analytes.

Note that the matrix spike may or may not be performed on a project sample due to the limited number of samples being collected in this investigation, and that MS samples are not applicable to soil gas analysis by method TO-15.

10.5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter that is most concerned with the proper design of the sampling program (USEPA, 1987). Samples must be representative of the environmental media being sampled. Selection of sample locations and sampling procedures will incorporate consideration of obtaining the most representative sample possible.

Field and laboratory procedures will be performed in such a manner as to ensure, to the degree that is technically possible, that the data derived represents the in-place quality of the material sampled. Every effort will be made to ensure chemical compounds will not be introduced into the sample via sample containers, handling, and analysis. All soil gas canisters must be free of contamination prior to sampling. Decontamination of sampling devices and digging equipment will be performed between samples as outlined in the Field Sampling Plan. Analysis of equipment blanks, trip blanks, and method blanks will also be performed to monitor for potential sample contamination from field and laboratory procedures.

The assessment of representativeness also must consider the degree of heterogeneity in the material from which the samples are collected. Sampling heterogeneity will be evaluated during data validation through the analysis of coded field duplicate samples. The analytical laboratory will also follow acceptable procedures to assure the samples are adequately homogenized (except for VOC analyses) prior to taking aliquots for analysis, so the reported results are representative of the sample received.

Chain-of-custody procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling. Details of blank, duplicate and Chain-of-custody procedures are presented in Sections 9.0 and 11.0.

10.5.4 Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid (USEPA, 1987). The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested. Completeness is defined as follows for all sample measurements:

$$\%C = \frac{V}{T} \times 100$$

where:

%C = Percent completeness.
V = Number of measurements judged valid.
T = Total number of measurements.

10.5.5 Comparability

Comparability expresses the degree of confidence with which one data set can be compared to another (USEPA, 1987). The comparability of all data collected for this project will be ensured by:

- Using identified standard methods for both sampling and analysis phases of this project.
- Requiring traceability of all analytical standards and/or source materials to the U.S. Environmental Protection Agency (USEPA) or National Institute of Standards and Technology (NIST).
- Requiring that all calibrations be verified with an independently prepared standard from a source other than that used for calibration (if applicable).
- Using standard reporting units and reporting formats including the reporting of QC data.
- Performing a data package review as described in Section 16, including the use of data qualifiers in all cases where appropriate.
- Requiring that all validation qualifiers be used any time an analytical result is used for any purpose.

These steps will ensure all future users of either the data or the conclusions drawn from them will be able to judge the comparability of these data and conclusions.

10.6 Analytical procedures

Samples will be analyzed according to the USEPA SW-846 "Test Methods for Evaluating Solid Waste," November 1986, 3rd edition and subsequent updates. The methods to be used for the laboratory analysis of water and soil samples are presented in Tables 7-1 and 7-2.

Table 10-1 Quantitation limits

Volatile Organics (5 mL purge)						
		Estimated Quantitation Limits			State of New York Standards	
	Analysis/Compound	Method	Water (µg/L)	Soil (µg/kg)	Water (µg/L) [a]	Soil (µg/kg) [b]
1	1,1,1-Trichloroethane	SW8260B	1	5	5	680
2	1,1,2,2-Tetrachloroethane	SW8260B	1	5	5	
3	1,1,2-Trichloroethane	SW8260B	1	5	1	
4	1,1-Dichloroethane	SW8260B	1	5	5	270
5	1,1-Dichloroethene	SW8260B	1	5	5	330
6	1,2-Dichloroethane	SW8260B	1	5	0.6	20 or SB
7	1,2-Dichloroethene(total)	SW8260B	1	5	5	
8	1,2-Dichloropropane	SW8260B	1	5	1	
9	2-Butanone (MEK)	SW8260B	10	25		120
10	2-Hexanone	SW8260B	10	25		
11	4-Methyl-2-pentanone(MIBK)	SW8260B	5	25		

Volatile Organics (5 mL purge)						
		Estimated Quantitation Limits			State of New York Standards	
	Analysis/Compound	Method	Water (µg/L)	Soil (µg/kg)	Water (µg/L) [a]	Soil (µg/kg) [b]
12	Acetone	SW8260B	10	25		50
13	Benzene	SW8260B	1	5	1	60
14	Bromodichloromethane	SW8260B	1	5		
15	Bromoform	SW8260B	1	5		
16	Bromomethane	SW8260B	2	10	5	
17	Carbon Disulfide	SW8260B	1	5		
18	Carbon Tetrachloride	SW8260B	1	5	5	760
19	Chlorobenzene	SW8260B	1	5	5	1100
20	Chloroethane	SW8260B	2	10	5	
21	Chloroform	SW8260B	1	5	7	370
22	Chloromethane	SW8260B	2	10	5	
23	cis-1,3-Dichloropropene	SW8260B	1	5	0.4	
24	Dibromochloromethane	SW8260B	1	5	5	
25	Ethyl Benzene	SW8260B	1	5	5	1000
26	Methyl-Tert-Butyl-Ether	SW8260B	1	5		930
27	Methylene Chloride	SW8260B	1	5	5	50
28	Styrene	SW8260B	1	5	5	
29	Tetrachloroethene	SW8260B	1	5	5	1300
30	Toluene	SW8260B	1	5	5	700
31	trans-1,3-Dichloropropene	SW8260B	1	5	0.4	
32	Trichloroethene	SW8260B	1	5	5	470
33	Vinyl Chloride	SW8260B	2	10	2	20
34	Xylenes(total)	SW8260B	1	5	5	260

Volatile Organics in Soil Vapor				
		Estimated Quantitation Limits		State of New York Background Concentrations
	Analysis/Compound	Method	Soil Vapor (µg/m3)	Soil Vapor (µg/m3) [C]
1	1,1,1-Trichloroethane	TO-15	1	0.3
2	1,1,2,2-Tetrachloroethane	TO-15	1	0.1
3	1,1,2-Trichloroethane	TO-15	1	0.2
4	1,1-Dichloroethane	TO-15	1	0.1
5	1,1-Dichloroethene	TO-15	1	0.1
6	1,2-Dichloroethane	TO-15	1	0.1
7	1,2-Dichloroethene(total)	TO-15	1	0.2 (as cis-1,2-dichloroethene)
8	1,2-Dichloropropane	TO-15	1	0.4
9	2-Butanone (MEK)	TO-15	1	6.2
10	2-Hexanone	TO-15	1	
11	4-Methyl-2-pentanone(MIBK)	TO-15	1	0.8
12	Acetone	TO-15	5	16
13	Benzene	TO-15	1	1.9
14	Bromodichloromethane	TO-15	1	
15	Bromoform	TO-15	1	
16	Bromomethane	TO-15	1	0.4
17	Carbon Disulfide	TO-15	1	
18	Carbon Tetrachloride	TO-15	1	0.4
19	Chlorobenzene	TO-15	1	0.1
20	Chloroethane	TO-15	1	0.2
21	Chloroform	TO-15	1	0.2
22	Chloromethane	TO-15	1	1.3
23	cis-1,3-Dichloropropene	TO-15	1	0.2
24	Dibromochloromethane	TO-15	1	
25	Ethyl Benzene	TO15	1	0.8
26	Methylene Chloride	TO-15	1	0.8
27	Styrene	TO-15	1	0.2
28	Tetrachloroethene	TO-15	1	0.6

Volatile Organics in Soil Vapor				
		Estimated Quantitation Limits		State of New York Background Concentrations
	Analysis/Compound	Method	Soil Vapor (µg/m3)	Soil Vapor (µg/m3) [C]
29	Toluene	TO-15	1	11
30	trans-1,3-Dichloropropene	TO-15	1	0.1
31	Trichloroethene	TO-15	1	0.2
32	Vinyl Chloride	TO-15	1	0.2
33	Xylenes(total)	TO-15	1	0.8 (m,p-xylene) 0.7 (o-xylene)

PCBs						
		Estimated Quantitation Limits			State of New York Standards	
	Analysis/Compound	Method	Water (µg/L)	Soil (µg/kg)	Water (µg/L) [a]	Soil (µg/kg) [b]
1	Aroclor-1016	SW8082	1.0	33	0.09	100 (Total PCBs)
2	Aroclor-1221	SW8082	2.0	33	0.09	
3	Aroclor-1232	SW8082	1.0	33	0.09	
4	Aroclor-1242	SW8082	1.0	33	0.09	
5	Aroclor-1248	SW8082	1.0	33	0.09	
6	Aroclor-1254	SW8082	1.0	33	0.09	
7	Aroclor-1260	SW8082	1.0	33	0.09	

Semivolatile Organics						
		Estimated Quantitation Limits			State of New York Standards	
	Analysis/Compound	Method	Water (µg/L)	Soil (µg/kg)	Water (µg/L) [a]	Soil (µg/kg) [b]
1	1,2,4-Trichlorobenzene	SW8270C	10	330	5	
2	1,2-Dichlorobenzene	SW8270C	10	330	3	1100
3	1,3-Dichlorobenzene	SW8270C	10	330	3	2400
4	1,4-Dichlorobenzene	SW8270C	10	330	3	1800
5	2,2'-oxybis(1-chloropropane)*	SW8270C	10	330	5	
6	2,4,5-Trichlorophenol	SW8270C	25	330	1	
7	2,4,6-Trichlorophenol	SW8270C	10	330	1	
8	2,4-Dichlorophenol	SW8270C	10	330	1	
9	2,4-Dimethylphenol	SW8270C	10	330	1	
10	2,4-Dinitrophenol	SW8270C	25	330	1	
11	2,4-Dinitrotoluene	SW8270C	10	330	5	
12	2,6-Dinitrotoluene	SW8270C	10	330	5	
13	2-Chloronaphthalene	SW8270C	10	330		
14	2-Chlorophenol	SW8270C	10	330	1	
15	2-methyl-4,6-Dinitrophenol	SW8270C	25	330		
16	2-Methylnaphthalene	SW8270C	10	330		
17	2-Methylphenol	SW8270C	10	330	1	330
18	2-Nitrolaniline	SW8270C	25	330	5	
19	2-Nitrophenol	SW8270C	10	330	1	
20	3,3'-Dichlorobenzidine	SW8270C	10	330	5	
21	3-Nitroaniline	SW8270C	25	330	5	
22	4-Bromophenyl-phenyl ether	SW8270C	10	330		
23	4-Chloro-3-methylphenol	SW8270C	10	330		
24	4-Chloroaniline	SW8270C	10	330	5	
25	4-Chlorophenyl-phenyl ether	SW8270C	10	330		
26	4-Methylphenol	SW8270C	10	330	1	330
27	4-Nitroaniline	SW8270C	25	330	5	
28	4-Nitrophenol	SW8270C	25	330	1	

Semivolatile Organics						
		Estimated Quantitation Limits			State of New York Standards	
	Analysis/Compound	Method	Water (µg/L)	Soil (µg/kg)	Water (µg/L) [a]	Soil (µg/kg) [b]
29	Acenaphthene	SW8270C	10	330		20000
30	Acenaphthylene	SW8270C	10	330		100000
31	Anthracene	SW8270C	10	330		100000
32	Benzo(a)anthracene	SW8270C	10	330		1000 or SB
33	Benzo(a)pyrene	SW8270C	10	330		1000 or SB
34	Benzo(b)fluoranthene	SW8270C	10	330		1000 or SB
35	Benzo(g,h,i)perylene	SW8270C	10	330		100000
36	Benzo(k)fluoranthene	SW8270C	10	330		800 or SB
37	bis(2-Chloroethoxy) methane	SW8270C	10	330	5	
38	bis(2-Chloroethyl) ether	SW8270C	10	330	1	
39	bis(2-ethylhexyl)phthalate	SW8270C	10	330	5	
40	Butylbenzylphthalate	SW8270C	10	330		
41	Carbazole	SW8270C	10	330		
42	Chrysene	SW8270C	10	330		1000 or SB
43	Di-n-butylphthalate	SW8270C	10	330	50	
44	Di-n-octylphthalate	SW8270C	10	330		
45	Dibenz(a,h)anthracene	SW8270C	10	330		33000
46	Dibenzofuran	SW8270C	10	330		
47	Diethylphthalate	SW8270C	10	330		
48	Dimethylphthalate	SW8270C	10	330		
49	Fluoranthene	SW8270C	10	330		100000
50	Fluorene	SW8270C	10	330		30000
51	Hexachlorobenzene	SW8270C	NA (8081A)	330		330
52	Hexachlorobutadiene	SW8270C	10	330	0.5	
53	Hexachlorocyclopentadiene	SW8270C	10	330	5	
54	Hexachloroethane	SW8270C	10	330	5	
55	Indeno(1,2,3-cd)pyrene	SW8270C	10	330		500 or SB
56	Isophorone	SW8270C	10	330		
57	N-Nitroso-di-n-propylamine	SW8270C	10	330		

Semivolatile Organics						
		Estimated Quantitation Limits			State of New York Standards	
	Analysis/Compound	Method	Water (µg/L)	Soil (µg/kg)	Water (µg/L) [a]	Soil (µg/kg) [b]
58	N-Nitrosodiphenylamine	SW8270C	10	330		
59	Naphthalene	SW8270C	10	330		12000
60	Nitrobenzene	SW8270C	10	330	0.4	
61	Pentachlorophenol	SW8270C	25	330	1	800
62	Phenanthrene	SW8270C	10	330		100000
63	Phenol	SW8270C	10	330	1	330
64	Pyrene	SW8270C	10	330		100000

Metals						
		Estimated Quantitation Limits			State of New York Standards	
	Analysis/Compound	Method	Water (mg/L)	Soil (mg/kg)	Water (mg/L) [a]	Soil (mg/kg) [b]
1	Antimony	SW6020	0.001	0.1	0.003	
2	Arsenic	SW6010B	0.01	2	0.025	13 or SB
3	Barium	SW6010B	0.01	1	1	350 or SB
4	Beryllium	SW6010B	0.005	0.5	0.003	7.2
5	Cadmium	SW6010B	0.005	0.5	0.005	2.5 or SB
6	Chromium	SW6010B	0.01	1	0.05	30 or SB
7	Copper	SW6010B	0.03	2.5	0.2	50
8	Lead	SW6010B	0.01	1	0.025	63 or SB
9	Mercury	SW7470A/7471A	0.0002	0.01	0.0007	0.18 or SB
10	Nickel	SW6010B	0.04	4	0.1	30
11	Selenium	SW6010B	0.015	4	0.01	3.9 or SB
12	Silver	SW6010B	0.01	1	0.05	2
13	Thallium	SW6020	0.0002	0.01	0.0005	
14	Zinc	SW6010B	0.02	2	2	109 or SB
15	Vanadium	SW6010B	0.05	1	0.0005	
16	Cobalt	SW6010B	0.05	1		
17	Aluminum	SW6010B	0.2	20		

Metals						
		Estimated Quantitation Limits			State of New York Standards	
	Analysis/Compound	Method	Water (mg/L)	Soil (mg/kg)	Water (mg/L) [a]	Soil (mg/kg) [b]
18	Calcium	SW6010B	5	500		
19	Iron	SW6010B	0.1	10	0.3	
20	Magnesium	SW6010B	5	500	35	
21	Manganese	SW6010B	0.015	1.5	0.3	1600 or SB
22	Potassium	SW6010B	5	500		
23	Sodium	SW6010B	5	500	20	
24	Cyanide	SW9010A	0.01	0.01	200	27

Notes:

N/A - Not Applicable

(a) - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, NYSDEC, October 1993

(b) - Standard Guidance Value from 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use, December 14, 2006

(c) - Mean outdoor air concentration from study of VOCs in air of fuel heated homes, Final NYSDOH CEH BEEI Soil Vapor Intrusion Guidance, Appendix C, October 2006 (Table C-1).

SB – Site background level.

11.0 Field quality control requirements

11.1 Data measurement quality objectives

When conducting a Brownfields site investigation, all measurements should be made so that results are reflective of the environmental media and conditions being measured. To assess if environmental monitoring measurements are of an appropriate quality, “acceptance and/or performance criteria” are typically established. Acceptance/performance criteria are commonly assessed by evaluating the Precision, Accuracy, Representativeness, Completeness, and Comparability (PARCC) of pertinent QA/QC options specified for sampling and analytical activities.

- Precision; a measure of the reproducibility of analyses under a given set or conditions.
- Accuracy; a measure of the bias that exists in a measurement system.
- Representativeness; the degree sampling data accurately and precisely depict selected characteristics.
- Completeness; the measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under “normal” conditions.
- Comparability; the degree of confidence with which one data set can be compared to another.

11.2 Sample collection precision

Sample collection precision is customarily assessed by collecting field duplicate samples. Field duplicate samples are used to evaluate errors associated with sample heterogeneity, sampling methodology and analytical procedures. The analytical results from these samples are important because they provide data to evaluate overall measurement precision.

11.3 Sample collection accuracy

To assess sample accuracy, field QC samples such as rinsate, trip, and/or field blanks, are typically incorporated into the sampling scheme. The data acquired from the analysis of blanks are useful in their ability to evaluate errors that can arise from cross-contamination. The occurrence of cross-contamination can result from the improper handling of samples by field and/or lab personnel, improper decontamination procedures, improper shipment and storage, and on-site atmospheric contaminants. Therefore, to facilitate sample collection accuracy, it is essential to maintain the frequent and thorough review of field procedures so that deficiencies can be quickly documented and corrected.

11.4 Sample collection representativeness

Representativeness is an expression of the degree to which a sample accurately and precisely represents a characteristic of a population, parameter variations at a sampling point or an environmental condition. Representativeness is a qualitative parameter that relies upon the proper design of a fitting sampling program and proper laboratory protocol. This criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected. Therefore, sample representativeness will be assessed by collecting field duplicates. Traditionally, field duplicates are by definition, equally representative of a given point in space and time.

11.5 Sample collection comparability

Comparability is defined as an expression of the confidence with which one data set can be compared to another. In most instances, the proficiency of field sampling efforts will be the determining factor that affects the overall comparability of environmental measurement data. To optimize the comparability of environmental measurement data, sample collection activities should always be performed using standardized procedures whenever possible. When performing a Brownfields site investigation, these efforts will be facilitated by adhering to the quality control criteria and technical guidelines put forth in this ste-specific Brownfields SAMP.

11.6 Sample collection completeness

Completeness is defined as the measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under correct normal conditions. Data completeness is often expressed as the percentage of valid data obtained from a given measurement system. To consider data valid, it is customary to assess if a set of data satisfies all of the specified acceptance/performance criteria (accuracy measures, precision measures, etc.) to render a determination. This necessitates that the data acquired for all confirmatory analyses critical to a Brownfields site investigation sampling program be validated (100%). Therefore, by performing a full data validation effort to ensure completeness, the rationale for considering data points non-critical will not be not required.

11.7 Sampling quality control requirements

11.7.1 Field QC samples

To assess field sampling and decontamination performance, two types of "blanks" will be collected and submitted to the laboratory for analyses. In addition, the precision of field sampling procedures will be assessed by collecting coded field duplicates and matrix spike/matrix spike duplicates (MS/MSDs).

The blanks will include:

- Trip Blanks - A Trip Blank will be prepared before the sample containers are sent by the laboratory. The trip blank will consist of a 40-ml VOA vial containing distilled, deionized water, which accompanies the other water sample bottles into the field and back to the laboratory. A trip blank will be included with each shipment of water samples for target compound list (TCL) volatiles analysis. The Trip Blank will be analyzed for TCL volatile organic compounds to assess any contamination from sampling and transport, and internal laboratory procedures.
- Equipment Blanks - Equipment Blanks will be taken at a minimum frequency of one for each type of equipment used each day a decontamination event is carried out. Equipment Blanks are used to determine the effectiveness of the decontamination procedures for sampling equipment. It is a sample of deionized, distilled water provided by the laboratory that has passed through a decontaminated bailer or other sampling apparatus. It is usually collected as a last step in the decontamination procedure, prior to taking an environmental sample. The field blank may be analyzed for all or some of the parameters of interest. Equipment blanks are not applicable to soil vapor samples.

The duplicates will consist of:

- Coded Field Duplicate - To determine the representativeness of the sampling methods, coded field duplicates will be collected. The samples are termed "coded" because they will be labeled in such a manner that the laboratory will not be able to determine that they are a duplicate sample. This will eliminate any possible bias that could arise. Field duplicates will be collected at a frequency of one duplicate per 20 field samples.

- Matrix Spike/Matrix Spike Duplicate (MS/MSD) - MS/MSD samples (MS/MSD for organics; MS and laboratory duplicate for inorganics) will be taken at a frequency of one pair per 20 field samples. These samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes. MS/MSD samples are not applicable to soil vapor samples.

Table 11-1 details the laboratory and field Quality Control Checks, the Control Limits, and the Laboratory Corrective Actions.

Parameter	QC Check	Frequencies	Control Limits	Laboratory Corrective Actions
VOCs	Method blanks	One per 12 hour analytical shift of a similar matrix (24 hours for method TO-15)	No target analytes detected above PQL for all compounds but methylene chloride, acetone, 2-butanone <5X PQL.	Check analytical system, reanalysis
	Surrogate spikes	Every sample, blank, standard	Laboratory control limits*; must be greater than 10%	Reanalysis; if still out of control limits, then report both sets of data
	MS/MSD samples	One per 20 field samples, of a similar matrix (not applicable to method TO-15)	Laboratory control limits*; must be greater than 10%	Report results
	LCS	One per 20 field samples, of a similar matrix	Laboratory control limits*; must be greater than 10%	Reanalysis; if still out, repreparation/reanalysis of entire batch
	IS areas	Every sample, blank, standard	-50% to +100% of associated continuing calibration Standard (-60% to +140% for method TO-15)	Reanalysis; if still out of control limits, then report both sets of data
	GC/MS mass tuning	At beginning of each 12 hour analytical shift (24 hour shift for method TO-15)	Control criteria listed in method	Recalibrate instrument until control criteria are met
SVOCs	Method blanks	One per 20 field samples or each extraction batch	No target analytes detected above PQL for all compounds but phthalates <5X PQL.	Reanalysis; if still out of control limits, then reextract entire batch
	Surrogate spikes	Every sample, blank, standard	Laboratory control limits*; must be greater than 10%	Reanalysis; if still out of control limits, then report both sets of data
	MS/MSD samples	One per 20 field samples, of a similar matrix	Laboratory control limits*; must be greater than 10%	Report results
	LCS	One per 20 field samples, of a similar matrix	Laboratory control limits*; must be greater than 10%	Reanalysis; if still out, repreparation/reanalysis of entire batch
	IS areas	Every sample, blank, standard	-50% to +100% of associated continuing calibration standard	Reanalysis; if still out of control limits, then report both sets of data
	GC/MS mass tuning	At beginning of each 12 hour analytical shift	Control criteria listed in method	Recalibrate instrument until control criteria are met

Parameter	QC Check	Frequencies	Control Limits	Laboratory Corrective Actions
PCBs	Method Blanks	One per 20 field samples or each extraction batch	All compounds <PQL	Reanalysis; if still out of control emits then reextract entire batch
	Surrogate Spikes	Every sample, blank, standard	Laboratory control limits*; must be greater than 10%	Reanalysis; if still out of control limits, then report both sets of data
	MS/MSD Samples	One per 20 field samples of a similar matrix	Laboratory control limits*; must be greater than 10%	Report results
	LCS	One per 20 field samples, of a similar matrix	Laboratory control limits*; must be greater than 10%	Reanalysis; if still out, repreparation/reanalysis of entire batch
Metals	Reagent/prep blanks	One per analytical batch	No analytes above PQL	Repreparation/reanalysis of entire prep batch
	MS samples	One per 20 field samples, per day of similar matrix	75 – 125% recovery.	Check LCS, flag results
	Duplicate samples	One per 20 field samples, per day of similar matrix	20% RPD aqueous; 50% RPD solid.	Check analytical system, flag results
	LCS	One per 20 field samples, per day of similar matrix	80 – 120% recovery.	Reanalysis; if still out, repreparation/reanalysis of entire batch
	Interference check (Method 6010B)	Beginning of each analytical run	± 20%	Evaluate; reanalysis if necessary
Cyanide	Reagent/prep blanks	One per analytical batch	No analytes above PQL	Repreparation/reanalysis of entire prep batch
	MS samples	One per 20 field samples, per day of similar matrix	75 – 125% recovery.	Check LCS, flag results
	Duplicate samples	One per 20 field samples, per day of similar matrix	20% RPD aqueous; 50% RPD solid.	Check analytical system, flag results
	LCS	One per 20 field samples, per day of similar matrix	80 – 120% recovery.	Reanalysis; if still out, repreparation/reanalysis of entire batch

NA = Not Applicable
PCB = Polychlorinated Biphenyls
QC = Quality Control
RPD = Relative Percent Difference
MS/MSD = Matrix Spike/Matrix Spike Duplicate
GC/MS - Gas Chromatograph/Mass Spectrometer
IS = Internal Standard
TPH = Total Petroleum Hydrocarbons
RL = Reporting Limit
LCS = Laboratory Control Sample
1Project Specific Criteria
Laboratory control limits are developed by the laboratory and are statistically derived values based on historical data. A copy of the laboratory's current limits is presented in Attachment V.

12.0 Data management and documentation

12.1 Data reporting

It is essential to the success of any Brownfields site investigation that a data flow or reporting scheme be developed. For any such scheme to be effective, it must address the complete scope of measurement results generated from all facets of an environmental monitoring project including the collection of raw data through the storage of validated results. In addition, it must also completely cover the step-wise procedures for entering data onto various reporting forms, as well as into computer systems. These procedures should always cover routine data transfer and entry validation checks to ensure these processes are complete. To assist in these efforts, pre-printed forms (for example, field data sheets) will be utilized for transcribing data whenever possible; examples of field data sheets are included in Attachment P.

12.2 Data formatting

When conducting a Brownfields site investigation there must always be adequate documentation available to enable the summation of all pertinent measurement data. This is necessary to assist in the interpretation of the data while ensuring that it is both scientifically valid and legally defensible. As a result, it is integral that all records be legible, complete, and properly organized. In some instances, it may be appropriate to utilize a document control system. Therefore, when planning a Brownfields site investigation project, one must consider the type of record to be maintained, and the process for how these records will be stored. The following sections discuss types of records, record maintenance, and record storage for various aspects of the project.

12.3 Field data reporting

All real-time measurements and observations must always be recorded in project log books, field data records, or in similar types of record keeping books. Field measurements may include pH, temperature, specific conductance, alkalinity, water flow, soil gas readings, and possibly FID/PID measurements. All measurement data collected by performing in-situ analyses must always be recorded directly and legibly in field logbooks, with all entries being signed and dated. If entries must be changed, it is essential that these changes be made in such a manner that none of the original entries become obscured. Likewise, the reason for making a change should be specified with the correction and explanation being signed and dated at the time the revision was made.

Examples of field data sheets are included as Attachment P. Field notebooks will be standard, water-resistant field books with numbered pages, and will be labeled with the project name and project number. Original field records will be maintained by the field team, reviewed by the senior Project Geologist, and hard copies stored in project files. In addition, electronic scans will be made of all field data sheets, logs, and field notes. Electronic copies will be clearly named and stored in project-specific shared network drives within ENSR. Communications and other miscellaneous relevant material will be stored electronically within ENSR. Reports, laboratory data, figures, and tables will be stored electronically and in hard copy in project files. ENSR will submit electronic copies of all documents contained within the RI/RA Report.

12.4 Laboratory data reporting

Whenever laboratory data are acquired, an analytical report should always be prepared to summarize the results of each environmental sample analyzed in accordance with this Site-Specific Brownfields SAMP. The laboratory analytical report will comply with NYSDEC Analytical Service Protocol Exhibit B Reporting and Deliverables Requirement presented in Attachment W.

The analytical report will contain information regarding the analytical methods or procedures employed, sample results, QA/QC results, chain of custody documentation, laboratory correspondence, and all accompanying raw data (i.e., all data necessary for calculating percent recoveries be presented along with the analytical results). The laboratory-provided Laboratory Quality Manual (Attachment S) details the laboratory's process for reviewing, maintaining, and filing of internal laboratory documents.

12.5 Data management and documentation requirements

Data collected during the field investigation will be reduced and reviewed by the laboratory QA personnel, and a report on the findings will be tabulated in a standard format. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates and in the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. The data package provided by the laboratory will contain all items specified in the USEPA SW-846 appropriate for the analyses to be performed, and be reported in standard format.

The completed copies of the Chain-of-custody records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

12.5.1 Data reporting

Two hard copies of the analytical data packages and one electronic copy will be provided by the laboratory to the Project Manager. The laboratory analytical report will comply with NYSDEC Analytical Service Protocol Exhibit B Reporting and Deliverables Requirement presented in Attachment W. The laboratory-provided data will be compared to appropriate guidance values (see Section 14.0), and used to prepare the Site Investigation/Remedial Alternatives report, as described in Section 14.0. If the City or County has proposed a redevelopment plan for the site at the time of report preparation, the proposed end use will be used to determine the cleanup objectives used. Otherwise, the cleanup objectives will be determined based on current use of the surrounding areas, under the assumption that the proposed redevelopment would be integrated with the surrounding community.

12.5.2 Data validation

ENSR will utilize an internal chemist to perform the data validation for this Site-Specific Brownfields SAMP. A Data Usability Summary Report (DUSR) will be prepared at the conclusion of the project. The purpose of the DUSR is to determine whether the data, as provided by the laboratory, meets project specific DQOs prior to, or instead of, formal data validation. The data package review leading up to production of the DUSR provides a thorough evaluation of analytical data and provides answers to the following questions:

- Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?
- Have all holding times been met?
- Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?
- Have all the data been generated using established and agreed upon analytical protocols?
- Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?
- Have the correct data qualifiers been used?

The data usability summary report (DUSR) will be prepared in accordance with the New York State Department of Environmental Conservation, Division of Environmental Remediation's, *Guidance for the Development of Data Usability Summary Reports,* (NYSDEC, August 2001).

12.6 Fixed laboratory data deliverable requirements

Two copies of the analytical data packages will be provided by the laboratory to the Project Manager. All laboratory data will comply with NYSDEC Analytical Service Protocol Exhibit B Reporting and Deliverables Requirement presented in Attachment W.

13.0 Assessment and response actions

13.1 Quality assurance requirements

The data collection scheme put forward in this Site-Specific Brownfields SAMP encourages the design of a monitoring network that blends in-situ field analytical screening techniques with confirmatory fixed laboratory analyses. Therefore, to ensure data are of an appropriate quality, the following protocols apply whenever duplicate samples are collected to confirm field screening and/or laboratory analyses with limited analytical deliverables:

- When applicable, rinse and trip blanks will be collected and analyzed with all environmental samples.
- QA/QC samples will be collected and as described in Section 11 of this SAMP.
- Protocols for analytical methods, sample containers, data deliverables, preservatives, chain-of-custody forms, matrix spike sample volumes, and shipping requirements are derived from the U.S.EPA Sampler's Guide to the Contract Laboratory Program.

13.2 Definitive data requirements

When conducting a Brownfields site investigation, definitive data should always be acquired using rigorous analytical protocols, such as conventional USEPA reference methods. This involves securing the acquisition of data that are media-specific to confirm target analyte identities and concentrations. Conventional analytical methods are known to produce tangible raw data (chromatograms, spectra, digital values, etc.) in the form of paper printouts and/or computer-generated electronic files. In most instances, definitive data can be generated at the site with a field analytical screening technique or at an off-site fixed laboratory by employing the necessary QA/QC protocols. Regardless of what type of determination is utilized, for data to be definitive, an assessment of analytical or total measurement error must be determined. Therefore, the following criteria should always be implemented when performing a site-specific Brownfields investigation:

- Definitive data QA/QC elements.
- Sample documentation (location, date and time collected, batch, etc.).
- Chain of custody for samples analyzed by an off-site laboratory.
- Sampling design approach (systematic, simple or stratified random, judgmental, etc.).
- Initial and continuing calibration.
- Determination and documentation of instrument and method detection limits.
- Analyte(s) identification.
- Analyte(s) quantification.
- QC blanks (trip, method, rinsate).
- Matrix spike recoveries.

13.3 Analytical error

Performing an estimate of analytical error is the process of determining a measure of overall precision for a particular analytical method. To render a determination of analytical error, an appropriate number of duplicate aliquots are taken from at least one thoroughly homogenized sample. These duplicate sample aliquots are then analyzed with standard laboratory QC parameters to calculate and compare method performance criteria (variance, mean, and coefficient of variation).

13.4 Total measurement error

The determination of total measurement error is an estimate of the overall precision of an environmental data acquisition system, from sample collection through analysis. To render a determination of total measurement error, an appropriate number of samples are independently collected from the same location. These collocated samples are then analyzed with standard laboratory QC parameters to calculate and assess measurement error goals (variance, mean, and coefficient of variation). Measurement error goals are acceptance/performance criteria typically established for the purpose of evaluating data quality. To ascertain a thorough assessment of total measurement error, this process should be undertaken for each environmental matrix under investigation and/or repeated for a given media at more than one location.

13.5 Assessment and response actions

13.5.1 Introduction

Quality assurance audits may be performed by the project quality assurance group under the direction and approval of the project Quality Assurance Officer (QAO) (see Section 1.2). These audits will be implemented to evaluate the capability and performance of project and subcontractor personnel, items, activities, and documentation of the measurement system(s). Functioning as an independent body and reporting directly to corporate quality assurance management, the QAO may plan, schedule, and approve system and performance audits based upon procedures customized to the project requirements. At times, the QAO may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. However, these personnel will not have responsibility for the project work associated with the performance audit. These audits are not anticipated to occur during the duration of this project; However, if conditions adverse to quality are detected, or if the Project Manager requests, audits may be conducted.

13.5.2 System audits

System audits may be performed by the QAO or designated auditors, and encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited. These audits may be performed once during the performance of the project. However, if conditions adverse to quality are detected, or if the Project Manager requests, additional audits may be conducted.

13.5.3 Performance audits

The laboratory may be required to conduct an analysis of Performance Evaluation (PE) samples or provide proof that Performance Evaluation samples submitted by USEPA or a state agency have been analyzed within the past twelve months.

13.5.4 Formal audits

Formal audits refer to any system or performance audit that is documented and implemented by the QA group. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklists to objectively verify that quality assurance requirements have been developed, documented, and instituted in accordance with contractual and project criteria. Formal audits may be performed on project and subcontractor work at various locations.

Audit reports will be written by auditors who have performed the site audit after gathering and evaluating all data. Items, activities, and documents determined by lead auditors to be in noncompliance shall be identified at exit interviews conducted with the involved management.

Noncompliances will be logged, and documented through audit findings, which are attached to and are a part of the integral audit report. These audit finding forms are directed to management to satisfactorily resolve the noncompliance in a specified and timely manner.

The Project Manager has overall responsibility to ensure that all corrective actions necessary to resolve audit findings are acted upon promptly and satisfactorily. Audit reports must be submitted to the Project Manager within fifteen days of completion of the audit. Serious deficiencies will be reported to the Project Manager within 24 hours. All audit checklists, audit reports, audit findings, and acceptable resolutions are approved by the QAO prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the QAO will close out the audit report and findings.

14.0 Project reports

14.1 Quality assurance reporting

When conducting a Brownfields site investigation, it is essential to establish mechanisms for providing periodic reports on measurement system performance and data quality to management. These reports should always provide an assessment of measurement data in terms of PARCC, performance audit results, systems audit results, and significant QA problems along with any recommended solutions. In addition, it is prudent that these reports be prepared to include a separate QA section for the purpose of summarizing pertinent information on environmental measurement data quality.

14.2 Roles and responsibilities

To ensure the successful outcome of any Brownfields site investigation project, it is integral for the environmental professional responsible for leading a municipality's remedial efforts to maintain close contact with the U.S.USEPA Remedial Project Manager. This is necessary to ensure that pertinent information regarding the technical and financial progress of a site-specific Brownfields investigation is fully understood by all the parties that are involved. Customarily, this communication will begin upon the award of a USEPA Brownfields pilot project grant. This will then necessitate the initiation of QA activities such as the development of project planning documentation.

14.3 Trip reports

To provide a detailed accounting of what occurred during a particular sampling mobilization, trip reports are to be prepared for each site-specific Brownfields investigation. Traditionally, trip reports are to be completed within two weeks of the last day of each sampling mobilization. For the effective use of trip reports, it is important that they provide information in a timely manner by noting major events, dates, and personnel on-site (including affiliations). To facilitate these efforts, trip reports should be assembled as follows:

- Background
- Observations and Activities
- Conclusions and Recommendations (optional)
- Future Activities

14.4 Project report requirements

A Remedial Investigation Report (RI Report) will be prepared summarizing the information generated during implementation of this Work Plan, including tank closures. The report will be prepared in accordance with 6 NYCRR Part 375.4, the NYSDEC Environmental Restoration Projects Procedures Handbook and Draft DER-10 Technical Guidance for Site Investigation and Remediation.

The report will also include the following information and data pertaining to the site:

- Boring /test pit/field sampling logs
- Analytical data tables presenting the analytical results for the soil, groundwater, and soil vapor samples including comparisons to appropriate standards, criteria, and guidance (e.g., 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives and NYSDEC Groundwater Standards; New York State does not have any standards, criteria, or guidance values for concentrations of volatile chemicals in subsurface vapors)

- A narrative that summarizes the results of the investigation including a discussion of the physical and analytical results
- A qualitative human health exposure assessment
- A fish and wildlife resources impact analysis
- A graphical conceptual model of the site in part or in whole
- Figures showing isoconcentrations of groundwater contamination
- Spider diagrams (small boxes showing contaminant concentrations with arrows pointing to each sample location) showing the concentrations of contaminants of concern
- Color (or other shading technique) figures showing soil (or soil vapor) contamination concentrations

In addition, the analytical data for characterization soil samples, groundwater samples, and soil vapor samples will be reviewed by an ENSR's QAO, and a Data Usability Summary Report (DUSR) will be prepared. The DUSR will be incorporated as an appendix to the Remedial Investigation Report. Section 12.5.2 details the data validation process.

15.0 Verification of sampling procedures

15.1 Performance and system audits

When conducting a Brownfields site investigation it is integral to perform internal, as well as, external performance and systems audits. These audits are undertaken to evaluate the capability and performance of the total measurement system comprising a Brownfields environmental monitoring network. These oversight activities are useful in ensuring that field activities are providing samples reflective of the site and its conditions.

To evaluate the accuracy of the total measurement system or component thereof, performance audits are usually undertaken periodically to assess data collection efforts. Concerning field sampling operations, this oversight function is performed to critique in-situ monitoring efforts and sample collection activities. However, for performance audits to be effective, they should be scheduled in accordance with the applicable field operations warranting oversight. Alternately, a systems audit focuses on evaluating the principal components of a measurement system to determine proper selection and use. Concerning field sampling operations, this oversight activity is performed to critique the quality control procedures which are to be employed. Systems audits of this nature are to be performed periodically, prior to or shortly after, field operations commence until the project is completed.

15.2 Verification of sampling procedures

Reviews of the sampling activities will be conducted by the Site Supervisor or their designated substitute. The intent of these reviews will be to verify that all established procedures that are documented in this site-specific Brownfields SAMP are followed. Reviews will be conducted at the beginning and at the midpoint of site activities. Each review will include an examination of field sampling records, field instrument operating records, sample collection frequencies and techniques, maintenance of QA procedures, and chain-of-custody documentation. The reviews will be documented in a field notebook dedicated to this purpose for easy reference during data validation. If corrective action is required, a follow-up review will be performed to document the corrective action taken. The follow-up review will also be recorded in the field notebook.

16.0 Data verification and validation

16.1 Data validation

To ensure that the measurement data acquired when performing a Brownfields site investigation are of an appropriate quality, it is important to specify and follow procedures for validating all pertinent environmental monitoring results. Data validation is regarded as a systematic process for reviewing a body of results against a set of established criteria to provide a specified level of assurance concerning validity. It requires a systematic and uniform evaluation to be performed on the data to identify those results with questionable quantitative value.

The approach for performing data validation should always be independent of the data production effort, and objective in its application. In most instances, the criteria for validating data will include conducting checks for internal consistency, reviews for transmittal errors, and/or audits for verifying laboratory capability. This will typically involve interpreting the results of external performance audits such as split sample, duplicate sample (field and laboratory), spiked sample, and initial calibration determinations. In conjunction, the assessment of detection limit studies, intra-laboratory comparisons, inter-laboratory comparisons, tests for normality, tests for outliers, and data base entry checks may also be undertaken.

16.2 Data verification and validation requirements

Section 12.0 discusses project-specific data validation. Additional steps to verify data quality will be:

- Each data package received from the selected laboratory will be reviewed upon receipt for completeness, correctness, and contractual compliance.
- The QC package received from the laboratory will be reviewed to verify that it includes all required elements.
- The data will be reviewed to verify that the requirements of the site assessment have been met, including assessing any exceedances of relevant standards, criteria, and guidance.
- ENSR will subcontract with a selected data validator to perform data validation for the SAMP.
- All field screening and laboratory data will be tabulated and located on a site map to verify that the results are consistent and reasonable.
- ENSR will verify that a minimum of 90 percent of the laboratory analyzed samples were validated and deemed acceptable by the laboratory.

16.3 Fixed-laboratory confirmatory data verification and validation requirements

ENSR will utilize an internal chemist to perform the data validation for this site-specific Brownfields SAMP. The data usability summary report (DUSR) will be prepared in accordance with the New York State Department of Environmental Conservation, Division of Environmental Remediation's, *Guidance for the Development of Data Usability Summary Reports,* (NYSDEC, August 2001).

All laboratory data will comply with NYSDEC Analytical Service Protocol Exhibit B Reporting and Deliverables Requirement presented in Attachment W.

17.0 Data usability

17.1 Data quality assessment

When performing a Brownfields site investigation, it is essential to correlate validated measurement data for reconciliation with the acceptance/performance criteria specified for the project. This will involve rendering a determination to ascertain whether measurement data are of the right type, quality, and quantity required to support environmental decision-making efforts. To perform this activity, scientific and statistical procedures must be employed to provide an assessment. The technique for determining if validated measurement results are adequate for their intended use is known as the Data Quality Assessment (DQA) process. The DQA process can provide information to enable a decision maker to draw conclusions about the strength of evidence depicted by a set of collected measurement data. To assist in these efforts, an outline of the formal DQA process is described in the *U.S.USEPA Guidance for Data Quality Assessment: Practical Methods for Data Analysis.*

17.2 Data quality assessment process

The DQA process is both a scientific and statistical evaluation technique, which consists of the following five steps:

- Review project acceptance/performance criteria and sampling design.
- Conduct a preliminary data review.
- Select a statistical test (i.e., Shaprio-Wilk W test, Student's t-Test, etc.).
- Verify the assumptions of the selected statistical test.
- Draw conclusions from the data.

Even if the formal DQA process is not followed in its entirety, a systematic assessment of measurement data quality should always be performed when conducting a Brownfields site investigation. This systematic process will involve carrying out the following data assessments:

- Validating all pertinent measurement data for scientific anomalies.
- Correlating all pertinent measurement data to the PARCC parameters designated for the project.
- Identifying measurement data trends and outliers.

In doing so, one can assimilate an abstract estimation of data "worth" to provide Brownfields stakeholders with a rationale for making proper decisions.

17.3 Data usability/reconciliation requirements

All of the field screening results and laboratory data will be included in the final Remedial Investigation Report. Any questions on the usability of the data that come to light in the data review will be described in the report. The conclusions and recommendations made in the report will be qualified if there are uncertainties about the validity of the sampling results. All laboratory data will be compared to the relevant standards, criteria, and guidance. The report will include a discussion of the Data Usability Summary Report generated during data validation.

18.0 References

USEPA, 1986. SW-846 "Test Method for Evaluating Solid Waste," dated November 1986. U.S. Environmental Protection Agency, Washington, D.C.

Taylor, J. K., 1987. Quality Assurance of Chemical Measurements. Lewis Publishers, Inc., Chelsea, Michigan

USEPA, 1987. Data Quality Objectives for Remedial Response Actions Activities: Development Process, USEPA/540/G-87/003, OSWER Directive 9355.0-7- U.S. Environmental Protection Agency, Washington, D.C.

USEPA, 1992a. CLP Organics Data Review and Preliminary Review. SOP No. HW-6, Revision #8, dated January 1992. USEPA Region II.

USEPA, 1992b. Evaluation of Metals Data for the Contract Laboratory Program (CLP) based on SOW 3/90. SOP No. HW-2, Revision XIII, dated September 2005. USEPA Region II.

USEPA, 1999. Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second edition, USEPA/625/R-96/010b, U.S. Environmental Protection Agency, Cincinnati, OH, January 1992.

NYSDOH, 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York, New York State Department of Health, Center for Environmental Health, Bureau of Environmental Exposure Investigation, October 2006

Note – All attachments to be provided separately

Attachment A

Contract Laboratory Program Guidance for Field Samplers

Attachment B

NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York

Attachment C

Superfund Program Representative Sampling Guidances

Attachment D

MiniRAE 2000 Instrument Manual

Attachment E

ENSR SOP #7315 – Operation/Calibration of a Photoionization Detector (PID)

Attachment F

Horiba U-22XD Water Quality Meter Instrument Manual

Attachment G

GasCheck 5000I Instruction Manual

Attachment H

U.S. EPA Compendia of Emergency Response Team (ERT) Sampling Procedures

Attachment I

ENSR SOP #7115 – Subsurface Soil Sampling by Split Spoon

Attachment J

ENSR SOP #7116 – Subsurface Soil Sampling by Geoprobe Methods

Attachment K

EPA Region 2 Low Flow Sampling SOP

Attachment L

ENSR SOP #7220 – Monitoring Well Construction and Installation

Attachment M

ENSR SOP #7221 – Monitoring Well Development

Attachment N

ENSR SOP #7150 – Packaging and Shipment of Samples

Attachment O

ENSR SOP #7600 – Decontamination of Equipment

Attachment P

Example ENSR Field Data Sheets

Attachment Q

Example Sample Label

Attachment R

Example Laboratory Chain of Custody Record and Custody Seal

Attachment S

Laboratory Quality Manual

Attachment T

Laboratory Standard Operating Procedures for Analytic Methods

Attachment U

Laboratory Standard Operating Procedures for Support Equipment Maintenance, Record Keeping, and Corrective Actions of Analytical Balances, Temperature Control Devices, and Reagent Water

Attachment V

Laboratory Control Limits for Organics and Inorganics

Attachment W

NYS DEC Analytical Service Protocol Exhibit B, Reporting and Deliverables Requirement

Appendix D

Site-Specific Health and Safety Plan

Prepared for:
City of Fulton and Oswego County
Fulton, New York




Health and Safety Plan

ERP Site ID #E7-38-038

60/62 North Fifth Street,

City of Fulton, New York

ENSR Corporation
April 2008
Document No.: 10683-007

ENSR | AECOM

Contents

List of Appendices

List of Tables

1.0 Introduction

1.1 HASP applicability

This site-specific Health and Safety Plan (HASP) has been developed by ENSR Corporation (ENSR). It establishes the health and safety procedures required to minimize potential risk to ENSR and contractor personnel involved with implementing the proposed Remedial Investigation at 60/62 North Fifth Street in the City of Fulton, County of Oswego, NY (NYSDEC ERP Site ID#E7-38-038).

The provisions of this plan apply to ENSR personnel and ENSR subcontractor personnel who may potentially be exposed to safety and/or health hazards related to activities described in Section 3.0 of this document. All activities covered by this HASP must be conducted in complete compliance with this HASP and with all applicable federal, state, and local health and safety regulations. Personnel covered by this HASP who cannot or will not comply will be excluded from site activities.

This plan will be distributed to each employee involved with the proposed investigative activities at the site, including subcontractor employees. Each employee must sign a copy of the attached health and safety plan sign-off sheet (see Attachment A).

1.2 Organization/responsibility

The implementation of health and safety at this project location will be the shared responsibility of the ENSR Project Manager (PM), the ENSR Regional Health and Safety Manager (RHSM), the ENSR Project Site Safety Officer (SSO) and other ENSR personnel and ENSR's contractors implementing the proposed scope of work.

1.2.1 ENSR Project Manager

The ENSR PM (Luke McKenney) is the individual who has the primary responsibility for ensuring the overall health and safety of this project. As such, the PM is responsible for ensuring that the requirements of this HASP are implemented. Some of the PM's specific responsibilities include:

- Assuring that all personnel to whom this HASP applies, including ENSR subcontractors, have received a copy of it.
- Providing the RHSM with updated information regarding conditions at the site and the scope of site work.
- Providing adequate authority and resources to the on-site SSO to allow for the successful implementation of all necessary safety procedures.
- Supporting the decisions made by the SSO and RHSM.
- Maintaining regular communications with the SSO and, if necessary, the RHSM, and
- Coordinating the activities of all ENSR subcontractors and ensuring that they are aware of the pertinent health and safety requirements for this project.

1.2.2 ENSR Regional Health and Safety Manager

The ENSR RHSM (Kathleen Harvey) is the individual responsible for the preparation, interpretation and modification of this HASP. Modifications to this HASP which may result in less stringent precautions cannot be undertaken by the PM or the SSO without the approval of the RHSM. Specific duties of the RHSM include:

- Writing, approving and amending the HASP for this project.

- Advising the PM and SSO on matters relating to health and safety on this site;
- Recommending appropriate personal protective equipment (PPE) and safety equipment to protect personnel from potential site hazards;
- Conducting accident investigations; and,
- Maintaining regular contact with the PM and SSO to evaluate site conditions and new information which might require modifications to the HASP.

1.2.3 ENSR Site Safety Officer

All ENSR field technicians are responsible for implementing the safety requirements specified in this HASP. However, one field technician will serve as the SSO. The SSO will be appointed by the PM. The SSO will be on-site during all activities covered by this HASP. The SSO is responsible for enforcing the requirements of this HASP once work begins. The SSO has the authority to immediately correct all situations where noncompliance with this HASP is noted and to immediately stop work in cases where an immediate danger is perceived. Some of the SSO's specific responsibilities include:

- Assuring that all personnel to whom this HASP applies, including all subcontractors, have submitted a completed copy of the HASP receipt and acceptance form.
- Assuring that all personnel to whom this HASP applies have attended a pre-entry briefing and any subsequent safety meetings that are conducted during the implementation of the program.
- Maintaining a high level of health and safety consciousness among employees implementing the proposed investigative activities.
- Procuring and distributing the PPE and safety equipment needed for this project for ENSR employees.
- Verifying that all PPE and health and safety equipment used by ENSR is in good working order.
- Verifying that ENSR contractors are prepared with the PPE and safety equipment required for this program.
- Notifying the PM of all noncompliance situations and stopping work in the event that an immediate danger situation is perceived.
- Monitoring and controlling the safety performance of all personnel within the established restricted areas to ensure that required safety and health procedures are being followed.
- Conducting accident/incident investigations and preparing accident/incident investigation reports.
- Conducting the pre-entry briefing prior to beginning work and subsequent safety meetings as necessary, and
- Initiating emergency response procedures in accordance with Section 11.0 of this HASP.

1.2.4 ENSR field personnel

All ENSR field personnel covered by this HASP are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner. Some of the specific responsibilities of the field personnel are as follows:

- Reading the HASP in its entirety prior to the start of on-site work.
- Submitting a completed HASP Acceptance Form to the ENSR SSO prior to the start of work.
- Attending the required pre-entry briefing prior to beginning on-site work and any subsequent safety meetings that are conducted during the implementation of the program.

- Bringing forth any questions or concerns regarding the content of the HASP to the PM or the SSO prior to the start of work.
- Reporting all accidents, injuries and illnesses, regardless of their severity, to the ENSR SSO and,
- Complying with the requirements of this HASP and the requests of the SSO.

1.2.5 Contractors

Additionally, the drilling company hired by ENSR is responsible for:

- Reading the HASP in its entirety prior to the start of on-site work.
- Attending the required pre-entry briefing prior to beginning on-site work and any subsequent safety meetings that are conducted during the implementation of the program.
- Ensuring, via daily inspections, that their equipment is in good working order.
- Operating their equipment in a safe manner.
- Appointing an on-site safety coordinator to interface with the ENSR SSO.
- Providing ENSR with copies of material safety data sheets (MSDS) for all hazardous materials brought on-site and,
- Providing all the required PPE and safety supplies to their employees.

1.3 Management of change/modification of the HASP

1.3.1 Management

The procedures in this HASP have been developed based on a Phase I Environmental Site Assessment (ESA) conducted by ENSR in June 2005 and the proposed scope of work. Every effort has been made to address the chemical and physical hazards that may be encountered during the implementation of the proposed investigation. However, unanticipated site-specific conditions or situations may occur during the implementation of this project. Also, ENSR and/or the contractors may elect to perform certain tasks in a manner that is different from what was originally intended due to a change in field conditions. As such, this HASP must be considered a working document that is subject to change to meet the needs of this dynamic project.

ENSR and/or ENSR's contractors will complete a Job Hazard Analysis (JHA) when new tasks or different investigative techniques not addressed in the HASP are proposed. The use of new techniques will be reviewed and if new hazards are associated with the proposed changes, they will be documented on the JHA form. An effective control measure must also be identified for each new hazard. JHA forms will be reviewed by the SSO prior to being implemented. Once approved, the completed forms will be reviewed with all field staff during the daily safety meeting. A blank JHA form is presented as Attachment B.

1.3.2 HASP modification

Should significant information become available regarding potential on-site hazards, it may be necessary to modify this HASP. All proposed modifications to this HASP must be reviewed and approved by the ENSR RHSM before such modifications are implemented. Any significant modifications must be incorporated into the written document as addenda and the HASP must be reissued. The ENSR PM will ensure that all personnel covered by this HASP receive copies of all issued addenda. Sign-off forms will accompany each addendum and must be signed by all personnel covered by the addendum. Sign-off forms will be submitted to the ENSR PM. The HASP addenda should be distributed during the daily safety meeting so that they can be reviewed and discussed. Attendance forms will be collected during the meeting.

2.0 Site description and history

2.1 Site location

The project site is located at 60/62 North Fifth Street in the City of Fulton, New York. The site is approximately one-half acre in size and consists of gravel and grassy areas. The site is bounded to the north by a residential property, beyond which are Erie Street and residential properties. To the east, the site is abutted by North Fifth Street, beyond which are residential properties. The site is bordered to the south by a residential property, beyond which is Seneca Street.

2.2 Site history

In August 2003, the subject property was acquired by the City of Fulton as the result of non-payment of taxes. A deteriorated single story concrete block building was demolished in 2004. During the demolition, the City discovered a 700-gallon underground storage tank (UST), which contained approximately 200 gallons of gasoline product. The UST was removed, along with a limited amount of impacted soils. Confirmatory sampling in the tank excavation indicated gasoline impacts remained in the subsurface soils. A spill number was obtained from the NYSDEC (Spill # 0310334). The gasoline-impacted soils that were excavated at the time of the UST removal were reportedly properly disposed of and the excavation was backfilled with clean fill. ENSR could not obtain a copy of the formal tank closure report and it is our understanding that the Spill number remains open for this site.

During ENSR's Phase I ESA, a small concrete and asphalt pad, approximately 3 feet by 5 feet in dimension, was noted in the southeast corner of the property. This is the former location of the 700-gallon UST. Additionally, historical review of Sanborn Maps, aerial photographs, city directories and newspaper articles include that previous operations at the site included a brass and metal works facility, a foundry, an automobile paint shop, an automobile warehouse and a construction materials warehouse.

3.0 Scope of work

3.1 Purpose of investigation

The City of Fulton was recently awarded funding to conduct a site investigation at 60/62 North Fifth Street through the NYSDEC Environmental Restoration Program. The purpose of the grant is to provide funding to further investigate the property, characterize the environmental conditions and evaluate remediation alternatives. The City's overall goal is to eliminate the existing environmental concerns at the site to enable redevelopment of the property.

3.2 Field tasks

To assist in characterizing the vertical and horizontal extent of impacts associated with the UST and to confirm or deny the presence of other contaminants of concern related to previous site usage, the following field investigation will be implemented:

- Advance soil borings, to a depth of approximately 15 feet below ground surface (bgs), using direct-push drilling techniques (i.e. Geoprobe™).
- Collect soil samples from each boring for field screening with a photoionization detector (PID) and for subsequent laboratory analyses.
- Install groundwater monitoring wells, using hollow-stem auger drilling techniques with continuous split-spoon sampling.
- Collect soil samples from each monitoring well for field screening and laboratory analyses.
- Develop each installed well and record groundwater level measurements following development, and
- Collect a groundwater sample from each well for subsequent laboratory analyses.

Additionally, ENSR will conduct a soil vapor investigation, following the soil boring investigation, around the perimeter of the property to evaluate the potential for current off-site exposure or off-site soil vapor contamination. Soil vapor probes will be installed at six locations to a depth of 5 feet bgs using direct-push technology. An additional soil vapor sample may be collected from beneath the concrete pad associated with the former UST. This sample point is contingent upon the results of the soil investigation. An additional soil vapor sample may be collected from beneath the concrete pad associated with the former UST. This sample point is contingent upon the results of the soil investigation. Shortly after the installation of the probes, one to three implant volumes will be purged prior to sample collection. Samples will be collected using Summa® canisters and will be shipped off-site for volatile organic compound (VOC) analysis.

4.0 Chemical hazard assessment and control

4.1 Chemical hazards

The primary concerns include gasoline constituents associated with the former UST and metals that may be associated with the former use of the property as a brass and metal works facility and foundry.

4.1.1 Gasoline

Gasoline is a clear, volatile liquid with a characteristic odor. It is a complex mixture of paraffinic, olefinic and aromatic hydrocarbons ranging from C3 to C11 compounds. Typical modern gasoline composition is 80% paraffins, 14% aromatics and 6% olefins. The mean benzene content is found to be approximately 1%. Gasoline acts as an anesthetic. Acute symptoms of overexposure include irritation of the mucous membranes of the upper respiratory tract, nose and mouth, drowsiness, headache, fatigue and drunken-like behaviors. OSHA has not developed a permissible exposure limit (PEL) for gasoline. The American Conference of Governmental Industrial Hygienists (ACGIH) has recommended a threshold limit value (TLV) of 300 ppm, as an 8-hour time weighted average (TWA).

4.1.2 Metals

Metals associated with brass works and non-ferrous foundry operations include lead, zinc and copper amongst others.

4.1.2.1 Lead

Lead can be absorbed into the body by inhalation and ingestion. Inhalation of airborne lead is generally the most important source of occupational lead absorption. However, lead can also be absorbed through the digestive system if lead is transferred to the mouth via contaminated hands during eating or smoking.

Lead that is absorbed into the body will enter the blood stream. Once in the blood stream, lead will be circulated throughout the body and stored in various organs and body tissues. If exposure to lead continues and the amount of lead stored in the body exceeds the amount of lead eliminated by the body, irreversible damage can occur.

The early symptoms of lead poisoning, as a result of chronic overexposure (either through ingestion or inhalation) include fatigue, sleep disturbance, headache, aching bones and muscles, digestive irregularities, abdominal pains, and decreased appetite. In lead colic, severe abdominal pain is experienced. Chronic overexposures to lead may result in systemic poisoning that can result in damage to the blood-forming, nervous, urinary and male and female reproductive systems. Overexposure to lead disrupts the blood-forming system resulting in decreased hemoglobin and ultimately anemia. Anemia is characterized by weakness, pallor and fatigue as a result of decreased oxygen carrying capacity in the blood. Muscular weakness as evidenced by “wrist drop” and “foot drop” are classic signs of a nervous system disorder called peripheral neuropathy. Chronic overexposure can cause kidney dysfunction and permanent kidney damage. In addition to reproductive effects, lead has also been identified as a fetotoxin. The OSHA PEL for inorganic lead is 50 µg/m3, as an 8-hr TWA.

4.1.2.2 Zinc

In the work place environment, exposure to zinc dusts and fumes can cause a flu-like condition known as metal fume fever due to exposure to zinc oxide that is created during welding, cutting or brazing.

Symptoms of metal fume fever include headache, fever, chills, muscle aches, thirst, nausea, vomiting, chest soreness, fatigue, gastrointestinal pain, weakness and tiredness. Symptoms usually start several hours after exposure and the attack may last for 6 to 24 hours with complete recovery occurring within 24 to 48 hours. High levels of exposure may cause a metallic or sweet taste in the mouth, dry and irritated throat, thirst and coughing at the time of the exposure. Several hours after exposure, a low-grade fever will occur. Fever is followed by sweating and chills similar to the flu. There is no information in the literature regarding the effects of long-term exposure to zinc oxide fumes. The OSHA PEL for zinc oxide fume is 5 mg/m3, as an 8-hr TWA.

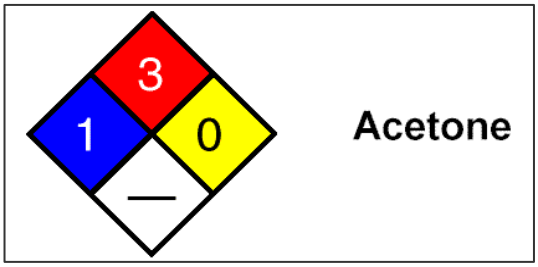
4.1.2.3 Copper

The OSHA PEL for copper dust is 1 mg/m3, as an 8-hr TWA. The inhalation of copper dusts or fume may cause metal fume fever, as described above. Small copper particles may enter the eye and cause irritation and/or discoloration. Repeated or prolonged contact with copper dusts may cause skin irritation or greenish discoloration of the skin or hair. Persons with pre-existing Wilson's disease may be more susceptible to the effects of copper exposure. Although not typically considered a route of exposure in an industrial setting, the ingestion of large quantities of copper may cause stomach and intestine ulceration, jaundice and kidney and liver damage.

4.1.3 Hazardous substances brought on-site by ENSR and/or contractors

A material safety data sheet (MSDS) must be available for each hazardous substance that ENSR or the drilling contractor brings on the property. This includes solutions/chemicals that will be used to decontaminate sampling equipment and calibration gases for the screening instrumentation.

In addition, all containers of hazardous materials must be labeled in accordance with OSHA's Hazard Communication Standard. Either the original manufacturer's label or an NFPA 704M label specific for the material (as shown at the right) is considered to be an acceptable label.



4.2 Chemical exposure and control

4.2.1 Chemical exposure potential

It is possible that the field team will encounter contaminated soils and groundwater during the proposed subsurface investigation and sampling program. The primary potential route of exposure to the contaminants of concern includes the inhalation of vapors of gasoline and metal dusts during drilling. However, the use of direct push drilling techniques will minimize the potential for vapor and dust generation during the soil boring and soil vapor investigation programs. The potential for exposure may increase during the installation of the wells as auger drilling is being used. Another likely route of potential exposure to the contaminants of concern is direct dermal contact during sample collection.

4.2.2 Chemical exposure control

The potential chemical hazards associated with the proposed subsurface investigation can be controlled in several ways, including:

- Soils will be screened for the presence of total volatile organic compounds (VOCs) using a photoionization detector (PID). As a precautionary measure, the breathing zone of employees will also be screened with the PID during soil boring, well installation, soil vapor probe installation and sampling activities. If sustained VOC concentrations exceed the established action levels, as defined in Section 6.1, engineering controls and/or respiratory protection, as indicated in Section 7.2, will be implemented/donned.

- Although the potential to generate dust is expected to be minimal, engineering controls, such as the application of a fine mist of water over the borehole, will be implemented to suppress dusts.
- To reduce the potential for contact with contaminated soils, personal protective equipment (PPE), as described in Section 7.0 of this HASP, will be worn.
- Although highly unlikely, exposure to all of the contaminants of concern may occur via ingestion (hand-to-mouth transfer). The decontamination procedures described in Section 10.0 address personal hygiene issues that will limit the potential for contaminant ingestion.

5.0 Physical hazards and controls

5.1 Utility hazards

5.1.1 Underground utilities

New York law requires that a utility clearance be performed at least two (2) days prior to initiation of any subsurface work. The drilling contractor will contact Dig Safely New York (1-800-962-7962) to request a mark-out of natural gas, electric, telephone, cable television, water and sewer lines in the proposed drilling and soil vapor probe installation locations. Work will not begin until the required utility clearances have been performed.

Public utility clearance organizations typically do not mark-out underground utility lines that are located on private property. Therefore, utilities that may be located where the soil borings and monitoring wells are being advanced must be identified via other mechanisms. As such, the drilling contractor must exercise due diligence and try to identify the location of any private utilities on the property being investigated. The contractor can fulfill this requirement in several ways, including:

- obtaining as-built drawings for the areas being investigated from the property owner.
- visually reviewing each proposed soil boring/monitoring well locations with the property owner or knowledgeable site representative.
- performing a geophysical survey to locate utilities.
- hiring a private line locating firm to determine the location of utility lines that are present at the property.
- identifying a no-drill zone.
- hand digging in the proposed soil boring/monitoring well locations if insufficient data is available to accurately determine the location of the utility lines.

5.1.2 Overhead utilities

Be particularly aware of overhead power lines in the work area. Any vehicle or mechanical equipment capable of having parts of its structure elevated (drill rig, crane etc.) near energized overhead lines shall be operated so that a clearance of at least 10 feet is maintained. If the voltage is higher than 50kV, the clearance shall be increased 4 inches for every 10kV over that voltage.

5.2 Drilling hazards

5.2.1 Direct-push drilling

Use of the Geoprobe System to collect soil samples and to install soil vapor probes will require all personnel in the vicinity of the operating unit to wear steel-toed boots, hardhats, hearing protection and safety eyewear. Personnel shall not remain in the vicinity of operating equipment unless it is required for their work responsibilities. Additionally, the following safety requirements must be adhered to:

- A remote vehicle ignition is located on the control panel of the Geoprobe unit. This allows the operator to start and stop the vehicle engine from the rear. This device must be tested prior to job initiation and periodically thereafter. All employees should be aware of how to access and operate the rear ignition.
- The driller must never leave the controls while the probe is being driven.

- Drillers, helpers and geologists must secure all loose clothing when in the vicinity of drilling operations.
- The Geoprobe vehicle shall not be moved any distance with the probe in the extended position. Check for clearance at roof or the vehicle before folding the Geoprobe out of the carrier vehicle.
- Be sure the parking brake is set before probing.
- Never allow the derrick foot to be lifted more than 6" off of the ground surface.
- Deactivate hydraulics when adding or removing probe rods, anvils or any tool in the hammer.
- Verify that all threaded parts are completely threaded together before probing.

5.2.2 Auger drilling

Use of a drill rig to install monitoring wells will require all personnel in the vicinity of the operating rig to wear steel-toed boots, hardhats, hearing protection and safety eyewear. Personnel shall not remain in the vicinity of operating equipment unless it is required for their work responsibilities. Additionally, the following safety requirements must be adhered to:

- All drill rigs and other machinery with exposed moving parts must be equipped with an operational emergency stop device. Drillers and geologists must be aware of the location of this device. This device must be tested prior to job initiation and periodically thereafter. The driller and helper shall not simultaneously handle augers unless there is a standby person to activate the emergency stop.
- The driller must never leave the controls while the tools are rotating unless all personnel are kept clear of rotating equipment.
- A long-handled shovel or equivalent must be used to clear drill cuttings away from the hole and from rotating tools. Hands and/or feet are not to be used for this purpose.
- A remote sampling device must be used to sample drill cuttings if the tools are rotating or if the tools are readily capable of rotating. Samplers must not reach into or near the rotating equipment. If personnel must work near any tools which could rotate, the driller must shut down the rig prior to initiating such work.
- Drillers, helpers and geologists must secure all loose clothing when in the vicinity of drilling operations.
- Only equipment which has been approved by the manufacturer may be used in conjunction with site equipment and specifically to attach sections of drilling tools together. Pins that protrude excessively from augers shall not be allowed.
- No person shall climb the drill mast while tools are rotating.
- No person shall climb the drill mast without the use of ANSI-approved fall protection (approved belts, lanyards and a fall protection slide rail) or portable ladder which meets the requirements of OSHA standards.

5.3 Noise exposure

The use of drilling equipment may expose the field team to noise levels that exceed the OSHA PEL of 90 dB for an 8-hour day. Exposure to noise can result in the following:

- Temporary hearing losses where normal hearing returns after a rest period.
- Interference with speech communication and the perception of auditory signals.
- Interference with the performance of complicated tasks.
- Permanent hearing loss due to repeated exposure resulting in nerve destruction in the hearing organ.

Since personal noise monitoring will not be conducted during the proposed activities, employees must follow this general rule of thumb: If the noise levels are such that you must shout at someone 5 feet away from you, you need to be wearing hearing protection. Employees can wear either disposable earplugs or earmuffs but all hearing protection must have a minimum noise reduction rating (NRR) of 27 dB.

5.4 Cuts and lacerations – knife safety

Employees are at an increased risk of cutting themselves with the knives used to open the acetate soil sample liners used in the Geoprobe sampling technique and when cutting tubing used to collect groundwater and soil vapor samples. When using knives or blades, follow the safety precautions listed below:

- Keep your free hand out of the way.
- Secure your work if cutting through thick material.
- Use only sharp blades; dull blades require more force that results in less knife control.
- Pull the knife toward you; pulling motions are easier to manage.
- Don't put your knife in your pocket.
- Use a self-retracting blade.
- Wear leather or Kevlar™ gloves when using knives or blades.

5.5 Back safety

Using the proper techniques to lift and move heavy pieces of equipment is important to reduce the potential for back injury. The following precautions should be implemented when lifting or moving heavy objects:

- Use mechanical devices to move objects that are too heavy to be moved manually.
- If mechanical devices are not available, ask another person to assist you.
- Bend at the knees, not the waist. Let your legs do the lifting.
- Do not twist while lifting.
- Bring the load as close to you as possible before lifting.
- Be sure the path you are taking while carrying a heavy object is free of obstructions and slip, trip and fall hazards.

5.6 Thermal stress

This program is scheduled to begin in April. Therefore, the hazards of cold stress are included in this plan. However, the hazards of heat stress are also included in the event that the field effort is delayed and begins in warmer weather.

5.6.1 Cold stress

Types of Cold Stress

Cold injury is classified as either localized, as in frostbite, frostnip or chilblain; or generalized, as in hypothermia. The main factors contributing to cold injury are exposure to humidity and high winds, contact with wetness and inadequate clothing.

The likelihood of developing frostbite occurs when the face or extremities are exposed to a cold wind in addition to cold temperatures. The freezing point of the skin is about 30° F. When fluids around the cells of the body tissue freeze, skin turns white. This freezing is due to exposure to extremely low temperatures. As wind velocity increases, heat loss is greater and frostbite will occur more rapidly.

Symptoms of Cold Stress

The first symptom of frostbite is usually an uncomfortable sensation of coldness, followed by numbness. There may be a tingling, stinging or aching feeling in the effected area. The most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes.

Symptoms of hypothermia, a condition of abnormally low body temperature, include uncontrollable shivering and sensations of cold. The heartbeat slows and may become irregular, the pulse weakens and the blood pressure changes. Pain in the extremities and severe shivering can be the first warning of dangerous exposure to cold.

Maximum severe shivering develops when the body temperature has fallen to 95° F. Productive physical and mental work is limited when severe shivering occurs. Shivering is a serious sign of danger. Immediately remove any person who is shivering from the cold.

Methods to Prevent Cold Stress

When the ambient temperature, or a wind chill equivalent, falls to below 40° F (American Conference of Governmental Industrial Hygienists recommendation), site personnel who must remain outdoors should wear insulated coveralls, insulated boot liners, hard hat helmet liners and insulated hand protection. Wool mittens are more efficient insulators than gloves. Keeping the head covered is very important, since 40% of body heat can be lost when the head is exposed. If it is not necessary to wear a hard hat, a wool knit cap provides the best head protection. A facemask may also be worn.

Persons should dress in several layers rather than one single heavy outer garment. The outer piece of clothing should ideally be wind and waterproof. Clothing made of thin cotton fabric or synthetic fabrics such as polypropylene is ideal since it helps to evaporate sweat. Polypropylene is best at wicking away moisture while still retaining its insulating properties. Loosely fitting clothing also aids in sweat evaporation. Denim is not a good protective fabric. It is loosely woven which allows moisture to penetrate. Socks with a high wool content are best. If two pairs of socks are worn, the inner sock should be smaller and made of cotton, polypropylene or similar types of synthetic material that wick away moisture. If clothing becomes wet, it should be taken off immediately and a dry set of clothing put on.

If wind conditions become severe, it may become necessary to shield the work area temporarily. The SSO and the PM will determine if this type of action is necessary. Heated break trailers or a designated area that is heated should be available if work is performed continuously in the cold at temperatures, or equivalent wind chill temperatures, of 20° F.

Dehydration occurs in the cold environment and may increase the susceptibility of the worker to cold injury due to significant change in blood flow to the extremities. Drink plenty of fluids, but limit the intake of caffeine.

5.6.2 Heat stress

Types of heat stress

Heat related problems include heat rash, fainting, heat cramps, heat exhaustion and heat stroke. Heat rash can occur when sweat isn't allowed to evaporate, leaving the skin wet most of the time and making it subject to irritation.

Fainting may occur when blood pools to lower parts of the body and as a result, does not return to the heart to be pumped to the brain. Heat related fainting often occurs during activities that require standing erect and immobile in the heat for long periods of time. Heat cramps are painful spasms of the muscles due to excessive salt loss associated with profuse sweating. Heat exhaustion results from the loss of large amounts of fluid and excessive loss of salt from profuse sweating. The skin will be clammy and moist and the affected individual may exhibit giddiness, nausea and headache.

Heat stroke occurs when the body's temperature regulatory system has failed. The skin is hot, dry, red and spotted. The affected person may be mentally confused and delirious. Convulsions could occur. EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH. A person exhibiting signs of heat stroke should be removed from the work area to a shaded area. The person should be soaked with water to promote evaporation. Fan the person's body to increase cooling.

Early symptoms of heat-related health problems:

- decline in task performance
- incoordination
- decline in alertness
- unsteady walk
- excessive fatigue
- reduced vigilance
- muscle cramps
- dizziness

Susceptibility to heat stress increases due to:

- lack of physical fitness
- lack of acclimation
- increased age
- dehydration
- obesity
- drug or alcohol use
- sunburn
- infection

People unaccustomed to heat are particularly susceptible to heat fatigue. First timers in PPE need to gradually adjust to the heat.

The effect of personal protective equipment

Sweating normally cools the body as moisture is removed from the skin by evaporation. However, the wearing of certain personal protective equipment (PPE), particularly chemical protective coveralls (e.g., Tyvek), reduces the body's ability to evaporate sweat and thereby regulate heat buildup. The body's efforts to maintain an acceptable temperature can therefore become significantly impaired by the wearing of PPE.

Measures to avoid heat stress

The following guidelines should be adhered to when working in hot environments:

- Establish work-rest cycles (short and frequent are more beneficial than long and seldom).
- Identify a shaded, cool rest area.
- Rotate personnel, alternative job functions.

- Water intake should be equal to the sweat produced. Most workers exposed to hot conditions drink less fluid than needed because of an insufficient thirst. DO NOT DEPEND ON THIRST TO SIGNAL WHEN AND HOW MUCH TO DRINK. For an 8-hour workday, 50 ounces of fluids should be drunk.
- Eat lightly salted foods or drink salted drinks such as Gatorade to replace lost salt.
- Save most strenuous tasks for non-peak heat hours such as the early morning or at night.
- Avoid alcohol during prolonged periods of heat. Alcohol will cause additional dehydration.
- Avoid double shifts and/or overtime.

The implementation and enforcement of the above mentioned measures will be the joint responsibility of the project manager, on-site field coordinator, and health and safety officer. Potable water and fruit juices should be made available each day for the field team.

Heat stress monitoring techniques

Site personnel should regularly monitor their heart rate as an indicator of heat strain by the following method: Check radial pulse rates by using fore-and middle fingers and applying light pressure to the pulse in the wrist for one minute at the beginning of each rest cycle. If the pulse rate exceeds 110 beat/minute, shorten the next work cycle by one-third and keep the rest period the same. If, after the next rest period, the pulse rate still exceeds 110 beats/minute, shorten the work cycle by one-third.

5.7 Biological hazards

The investigative program is being implemented in February. However, if the project is delayed and does not begin until the summer there are a variety of summer season biological hazards could potentially affect the field team. These issues are discussed in detail below.

5.7.1 Poisonous plants

Persons working on this program should be aware of the possible presence of poisonous plants and insects. **Poison ivy** is a climbing plant with leaves that consist of three glossy, greenish leaflets. Poison ivy has conspicuous red foliage in the fall. Small yellowish-white flowers appear in May through July at the lower leaf axils of the plant. White berries appear from August through November. Poison ivy is typically found east of the Rockies. **Poison oak** is similar to poison ivy but its leaves are oak-like in form. Poison oak occurs mainly in the south and southwest. **Poison sumac** typically occurs as a small tree or shrub and may be 6-20 feet in height. The bark is smooth, dark and speckled with darker spots. Poison sumac is typically found in swampy areas and east of the Mississippi. The leaves have 7-13 smooth-edged leaflets and drooping clusters of ivory-white berries appear in August and last through spring.

The leaves, roots, stems and fruit of these poisonous plants contain urushiol. Contact with the irritating oil causes an intensely itching skin rash and characteristic, blister-like lesions. The oil can be transmitted on soot particles when burned and may be carried on the fur of animals, equipment and apparel.

Proper identification of these plants is the key to preventing contact and subsequent dermatitis. Wear long sleeves and pants when working in wooded areas. In areas of known infestation, wear Tyvek coveralls and gloves. Oils are easily transferred from one surface to another. If you come in contact with these poisonous plants, wash all exposed areas immediately with cool water to remove the oils. Some commercial products such as Tecnu's Poison Oak-n-Ivy Cleanser claim to further help with the removal of oils.

5.7.2 Ticks

Ticks are bloodsuckers, attaching themselves to warm-blooded vertebrates to feed. If a tick is not removed, or if the tick is allowed to remain for days feeding on human blood, a condition known as **tick paralysis** can develop. This is due to a neurotoxin, which the tick apparently injects while engorging. This neurotoxin acts upon the spinal cord causing incoordination, weakness and paralysis.

Deer ticks are associated with the transmission the bacteria that causes Lyme Disease. Female deer ticks are about one-quarter inch in length and are black and brick red in color. Males are smaller and all black. The early stages of Lyme disease, which can develop within a week to a few weeks of the tick bite, are usually marked by one or more of these signs and symptoms:

- Tiredness
- Chills and fever
- Headache
- Muscle and/or join pain
- Swollen lymph glands
- Characteristic skin rash (i.e. bulls-eye rash)

Tick season lasts from April through October; peak season is May through July. You can reduce your risk by taking these precautions:

- During outside activities, wear long sleeves and long pants tucked into socks. Wear a hat, and tie hair back.
- Use insecticides to repel or kill ticks. Repellents containing the compound DEET can be used on exposed skin except for the face, but they do not kill ticks and are not 100% effective in discouraging ticks from biting. Products containing permethrin kill ticks, but they cannot be used on the skin -- only on clothing. When using any of these chemicals, follow label directions carefully.
- After outdoor activities, perform a tick check. Check body areas where ticks are commonly found: behind the knees, between the fingers and toes, under the arms, in and behind the ears, and on the neck, hairline, and top of the head. Check places where clothing presses on the skin.
- Remove attached ticks promptly. Removing a tick before it has been attached for more than 24 hours greatly reduces the risk of infection. Use tweezers, and grab as closely to the skin as possible. Do not try to remove ticks by squeezing them, coating them with petroleum jelly, or burning them with a match.
- Report any of the above symptoms and all tick bites to the RHSM for evaluation.

5.7.3 Mosquito-borne illnesses

5.7.3.1 Eastern equine encephalitis

Eastern equine encephalitis is a rare disease that is spread to horses and humans by infected mosquitoes. It is among the most serious of a group of mosquito-borne virus diseases that can affect the central nervous system and cause severe complications and even death. Although relatively small outbreaks of human disease have occurred in the United States, the frequency of this disease is increasing with most cases reported from the eastern seaboard states, the Gulf Coast, and some inland mid-western areas.

After infection, the virus invades the central nervous system, including the spinal cord and brain. Most people have no symptoms; others get only a mild flu-like illness with fever, headache, and sore throat.

For people with infection of the central nervous system, a sudden fever and severe headache can be followed quickly by seizures and coma. About half of these patients die from the disease. Of those who survive, many suffer permanent brain damage and require lifetime institutional care. Symptoms usually appear 4 to 10 days after the bite of an infected mosquito. Confirming diagnosis is based on tests of blood or spinal fluid.

5.7.3.2 West Nile Virus

West Nile encephalitis is an infection of the brain caused by the West Nile virus, which is transmitted by infected mosquitoes. Following transmission from an infected mosquito, West Nile virus multiplies in the person's blood system and crosses the blood-brain barrier to reach the brain. The virus interferes with normal central nervous system functioning and causes inflammation of the brain tissue. However, most infections are mild and symptoms include fever, headache and body aches. More severe infections may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis and rarely, death. Persons over the age of 50 have the highest risk of severe disease.

Prevention centers on public health action to control mosquitoes and on individual action to avoid mosquito bites. To avoid being bitten by the mosquitoes that cause the disease, use the following control measures:

- If possible, stay inside between dusk and dark. This is when mosquitoes are most active.
- When outside between dusk and dark, wear long pants and long-sleeved shirts.
- Spray exposed skin with an insect repellent, preferably containing DEET.

5.7.4 Wasps and bees

Wasps (hornets and yellow-jackets) and bees (honeybees and bumblebees) are common insects that may pose a potential hazard to the field team if work is performed during spring, summer or fall. Bees normally build their nests in the soil. However, they use other natural holes such as abandoned rodent nests or tree hollows. Wasps make a football-shaped, paper-like nest either below or above the ground. Yellow-jackets tend to build their nests in the ground but hornets tend to build their nests in trees and shrubbery.

To avoid bees and wasps when working outdoors:

- Avoid the use of heavily scented soaps, shampoos, perfumes, colognes, after-shaves and cosmetics.
- Avoid shiny buckles and jewelry.
- Cover exposed skin and wear gray, white or tan rather than bright colors. Flowery prints and black especially attract insects.
- Remove food sources from site that may attract bees. Social wasps thrive where humans discard food.
- Check for new nests during the warmer hours of the day during July, August and September. Bees are very active then.

Bees are generally more mild-mannered than wasps and are less likely to sting. Bees can only sting once while wasps sting multiple times because their stinger is barbless. Wasps and bees will sting in defense of itself or its nest. To avoid being stung:

- Slowly raise your hands to protect your face, remaining calm and stationary for a while and then move very slowly away.
- Never swing, strike or run rapidly away since quick movement often provokes attack and painful stings.

- Restrain from throwing rocks or spraying nests with water.
- Avoid creating loud noises and disturbance near the nest.

When a wasp or bee stings, they inject a venomous fluid under the skin. The venom causes a painful swelling that may last for several days. If the stinger is still present, carefully remove it with tweezers. Then:

- Wash the area carefully with soap and water. This should be continued several times a day until the skin is healed.
- Apply a cold or ice pack, wrapped in cloth for a few minutes.
- Apply a paste of baking soda and water and leave it on for 15 to 20 minutes.
- Take acetaminophen for pain.

Wasp stings can be life-threatening to persons who are allergic to their venom. If you develop hives, difficulty breathing or swallowing, wheezing or similar symptoms of allergic reaction, **SEEK MEDICAL ATTENTION IMMEDIATELY**. People with known allergies to insect stings should NEVER work alone.

5.8 Inclement weather

It is expected that this field program will begin in April. However, if the program is delayed and does not begin until summer it is important to remember that this project location is subject to severe thunderstorms in the summer months. When a severe thunderstorm is coming, employees will only have a short amount of time to make important decisions. When working at this site, ENSR employees will have access to current weather information via the car or truck radio. If threatening skies develop, the team should turn on the radio to determine if a weather alerts have been issued.

Via the radio, the team will be aware of any severe thunderstorm watches or warnings that have been issued for their work area by the National Weather Service. It is important for field team members to understand the difference between a "watch" and a "warning".

If a severe thunderstorm watch is issued for your work or travel area, it means that a severe thunderstorm is possible. If a severe thunderstorm warning is issued, it means that a severe thunderstorm has actually been spotted or is strongly indicated on radar and it is time to seek safe shelter immediately.

Weather broadcasts are typically issued for specific counties, not individual towns. It is important for all field team members to know what county they are performing work. Additionally, employees should become familiar with the names of the counties through which they must travel when mobilizing/demobilizing from their assigned work location, in the event that a broadcast is issued for those counties.

If a severe thunderstorm watch is issued, employees must remain alert for approaching storms and review the procedures for seeking refuge in the event that a warning is issued. If a severe thunderstorm warning is issued, ENSR employees will take the following measures:

- If you hear thunder, you are close enough to a storm to be struck by lightning. Cease all work and seek shelter, either a sturdy building or car, immediately. Do not take shelter in small sheds, under isolated tress or in convertible automobiles. Avoid trees as they are targets for lightning. If in a car, keep the windows up.
- If you are caught outside during a thunderstorm and no shelter is available, find a low spot away from trees, fences and poles. Squat low to the ground on the balls of your feet, place your hands on your knees with head between them. Make yourself the smallest target possible and minimize your contact with the ground.

- All field teams must be equipped with cellular phones to ensure prompt communication with local emergency responders. After the storm, listen for the latest emergency information and obey all curfews and emergency orders. Avoid all downed power lines and stay out of damaged buildings.

6.0 Air monitoring

6.1 Direct reading instruments

Instrument 1 - RaeSystems Mini-Rae 2000 PID with a 10.6 ev lamp

A RaeSystems Mini-Rae 2000 PID with a 10.6 ev lamp, or equivalent, will be used to monitor the breathing zone of personnel during the proposed subsurface investigations. If the PID indicates sustained (15 minute) breathing zone vapor concentrations in excess of 50 units or more, engineering controls or the use of respiratory protection, as described in Section 7.2 of this document, will be implemented. This action level is based on the ACGIH TLV of 300 ppm for gasoline, the reported response of gasoline vapor to the selected instrument and an applied safety factor.

Instrument 2 – Thermo Electron DataRam 4000

A portable dust monitor, such as a Thermo Electron DataRam 4000 with a PM-10 head, will be used to monitor the concentrations of total dust during active soil boring and well installation operations. If the total dust levels exceed 2 mg/m3, for a period of 15 minutes, engineering controls, such as the application of a fine mist of water over the borehole, will be implemented to suppress dusts.

6.2 Personal air sampling

Personal air sampling will not be conducted by ENSR during the activities covered by this HASP.

6.3 Calibration and recordkeeping

Equipment used by ENSR will be calibrated in accordance with ENSR's standard operating procedures. A log of PID readings will be kept in the field notebook. Daily calibration information will also be recorded in the field notebook.

6.4 Community air monitoring plan

The New York State Department of Health (NYSDOH) requires continuous real-time monitoring for VOCs and particulates at the downwind perimeter of each designated work area when ground intrusive activities, such as the installation of soil borings and monitoring wells, are in progress at contaminated sites.

Upon arrival to the site, ENSR will identify a downwind perimeter location where real-time monitoring instruments will be staged. The instruments being used for this monitoring will be identical to the instruments identified above. These monitors will be positioned on stationary stands and at a height of approximately 6 feet above the ground.

Each unit will be calibrated at the beginning of each day and will be operated continuously during the proposed intrusive activities. Each unit will be pre-programmed to calculate a 15-minute average of the readings collected.

In accordance with the NYSDOH Generic CAMP, ENSR will be implementing the following action limits for total VOCs:

- If a total VOC concentration at the downwind perimeter location exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the levels rapidly decrease below 5 ppm above background, work will resume with continued monitoring.
- If total VOC concentrations at the downwind perimeter location persist at levels in excess of 5 ppm above background but are less than 25 ppm above background, work will halt until corrective measures can be taken to abate the emissions. Work will begin once the levels at the perimeter location are below 5 ppm above background.
- If total VOC concentrations exceed 25 ppm above background at the perimeter location, work must be shutdown.

The DataRam 4000 will be capable of measuring particulate matter less than 10 micrometers in size (PM-10) and as indicated above will integrate readings over a period of 15 minutes. In accordance with the NYSDOH Generic CAMP, ENSR will be implementing the following action limits for total dust:

- If the downwind PM-10 level is 100 ug/m3 greater than background for the 15-minute period or if airborne dust is observed leaving the work area, dust suppression techniques, as discussed in Section 7.2, will be implemented. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 ug/m3, above the upwind level and provided no dust is observed leaving the work area.
- If, after implementing dust suppression techniques, downwind PM-10 particulate levels are greater than 150 ug/m3, work will be stopped and re-evaluated. Work will only resume if dust suppression measures and other controls are successful in reducing downwind PM-10 particulate concentrations to within 150 ug/m3 and in preventing visible dust migration.

The PID and DataRam will be equipped with dataloggers. The recorded data will be collected at the end of each day and maintained as part of the project files.

7.0 Personal protective equipment

Personal protective equipment (PPE) will be worn during these activities to prevent on-site personnel from being injured by the safety hazards posed by the site and/or the activities being performed. In addition, chemical protective clothing will be worn to prevent direct dermal contact with the site's chemical contaminants. The following table describes the PPE and chemical protective clothing to be worn for general site activities and for certain specific tasks.

Table 7-1 Chemical protective clothing

PPE Item	Installation of Soil Borings and Monitoring Wells	Soil Sampling	Well Development and Groundwater Sampling	Soil Vapor Probe Installation and Sampling
Hard Hat	✓	If rig is operating		✓
Steel Toed Safety Shoes	✓	✓	✓	✓
Safety Glasses with Side shields	✓	✓	✓	✓
Outer Nitrile Gloves with inner Latex liners		✓	✓	
Kevlar gloves	✓	When cutting open acetate liners	When using blades to cut tubing	✓
Hearing Protection	✓	If rig is operating		✓

7.1 Engineering controls/respiratory protection

In the event that total VOC concentrations are sustained (15 minutes) in the breathing zone of workers at levels above 50 ppm, Level C respiratory protection will be donned.

Level C Specification – Half-mask air-purifying respirator equipped with organic vapor cartridges

All employees who are expected to wear respirators must have successfully passed a qualitative fit-test within the past year for the brand, model and size respirator they plan to wear for this program.

Although the potential to generate dust is expected to be minimal, engineering controls, such as the application of a fine mist of water over the borehole, will be implemented to suppress dusts.

7.2 Other safety equipment

The following additional safety items should be available at the site:

- Portable, hand-held eyewash bottles
- First aid kit
- Type A-B-C fire extinguisher (located on the drill rig)
- Portable phones

8.0 Site control/decontamination

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, hazardous work areas will be clearly identified and decontamination procedures will be required for personnel and equipment leaving those areas.

8.1 Designation of zones

ENSR designates work areas or zones as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/OSHA/USCG/EPA, November 1985. They recommend that the areas surrounding each of the work areas to be divided into three zones:

- Exclusion or "Hot" Zone
- Contamination Reduction Zone (CRZ)
- Support Zone

8.1.1 Exclusion zone

Formal exclusion zones do not need to be established around each drilling location as the site is currently vacant. However, all personnel entering the work areas must wear the prescribed level of protective equipment.

8.1.2 Contamination reduction zone

A mini-decontamination zone will be established adjacent to each work area. Personnel will remove contaminated gloves and other disposable items in this area and place them in a plastic bag until they can be properly disposed of.

8.1.3 Support zone

At this site the support zone will include the area outside of the exclusion zone.

8.2 General site safety practices

The following measures are designed to augment the specific health and safety guidelines provided in this plan.

- The "buddy system" will be used at all times by all field personnel. No one is to perform field work alone. Standby team member must be intimately familiar with the procedures for initiating an emergency response.
- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in the immediate work area and the decontamination zone.
- Smoking is prohibited in all work areas. Matches and lighters are not allowed in these areas.
- Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.
- The use of alcohol or illicit drugs is prohibited during the conduct of field operations.

- All equipment must be decontaminated or properly discarded before leaving the site in accordance with the project work plan.

9.0 Decontamination

9.1 Personal decontamination

Proper decontamination is required of all personnel before leaving the exclusion zone. Decontamination will occur within the contamination reduction zone. Disposable PPE, such as gloves, will be removed in the decontamination reduction zone and placed in garbage bags for disposal as general refuse.

Regardless of the type of decontamination system required, as a minimum, a container of potable water and liquid soap should be made available so employees can wash their hands and face before leaving the site for lunch or for the day. Employees should always wash their face and hands with soap and water before eating, smoking or drinking.

9.2 Management of investigation derived wastes

Investigation-derived wastes (IDW) generated during the investigation will include soil cuttings, purge water, and decontamination water. During investigative activities, the waste will be contained in DOT-approved 55-gallon drums pending results of waste characterization analysis. A sample will be collected from each waste stream and analyzed for waste characterization parameters. All IDW will be inventoried and properly labeled and stored on site for transportation and disposal to the appropriate facility.

10.0 Medical monitoring and training requirements

10.1 Medical monitoring

All personnel performing activities covered by this HASP must be active participants in a medical monitoring program that complies with 29 CFR 1910.120(f). Each individual must have completed an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any work on the site covered by this HASP.

10.2 Health and safety training

10.2.1 HAZWOPER

All personnel performing activities covered by this HASP must have completed the appropriate training requirements specified in 29 CFR 1910.120 (e). Each individual must have completed an annual 8-hour refresher training course and/or initial 40-hour training course within the last year prior to performing any work on the sites covered by this HASP.

10.2.2 Pre-entry briefing

Prior to the commencement of on-site activities, a pre-entry briefing will be conducted by the SSO to review the specific requirements of this HASP. Attendance of the pre-entry meeting is mandatory for all personnel covered by this HASP and must be documented on the attendance form provided in Attachment C. HASP sign-off sheets should also be collected at the time of the pre-entry briefing. All documentation should be maintained in the project file.

The pre-entry briefing must be completed for each new employee before they begin work at the site. Short safety refresher meetings will be conducted, as needed, throughout the duration of the project. Specific topics that will be discussed during the pre-entry briefing include:

- Discussion of site history
- Discussion of work scope
- Review of the potential hazards associated with contaminants of concern and how these potential hazards will be controlled
- Review of air monitoring requirements and action limits
- Review of PPE and engineering control requirements
- Discussion of the potential physical hazards associated with implementing scope of work
- Review of emergency egress and hospital location/directions
- Review of decontamination procedures

11.0 Emergency response

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." According to ENSR policy, ENSR personnel shall not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure). ENSR response actions will be limited to evacuation and medical/first aid as described within this section below. As such this section is written to comply with the requirements of 29 CFR 1910.38 (a).

The basic elements of an emergency evacuation plan include:

- employee training
- alarm systems
- escape routes
- escape procedures
- critical operations or equipment
- rescue and medical duty assignments
- designation of responsible parties
- emergency reporting procedures
- methods to account for all employees after evacuation

11.1 Employee training

Employees must be instructed in the site-specific aspects of emergency evacuation. On-site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are changed.

11.2 Alarm system/emergency signals

An emergency communication system must be in effect at all sites. The most simple and effective emergency communication system in many situations will be direct verbal communications. Each site must be assessed at the time of initial site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices can not be clearly perceived above ambient noise levels (i.e., noise from heavy equipment; drilling rigs, backhoes, etc.) and anytime a clear line-of-sight can not be easily maintained amongst all ENSR personnel because of distance, terrain or other obstructions.

Verbal communications will be adequate to warn employees of hazards associated with the immediate work area. The property is currently occupied. However, ENSR may not have access to facility phones. Therefore, ENSR will bring a portable phone to the site to ensure that communications with local emergency responders is maintained, when necessary.

11.3 Escape routes and procedures

During an on-site emergency, ENSR employees will leave the site via North Fifth Street. All personnel on site are responsible for knowing the escape route from the site and where to assemble after evacuation.

11.4 Rescue and medical duty assignments

The phone numbers of the police and fire departments, ambulance service, local hospital, and ENSR representatives are provided in the emergency reference sheet. This sheet will be posted in the site vehicle.

In the event an injury or illness requires more than first aid treatment, the SSO will accompany the injured person to the medical facility and will remain with the person until release or admittance is determined. The escort will relay all appropriate medical information to the on-site project manager and the RHSM.

If the injured employee can be moved from the accident area, he or she will be brought to the CRZ where their PPE will be removed. If the person is suffering from a back or neck injury the person will not be moved and the requirements for decontamination do not apply. The SSO must familiarize the responding emergency personnel about the nature of the site and the injury. If the responder feels that the PPE can be cut away from the injured person's body, this will be done on-site. If this not feasible, decontamination will be performed after the injured person has been stabilized.

11.5 Designation of responsible parties

The SSO is responsible for initiating emergency response. In the event the SSO can not fulfill this duty, the alternate SSO will take charge.

11.6 Employee accounting method

The SSO is responsible for identifying all ENSR personnel on-site at all times. On small, short duration jobs this can be done informally as long as accurate accounting is possible.

11.7 Accident reporting and investigation

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an accident investigation and report. The investigation should be conducted as soon as emergency conditions are under control. The purpose of the investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided. An ENSR accident investigation form is presented in Attachment D of this HASP. The injured ENSR employee's supervisor and the RHSM should be notified immediately of the injury.

If a subcontractor employee is injured, they are required to notify the ENSR SSO. Once the incident is under control, the subcontractor will submit a copy of their company's accident investigation report to the ENSR SSO.

EMERGENCY REFERENCES

Ambulance:	911
Fire:	911
Police:	911
Medical Services:	AL Lee Memorial Hospital
	510 South Fourth St – Fulton
	315-592-2224

Directions to Hospital:

1. Start at **60 N 5TH ST, FULTON** going toward **SENECA ST** - go **0.4** mi
2. Turn RIGHT on **ACADEMY ST** - go **0.1** mi
3. Turn LEFT on **S 4TH ST** - go **0.5** mi
4. Arrive at **510 S 4TH ST, FULTON,** on the RIGHT

On Site Telephone:	Bring portable communications.
Underground Utility Location Service:	Dig Safely New York
	800-962-7962

ENSR Project Representatives:

ENSR/Westford, MA	(978) 589-3000
- Kathy Harvey (RHSM)	x 3325
ENSR/Syracuse, NY	315-432-0506
- Luke McKenney (PM)	x157
- Denise Sero (Task Manager)	x144
- Ray Smith	x119

Map and Directions from Site to AL Lee Memorial Hospital
510 S Fourth St - Fulton

Attachment A

Health and Safety Plan receipt and acceptance form

Health and Safety Plan Receipt and Acceptance Form

Remedial Investigation
ERP Site ID #E7-38-038
City of Fulton, NY

I have received a copy of the Health and Safety Plan prepared for the above referenced site, I have read and understand its content and I agree that I will abide by its requirements.

Name	Signature	Company	Date

Attachment B

Job safety form

Job Safety Analysis Form

PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
SAFETY EQUIPMENT	**INSPECTION REQUIREMENT**	**TRAINING REQUIREMENTS**

Attachment C

Health and Safety Plan pre-entry briefing attendance form

Health and Safety Plan Pre-Entry Briefing Attendance Form

Remedial Investigation
ERP Site ID #E7-38-038
City of Fulton, NY

Conducted by:		**Date Performed:**	
Topics Discussed:	1. Review of the content of the HASP (Required)		
	2.		
	3.		
	4.		

Printed Name	Signature	Representing

Appendix E

Citizen Participation Plan

Prepared for:
City of Fulton and Oswego County
Fulton, New York




Citizen Participation Plan

ERP Site ID #E7-38-038

60/62 North Fifth Street,
City of Fulton, New York

ENSR Corporation
April 2008
Document No.: 10683-007

ENSR | AECOM

Prepared for:
City of Fulton and Oswego County
Fulton, New York

Citizen Participation Plan

ERP Site ID #E7-38-038

60/62 North Fifth Street,
City of Fulton, New York

Prepared By:

_____
Daniel M. Shearer, P.E.

Reviewed By:

_____
Bruce Coulombe

ENSR Corporation
April 2008
Document No.: 10683-007

ENSR | AECOM

Contents

List of Tables

List of Appendices

1.0 Introduction and overview of the Citizen Participation Plan

1.1 What is a Brownfield?

Brownfields are abandoned, idled, or under-used properties where expansion or redevelopment is complicated by real or perceived environmental contamination. They are typically former industrial or commercial properties where improper operations may have resulted in soil and/or groundwater contamination. They often pose not only environmental, but legal and financial burdens on communities.

In an effort to spur the cleanup and redevelopment of brownfields, Former New York Governor George Pataki proposed, and New Yorkers approved, a $200 million Environmental Restoration Fund as part of the $1.75 billion Clean Water/Clean Air Bond Act of 1996 (1996 Bond Act). Under the Program, the State provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Only New York State municipalities are eligible. The term "municipality" includes counties, cities, towns and villages as well as local public authorities, public benefit corporations, school and supervisory districts and improvement districts. The term also includes a municipality acting in partnership with a community-based organization.

Once remediated, the property may then be reused for commercial, industrial, residential or public use. In addition, the municipality and all successors in title, lessees, and lenders are released from remedial liability for hazardous substances that were on the property prior to the grant. The State indemnifies these same persons in the amount of any settlements/judgments obtained regarding an action relating to hazardous substances that were on the property prior to the grant.

In 1995, Congress passed the Small Business Liability Relief and Brownfields Revitalization Act, through which the US Environmental Protection Agency (US EPA) funds Brownfield Assessment Grants, Brownfield Clean-up Grants, Brownfield Revolving Loan Funds Grants and Brownfield Training Grants. Like the NYS Environmental Restoration Fund, US EPA provides grants to municipalities to reimburse 100 percent of eligible costs based upon the grant amount awarded. These grants are typically $200,000 or less.

The City of Fulton and Oswego County have leveraged both of these grants to facilitate the investigation and possible clean-up of the property known as the 60/62 North Fifth Street site.

1.2 ERP eligibility

- NYS municipalities – municipality includes counties, cities, towns and villages as well as local public authorities, public benefit corporations, school and supervisory districts and improvement districts.
- Municipality must own the property and cannot be responsible for the contamination.
- Purpose must be to investigate or remediate hazardous substances or petroleum on the property.
- The property cannot be listed as a Class 1 or 2 site on the NYS Registry of Inactive Hazardous Waste Disposal Sites.

Projects are evaluated based upon four criteria defined in the Bond Act:

- Benefit to the environment.
- Economic benefit to the State.
- Potential for public or recreational use of the cleaned up property, and
- Availability of other funding sources to pay for the project.

As this project is also being funded by the USEPA grant, the eligibility requirements also include that no part of a grant can be used to pay response costs at a brownfield site for which the recipient of the grant or loan is potentially liable under CERCLA §107.

1.3 Two types of grants:

1.3.1 Investigation grants

- The purpose is to determine the nature and extent of contamination and then determine the appropriate remedy.
- Investigations follow the same process as a Remedial Investigation/Feasibility Study used in the State Superfund Program.
- Includes public input on the selection of the cleanup remedy and ends with a Record of Decision (ROD).
- Investigation applications are handled on a first come, first served basis.

1.3.2 Remediation grants:

- Remediation includes the Design and Construction of the cleanup selected in the ROD.
- Projects are prioritized using a priority ranking score based on the four Bond Act criteria:
  - Benefit to the environment
  - Economic benefit to the State
  - Potential for public or recreational use of the cleaned up property and
  - Availability of other funding sources to pay for the project
- Remediation applications are reviewed, scored, ranked and approved on a periodic basis.

1.4 Reimbursement of costs

Municipalities may submit requests for payment for any costs that they have paid to a contractor and/or vendor, plus any costs they have been billed but not yet paid. Payments may be submitted quarterly, or more frequently.

1.5 Liability limitation

- The municipality and all successors in title, lessees, and lenders are released from remedial liability for hazardous substances that were on the property prior to the grant.
- The State indemnifies these same persons in the amount of any settlements/judgments obtained regarding an action relating to hazardous substances that were on the property prior to the grant.
- Such person shall be entitled to representation by the State Attorney General.

1.6 Public participation

There are two primary public participation requirements:

1. The municipality must prepare and implement a public participation plan.

2. A 45-day comment period must be provided on the proposed remedy.

1.7 State Environmental Quality Review Act (SEQRA)

- Investigation projects are Type II actions and therefore exempt from SEQRA.
- Remediation projects require compliance with SEQRA. Depending on the significance of impacts to the environment, the municipality must submit either a positive or negative declaration. If the municipality submits a positive declaration, an Environmental Impact Statement must be prepared.. It is strongly recommended that the municipality coordinate lead agency status with NYSDEC prior to conducting its SEQR review.

1.8 Cost recovery

- The State is obligated to make all reasonable efforts to recover costs from responsible parties.
- The municipality is only obligated to assist the State in cost recovery efforts by providing the information obtained as a result of the project and to identify responsible parties.
- Any monies received by the municipality from the Federal Government, responsible parties, other private parties, or the sale or lease of the property are handled in the following hierarchy:
  - The first monies recovered are split 90%/10% between the State and the municipality to reimburse the project costs.
  - If the monies recovered exceed the project costs, the municipality may take any of its cost of the property including any back taxes owed to the municipality.
  - Any profit after one and two will be retained by the municipality.

1.9 What is a Citizen Participation Plan?

The City of Fulton, County of Oswego, the New York State Department of Environmental Conservation (NYSDEC), the New York State Department of Health (NYSDOH) and the United States Environmental Protection Agency (USEPA) are committed to informing and involving the public during the process to develop the Remedial Investigation and Remedial Alternatives Report (RI/RAR) for the property known as the 60/62 North Fifth Street site. The site is located at 60/62 North Fifth Street in the City of Fulton, Oswego County, State of New York. This Citizen Participation Plan (CPP) has been prepared by ENSR Corporation (ENSR) on behalf of the City of Fulton and Oswego County specifically for this site. Definitions of some common terms used in the RI/RAR process may be found in Appendix A.

The Remedial Investigation (RI) is a detailed study to determine how much contamination exists at the property, how far it extends, and any potential threats to public health and the environment. Using information developed during the RI, the Remedial Alternatives Report (RAR) evaluates possible ways to clean up the site. Upon review and approval of the RI/RAR, NYSDEC will describe its preferred remedy in a Proposed Remedial Action Plan (PRAP). After public comment, the selection of a remedy is finalized in a Record of Decision (ROD).

The CPP seeks to assure an open process for the interested and possibly affected public. This includes public officials at all levels, citizen interest groups, commercial interests, individuals in the area of the site, and the media. These parties can be a part of the decision-making process for this site and need to be informed about on-site activities. The CPP also identifies locations where these parties can obtain additional information about the remedial program for this site. Specific opportunities for public and community input into the decision-making process are indicated.

The CPP is a working document. It can be enhanced to accommodate major changes in either public attitude or in the nature and scope of technical activities at the site. The activities listed below are not intended to be an all-inclusive list, but an outline of possible activities which may be conducted in coordination with the site investigation and remedial process.

To enable citizens to participate more fully in decisions that may affect their neighborhood, NYSDEC and USEPA require several opportunities for citizen involvement during the investigation and cleanup of brownfield sites. The CPP provides interested citizens with an overview of public involvement activities that will happen during the investigation and possible cleanup of a brownfield site. The plan also provides:

- Information about the site's history, planned site investigations and/or cleanup activities;
- A description of planned citizen participation activities and a tentative schedule of when they will occur;
- A list of project contacts who are knowledgeable about the project and represent the affected and interested public agencies associated with this project;
- A glossary of terms and acronyms you may encounter while learning about the site;
- A description of the proposed RI/RAR activities; and
- Identification of a local repository for information and reports generated during the course of completing the investigation activities

The CPP is also designed to help municipal officials track public involvement activities they conduct to ensure they meet NYSDEC's and USEPA's requirements for citizen involvement. The CPP is put together by the municipality conducting a brownfield investigation, in consultation with the NYSDEC and USEPA. The plan is periodically updated to include new fact sheets, additions to the mailing list, and any changes in planned citizen involvement activities.

2.0 Background information

The project site is located at 60/62 North Fifth Street (Site ID#E7-38-038) in the City of Fulton, New York. The site is approximately one quarter acre in size and consists of gravel and grassy areas. A concrete pad exists on the southeast corner of the property. The site is located in a residential neighborhood and is currently vacant. Previous operations at the site included a brass and metal works facility, a foundry, an automobile paint shop, an automobile warehouse and a construction materials warehouse.

In June 2005, ENSR conducted a Phase I Environmental Site Assessment (ESA) of the property on behalf of Oswego County, as part of their USEPA Brownfield Assessment Program, in an effort to develop an initial understanding of the environmental conditions associated with the property.

In August 2003, the subject property was acquired by the City of Fulton as the result of non-payment of taxes. A deteriorated single story concrete block building previously on site was demolished in 2004. During the demolition, the City discovered a 700-gallon underground storage tank (UST), which contained approximately 200 gallons of gasoline product. The UST was removed, along with a limited amount of petroleum impacted soils. Confirmatory sampling in the tank excavation indicated gasoline impacts remained in the subsurface soils. A spill number was obtained from the NYSDEC (Spill # 0310334). The gasoline-impacted soils that were excavated at the time of the UST removal were reportedly properly disposed of and the excavation was backfilled with clean fill. ENSR could not obtain a copy of the formal tank closure report and it is our understanding that the NYSDEC Spill number remains open for this site.

Based on the historical use of the property and the spill closure issues, ENSR recommended a Phase II Environmental Site Assessment be completed to further investigate and remediate the site as well as to verify the appropriate closure documentation could be obtained for the subject site.

The City was recently awarded funding to conduct the remedial investigation at the site through the New York State Department of Environmental Conservation's (NYSDEC) Environmental Restoration Program (ERP). The purpose of the grant is to provide funding to further investigate the property, characterize the environmental conditions and evaluate remediation alternatives. An additional funding source for the brownfield project is through Oswego County's (County) United States Environmental Protection Agency (USEPA) Brownfields Assessment Grant. The overall goal is to eliminate the existing environmental concerns to enable redevelopment of the property. ENSR was selected to conduct the remedial investigation and to evaluate remedial alternatives.

3.0 Future site investigation activities

In February 2006, the City of Fulton was awarded ERP funding to conduct the remedial investigation, characterize the environmental conditions and evaluate remediation alternatives. The City's overall goal is to eliminate the existing environmental concerns to enable redevelopment of property. In addition, Oswego County will contribute previously approved USEPA Brownfield Assessment Funds to perform the Phase II ESA.

The City of Fulton has hired ENSR to perform the investigation. ENSR had already been selected by the County to assist with brownfield projects. As part of the investigation, ENSR has developed site investigation plans including areas to investigate and types of samples to be obtained for chemical analysis.

ENSR will conduct field activities to obtain samples and assess site condition. These activities will include obtaining representative soil and groundwater samples at strategic locations. Samples will be tested for specific contaminants to characterize and further define any issues at the site. Soil vapor samples will also be collected to evaluate the potential for current off-site exposure or off-site soil vapor contamination. Soil vapor is air existing in void spaces in the soil between the groundwater table and the ground surface. These gases may include vapor of hazardous chemicals such as VOCs. Petroleum-impacted soils remaining at the site, and other potentially impacted soils not presently identified, may be acting as a source area for VOCs in soil gas. VOC vapors in soil gas can enter and accumulate in structures, adversely affecting indoor air quality. A detailed description of the proposed sampling and analysis is included in the Remedial Investigation Work Plan.

Upon completion of the field activities, the Remedial Investigation/Remedial Alternatives Report (RI/RAR) will be prepared. This will document the results of the field work and present alternatives and recommendations for contamination issues identified.

The field investigation is tentatively scheduled to begin in May 2008 and is expected to take approximately two weeks to complete. After the investigation is completed, ENSR, on behalf of the City of Fulton and Oswego County, will prepare and submit the RI/RAR to the NYSDEC and USEPA. This report will include the results of the investigation and will evaluate options for addressing contamination at the site.

After the site has been investigated, NYSDEC, in conjunction with the NYSDOH and USEPA, will determine if cleanup actions are necessary. If the investigation does not show significant contamination, cleanup may not be necessary, and the municipality can develop the site. If cleanup is necessary, NYSDEC, in conjunction with the City of Fulton and with concurrence of NYSDOH and USEPA, will propose a final action plan for the site. This plan is called a Proposed Remedial Action Plan, or PRAP. This plan will include a comparison of different cleanup options that could be taken at the site. NYSDEC will select a preferred cleanup option based on a series of criteria, such as short and long-term permanence of the remedy, cost, and ease of implementation. NYSDEC will issue a Record of Decision (ROD) that specifies the required cleanup actions. The City of Fulton can apply for additional funds from the 1996 Clean Water/Clean Air Bond Act to pay for up to 90% of eligible cleanup costs.

3.1 Schedule

The following schedule has been developed assuming Agencies' approval of the Work Plan is received by April 8, 2008. ENSR has allotted for a 45-day Agency review period of the Remedial Investigation and Remedial Alternatives Report.

Task	Start Date	Completion Date
Mail a fact sheet to the Mailing List and announce through local news media the availability of the Work Plan at local repositories.	June 2, 2008	June 6, 2008
Conduct Remedial Investigation	June 9, 2008	June 27, 2008
Prepare and Submit Draft Remedial Investigation Report	August 4, 2008	August 15, 2008
Prepare and Submit Draft Remedial Alternatives Report	August 18, 2008	September 15, 2008
Prepare and Submit Final Remedial Investigation and Remedial Alternatives Report	October20, 2008	October 31, 2008

4.0 Citizen participation activities

4.1 Required citizen participation activities

The City of Fulton, Oswego County, NYSDEC, NYSDOH and USEPA will work together to keep the public informed about progress at the site. To enable citizens to participate more fully in brownfield projects, several opportunities for citizen involvement will be offered during the investigation and possible cleanup of this site.

It is the expressed intent of the aforementioned governmental bodies to provide information to the public in a timely, complete, and accurate manner. The City of Fulton has compiled a list of individuals to whom the public can address specific requests for information. These contacts are local, state and federal public officials and are knowledgeable of the proposed investigative activities. This list of public agency contacts is provided in Section 6.

Local repositories have been established at the Fulton Public Library, and at the Oswego Public Library, in addition to the one established at the Syracuse NYSDEC office located at 615 Erie Blvd. West. Repositories of information are identified in Section 7. A copy of the documents relevant to the RI/RAR, including the RI/RAR Work Plan, will be placed in the repositories to allow interested citizens and groups to review these documents.

A Fact Sheet detailing the availability of the Remedial Investigation Work Plan will be sent out to the residents and other interested parties on the mailing list. The mailing list is presented in Section 8. The Fact Sheet also will include information about the document repositories, and the name and address of the Oswego County Administrator, NYSDEC Citizen Participation Specialist, NYSDEC Project Manager, NYSDOH contact and USEPA Project Manager. Parties who express interest in being placed on or removed from the mailing list will be added or removed as requested.

The Fact Sheet will also serve as an invitation for the public to provide input on the Remedial Investigation Work Plan via written or oral comments.

A public meeting and/or Fact Sheet after the site investigation is completed will be provided to ensure the community is kept fully aware of the results of the investigation. Other communication activities may be added as necessary to address specific issues surrounding the site or the brownfields program.

Once the RI/RAR Report has been accepted, the NYSDEC will issue a Proposed Remedial Action Plan (PRAP) for the site. This plan will use the information contained in the RI/RAR and evaluate several alternatives to address the contamination at the site, if needed. This plan will then propose a course of remedial action for the site.

The public will then have 45 days to review and comment on the plan. NYSDEC will also present the proposed plan at a public meeting and gather comments from citizens at the meeting. After the 45-day comment period ends, NYSDEC will make a final decision on the cleanup plan and issue a Record of Decision (ROD). NYSDEC will include responses to comments they receive from citizens in an appendix to the ROD.

The PRAP and ROD, and all NYSDEC-approved reports, plans, and fact sheets on this project will be placed in the document repositories for public review. These documents may be distributed more widely, such as to interested local groups, if warranted.

The table below describes citizen participation activities planned for the investigation. The adjacent time line indicates when each activity is tentatively scheduled to be completed or when the activity was completed.

Table 4-1 Citizen participation activities

Citizen participation activities			
The City of Fulton and Oswego County will:	**At this point in the Site Investigation:**	**The activity is scheduled to be completed:**	**The activity was completed:**
Set up Document Repositories, where citizens can review site-related documents, at a public location near the site.	Before the start of the investigation.	January 2007	January 2007
Create a list of people ("Mailing List") interested in the site, including residents, government representatives, media, and any interested civic, environmental or business groups.	Before the start of the investigation.	January 2007	January 2007
Place relevant documents, such as the Remedial Investigation Work Plan (including the CPP), at the document repositories.	Before the start of the investigation.	May 12, 2008*	
Mail a fact sheet to the Mailing List and announce through local news media the availability of the Work Plan, which describes investigation activities proposed for the site, at local repositories.	At the start of the investigation.	May 12, 2008*	
Mail a fact sheet to the Mailing List upon completion of activities to ensure community is aware of the results of the investigation	At the end of the investigation.	October 20, 2008*	
*Estimated Dates: Plans will be available after formal approval of the work plan from the NYSDEC and USEPA. Additional documents will be placed in the repositories and their availability will be announced to the public as they are developed. The documents are meant to remain at the repository so that anyone who is interested in the site can have access to them.			

If cleanup is required:			
The State and Municipality will work together to:	**At this point in the process:**	**The activity is scheduled to be completed:**	**The activity was completed:**
Mail a fact sheet to the Mailing List and announce thorough local news media the availability of a Proposed Remedial Action Plan (PRAP). Place the PRAP and other relevant documents, such as the investigation report(s), at the document repositories.	After the PRAP is written.	TBD	
Allow the public 45 days to comment on the proposed cleanup plan (PRAP).	After fact sheet announcing the PRAP is mailed.	TBD	

If cleanup is required:			
The State and Municipality will work together to:	**At this point in the process:**	**The activity is scheduled to be completed:**	**The activity was completed:**
Conduct public meeting on the PRAP	During review period	TBD	
Prepare a responsiveness summary addressing public comments about the PRAP. Include the responsiveness summary in the Record of Decision, which outlines the final cleanup remedy.	When the Record of Decision is being written.	TBD	
Mail a fact sheet to the Mailing List and announce to local news media the selected remedy and provide responses to significant comments received during the comment period. Place the Record of Decision, which outlines the final cleanup remedy, in the document repository.	When the Record of Decision is signed.	TBD	
Post the fact sheet on the City and County websites	When the Record of Decision is signed.	TBD	
*Estimated Dates: Plans will be available after formal approval of the work plan from the NYSDEC and USEPA. Additional documents will be placed in the repositories and their availability will be announced to the public as they are developed. The documents are meant to remain at the repository so that anyone who is interested in the site can have access to them.			

4.2 Additional citizen participation activities

4.2.1 Technical assistance for community members

If requested, the City of Fulton and Oswego County will provide additional technical assistance to community members. Additional assistance may include: meetings between technical staff and interested community members to discuss technical information about the project, a public availability session in which project staff would answer questions on a one-on-one basis, or other appropriate activities. If you wish to request such assistance, please contact Ron Edick, City of Fulton Engineer at (315) 592-3454.

4.2.2 Other citizen participation activities

The City of Fulton and Oswego County may also conduct additional citizen participation activities depending on the amount of citizen interest shown about the site. Community involvement is important to ensure that City of Fulton and Oswego County satisfy the needs of those living and working near the site.

Any additional activities currently planned for this site are listed in the table below. If additional activities are scheduled during the course of the investigation the table will be updated accordingly.

Table 4-2 Additional activities

City of Fulton and Oswego County will:	This activity is scheduled to be completed:	This activity was completed:
Issue a press release prior to the start of the investigation that explains the purpose of the investigation, describes the activities to be conducted, and states where citizens can find more information.	May 12, 2008*	

*Estimated Dates: Plans will be available after formal approval of the Work Plan from the NYSDEC and USEPA. Additional documents will be placed in the repositories and their availability will be announced to the public as they are developed. The documents are meant to remain at the repository so that anyone who is interested in the site can have access to them.

5.0 Site issues and communication needs

This section of the Citizen Participation Plan is designed to help the City of Fulton and Oswego County identify and document site-related issues important to the community near the brownfield site, as well as to identify the information needs of the community, the municipality, NYSDEC and USEPA. This information will help the municipality to effectively implement the CP requirements and identify any additional citizen participation activities that should be conducted.

5.1 Major issues of interest to the community

The City of Fulton and Oswego County have attempted to identify major issues that are of interest to the community surrounding the site and are aware of the following community concerns:

- Residents are interested in what uses may be developed at the site and the impact of redevelopment on the neighborhood.

5.2 Information needed from the community

Below is a list of information the City of Fulton and Oswego County needs from the community to assist with the site investigation and, if necessary, determination of an appropriate cleanup:

- The City of Fulton and Oswego County want input on the proposed future uses of the site from the residents

5.3 Information to be communicated to the community

Below is a list of information the City of Fulton and Oswego County wants to communicate to the community through the citizen participation program:

- The City of Fulton and Oswego County want to inform site neighbors about why the investigation is happening and the nature of the environmental issues
- The City of Fulton and Oswego County want residents to know how to get more information and how to get involved with the project.

6.0 Public agency contacts

The City of Fulton and Oswego County have identified individuals knowledgeable about the proposed remedial investigation activities. These individuals are identified below. If you have questions or concerns, please do not hesitate to contact any of the following people:

The City of Fulton
Ronald C. Edick
City Engineering Department
Municipal Building
141 South First Street
Fulton, New York 13069-1717
Ph: (315) 592-3454

Oswego County
Karen Noyes
Oswego County Department of Planning & Community Development
46 East Bridge Street
Oswego, NY 13126
Ph: (315) 349-8295

New York State Department of Environmental Conservation:
Christopher F. Mannes, III PE
NYSDEC Project Manager
615 Erie Blvd. West
Syracuse, NY 13204
Ph: (315) 426-7515

New York State Department of Health:
Katie Comerford, Public Health Specialist
NYSDOH Project Manager
Environmental Exposure Investigation
NYS Department of Health/CNY Regional Office
217 S. Salina Street
Syracuse, New York 13202
Ph: 315-477-8566

United States Environmental Protection Agency:
Jenny Tsolisos
USEPA Region 2 Brownfields Program Manager
290 Broadway, 18th Floor
New York, NY 10007
Ph: (212) 637-4349

ENSR
Daniel M. Shearer, P.E.
ENSR Brownfields Program Manager
3 Marcus Boulevard
Albany, New York 12205
Ph: (518) 453-6444

7.0 Document repositories and list of available documents

Copies of important documents related to the site investigation at 60/62 North Fifth Street are available at these locations for the public to review:

Fulton Public Library
160 South First Street
Fulton, NY 13069
(315) 592-5159
Hours: Monday, Friday, Saturday 9:00 a.m. – 5:00 p.m.
Tuesday, Wednesday, Thursday 9:00 a.m. – 7:00 p.m.

Oswego Public Library
Temporary Location
140 East Second Street
Oswego NY 13126

Main Location
140 E 1st St # 142
Oswego, NY 13126
Phone: (315) 341-5867
Hours: Monday-Thursday: 10:00am-8:00pm
Friday: 10:00am-5:00pm
Saturday, Sunday: Noon-5:00 pm

NYS Department of Environmental Conservation
Region 7 Offices
615 Erie Blvd. West
Syracuse, NY 13204
(315) 476-7403
Hours: Mon.- Fri. 8:30 - 4:45 pm
Please call for an appointment

The following documents are available for review at the repositories:

Document	Date
Work Plan for Remedial Investigation/ Remedial Alternatives Report (including Citizen Participation Plan)	Upon Agency Approval

8.0 Mailing list

The City of Fulton, Oswego County and the NYSDEC maintain the mailing list, consisting of agency officials, local elected officials, media, residents, and other parties interested in the 60/62 North Fifth Street site investigation. The City of Fulton, Oswego County, and NYSDEC will mail fact sheets about the site to this list. If you would like to be added to the mailing list, please contact, Ron Edick at 315-592-3454.

The City has compiled an initial list of residents in a two block radius of 60/62 North Fifth Street. The resident portion of the list is maintained confidentially in the City's project files.

Table 8-1 Mailing list

Name	Address	Affiliation (if applicable)
Honorable Ronald Woodward, Mayor, City of Fulton	Municipal Building 141 South First Street Fulton, New York 13069-1717	The City of Fulton
Ronald C. Edick, City Engineer	Municipal Building 141 South First Street Fulton, New York 13069-1717	The City of Fulton
Karen Noyes, Oswego County Senior Planner	46 East Bridge Street Oswego, NY 13126	Oswego County
Christopher F. Mannes, III PE, NYSDEC Project Manager	615 Erie Blvd. West Syracuse, NY 13204	NYS Department of Environmental Conservation
Katie Comerford, Public Health Specialist NYSDOH Project Manager	217 S. Salina Street Syracuse, New York 13202	NYS Department of Health/CNY Regional Office
Jenny Tsolisos, USEPA Region 2 Brownfields Program Manager	290 Broadway, 18th Floor New York, NY 10007	United States Environmental Protection Agency Region 2
Daniel M. Shearer, P.E.	3 Marcus Boulevard Albany, New Tork 12205	ENSR Corporation
Sean Hart	5015 Campuswood Drive, Suite 104 East Syracuse, New York 13057	ENSR Corporation
Bruce Coulombe	1001 West Seneca Street Ithaca, New York 14850	ENSR Corporation

Appendix A

Citizen's guide to environmental acronyms

New York State Department of Environmental Conservation
Guide to Environmental Acronyms

This list of acronyms includes abbreviations for agency names, chemicals, units of measure, and various documents and technical terms.

AG	Attorney General
AOC	Area of Concern
ARARs	Applicable or Relevant and Appropriate Requirements
AST	Above-Ground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry (Federal)
C&D	Construction & Demolition
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Federal)
CO	Consent Order
COC(s)	Contaminant(s) of Concern
CP	Citizen Participation
CPP	Citizen Participation Plan
CPS	Citizen Participation Specialist
DDT	Dichloro-diphenyltrichloroethane (pesticide)
DEC	Department of Environmental Conservation (New York State)
DEE	Division of Environmental Enforcement (within DEC)
DEP	Division of Environmental Permits (within DEC)
DER	Division of Environmental Remediation (within DEC)
DFWMR	Division of Fish, Wildlife and Marine Resources (within DEC)
DNAPL	Dense Non-Aqueous Phase Liquid
DOD	Department of Defense(Federal)
DOH	Department of Health (New York State)
DOL	Department of Law (New York State)
DOT	Department of Transportation (New York State)
DOW	Division of Water (within DEC)
ECL	Environmental Conservation Law (New York State)
EIS	Environmental Impact Statement
ELAP	Environmental Laboratory Accreditation Program
ENB	Environmental Notice Bulletin
EPA	United States Environmental Protection Agency
EQBA	1996 Environmental Quality Bond Act (New York State “Superfund”)
ESD	Explanation of Significant Differences (DEC document)
F&W	Division of Fish & Wildlife (within DEC)
FOIA	Freedom of Information Act (Federal)
FOIL	Freedom of Information Law (New York State)
FS	Feasibility Study
FSF	Federal Superfund
FY	Fiscal Year
GPM	Gallons Per Minute
HASP	Health and Safety Plan
HDPE	High-Density Polyethylene (plastic)
HRS	Hazard Ranking System
ICM	Interim Corrective Measures
ICMI	Interim Corrective Measures Implementation
IIWA	Immediate Investigation Work Assignment
IRM	Interim Remedial Measure
LEL	Lowest Effect Level
LNAPL	Light Non-aqueous Phase Liquid
mg/kg mg/l	Milligrams per Kilogram / Milligrams per Liter
MW	Monitoring Well (groundwater)
NAPL	Non-Aqueous Phase Liquid
ND	Non-detect (not detected)

NIOSH	National Institutes of Occupational Safety and Health
NPL	National Priorities List (EPA list)
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation & Maintenance
OSHA	Occupational Safety and Health Administration (U.S.)
OU	Operable Unit
PAH	Polynucleated Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PCE	Perchloroethene (Tetrachloroethene)
PID	Photoionization Detector
POTW	Publicly Owned Treatment Works (sewage or water treatment plant)
ppb	Parts per Billion
ppm	Parts per Million
ppt	Parts per Trillion
PRAP	Proposed Remedial Action Plan (DEC document)
PRP	Potentially Responsible Party
PRS	Priority Ranking System
PSA	Preliminary Site Assessment
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAS	Remedial Action Selection Report
RAR	Remedial Alternatives Report
RCRA	Resource Conservation and Recovery Act (Federal)
RD	Remedial Design
RHWRE	Regional Hazardous Waste Remediation Engineer
RI	Remedial Investigation
RI/FS	Remedial Investigation/ Feasibility Study

Appendix B

Fact sheets issued since the beginning of the project

FACT SHEET

Environmental Investigation to Begin at 60/62 North 5th Street

The City of Fulton (City) was recently awarded funding to conduct a remedial investigation at 60/62 North 5th Street in Fulton, New York (Site), through the New York State Department of Environmental Conservation's (NYSDEC) Environmental Restoration Program (ERP). The purpose of the grant is to provide funding to investigate the property, characterize the environmental conditions, and evaluate remediation alternatives. An additional funding source for the brownfield project is through Oswego County's (County) United States Environmental Protection Agency (USEPA) Brownfields Assessment Grant. The overall goal for the Site is to eliminate the existing environmental concerns to enable redevelopment of property. Work is scheduled to begin in late Summer 2007.

DEC is providing this fact sheet in cooperation with the New York State Department of Health, Oswego County, the City of Fulton, and the USEPA. The purpose of this fact sheet is to notify nearby residents and other interested parties of the planned investigation and to identify ways to get more information.

About New York State's Environmental Restoration Program

A brownfield is an abandoned or under-used property where redevelopment is complicated by real or perceived environmental contamination. In an effort to spur the cleanup and redevelopment of brownfields, a $200 million Environmental Restoration Fund was enacted as part of the $1.75 billion Clean Water/Clean Air Bond Act of 1996. Enhancements to the program were enacted on October 7, 2003. Under the enhanced Environmental Restoration Program, the State provides grants to municipalities that own brownfields, but are not responsible for the contamination, to reimburse up to 90 percent of on-site eligible costs and 100 percent of off-site eligible costs for site investigation and remediation activities.

Future Investigation

The purpose of the upcoming investigation is to define the nature and extent of contamination at the site. Starting this summer, the City's consultant (ENSR) will perform a number of investigative tasks at the site. The initial fieldwork should be completed by the end of the fall.

Two areas of concern will be investigated. The first is the area of a removed 700-gallon underground storage tank (UST); ENSR's historic research indicates that following removal of the tank and associated soil, some petroleum-impacted soils remained. The second area of concern is previous site usage as a foundry. These areas will be investigated by a variety of field tasks. Soil borings (drilling to collect soil samples) and

groundwater monitoring wells will be installed. Samples of soil and groundwater will be collected at the site and submitted for laboratory analyses of a comprehensive list of contaminants, including: volatile and semivolatile organic compounds (petroleum- and solvent-related), metals, and PCBs. Prior to the start of subsurface work at the site, ENSR will contact Dig Safe NY to locate public utilities present at the site. Final determination of the location of the borings and monitoring wells will be dependent upon the confirmed utility locations.

Soil vapor samples will also be collected. Soil vapor is air existing in void spaces in the soil between the groundwater table and the ground surface. These gases may include vapor of hazardous chemicals such as VOCs. Soils impacted with environmental contaminants can act as a source for VOCs in soil gas, which can enter and accumulate in structures, adversely affecting indoor air quality. Soil vapor sampling and analysis at the Site will confirm or deny the presence of contaminated soil vapors.

During the investigation activities, air monitoring will be conducted to ensure that site-related contaminants are not migrating offsite through the air. The area near the Site is served by public water; therefore, exposure to site-related contaminants in drinking water is not expected.

What Happens Next:

When the investigation is complete, the City will submit a report to DEC and the USEPA summarizing the investigation, evaluating the potential exposure pathways, and presenting remedial alternatives. If cleanup actions are necessary, DEC will propose a remedial plan and present it at a public meeting. Additionally, DEC will have a 45-day public comment period on the plan before the final remedy is selected. The City of Fulton will be eligible to apply for additional funds to help pay for the cleanup. At this time, the City has not selected a plan for redevelopment of the Site after cleanup is complete.

About the Site

The vacant property is situated in a residential property area. The subject property is approximately 33 feet wide and 100 feet in depth. A small concrete and asphalt pad, approximately 3 feet by 5 feet in dimension, is located in the southeast corner of the property. According to interviews with key personnel, the concrete pad is reportedly the location of the former 700-gallon UST. According to the historical review, previous operations at the site included a brass and metal works facility, a foundry, an automobile paint shop, an automobile warehouse and a construction materials warehouse.

For More Information:

Documents related to this investigation, including the Work Plan for Remedial Investigation/Remedial Alternative Report and Citizen Participation Plan, are available for you to review at:

Fulton Public Library
160 South First Street
Fulton, NY 13069
(315) 592-5159
Hours: Monday, Friday, Saturday 9:00 a.m. – 5:00 p.m.
Tuesday, Wednesday, Thursday 9:00 a.m. – 7:00 p.m.

Oswego Public Library
Temporary Location
140 East Second Street
Oswego NY 13126

Main Location
140 E 1st St # 142
Oswego, NY 13126
Phone: (315) 341-5867
Hours: Monday-Thursday: 10:00am-8:00pm
Friday: 10:00am-5:00pm
Saturday, Sunday: Noon-5:00 pm

NYS Department of Environmental Conservation
Region 7 Offices
615 Erie Blvd. West
Syracuse, NY 13204
(315) 476-7403
Hours: Mon.- Fri. 8:30 - 4:45 pm
Please call for an appointment

For Questions About the Investigation:

The City and County have identified individuals knowledgeable about the proposed remedial investigation activities, identified below. If you have questions or concerns, please do not hesitate to contact any of the following people:

The City of Fulton
Ronald C. Edick
City Engineering Department
Municipal Building
141 South First Street
Fulton, New York 13069-1717
Ph: (315) 592-3454

Oswego County
Karen Noyes
Oswego County Department of Planning & Community Development
46 East Bridge Street
Oswego, NY 13126
Ph: (315) 349-8295

New York State Department of Environmental Conservation:
Christopher F. Mannes, III PE
NYSDEC Project Manager
615 Erie Blvd. West
Syracuse, NY 13204
Ph: (315) 426-7515

New York State Department of Health:
Katie Comerford, Public Health Specialist
NYSDOH Project Manager
Environmental Exposure Investigation
NYS Department of Health/CNY Regional Office
217 S. Salina Street
Syracuse, New York 13202
Ph: 315-477-8566
(for site-specific questions)

United States Environmental Protection Agency:
Jenny Tsolisos
USEPA Region 2 Brownfields Program Manager
290 Broadway, 18th Floor
New York, NY 10007
Ph: (212) 637-4349

ENSR
Daniel M. Shearer. PE
ENSR Brownfields Program Manager
3 Marcus Boulevard
Albany, NY 12205
Ph: (518) 453-6444