

Sub-Surface Soil Vapor Investigation Work Plan

ECL Article 27/Title 14

235 Metro Park
Town of Brighton
Rochester, New York 14623

NYSDEC Site No. 828150

Prepared for:

235 Metro Park, LLC

Prepared by:



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P.N. 20121.26

PRIVILEGED AND CONFIDENTIAL

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Sub-Surface Soil Vapor Investigation Work Plan

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NYSDEC Site No. 828150

1 INTRODUCTION

This Sub Surface Soil Vapor Investigation Work Plan describes specific activities to be undertaken during the investigation of 235 Metro Park in the Town of Brighton, New York pursuant to the Consent Order between the New York State Department of Environmental Conservation (NYSDEC) and 235 Metro Park, LLC.

1.1 Project Scope and Goals

The purpose of this Investigation is to further define the nature and extent of potential on-site impacts resulting from historic operations at the site. The extent of off-site impact, if any, will be evaluated at the property boundary. The results of this investigation will be used to evaluate remedial actions that might be required at the Site. Specifically, the investigation is intended to determine:

1. If the sub-surface vapors at the property boundaries are contaminated;
2. What are the current and potential exposures to contaminated sub-surface vapors; and.
3. What actions, if any, are needed to prevent or mitigate exposures and to remediate sub-surface vapor contamination.

2 SITE HISTORY AND DESCRIPTION

The 235 Metro Park parcel is comprised of 2 contiguous parcels totaling approximately five acres, bounded on the north and west by Metro Park in the Town of Brighton, New York (Figure 1). The western parcel is improved with one approximately 20,000-square-foot masonry and metal building with slab-on-grade construction, built in 1968. The building was formerly occupied by Fischbach & Moore Electric, LLC, for sales and service of electrical motors and transformers. The subject site is part of the Metro Park area of commercial properties; all of Metro Park is zoned Light Industrial. The area is serviced by public water and sewers.

2.1 Previous Investigations

Our December 2005 Site Investigation Report (SIR) and January 2007 Remedial Design Investigation Report delineated the on-site Tetrachloroethylene (a/k/a perchloroethylene, or PCE) and trichloroethylene (TCE) contamination, along with their chlorinated breakdown products which are present in site soil vapors and groundwater at concentrations warranting remedial measures. As demonstrated in the December 2005 SIR, the chlorinated solvents PCE, TCE, and their breakdown products were found in groundwater northeast and southeast of the subject building. A plume of TCE-contaminated groundwater has migrated beneath the parking lot south of the building. PCE-and TCE-contaminated soil vapor and groundwater at the site have resulted in:

- chlorinated compounds including PCE and TCE in groundwater, but significant off-site migration was not observed.
- cis-1,2-dichloroethylene in sub-slab soil vapor beneath the eastern warehouse slab of the subject building at concentrations warranting mitigation per New York State Department of Health (NYSDOH) guidance.

As tabulated on the following page, groundwater samples collected at 235 Metro Park are determined to have volatile organic compound (VOC) contamination in concentrations greater than unrestricted use Site Cleanup Objectives (SCOs) and the NYSDEC TOGS 1.1.1 Groundwater Standards:

2.1.1 Results

TABLE 1: Groundwater-VOCs
June 2003, December 2003 & April 2006

Sampling ID Sampling Date Units	Sub-Surface Soil Vapor Investigation Work Plan 2008										TOGS 1.1.1 Groundwater Standard (ug/L)
	MW-4 Shallow (S)			MW-4 Deep (D)			MW-10			MW-11	
	6/3/03	12/4/03	4/5/06	6/3/03	12/4/03	4/5/06	6/3/03	12/4/03	4/10/06	4/10/06	
	(ug/L)			(ug/L)			(ug/L)			(ug/L)	
Acetone	ND	ND	ND	28	66	16	ND	ND	ND	ND	50
2-Butanone	ND	ND	ND	3J	10J	3J	ND	ND	ND	ND	50
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	"NS"
cis-1,2-Dichloroethene	340	400D	930D	14	85	96	ND	ND	ND	ND	5
Chloroethane	ND	3J	ND	ND	ND	ND	ND	ND	ND	ND	5
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7
1,1-Dichloroethene	ND	82	240D	ND	2J	2J	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	78	170	ND	4J	4J	ND	ND	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	3J	ND	ND	10	ND	ND	ND	ND	10
Methylene chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,1-Trichloroethane	100J	78	260 D	ND	ND	ND	ND	ND	ND	ND	5
Trichloroethene	3400	3300D	9400D	12	120	110	ND	2J	6J	ND	5
1,1,2-Trichloroethane	ND	ND	1J	ND	ND	ND	ND	ND	ND	ND	1
Tetrachloroethene	ND	9J	5J	ND	12	8J	510D	170	480D	3J	5
Touene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Trans-1,2-Dichloroethene	ND	5J	9J	ND	3J	2J	ND	ND	ND	ND	5
Vinyl chloride	110J	120	310D	ND	31	16	ND	ND	ND	ND	2
Methyl acetate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	"NS"

Organic Qualifiers:

- ND or U:** Indicates compound was analyzed for, but not detected at or above the reporting limit.
- J:** Indicates an estimated value. This flag is used either when estimating concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
- B:** Analyte is found in the associated blank, as well as in the sample.
- D:** Identifies all compounds identified in analysis at the secondary dilution factor.
- N** Indicates presumptive evidence of a compound. It is applied to all TIC results
- "NS":** "No Standard" Indicates objective is not available in Division of Water Technical and Operational Guidance Series (1.1.1)
- TIC:** Indicates Tentatively Identified Compounds.
- BOLD:** Indicates data in exceedance of applicable standards, criteria and guidance values (SCGs).

TABLE 1 Cont'd: Groundwater-VOCs
April 2006

Sample ID Sampling Date Units	Sub-Surface Soil Vapor Investigation Work Plan 2008										NYS togs 1.1.1 Groundwater Standard (ug/L)
	MW-12S 4/5/06 (ug/L)	MW-12D 4/5/06 (ug/L)	MW-13S 4/5/06 (ug/L)	MW-13D 4/5/06 (ug/L)	MW-14S 4/5/06 (ug/L)	MW-15S 4/5/06 (ug/L)	MW-16I 4/5/06 (ug/L)	MW-16S 4/5/06 (ug/L)	MW-17S 4/5/06 (ug/L)	MW-17D 4/5/06 (ug/L)	
Acetone	ND	16	ND	580D	6J	ND	12	ND	ND	110	50
2-Butanone	ND	ND	ND	ND	2J	ND	ND	ND	ND	ND	50
Bromodichloromethane	ND	ND	ND	ND	ND	ND	1J	ND	ND	ND	50
Carbon Disulfide	ND	ND	ND	2J	ND	ND	ND	ND	ND	ND	"NS"
cis-1,2-Dichloroethene	ND	ND	3J	4J	2J	ND	11	160	ND	ND	5
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Chloroform	ND	ND	ND	ND	ND	ND	26	ND	ND	ND	7
1,1-Dichloroethene	ND	ND	ND	ND	7J	86D	ND	1J	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	3J	480D	ND	2J	ND	ND	5
Methyl-t-Butyl Ether (MTBE)	ND	ND	ND	ND	2J	ND	ND	7J	ND	ND	10
Methylene chloride	ND	ND	ND	ND	ND	ND	2J	ND	ND	ND	5
1,1,1-Trichloroethane	ND	ND	ND	ND	14	110D	ND	ND	ND	ND	5
Trichloroethene	ND	ND	ND	2J	ND	ND	3J	2J	2J	2J	5
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Tetrachloroethene	ND	ND	ND	ND	ND	260D	ND	ND	ND	ND	5
Toluene	ND	ND	ND	ND	1J	ND	ND	ND	1J	ND	5
Trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	72D	ND	11	ND	ND	5
Vinyl chloride	ND	ND	ND	1J	ND	970D	5J	49	ND	ND	2
Methyl acetate	ND	ND	ND	ND	ND	ND	ND	5J	ND	ND	"NS"

Organic Qualifiers:

- ND or U:** Indicates compound was analyzed for, but not detected at or above the reporting limit.
- J:** Indicates an estimated value. This flag is used either when estimating concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
- B:** Analyte is found in the associated blank, as well as in the sample.
- D:** Identifies all compounds identified in analysis at the secondary dilution factor.
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2.1.2 Discussion

Figure 2 is a map of the Site showing the monitoring well locations and the contaminant concentrations.

The groundwater data confirm two independent plumes of contaminated groundwater that will require treatment:

- The MW-4S,-4D, and MW-15 area around the southeast corner of the building is contaminated with TCE and its various breakdown products through vinyl chloride.
- PCE contamination is present in MW-10, in the driveway east of the loading docks.

Although no off-site migration of contaminated groundwater has been detected, this boundary vapor study is being conducted to confirm that off-site vapor migration has not occurred.

3 FIELD ACTIVITIES PLAN

This section outlines the activities that will be performed during the Sub-Surface Soil Vapor Investigation. The work will be conducted in accordance with Draft DER 10, "Technical Guidance for Site Investigations and Remediation" October, 2006 New York State Department of Health (NYSDOH), "Guidance for Evaluation Soil Vapor Intrusion in the State of New York."

3.1 Groundwater Sampling

Concurrently with this boundary vapor investigation, an additional round of groundwater sampling will be conducted on all of the monitoring wells that were installed during the RI, and during the Remedial Design Investigation. The groundwater samples will be analyzed for VOCs by ASP Methodology with Category B deliverable package. The data will be validated and a Data Usability Summary Report (DUSR) will be prepared. One boundary vapor sample will be collected in close proximity to MW-11, in the northeast portion of the Site. The groundwater samples will be collected with low-flow minimal draw-down methodologies in conformance with the RI Work Plan dated July 2002.

3.2 Project Scope and Goals

Soil vapors will be investigated in conformance with the October 2006, NYSDOH “Guidance for Evaluation Soil Vapor Intrusion in the State of New York.” The soil vapor investigation will be designed to address the following issues:

1. Are sub-surface vapors at the site boundaries contaminated?
2. What are the current and potential exposures to contaminated sub-surface vapors?
3. What actions, if any, are needed to prevent or mitigate exposures and to remediate sub-surface vapor contamination?

To evaluate the potential for off-site soil vapor contamination, eight samples will be collected and analyzed for VOCs.

1. Two boundary samples will be collected along the north, south, east and west property lines, for a total of eight samples.
2. The samples will be collected at a depth of 1 to 1.5 feet above the contaminated groundwater.

3.3 Preliminary Mapping and Utility Mark Out

Prior to conducting the sampling, the locations of all sub-surface utilities (power, phones, gas, and sewer) will be marked by Underground Facilities Protective Organization (UFPO).

3.4 Sampling Method

3.4.1 Soil Vapor Probe

1. Ground water depth will be measured at the Site.
2. A temporary stainless steel soil vapor probe will be installed at approximately 1 to 1.5 feet above the contaminated groundwater. The probe will have a screened interval of 20 inches.
3. Implants will be fitted to the surface with ¼ inch diameter, laboratory grade, polyethylene tubing. Soil vapor probes will be sealed above the sampling zone with bentonite slurry

for a minimum distance of 2 feet to prevent outdoor air infiltration. The remainder of the borehole will be backfilled with grout.

4. Boreholes will be drilled to an appropriate depth using a Geoprobe.
5. Glass beads will be used to create a sampling zone 1 to 2 feet in length.

3.4.2 *Soil Vapor Sampling*

1. The sub-surface soil vapor samples will be collected using 1 liter Summa canisters on the north, south, east and west site boundaries (Figure 3).
2. A minimum of three volumes of the sample tube will be extracted manually prior to sample collection.
3. The Summa Canisters will be calibrated for a two hour collection time and a flow rate of ± 0.008 liters per minute.

3.4.3 *Purging Procedure*

Centek Labs provides equipment designed to meet the latest vapor intrusion guidelines in accordance with the NYSDEC and NYSDOH "October 2006: Final Soil Vapor Intrusion Guidance." A three liter flux chamber is provided by Centek to serve as an enclosure for the tracer gas and sampling procedure. The sample tubing will be hooked to the union clamped to the inside of the flux chamber. Hydraulic cement (e.g. Plug Tite) will be placed around the tubing to seal the borehole. Plastic garbage bags will be placed on the ground to create a surface for the flux chamber; modeling clay, will be used around the rim to seal the flux chamber; if the modeling clay does not achieve the desired seal, bentonite will be used around the rim to seal the flux chamber. The tubing will be purged by drawing air from the tube with a 200 ml syringe. The volume of the tube will be calculated ($V=2\pi r^2h$) and the line will be purged three volumes. The purging flow rate will not exceed 2 liters per minute.

3.4.5 *Tracer Gas*

Helium will be used as a tracer gas before collecting soil vapor samples to verify that adequate sampling techniques are being implemented (i.e., to verify infiltration of outdoor air is not occurring). We will utilize the tracer gas method as depicted in the NYSDOH “Guidance for Evaluating Soil Vapor Intrusion in the State of New York” (Figure 4). We will use a portable monitoring device to analyze a sample of soil vapor for helium prior to collecting the sub-surface soil vapor samples. If the monitoring device detects the tracer gas we will re-seal the sample tube and repeat the procedure until there is no tracer gas detected.

3.4.6 *Field Sampling Log*

A field sampling log will be completed with the following information:

1. Sample identification,
2. Date and time of sample collection,
3. Sampling depth,
4. Identity of samplers,
5. Sampling methods and devices,
6. Purge volumes,
7. Volume of soil vapor extracted,
8. The vacuum of the canisters before and after samples were collected, and
9. Chain of custody protocols and records used to track samples from sampling point to analysis.

3.4.7 *Time Frame*

Pending NYSDEC and NYSDOH approval of the Sub-Surface Soil Vapor Investigation Work Plan, Passero Associates will schedule this sub-surface soil vapor sampling anticipated to be conducted in one or two field days.

4 QUALITY ASSURANCE/QUALITY CONTROL PROTOCOLS

4.1 Project Manager

Peter S. Morton, C.P.G. is Passero Associates' Certified Professional Geologist, licensed Asbestos Inspector, and licensed Lead Paint Inspector. His 40 hour OSHA safety training is up to date. He is serving as Project Manager for this Remedial Investigation/Feasibility Study (RI/FS).

4.2 Decontamination

The drilling augers and split-spoon samplers will be decontaminated by pressure washing in between each borehole if the equipment is to be re-used. The augers will be power-washed and the samplers will be washed withalconox and water. All decontamination water and soil cuttings generated at the Site will be containerized and characterized for disposal purposes.

4.3 Sampling Equipment

- The soil vapor probe will be stainless steel and the implants will be fitted to the surface with ¼-inch diameter, laboratory grade, polyethylene tubing;
- The Summa canisters will be batch certified clean by Centek.
- The air samples collected in the Summa Canisters will be shipped by federal express in a cooler directly to Centek Laboratories.

4.4 Laboratory Analysis

4.4.1 Analytical Parameters

The samples will be analyzed for EPA Method TO-15 for a wide range of VOCs; the analytical results will be reported in micrograms per cubic meter.

4.4.2 Sample Storage and Handling

Samples will be package and transported directly to Centek Laboratories on the day they are collected, or expedited for overnight delivery to the laboratory.

4.4.3 Analytical Laboratory

The analytical laboratory that will perform all of the sub-surface soil vapor analyses will be Centek Laboratories. Centek Laboratories is a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory. Their QA/QC protocols are in conformance with DER-10 Section 2 “Quality Assurance for Sampling and Laboratory Analysis.” Russ Pelligrino of Centek Laboratories stated that they are able to achieve a minimum reporting limit of 1 microgram per cubic meter for each of the EPA method TO-15 analytes.

4.4.4 Data Usability Report (DUSR)

All laboratory data generated during this sub-surface soil vapor investigation will be subjected to a DUSR.

5 HEALTH AND SAFETY PROTOCOLS

The Health and Safety Plan (HASP) included in Appendix 1 will be followed during this the sub-surface soil vapor investigation. The HASP presents information and procedures, including the assignment of responsibilities, personnel protection requirements, work practices and emergency response procedures for Passero Associates who will be conducting field activities. The HASP is based on an assessment of potential health hazards at the site, using available historical information. The Route to the hospital can be found in Appendix J of the HASP.

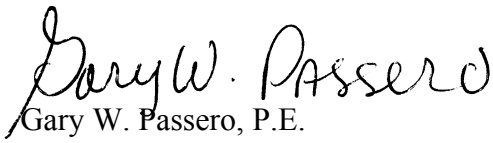
The result of the community monitoring program will be made available upon request by the NYSDEC or the NYSDOH.

The HASP will be followed in conformance with OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations found in 29 CFR 1926. All personnel and subcontractors who enter the site during field operations and are involved with remedial activities will be required to comply with the HASP.

We, Peter S. Morton and Gary W. Passero, certify we are the people with primary responsibility for the day to day performance of the activities under the Consent Order between NYSDEC and 235 Metro Park, LLC and that all activities will be performed in full accordance with this Work Plan.



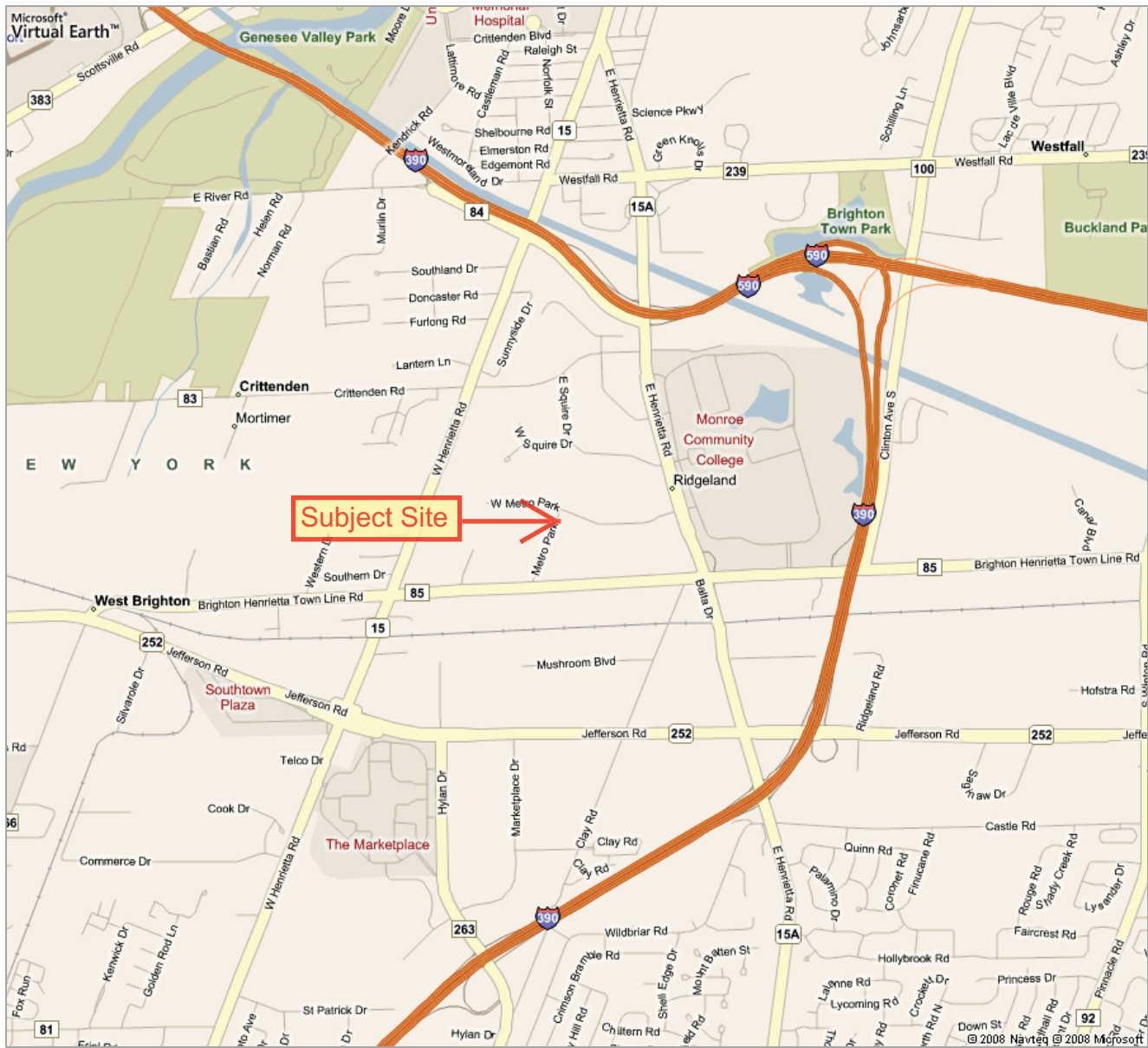
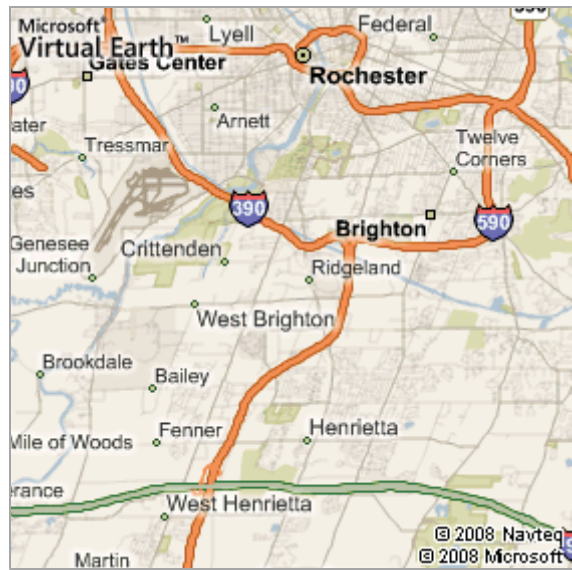
Peter S. Morton, C.P.G.
Certified Professional Geologist



Gary W. Passero, P.E.
Chairman and CEO

FIGURES

Figure 1
235 Metro Park Location Map



MONITORING WELL LOCATIONS & ELEVATIONS

Project 235 METRO PARK
Site No. 828150

Town BRIGHTON, N.Y.

LEGEND:

- = SHALLOW WELL
- = DEEP WELL
- = EXISTING WELL

Sample ID	MW-16S
Sampling Date	4/5/06
Units	(ug/L)
cis-1,2-Dichloroethene	160
1,1-Dichloroethene	1J
1,1-Dichloroethane	2J
Methyl-t-Butyl Ether (MTBE)	7J
Trichloroethene	2J
Trans-1,2-Dichloroethene	11
Vinyl chloride	49
Methyl acetate	5J

Sample ID	MW-16i
Sampling Date	4/5/06
Units	(ug/L)
Acetone	12
Bromodichloromethane	1J
cis-1,2-Dichloroethene	11
Chloroform	26
Methylene chloride	2J
Trichloroethene	3J
Vinyl chloride	5J

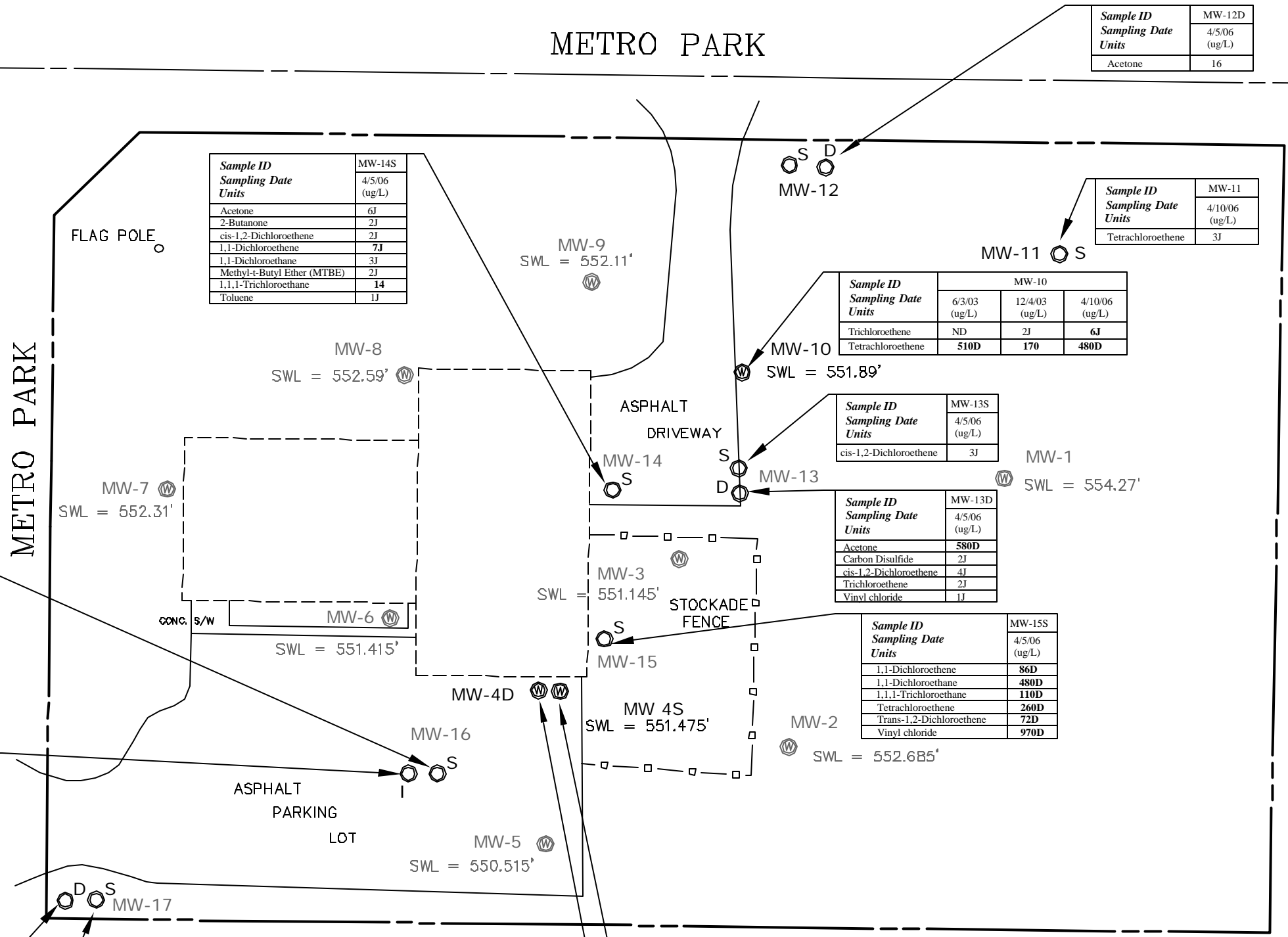
Sample ID	MW-17D
Sampling Date	4/5/06
Units	(ug/L)
Acetone	110
Trichloroethene	2J

Sample ID	MW-17S
Sampling Date	4/5/06
Units	(ug/L)
Trichloroethene	2J
Toluene	1J

Sample ID	MW-4D		
	6/3/03	12/4/03	4/5/06
Sampling Date	(ug/L)	(ug/L)	(ug/L)
Units			
Acetone	28	66	16
2-Butanone	3J	10J	3J
cis-1,2-Dichloroethene	14	85	96
1,1-Dichloroethene	ND	2J	2J
1,1-Dichloroethane	ND	4J	4J
Methyl-tert-Butyl Ether	ND	ND	10
Trichloroethene	12	120	110
Tetrachloroethene	ND	12	8J
Trans-1,2-Dichloroethene	ND	3J	2J
Vinyl chloride	ND	31	16

Sample ID	MW-4 Shallow (S)		
	6/3/03	12/4/03	4/5/06
Sampling Date	(ug/L)	(ug/L)	(ug/L)
Units			
cis-1,2-Dichloroethene	340	400D	930D
Chloroethane	ND	3J	ND
1,1-Dichloroethene	ND	82	240D
1,1-Dichloroethane	ND	78	170
Methyl-tert-Butyl Ether	ND	ND	3J
1,1,1-Trichloroethane	100J	78	260 D
Trichloroethene	3400	3300D	9400D
1,1,2-Trichloroethane	ND	ND	1J
Tetrachloroethene	ND	9J	5J
Trans-1,2-Dichloroethene	ND	5J	9J
Vinyl chloride	110J	120	310D

- Organic Qualifiers:**
- ND or U:** Indicates compound was analyzed for, but not detected at or above the reporting limit.
 - J:** Indicates an estimated value. This flag is used either when estimating concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
 - B:** Analyte is found in the associated blank, as well as in the sample.
 - D:** Identifies all compounds identified in analysis at the secondary dilution factor.
 - N** Indicates presumptive evidence of a compound. It is applied to all TIC results
 - "NS"** "No Standard" Indicates objective is not available in Division of Water Technical and Operational Guidance Series (1.1.1)
 - TIC:** Indicates Tentatively Identified Compounds.
 - BOLD:** Indicates data in exceedance of applicable standards, criteria and guidance values (SCGs).



Sample ID	MW-12D
Sampling Date	4/5/06
Units	(ug/L)
Acetone	16

Sample ID	MW-11
Sampling Date	4/10/06
Units	(ug/L)
Tetrachloroethene	3J

Sample ID	MW-10		
	6/3/03	12/4/03	4/10/06
Sampling Date	(ug/L)	(ug/L)	(ug/L)
Units			
Trichloroethene	ND	2J	6J
Tetrachloroethene	510D	170	480D

Sample ID	MW-13S
Sampling Date	4/5/06
Units	(ug/L)
cis-1,2-Dichloroethene	3J

Sample ID	MW-13D
Sampling Date	4/5/06
Units	(ug/L)
Acetone	580D
Carbon Disulfide	2J
cis-1,2-Dichloroethene	4J
Trichloroethene	2J
Vinyl chloride	1J

Sample ID	MW-15S
Sampling Date	4/5/06
Units	(ug/L)
1,1-Dichloroethene	86D
1,1-Dichloroethane	480D
1,1,1-Trichloroethane	110D
Tetrachloroethene	260D
Trans-1,2-Dichloroethene	72D
Vinyl chloride	970D

NOTE: BOUNDARY, PARKING LOT AND FENCE LOCATIONS ARE APPROXIMATE AND SCALED FROM 'INSTRUMENT SURVEY MAP' OF #235 METRO PARK DONE ON MAY 30, 1989 AND REDATED ON OCTOBER 10, 1990 BY LARSEN ENGINEERS.

Job No. 20121.26

PASSERO ASSOCIATES
ARCHITECTS-ENGINEERS-SURVEYORS

100 LIBERTY POLE WAY, RICHEY, NY 14604 (585) 925-1000
www.passero.com

Scale 1" = 60'

Date 5.10.06 / 3.20.09

Drawn By J.D.S./DS

Checked By

FIGURE 2
GROUNDWATER DATA

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY MAP IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE N.Y.S. EDUCATION LAW.



Figure 3

October 2006

Final NYSDOH CEH BEEI Soil Vapor Intrusion Guidance

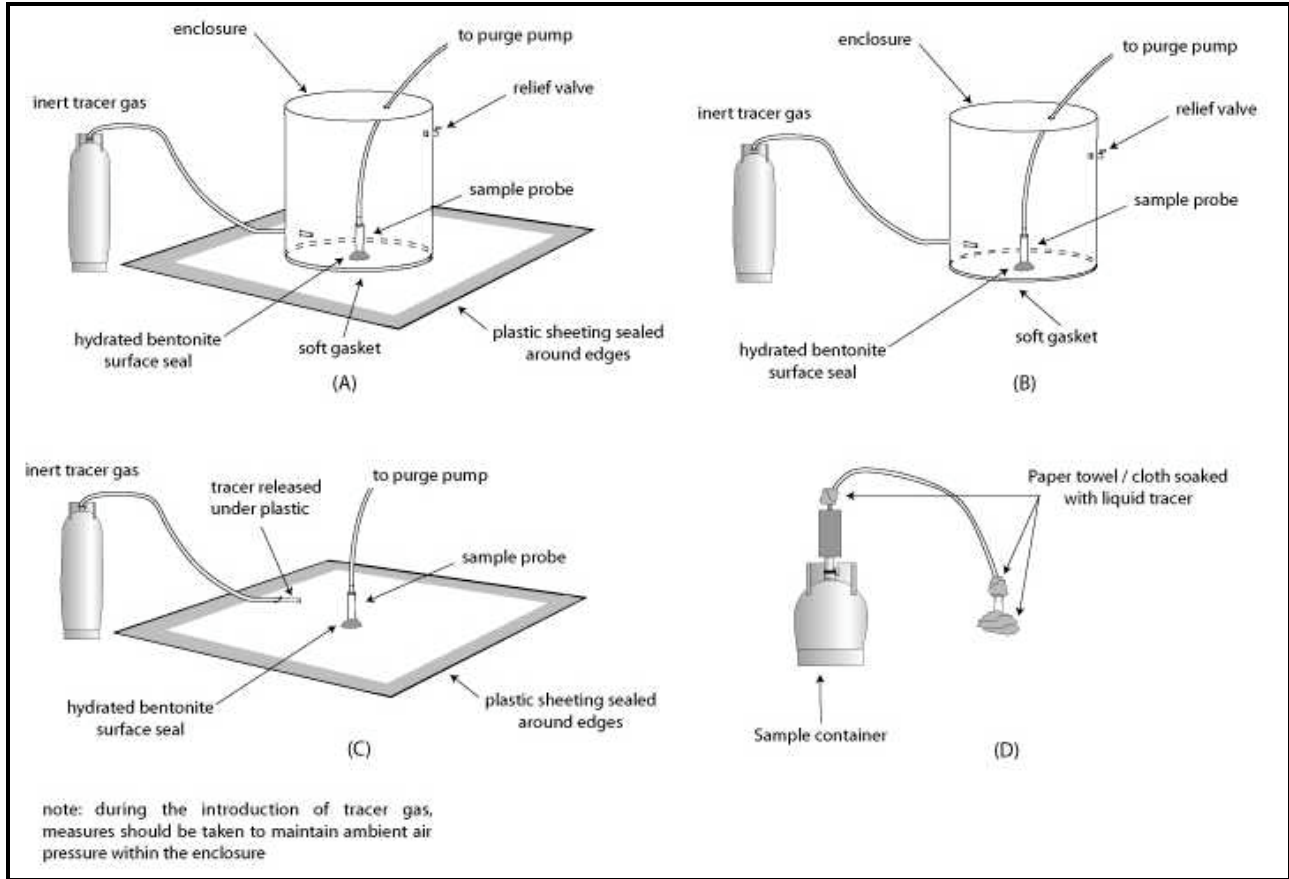


Figure 2.4

Schematics of generic tracer gas applications when collecting soil vapor samples

Because minor leakage around the probe seal should not materially affect the usability of the soil vapor sampling results, the mere presence of the tracer gas in the sample should not be a cause for alarm. Consequently, portable field monitoring devices with detection limits in the low ppm range are more than adequate for screening samples for the tracer. If high concentrations (> 10%) of tracer gas are observed in a sample, the probe seal should be enhanced to reduce the infiltration of outdoor air.

Where permanent or semi-permanent sampling probes are used, tracer gas samples should be collected at each of the sampling probes during the initial stages of a soil vapor sampling program. If the results of the initial samples indicate that the probe seals are adequate, reducing the number of locations at which tracer gas samples are employed may be considered. At a minimum, tracer gas samples should be collected with at least 10% of the soil vapor samples collected in subsequent sampling rounds. When using permanent soil vapor probes as part of a long-term monitoring program, annual testing of the probe integrity is recommended. Where temporary probes are used, tracer gas should be used at every sampling location, every time.

APPENDIX 1
Health and Safety Plan

PASSERO ASSOCIATES

HEALTH AND SAFETY PLAN

LOCATION:

235 Metro Park
Town of Brighton
Rochester, New York 14623

NYSDEC Site No. 828150

PROJECT: Sub-Surface Soil Vapor Investigation

DATE: October 23, 2008

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1 EMERGENCY CONTACTS

Phone Location: Front Desk
Site Address: 235 Metro Park Town of Brighton
Closest Intersection: Metro Park/East Henrietta Road
Site Phone Number: 585-272-5500

- EMS: 911
- Fire: 911
- HAZMAT: 911
- Hospital: 585- 275-2100
- Police: 911
- Other:

2 REQUIRED PERSONNEL, LINES OF AUTHORITY, AND COMMUNICATION CHAIN

In case of emergency or change in work scope, contact the following and document instructions received -

Client Representative: James Goldgerg 585-442-2092

Contact for emergencies, job scheduling/equipment/coordination problems –

Project Manager: Peter S. Morton, C.P.G, 585-325-1000

Health and Safety Officer: Elizabeth Primus: 585-820-0298

3 CHAIN OF COMMAND

Contractors will report any health and safety questions or concerns to Health and Safety Officer Elizabeth Primus. Ms. Primus will relay questions or changes in scope to Project Manager Peter Morton.

4 HEALTH AND SAFETY SUMMARY

Prior to work being performed, the Project Manager/Site Supervisor will review the project, with all field personnel, to identify any potential hazards. Personnel present on site will be advised of safety hazards and potential health hazards before work begins, and when hazards are discovered (if applicable). The evaluations are based on what is known about the site and the anticipated risks posed by various operations.

- Chemicals of Concern:
 1. Chlorinated Compounds,
 2. Helium

- Chemicals expected to be brought on site:

Helium

- Job Objectives:

Sub-surface soil vapor investigation.

- Initial level of Personal Protective Equipment (PPE):

Exclusion Zone Level D

- Action level for upgrading PPE:

Upgrade from Level D to Level C at 5 ppm measured within the breathing zone for 5 minutes. Upgrade from Level C to Level B at 500 ppm measured within the breathing zone for 5 minutes. This will be determined by a photoionization detector (PID) with a 10.6 uV lamp. The Descriptions of the Personal Protective Equipment Levels A-D are in Appendix A of this HASP.

Level D – If less than 5 ppm known contaminant present and measurable.

Level C – If the known contaminant has a concentration of 5 to 500 ppm above background

Level B – If the known contaminant has a concentration of 500 to 2,000 ppm above background

Level A – Call Health and Safety Coordinator

5 COMMUNICATIONS

In an emergency, crucial messages will be conveyed quickly and accurately. Site staff will communicate such information as the location of the injured personnel, orders to evacuate the site, and notice of blocked evacuation routes, even through noise and confusion. Outside support sources will be reached, help obtained, and measures for public notification ensured, if necessary.

5.1 External Communication

- Off-site sources will be contacted to get assistance or to inform officials about hazardous conditions that may affect public or environmental safety.
- All personnel will be familiar with the protocol (phone number or emergency code, contact person) for contacting public emergency aid teams such as fire departments, ambulance units, and hospitals
- Direction to Strong Memorial Hospital can be found in Appendix J.
- All personnel must know the location of the nearest public telephone. A supply of telephone change will be available.

6 EMERGENCY EQUIPMENT ON-SITE

During the project, the following equipment will be available.

Absorbent Pads
First Aid Kit
Fire Extinguisher
Personal Protective Equipment
Site Safety Plan

7 PREREQUISITE FOR ENTRY

Site Security

Visitors will not be permitted to enter work and/or hot zones without certification, 40-Hour OSHA training, respiratory protection, medical clearance, a fit test (if Level C is being used), and review of the Site Safety Plan. If a visitor does not adhere to the provisions of the Site Safety Plan and common safety practices, they will be requested to leave or retreat to the clean zone. Non-conformance incidents will be recorded in the site log.

8 SITE PERSONNEL TRAINING/PROGRESS MEETINGS

8.1 1910.120 Training

All on-site personnel will have current 40-Hour OSHA HAZWOPER training. Personnel 8 hour HAZWOPER refresher course certificates must be provided upon request by the NYSDEC or NYSDOH personnel.

9 AIR MONITORING

Volatile organic compound (VOC) monitoring will be performed and documented during all drilling activities. Monitoring will be in accordance with the New York State Department of Health Generic Community Air Monitoring Program (see Appendix B).

10 SITE CONTROL AND WORK ZONE

The site will be controlled to reduce or eliminate the possibility of exposure or translocation of substances by performing the following:

1. Establishing communications for emergency altering.
2. Using the buddy system.
3. Following safe work practices/Standard Operating Procedures.
4. Identifying medical assistance.
5. Implementing appropriate decontamination procedures to prevent cross-contamination.

11 EMERGENCY PROCEDURES AND FIRST AID

1. Survey the situation. Do not endanger your own life. **DO NOT ENTER A CONFINED SPACE TO RESCUE SOMEONE WHO HAS BEEN OVERCOME** unless an SCBA or airline is worn, the fire department or HAZMAT team has been advised, and there is a standby for you.
2. Call 911 (if available) or the fire department **IMMEDIATELY**. Explain the physical injury, chemical exposure, fire, or release.
3. If the victim's condition appears to be non-critical, but seems to be more severe than minor cuts, he should be transported to the hospital or clinic listed; let the doctor assume the responsibility of determining severity. If the condition is obviously serious, transportation must be done by EMS.
4. Notify the Project Manager and the Safety Officer as soon as practicable. Complete Incident Investigation Report found in Appendix C within 24 hours.
5. Personal injury in the Exclusion Zone: upon notification of an injury in the exclusion Zone, the designated alarm or signal will be given. All site personnel shall assemble at the decontamination line. The rescue team will enter the Exclusion Zone to remove the injured worker to the hotline. The Site Safety Officer and Project Manager will evaluate the nature of the injury, and the affected person should be decontaminated to the best

extent possible prior to movement to the Support Zone. The on-site first aid person should administer the proper treatment and contact should be made for removal by ambulance to the designated medical facility (if required). No person shall re-enter the Exclusion Zone until the cause of the injury or the symptoms is determined.

6. Personal injury outside the Exclusion zone: Upon notification of an injury in the Support Zone, the Site Safety Officer and Project Manager will assess the nature and extent of the injury. If the cause of the injury or loss of the injured person does not affect the performance of the site tasks, then operations may continue. On-site first aid should be administered and the necessary follow-up procedures followed as stated above. If the nature of the injury is such that it endangers or increases risks to others, the emergency signal should be given and the site should be shut down. Activities on-site should not be re-started until the added risk is corrected or removed.
7. Fire/Explosion: Upon notice of a potential or existing fire or explosion, the site emergency signal should be given and all personnel should assemble at the decontamination line. The fire department should be notified and all personnel moved to a safe distance from the involved area.
8. Personnel Protective Equipment Failure: If any site worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his/her buddy shall immediately leave the Exclusion Zone. Reentry shall not be permitted until the equipment has been repaired or replaced.
9. Other Equipment Failure: If any other equipment fails to operate on-site, the Project Manager and Safety Officer shall be notified to determine the effect of this failure on continuing operations on-site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

In all situations, when an on-site emergency results in evacuation of personnel from the Exclusion Zone, personnel shall not reenter until:

1. The conditions resulting in the emergency have been corrected.
2. The hazards have been reassessed.
3. The Site Safety Plan has been reviewed.
4. Site personnel have been briefed in any changes in the Site Safety Plan.

10. Decontaminate victim without causing delay of life-saving procedures.

Employees receive training concerning contingency plans for site emergencies, with emphasis on recognition, control, or retreat. This occurs during the 40-hour course required by OSHA 29 CFR 1910.120.

Additional Emergency Phone Numbers

National Response Center	(800) 424-8802
Chemtrec	(800) 424-9300
SARA Hotline	(800) 535-0202
EPA Hotline	(800) 424-9346
OSHA Hotline	(800) 523-8151
NYSDEC Spill hotline	(800) 457-7362
NYSDEC Project Manager Charlotte B. Theobald	(585) 226-5354
NYSDOH	(518) 402-7860
MCDOH	(585) 274-6904
Chemtrec (chemical emergencies)	(800) 424-9300
Centers for Disease Control (biological agents)	(404) 633-5313
National Response Center	(800) 424-8802
USDOT Office of Hazardous Operations	(202) 426-0656
USDOT Regulatory Matters	(202) 426-8802
USEPA RCRA-Superfund Hotline	(800) 424-9346

11.1 Incident Documentation and Follow-Up

The Project Manager is responsible for documenting the incident. At a minimum, include actions and decisions made, and the circumstances at the time of the actions and decisions. (See Appendix C.)

11.2 Notifications

The Client Representative must contact the client or generator. The generator is under obligation to report to the proper government agencies. If the spill extends into waterways, the Coast Guard and the National Response Center (1-800-424-8802) should be notified immediately, by the client or with his permission. The generator is under obligation to report to the proper government agencies. If a chemical is accidentally released, the National Response Center, and the local fire department, usually have to be notified immediately by the generator. All reporting must be done with Site Manager and client approval.

If contaminants are found to have migrated off-site into populated areas, a large spill of flammable products is involved, or the material is considered acutely toxic or exceeding published IDLH values, notify the fire department first and tell them that and evacuation may be necessary. Use of berms/dikes, sorbent materials, foams, knock-down water sprays can be used under restricted conditions for spills and/or air releases (vapor clouds). In life-threatening situations, do not wait for approval to call Fire Department.

Site Security and Control during Emergencies

- If public evacuation is necessary, responsibility for implementation lies with government authorities.
- When the fire department or state regulatory agent arrives, the command, control, and responsibility for the site is automatically and instantly transferred to that entity.
- No one is permitted on-site during the emergency, unless exception is individually granted by the incident commander.
- Physical barriers should be immediately erected to indicate the perimeter of the incident area; non-essential personnel and the public must be kept on the safe side of this border.
- Evacuations of the public are not responsibility of the Site personnel. Inform local police and they can contact Civil Defense or other agencies.

12 RISK MATRIX: PRECAUTIONS AND SITE TASK AND PROTECTION

12.1 All Activities

POTENTIAL HAZARDS

PRECAUTIONS

Heat Stress

- 1) Increase liquid consumption
- 2) Increase number of rest breaks
- 3) Watch for signs
- 4) Eliminate alcohol consumption
- 5) Do not use salt tablets
- 6) Rest in cool/dry areas such as the air-conditioned truck
- 7) Call EMTs for case of unconscious or other signs of stress

Traffic

- 1) Wear fluorescent safety vest during all site visits.
- 2) Use cone/barricades to indicate work area to drivers and pedestrians.

Exposure to Toxic Products (during sampling, equipment setup, cleaning, etc)

- 1) Wear Nitrile or Silver Shield gloves. Splash goggles advised. Vinyl or PVC sample gloves are not as protective as Nitrile sample gloves.
- 2) Minimize contact time.
- 3) Do not walk through discolored areas, puddles, etc.
- 4) Follow decontamination procedures.
- 5) If >5ppm by OVM, use full face respirator with organic vapor cartridges.
- 6) No eating, smoking, drinking in work area/hot zone and decon zone, to reduce exposure by ingestion.
- 7) Continuously monitor (without threatening your health) when unexpected contamination has been discovered. If unknowns discovered, call H&S managers.

Inclement weather

- 1) Cease outdoor work during lightning storms
- 2) Take cover indoors or in vehicle
- 3) Listen to local forecast for specific hazards

High crime areas

- 1) Be aware of surroundings. Keep lookout.
- 2) Request police protection, If appropriate.

RISK MATRIX: PRECAUTIONS AND SITE TASK AND PROTECTION (Cont'd)

12.2 Vault Entry and Indoor Work And Confined Spaces

<u>POTENTIAL HAZARDS</u>	<u>PRECAUTIONS</u>
Flammability	<ol style="list-style-type: none">1) LEL 0% - 20%: use non-sparking tools; prevent electrical engagement; investigate source.2) LEL 20% or more: leave area; seek advice on changing the atmosphere; do not engage any work source. Wear Nomex suit for situations in which a flash fire is possible.
Oxygen deficiency	<ol style="list-style-type: none">1) $O_2 < 19.5\%$: use SAR or SCBA; call H&S Manager.
Oxygen enrichment	<ol style="list-style-type: none">1) $O_2 > 23\%$: leave area and call the H&S Manager for advice on next step. The excess oxygen drastically increases the flammability range of normally flammable vapors which then make them extremely flammable. Permit must be obtained for confined space entry.

RISK MATRIX: PRECAUTIONS AND SITE TASK AND PROTECTION (Cont'd)

12.3 Drilling, Excavating, and Other Equipment Use

POTENTIAL HAZARDS

PRECAUTIONS

Buried debris, junk on ground, debris

- 1) Stay at least 20 feet from the auger; wire metal has wrapped around legs and dragged humans into the rotating drill.
- 2) Wear steel (or fiberglass) shanked (foot bottom) boots when metal debris is present; feet in regular boots may be sliced.
- 3) Buried debris increases the danger associated with invasive tasks (i.e., suddenly flying objects, entanglement, sparks, new trip hazards, damage, etc.).

Noise

- 1) Wear hearing protection whenever there is a need to shout to be understood or in noisy situations, such as drilling or when pumping wells.

Power Lines and Electrical Connections

- 1) Check height of heavy equipment, drill rigs, cranes in relation to wires. Keep a 20-foot minimum clearance. Electric arcs can electrify rig even when no contact is made with power lines.
- 2) Use ground fault circuit interrupters on all non-permanent wiring, including extension cords.

Physical Injury

- 1) Wear hard hat whenever performing construction type activity, when equipment, hoses could fly.
- 2) Make eye contact with the operator when moving around heavy equipment-know exactly where everyone is.
- 3) Don't wear ties, rings, bracelets, long neck chains, or loose/dangling clothing.
- 4) Prevent slips, trips, and falls; work area uncluttered and dry.
- 5) Stand away from the auger when it is in motion.

RISK MATRIX: PRECAUTIONS AND SITE TASK AND PROTECTION (Cont'd)

12.4 Drilling, Excavating, and Other Equipment Use (Cont'd)

<u>POTENTIAL HAZARDS</u>	<u>PRECAUTIONS</u>
Physical Injury (cont'd)	<ol style="list-style-type: none">6) Never use your hands to take samples while the auger is rotating, use a shovel or stop the auger.7) If a partial amputation occurs, call 911, raise the stump (if possible), apply direct pressure to minimize bleeding; if this does not stop bleeding, use pressure points. Never use a tourniquet – it will increase the amount of limb lost. Collect the part, place in a clean plastic bag or jar. Be careful, if you freeze the part or get it soggy, it can't be reattached due to its damage.
Back Injury	<ol style="list-style-type: none">1) Think out the lift, before performing it, and avoid lifting with a simultaneous twisting motion.2) Get partner for lifting!3) Bend knees when lifting and use leg muscles.
Slippery Surfaces	<ol style="list-style-type: none">1) Do not wear latex booties or disposable booties. Booties are a major cause of slips and back injuries on dirt/mud/grass surfaces.2) Wear ANSI approved work boots with toe and shank protection and non-skid overboots.

13 TREATMENT OF HEAT ILLNESS

13.1 Heat Stress Emergence Decontamination

IF AN EMERGENCY DUE TO A HEAT-RELATED ILLNESS DEVELOPS, PROTECTIVE CLOTHING SHOULD BE REMOVED (CUT OFF) FROM THE VICTIM AS SOON AS POSSIBLE TO REDUCE THE HEAT STRESS. If the outer contaminated garments cannot be safely removed, isolation is in order; blankets, sheets of plastic, garbage drum bags or drum liners should be placed between the contaminated clothing and the clean surfaces of a vehicle to help prevent contaminating medical personnel and/or the inside of ambulances. Protective equipment, particularly gloves, should be brought along in case medical personnel request it. For minor medical problems, decontamination procedure should be followed as usual.

APPENDIX A

Personal Protection Equipment

Level D

0 PPM to 5 PPM measured by OVM, in the breathing zone:

Outside Glove: Sample Gloves – Nitrile or Vinyl
Work Gloves – Leather or Heavy Duty Cloth

Inside Glove: Disposable cloth, if abrasions from physical work are possible.

Footwear: Chemical resistant steel toe boot, leather.

Other: Traffic vest, eye protection, ear plugs (where applicable); hard hat when strike possible. Use of rubber gloves during decontamination of equipment.

Level C

5 PPM or more by OVM in breathing zone:

Respirator: Full face vapor respirator cartridge (organic vapor).

Overalls: P.E. coated Tyvek

Hood: Tyvek or coated Tyvek

Inside Glove: Sample glove – Nitrile.

Outside Glove: Chemical resistant gloves.

Footwear: Splash overboot and steel toe boot.

Other: Ear plugs, hard hat, duct tape joints, face shield as necessary.

Level B

500 PPM or more by OVM in breathing zone:

If level B becomes necessary, stop work and call Health and Safety Manager.

Respirator: SCBA or supplied air respirator.

Chemical resistant clothing: coveralls, disposable chemical resistant suit or hooded coveralls (dependent on contaminants encountered).

Inner and outer glove: chemical resistant.

Other: Hard hat, two way radio, disposable outer boots, 5-minute escape mask.

APPENDIX A

Personal Protection Equipment

Level A

>500 PPM by OVM

Inform Health and Safety Manager

Fully encapsulated chemical resistant suit with positive pressure SCBA breathing apparatus required.

APPENDIX B

Community Air Monitoring Program

Based on the nature of known and potential contaminants present at the Fischbach & Moore/235 Metro Park site, real-time air monitoring for volatile organic compounds (VOCs) and particulate levels at the perimeter of the work zone will be conducted.

Continuous Monitoring

During the course of all ground intrusive activities continuous air monitoring and particulate monitoring will be conducted. Ground intrusive activities conducted on the Fischbach & Moore/235 Metro Park site will include, but not limited to; contaminated soil/waste excavation and disposal, excavation of test pits, and monitoring well installation subsequent to the completion of remedial excavation activities.

Periodic Monitoring

During the course of non-ground intrusive activities periodic monitoring for VOCs will be conducted. Periodic monitoring will occur during the collection of soil samples and any other applicable scenario where continuous monitoring is not warranted.

VOC Monitoring: Response Levels and Associated Actions

VOCs will be monitored at the downwind boundary of the immediate work area on a continuous basis. Upwind concentrations will be recorded at the time work is to commence on a daily basis and periodically after initial readings to establish background conditions. VOC monitoring will be conducted employing photo-ionization detectors (PIDs) with data logging capabilities. The PIDs will be capable of calculating 15 minute running average concentrations. PID readings will be used to monitor for the following excavation area parameters:

- If the total VOC concentration in ambient air readings consistently exceed background readings by 5 parts per million (ppm) for the 15-minute average, site activities will temporarily cease and monitoring will continue. If continued monitoring shows an immediate decrease in total VOC concentrations below 5 ppm, site activities will resume with continuous monitoring.
- If total VOC concentrations at the downwind perimeter continue to be recorded in excess of 5 ppm above background readings, not exceeding 25 ppm, site activities will cease and appropriate measures will be taken to reduce or eliminate nuisance VOC concentrations in ambient air. Subsequent to corrective action, site activities will resume provided total VOC concentrations recorded at a midpoint between the work area and the closest potential receptors are less than 5 ppm above previously recorded background levels over the 15-minute average.
- If total VOC concentrations above 25 ppm are recorded at the boundary of the work area, all site activities will cease. Data recorded during 15-minute readings and instantaneous reading data will be available for review by NYSDEC and NYSDOH representatives.

Particulate Monitoring: Response Levels and Associated Actions

Particulate monitoring will occur continuously at designated upwind and downwind locations at the boundaries of the work area. Particulate monitoring will be conducted employing real-time monitors capable of recording particulate matter less than 10 micrometers in total size. Particulate monitors will be pre-programmed to evaluate particulate concentration averages over 15-minute cycles, to be compared with airborne particulate required action levels. In addition, particulate monitoring equipment will employ audible alarms to indicate exceedence of action levels. Particulate monitoring will occur coinciding with the following response parameters:

- In the instance downwind particulate concentrations exceed 100 micrograms per cubic meter over a 15-minute cycle, or if air born dust is observed leaving the work area, dust suppression activities will commence. Site activity will continue provided downwind particulate concentrations do not exceed upwind particulate concentrations by 150 micrograms per cubic meter while dust suppression activities are conducted, and provided that no visible dust is migrating from the work area.
- Subsequent to dust suppression activities, if total particulate concentrations at downwind monitoring stations exceed the upwind level by 150 micrograms per cubic meter, site activities will cease and be evaluated for modification. Site work will resume provided dust suppression methods reduce total particulate concentrations to within 150 micrograms per cubic meter of the upwind level and in preventing visible dust migration. All particulate monitoring data will be made available for review by NYSDEC and NYSDOH representatives.

All readings must be recorded and be available for the DEC and DOH personnel to review. The preceding document was generated as a site-specific adaptation of the NYSDOH Generic Community Air Monitoring Plan.

APPENDIX C

Incident Investigation Report

ACCIDENT-NO INJURY _____

EMERGENCY INVOLVING THE PUBLIC _____

INJURY/ILLNESS _____

EMERGENCY INVOLVING THE ENVIRONMENT _____

NEAR MISS _____

PROJECT NO.: _____

PROJECT PHONE NO.: _____

PROJECT LOCATION: _____

EMPLOYEE'S FULL NAME: _____

IF SUBCONTRACTOR, GIVE NAME/ADDRESS: _____

ADDRESS (HOME): _____

PHONE NO.: _____

DATE OF BIRTH: _____

SOCIAL SECURITY NO.: _____

TITLE: _____

DATE AND TIME OF OCCURRENCE: _____

DATE AND TIME REPORTED: _____

DATE EMPLOYEE BEGAN TO LOSE WORK TIME: _____

ESTIMATED/ACTUAL DATE OF RETURN TO WORK: _____

DESCRIBE THE APPARENT EXTENT OF INJURY OF ILLNESS AND PARTS OF BODY AFFECTED (LACERATION, BURN, FRACTURE – RT. LOWER LEG, LT. INDEX FINGER): _____

APPENDIX C

Incident Investigation Report

DESCRIBE TREATMENT GIVEN (X-RAY) STITCHES, ETC.). IF HOSPITAL OR DOCTOR, GIVE NAME, ADDRESS, AND PHONE NUMBER AND ATTACH RETURN-TO-WORK SLIP:_____

DID A CHEMICAL EXPOSURE OCCUR? IF YES, WHAT KNOWN CONTAMINANTS WERE PRESENT? WHAT TYPE OF EXPOSURE OCCURRED? (INHALATION, INGESTION, SKIN CONTACT, ETC.):_____

DESCRIBE FULLY HOW INCIDENT HAPPENED, GIVE CAUSES AND RESULTS. ATTACH ANOTHER SHEET IF NECESSARY:_____

EXACT LOCATION WHERE INCIDENT OCCURRED:_____

NAMES AND ADDRESSES OF WITNESSES TO THE INCIDENT:_____

WHO WAS DIRECTLY SUPERVISING THE WORK?_____

WORK SCHEDULE AT TIME OF INCIDENT:_____HOURS PER DAY
_____DAYS PER WEEK

LEVEL OF PERSONAL PROTECTIVE EQUIPMENT UTILIZED AT TIME OF INCIDENT:
(CIRCLE) A - B - C - D

WHAT DIRECTION OR TRAINING HAD BEEN GIVEN TO THE TASK:_____

HOW CAN YOU OR THE COMPANY PREVENT SIMILAR INCIDENTS FROM HAPPENING AGAIN?_____

WHAT ACTION HAS OR WILL BE TAKEN TO PREVENT SIMILAR OCCURRENCES?_____

SIGNATURE:_____DATE:_____
(EMPLOYEE)

SIGNATURE:_____DATE:_____
(SITE SUPERVISOR)

SIGNATURE:_____DATE:_____
(SAFETY OFFICIAL)

APPENDIX D

Work Practices and Standard Operating Procedures

1. Eating, drinking, chewing gum or tobacco, taking medication, smoking, applying cosmetics or inserting contact lenses is prohibited in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists. Carrying food, beverage, matches, lighters, cosmetics, etc. around on-site prohibited unless in the clean zone exclusively.
2. Drinking alcoholic beverages and/or taking other controlled substances during working hours or when driving is prohibited. Driving while intoxicated may result in immediate termination.
3. Compressed gas cylinders must be secured (with chain or other) upright. SCBA units must be upright or in cases.
4. The buddy system is mandatory whenever entry to the hot zone is made in Level C or higher. Visual contact is maintained between “buddies” on site. Close proximity must be maintained in cases of emergencies. Responsibilities of the buddy include:
 - assisting/checking protective clothing and backs
 - keeping visual and voice contact
 - monitoring the body for heat stress and/or chemical exposure
 - getting help, primarily; secondarily, getting the buddy out of the hot zone, if possible
5. Only FM approved metal safety cans may be used to transport and store flammable liquids. Do not leave these in the sun or near heat – pressure builds and when opened, the liquid spurts out.
6. Smoking is never permitted within the decon or hot zones.
7. Trenches more than four (4) feet deep, which will be entered, must have a ladder or steps every 25 feet of the trench.
8. Soil must be laid two (2) feet or more from the edge of the excavation/trench.
9. If a trench is > 5 feet in depth, and employees will enter, call the Health & Safety Manager about OSHA required sloping, shoring, and shielding.
10. When in an area where heavy equipment is used, including tank pulls, wear steel/plastic toed boots, hard hat, and eye protection. Get visual contact by the operator whenever moving around heavy equipment. Watch the bucket/crane load/arm to avoid being struck. Never stand under or near any load, especially tanks being removed.

APPENDIX E

Confined Spaces

Entry into 4-foot deep vaults will not require a buddy when: (1) a ventilation system is installed; (2) the space is vented, by taking the manhole cover off 3 to 5 minutes before entering the vault and leaving it off; or (3) monitoring for air quality is done continuously.

Buddy System: Two or three people work as a team and are in constant visual and voice contact. The buddy system must be used when the work in the confined space: (1) requires the person's head to be below ground level; or (2) the person must work in a manhole or other space in which an exit may not be easily accessible.

Organic and/or combustible vapors may be trapped resulting in lack of oxygen (anoxia) and/or overexposure to vapors. Allow the confined space to vent by opening doors and/or manhole covers before monitoring. Normal oxygen levels may not be restored simply by venting the space by those means.

Oxygen Level: Monitor for % Oxygen with an O₂/LEL to ensure a minimum oxygen level of 19.5%. Because of the high vapor density of gasoline there is a high probability that vapors will replace any oxygen that is present, even if the space is open to the air. Oxygen level monitoring will be done at the top, middle, and bottom of the enclosed space.

If oxygen is less than 19.5%, do not enter the space without and airline of SCBA. When these devices are to be used, the H&S Manager MUST be present.

Explosive Vapors: Monitor for % of Lower Explosive Limit (LEL) of vapor concentrations within the confined space. Gasoline can collect in enclosed spaces, in corners, and in low areas.

If LEL readings exceed 20%, cautiously change the atmosphere in the space. If LEL readings are between 10 and 20%, work can be done, very cautiously. Non-sparking tools must be used.

Toxic Vapors: Monitor for toxic vapors with a direct reading instrument for the specific toxic or use a PID. PID readings will be taken at the top, middle, and bottom of a vault, shed, or other confined space to ensure that vapors do not exceed acceptable levels. The probe can be extended by adding a piece of Tygon tubing to it. Monitoring is not necessary if entry is made in SAR or SCBA.

If the PID and/or the FID readings exceed 5 ppm, a full face respirator must be worn in the confined space but only if the oxygen level is at or above 19.5%. Log monitoring results.

APPENDIX F

PID, Dust and Sample Log Forms

Project: _____ Operator: _____

Date: _____

Instrument: _____

Sampling
Technique: _____

Sample Interval: _____

Calibration: _____

Background Reading: _____

Action Level/Response: _____

Project: _____ Operator: _____

Date: _____

Instrument: _____

Sampling
Technique: _____

Sample Interval: _____

Calibration: _____

Background Reading: _____

Action Level/Response: _____

**Sub-Surface Soil Vapor Investigation
235 Metro Park
NYSDEC Site No. 828150**

Sample ID	SG#		SG#		SG#		SG#	
Date								
Time								
Sampling Depth								
Helium measurements								
Identity of Samplers	Canister	Regulator	Canister	Regulator	Canister	Regulator	Canister	Regulator
Purge volumes								
Volume of soil vapor extracted								
Vacuum of the canisters before and after collection	Before	After	Before	After	Before	After	Before	After
Moisture content of sampling zone								

APPENDIX G

Decontamination Procedures

The number and complexity of steps is variable. Disciplinary action will be the consequence of returning dirty equipment to clean areas, such as the office or warehouse.

According to 1910.120 (k), decontamination procedures must be communicated to employees and it must be set up prior to entry into potentially contaminated areas; decontamination effectiveness must be monitored by the site safety officer.

Decontamination waste water or solution will be disposed of properly. Please check state and local regulations! Depending on the site setup/goals/treatment methods, the water may be treated with the rest of the contaminated materials generated.

Boots are always the first items to be decontaminated, followed by gloves. When using Level C, the water in the tubs must be changed twice a day or more often, if muddied.

Decontamination Solutions

Solution(s) to be used: Alconox or detergent, and water.

Decontamination Steps for Personnel and PPE

Level D+

1. Wash and rinse outer boot.
2. If an outer glove is used, wash gloves and rinse.
3. Remove and dispose of inner gloves or sample gloves.
4. At earliest opportunity, wash hands, arms, and face thoroughly.

Level C

Equipment Drop hot line

Decon area

1. Outer boot wash and rinse
2. Outer glove wash and rinse (if any)
3. If cartridge change is necessary, do now
4. Remove and discard tape
5. Remove outer boot, glove
6. Remove and dispose of Tyvek
7. Remove hard hat, goggles/safety glasses (if any)
8. Place respirator in wash solution (tub)
9. Remove inner gloves
10. Rinse respirator and air dry
11. Wash arms, hands, face thoroughly

APPENDIX G

Decontamination Procedures

Monitoring Equipment

Prevent contamination because liquids could damage the instruments.

Wooden Tools

Wooden tools are impossible to decontaminate because they absorb chemicals. They should be kept on the site and handled only by protected workers. If contaminated with skin absorbers, they should be properly discarded.

Respirators

Hot water and some chemical solutions or detergents are necessary. Do not use towels to dry because they recontaminate a surface with micro-organisms and they leave itchy lint behind. Air drying is preferred.

Protective Clothing

PPE, particularly gloves and overboots, should be inspected before donning, during use (with the help of a buddy), when decontaminating, when problems arise. High ambient temperatures decrease wear time. Cold temperatures compromise materials' flexibility and strength. Consider factors such as splash, wearing layers, the area of the PPE exhibiting these signs, economics, and purpose of use. If protective clothing exhibits the following signs (particularly if it is a used item), it should be ripped up and then properly discarded.

- a. puckering or overall warping
- b. swelling or changes in thickness, non-uniform coatings
- c. brittleness not due to cold temperatures
- d. softening or stiffening
- e. pin holes (hold up to the light), cracks, tears
- f. stickiness or dirt that won't wash off
- g. inside discoloration
- h. seams coming apart or contamination on seams/zippers
- i. corrosion, abrasions

Sanitation

Employees must have access to wash facilities, toilets, and drinking water.

APPENDIX H

Electrical Safety Requirements

Electrical Equipment and Ground Fault Circuit Interrupters

All electrical equipment and power cables in and around wells or structures suspected of containing chemical contamination must be intrinsically safe and equipped with a three-wire, ground lead that has been rated as explosion proof for hazardous atmospheres (Class 1, Division 1 & 2). In accordance with OSHA 29 CFR 1926.404, approved ground fault circuit interrupters (GFCIs) must be used for all 120 volt, single phase, 15 and 20 ampere receptacle outlets on the site which are in use by employees and which are not part of the permanent wiring as defined by the NED 1987. Receptacles on the ends of extension cords are not part of the permanent wiring and therefore, must be protected by GFCIs whether or not the extension cord is plugged into permanent wiring.

The GFCI is a fast-acting circuit breaker which senses small imbalances in the circuit caused by current leakage to ground, and in a fraction of a second shuts off the electricity. However, the GFCI will not protect the employee from line-to-line contact hazards (such as a person holding two “hot” wires or a hot and neutral wire in each hand. The GFCI does provide protection against the most common form of electrical shock hazard – the ground fault. It also provides protection against fires, overheating, and destruction of insulation or wiring.

GFCIs can be used successfully to reduce electrical hazards on construction sites. Tripping of GFCIs, interruption of current flow, is sometimes caused by wet connectors and tools. It is good practice to limit exposure of connectors and tools to excessive moisture by using watertight or sealable connectors. Providing more GFCIs or shorter circuits can prevent tripping caused by the cumulative leakage from several tools or by leakages from extremely long circuits. (Adapted from OSHA 3007; Ground-Fault Protection of Construction Sites, 1987.)

APPENDIX I

NIOSH Guide to Chemical Properties for TCE and PCE



NIOSH Pocket Guide to Chemical Hazards

[NPG Home](#) | [Introduction](#) | [Synonyms & Trade Names](#) | [Chemical Names](#) | [CAS Numbers](#) | [RTECS Numbers](#) | [Appendices](#) | [Search](#)

Trichloroethylene		CAS 79-01-6	
ClCH=CCl₂		RTECS KX4550000	
Synonyms & Trade Names Ethylene trichloride, TCE, Trichloroethene, Trilene		DOT ID & Guide 1710 160	
Exposure Limits	NIOSH REL: Ca See Appendix A See Appendix C		
	OSHA PEL †: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)		
IDLH Ca [1000 ppm] See: 79016		Conversion 1 ppm = 5.37 mg/m ³	
Physical Description Colorless liquid (unless dyed blue) with a chloroform-like odor.			
MW: 131.4	BP: 189°F	FRZ: -99°F	Sol(77°F): 0.1%
VP: 58 mmHg	IP: 9.45 eV		Sp.Gr: 1.46
Fl.P: ?	UEL(77°F): 10.5%	LEL(77°F): 8%	
Combustible Liquid, but burns with difficulty.			
Incompatibilities & Reactivities Strong caustics & alkalis; chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium)			
Measurement Methods NIOSH 1022 , 3800 ; OSHA 1001 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]			
Target Organs Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system			
Cancer Site [in animals: liver & kidney cancer]			
See also: INTRODUCTION See ICSC CARD: 0081 See MEDICAL TESTS: 0236			


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NIOSH National Institute for
Occupational Safety and Health

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September 2005

NIOSH Pocket Guide to Chemical Hazards

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1,1,2,2-Tetrachloroethane		CAS 79-34-5	
CHCl₂CHCl₂		RTECS K18575000	
Synonyms & Trade Names Acetylene tetrachloride, Symmetrical tetrachloroethane		DOT ID & Guide 1702 151	
Exposure Limits	NIOSH REL : Ca TWA 1 ppm (7 mg/m ³) [skin] See Appendix A See Appendix C (Chloroethanes)		
	OSHA PEL †: TWA 5 ppm (35 mg/m ³) [skin]		
IDLH Ca [100 ppm] See: 79345		Conversion 1 ppm = 6.87 mg/m ³	
Physical Description Colorless to pale-yellow liquid with a pungent, chloroform-like odor.			
MW: 167.9	BP: 296°F	FRZ: -33°F	Sol: 0.3%
VP: 5 mmHg	IP: 11.10 eV		Sp.Gr(77°F): 1.59
Fl.P: NA	UEL: NA	LEL: NA	
Noncombustible Liquid			
Incompatibilities & Reactivities Chemically-active metals, strong caustics, fuming sulfuric acid [Note: Degrades slowly when exposed to air.]			
Measurement Methods NIOSH 1019 , 2562 ; OSHA 7 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Nausea, vomiting, abdominal pain; tremor fingers; jaundice, hepatitis, liver tenderness; dermatitis; leukocytosis (increased blood leukocytes); kidney damage; [potential occupational carcinogen]			
Target Organs Skin, liver, kidneys, central nervous system, gastrointestinal tract			
Cancer Site [in animals: liver tumors]			
See also: INTRODUCTION See ICSC CARD: 0332 See MEDICAL TESTS: 0222			

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NIOSH APPENDIX A - NIOSH Potential Occupational Carcinogens

New Policy

For the past 20 plus years, NIOSH has subscribed to a carcinogen policy that was published in 1976 by Edward J. Fairchild, II, Associate Director for Cincinnati Operations, which called for "no detectable exposure levels for proven carcinogenic substances" (Annals of the New York Academy of Sciences, 271:200-207, 1976). This was in response to a generic OSHA rulemaking on carcinogens. Because of advances in science and in approaches to risk assessment and risk management, NIOSH has adopted a more inclusive policy. NIOSH recommended exposure limits (RELs) will be based on risk evaluations using human or animal health effects data, and on an assessment of what levels can be feasibly achieved by engineering controls and measured by analytical techniques. To the extent feasible, NIOSH will project not only a no-effect exposure, but also exposure levels at which there may be residual risks. This policy applies to all workplace hazards, including carcinogens, and is responsive to Section 20(a)(3) of the Occupational Safety and Health Act of 1970, which charges NIOSH to ". . . describe exposure levels that are safe for various periods of employment, including but not limited to the exposure levels at which no employee will suffer impaired health or functional capacities or diminished life expectancy as a result of his work experience."

The effect of this new policy will be the development, whenever possible, of quantitative RELs that are based on human and/or animal data, as well as on the consideration of technological feasibility for controlling workplace exposures to the REL. Under the old policy, RELs for most carcinogens were non-quantitative values labeled "lowest feasible concentration (LFC)." [Note: There are a few exceptions to LFC RELs for carcinogens (e.g., RELs for asbestos, formaldehyde, benzene, and ethylene oxide are quantitative values based primarily on analytical limits of detection or technological feasibility). Also, in 1989, NIOSH adopted several quantitative RELs for carcinogens from OSHA's permissible exposure limit (PEL) update.]

Under the new policy, NIOSH will also recommend the complete range of respirators (as determined by the NIOSH Respirator Decision Logic) for carcinogens with quantitative RELs. In this way, respirators will be consistently recommended regardless of whether a substance is a carcinogen or a non-carcinogen.

Old Policy

In the past, NIOSH identified numerous substances that should be treated as potential occupational carcinogens even though OSHA might not have identified them as such. In

determining their carcinogenicity, NIOSH used the OSHA classification outlined in 29 CFR 1990.103, which states in part:

Potential occupational carcinogen means any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in humans or in one or more experimental mammalian species as the result of any oral, respiratory or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition also includes any substance which is metabolized into one or more potential occupational carcinogens by mammals.

When thresholds for carcinogens that would protect 100% of the population had not been identified, NIOSH usually recommended that occupational exposures to carcinogens be limited to the lowest feasible concentration. To ensure maximum protection from carcinogens through the use of respiratory protection, NIOSH also recommended that only the most reliable and protective respirators be used. These respirators include (1) a self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a positive-pressure mode, or (2) a supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in a pressure-demand or other positive-pressure mode.

Recommendations to be Revised

The RELs and respirator recommendations for carcinogens listed in this edition of the *Pocket Guide* still reflect the old policy. Changes in the RELs and respirator recommendations that reflect the new policy will be included in future editions.

NIOSH APPENDIX C **Supplementary Exposure Limits**

Trichloroethylene

NIOSH considers trichloroethylene (TCE) to be a potential occupational carcinogen and recommends a REL of 2 ppm (as a 60-minute ceiling) during the usage of TCE as an anesthetic agent and 25 ppm (as a 10-hour TWA) during all other exposures.

Chloroethanes

NIOSH considers ethylene dichloride; hexachloroethane; 1,1,2,2-tetrachloroethane; and 1,1,2-trichloroethane; to be potential occupational carcinogens.

Additionally, NIOSH recommends that the other five chloroethane compounds:

- 1,1-Dichloroethane

- Ethyl chloride
- Methyl chloroform
- Pentachloroethane
- 1,1,1,2-Tetrachloroethane

be treated in the workplace with caution because of their structural similarity to the four chloroethanes shown to be carcinogenic in animals.

APPENDIX J

Directions to the Hospital

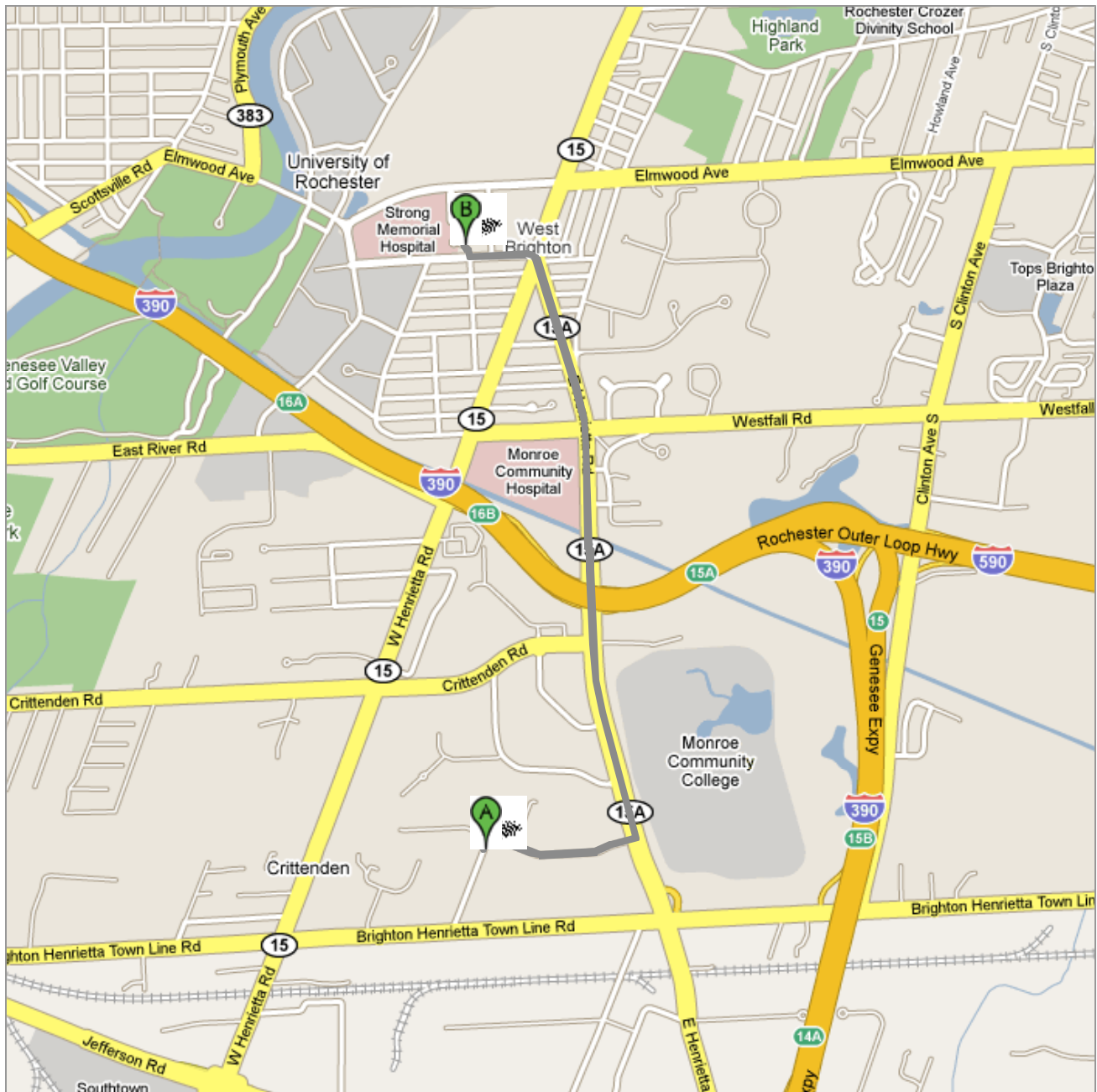


Directions to Strong Memorial Hospital





2.4 mi – about 9 mins

Save trees. Go green!

Download Google Maps on your phone at google.com/gmm



 **235 Metro Park**
Rochester, NY 14623

-
- | | |
|--|---------------------------|
|  1. Head north on Metro Park toward E Henrietta Rd/RT-15A
About 1 min | go 0.5 mi
total 0.5 mi |
|  2. Turn left at E Henrietta Rd/RT-15A
Continue to follow E Henrietta Rd
About 7 mins | go 1.7 mi
total 2.1 mi |
|  3. Slight left at Crittenden Blvd
About 1 min | go 0.2 mi
total 2.3 mi |
|  4. Turn right at Norfolk St | go 187 ft
total 2.4 mi |

 **Strong Memorial Hospital**

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2008 Tele Atlas